Oracle Utilities Opower Digital Self Service - Energy Management

Opower Digital Self Service - Energy Management Overview Guide

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Digital Self Service - Energy Management Cloud Services Overview

Welcome to the Digital Self Service Energy Management cloud services overview. Use this information to learn about the features and capabilities of the Oracle Utilities Opower Digital Self-Service products. Have a question? Contact Your Delivery Team or visit My Oracle Support.

Quick Links

- Getting Started
- Requirements and Limitations
- Digital Self Service - Energy Management Web Portal
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Getting Started

The Digital Self Service - Energy Management documentation includes detailed descriptions of the following cloud services:

- **Digital Self Service - Energy Management Cloud Service**: *This cloud service is a prerequisite for all other cloud services listed on this page.* It includes web and mobile products that help customers better understand their energy use patterns, find actionable tips, and manage their account. The following components are available:
  - Digital Self Service - Energy Management Web Portal
  - APIs
  - Inside Opower
  - Customer Service Interface
- **Digital Self Service - Energy Management AMI Cloud Service**: This cloud service provides additional AMI data, energy use insights, and functionality to utility customers who are on the Digital Self Service - Energy Management cloud service. The following additional components are available:
  - Bill Comparison - AMI Insights
  - Bill Forecast
  - Data Browser - AMI Insights
  - Green Button - Exporting AMI Data
  - Highest Use Energy Days
  - Smart Dashboard - AMI Insights

For an overview of all cloud services available from Oracle Utilities, see the Oracle Energy and Water Cloud Service Descriptions online at Oracle Contracts - Cloud Services Service Descriptions.

Note that each cloud service comes with a set of requirements that must be met in order for customers to receive the Opower products. See Requirements and Limitations for details.

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Requirements and Limitations

There are multiple Oracle Utilities Opower Digital Self Service cloud services. Each cloud service comes with a set of data requirements and limitations. The requirements must be met for a utility and a customer to participate in the program.

General Requirements

- **Cloud Service Requirements**: The Digital Self Service - Energy Management cloud service is a prerequisite for all other cloud services listed on this page. For an overview of all cloud services available from Oracle Utilities, see the Oracle Energy and Water Cloud Service Descriptions online at Oracle Contracts - Cloud Services Service Descriptions.
- **Active Account**: Customers must be associated with a premise that has an active account with the utility. An active account means that the customer has signed up with the utility for at least one service point for one fuel type at an address.
- **Screen Resolution**: A minimum width of 320 pixels is required for devices to display widgets.
- **Supported Browsers**: The customer must use a supported web or mobile browser. Oracle Utilities Web products adhere to the Oracle Software Web Browser Support Policy.
- **Configuration**: Configurations are limited to the utility logo, primary and secondary colors, and up to 10 configurable text changes.

Digital Self Service - Energy Management Cloud Service

Utility Requirements

- **Cloud Service Requirement**: Utilities must purchase the Digital Self Service - Energy Management cloud service.
- **Data Integration**: Data must be sent to Oracle Utilities in the right schema and according to the established data specifications. Your Oracle Utilities Delivery Team will work with you to identify which data specifications are applicable to your situation.
- **Single Sign-On**: Oracle Utilities recommends that utilities use single sign-on (SSO), as outlined in the Oracle Utilities Opower SSO Configuration Guide. See Authentication for more information. If the utility uses SAML-based SSO, third-party cookies must be enabled on the customer's web or mobile browser to view Oracle Utilities Opower embedded web features. Third-party cookies authenticate the customer's account using a session identifier, which allows embedded widgets to display the correct data for the customer. Third-party cookies are not required for OpenID Connect-based SSO.
- **AMI Insights:** AMI insights can be enabled in various widgets and features if utilities purchase the Digital Self Service - Energy Management AMI cloud service. For more information about what AMI insights can be provided, see Getting Started.

Customer Requirements

- **Data History**: For most features to have meaningful insights, a customer must have more than one bill of historical billing data in the form of subdaily, daily, monthly, bi-monthly, or quarterly read data. Additional data requirements vary by feature.
- **Rates**: Utility rates must be modeled by Oracle Utilities for cost information to appear. If rates are not modeled, energy use information is displayed by default. If the utility chooses to display cost information, rate modeling is required during initial program setup for an additional fee. See Rates Engagement and Rates Modeling for more information.

Digital Self Service - Energy Management AMI Cloud Service

Utility Requirements

- **Cloud Service Requirement**: In order to purchase the Digital Self Service - Energy Management AMI cloud service, utilities must also purchase the Digital Self Service - Energy Management cloud service.

Customer Requirements

- **Data History**: For most features to have meaningful insights, a customer must have more than one bill of historical billing data in the form of subdaily, daily, monthly, bi-monthly, or quarterly read data. Additional data requirements vary by feature.

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Digital Self Service - Energy Management Web Portal

The Digital Self Service - Energy Management Web Portal is a flexible web experience that provides utility customers with personalized energy data, insights, and recommendations on how to save energy. The experience is delivered through modular, mobile responsive widgets that are included in a standalone web portal or embedded in the pages of a utility's web site.

Widgets and Requirements

The Digital Self Service - Energy Management Web Portal includes a variety of widgets. Most widgets and insights are available with billing data, while others require AMI and rates data. For a list of product-wide requirements, see Requirements and Limitations. Additional requirements vary by widget.

> **Note**
>
> Utilities must purchase additional cloud services to enable AMI and rates-based features and insights. See Getting Started for more information.

Responsive Layout

The layout and design of widgets is responsive so that the functionality can display correctly on mobile as well as desktop displays. This design allows for a single version of a website that automatically adjusts based on the customer's screen size and orientation. Note that the responsive design can cause user experience variations because the components of a widget may be hidden or adjusted. For example, separate navigation options can be combined into a single drop-down list on smaller screen sizes.The Digital Self Service - Energy Management Web Portal supports the use of media queries to implement the responsive design. For example, the responsive layout for a widget is defined using up to four screen size breakpoints.

> **Note**
>
> A minimum width of 320 pixels is required for devices to display widgets.

Embeddable Widgets

An embeddable widget is any widget that can be included directly on an existing web page rather than requiring its own page. An embeddable widget can be included on a webpage in the standalone version of the Digital Self Service - Energy Management Web Portal, or on a utility-hosted webpage. Utilities can improve the customer experience of their website by directly surfacing data and insights through embeddable widgets.

Most Digital Self Service widgets are embeddable, but not at all are. For a list of which widgets are embeddable, see Guidelines for Embedding Widgets in the Oracle Utilities Opower Embeddable Widgets Integration Guide. If a widget is listed under that page, then it is embeddable.

To embed a widget, JavaScript that calls the widget is provided to the utility. The JavaScript can be placed in the HTML of a web page, in the desired location. When a utility receives an updated widget, users automatically receive the latest version of the content when visiting the page that contains the embeddable widget. For more information on embedding widgets, see Embedding a Widget Using Web Components.

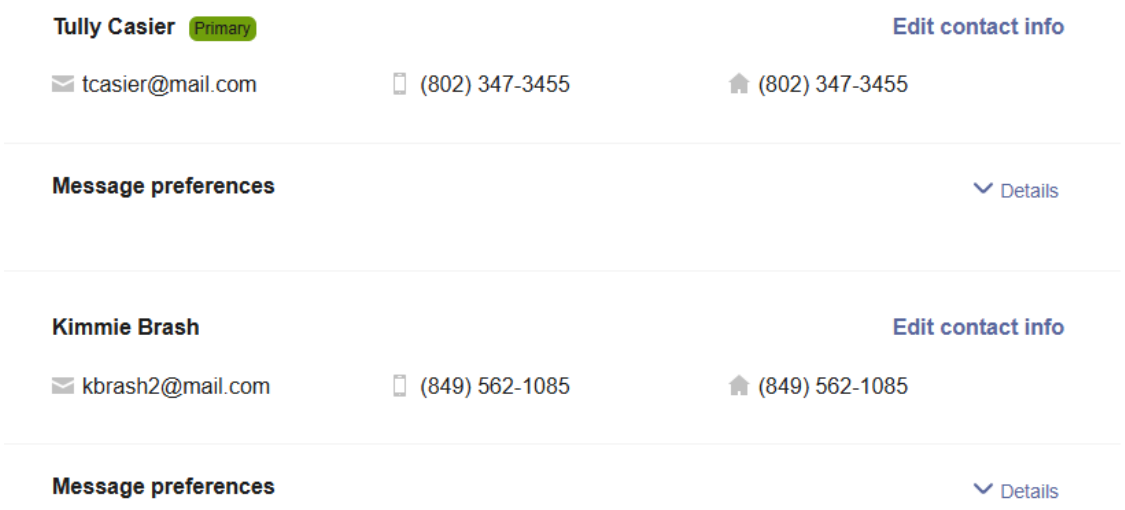
Be aware that the width of widgets that are embedded in containers is restricted by the container. This can cause embedded widgets to switch to smaller, responsive layouts at larger, overall screen sizes as compared to widgets that can utilize the full width of the page.

Account Center

The Account Center allows customers to view and change information about their utility account, their alert preferences, and the communications they receive from the utility.

Manage Recipients and Preferences

The Manage Recipients and Preferences section allows users to manage recipient and alert preferences. Users can edit the primary recipient's information, add additional recipients to the account, edit recipient details, and select alert preferences for each recipient. Recipients are users who can be selected to receive communications and alerts related to the account. At a minimum, the section displays information for the primary recipient.



Manage Recipients

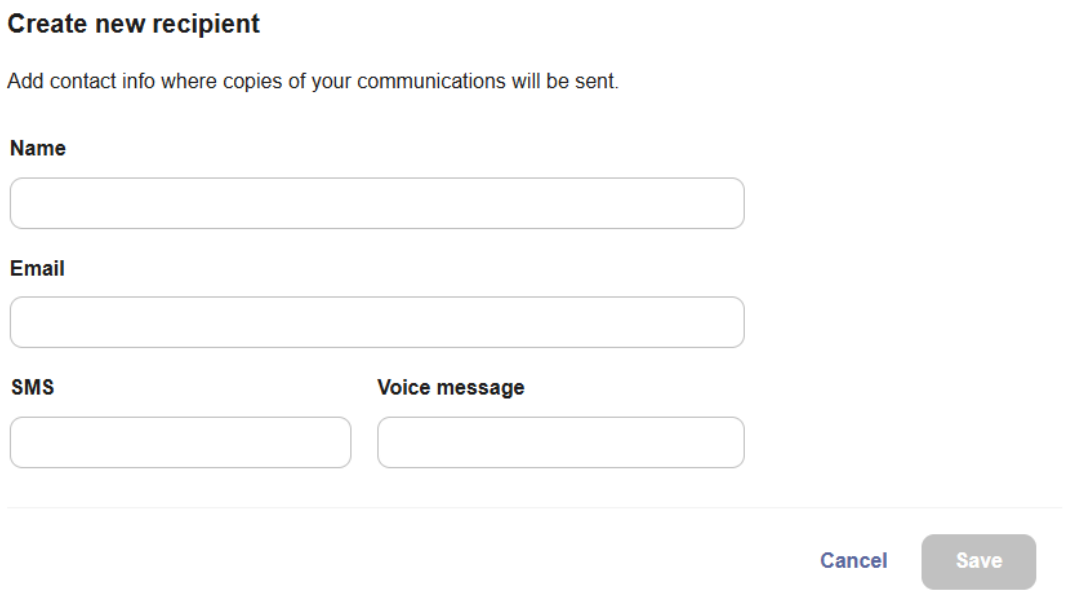
The details for each recipient are displayed, and can be edited. Recipients other than the primary recipient can also be removed. The primary recipient can not be removed from the account. Additionally, each recipient must have a name and at least one communication type (email or phone number). The communication type determines which communications and alerts a recipient can select to receive. For example, an email address is required in order for a customer to select to receive Email Home Energy Reports. Recipient details include:

- Name
- Email Address
- Phone Numbers for SMS text and voice messages

Be aware that the name that appears on communications is the name on the actual utility account, and not the name that is displayed here. If the primary recipient changes their name here, it will not change the name that appears on the communication.

Create New Recipient

Customers can specify other recipients to receive alerts. Basic validation is performed to ensure that the phone numbers and email addresses resemble real values, but these values are not tested or verified. Note that these recipients will receive *copies* of the communications sent to the primary recipient. This means that the communications will contain the name of the primary recipient, not the secondary recipient.



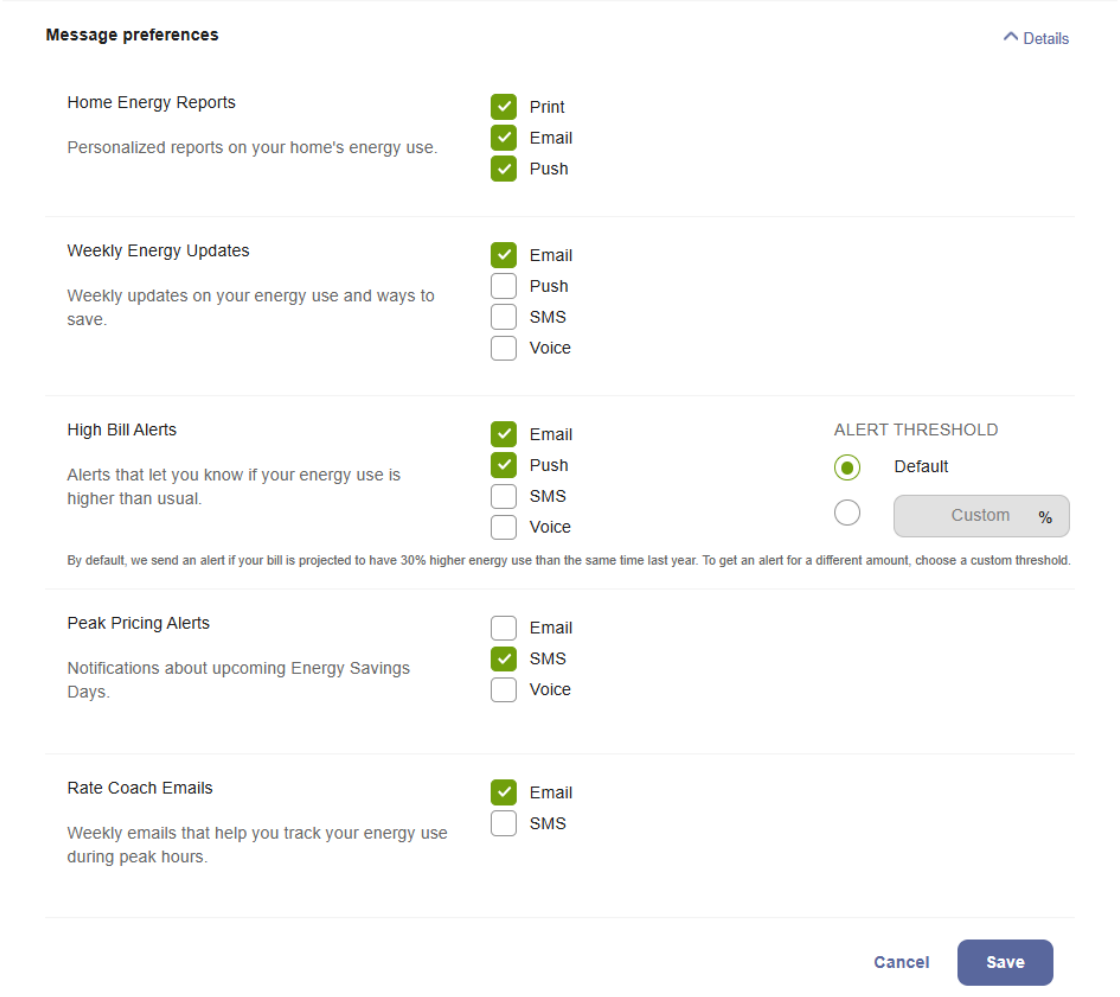
Manage Message Preferences

The Message Preferences section is displayed once for each recipient on the account, and provides a list of the available communications and alerts that the recipient can receive. This section of the widget can be expanded or collapsed by clicking Details.

The products and channels that are displayed for each recipient depend on:

- The products and reports that are available from the utility.
- The communication types included for the recipient. For example, do they have both an email and a phone number?
- Whether the recipient is the primary recipient on the account.

Each applicable channel can then be selected or cleared for each recipient of a product. Printed reports can be sent only to the mailing address for the primary account recipient. Additional recipients cannot select printed reports.



Load Shifting

This section, which might also be called Rate Coach Emails, controls whether a customer receives Load Shifting email communications. Load Shifting communications are only available for the email channel. For more information, see the Oracle Utilities Opower Load Shifting Cloud Service, Rate Coach Product Overview (Getting Started).

Home Energy Reports

Mail: The mail option controls whether the customer receives a printed Home Energy Report. Home Energy Reports are an opt-out program only, so this option is only visible if the utility has determined that the customer is eligible to receive the report. Also note that print reports are only sent to the primary mailing address for the utility account. Additional recipients cannot receive paper HERs.

Email: The email option controls whether the customer receives an Email Home Energy Report. This option can be displayed whether or not the customer is already receiving email report. Additional recipients can choose to receive the email if they are eligible, and they provide a valid email address.

For more information about Home Energy Reports, see the Oracle Utilities Opower Energy Efficiency Cloud Service Product Overview.

Weekly Energy Updates

Weekly energy updates are email notifications compare the energy use for a premise to that of neighbors. For more information on Weekly Energy Updates, see the Oracle Utilities Opower Proactive Alerts Cloud Service Product Overview (Getting Started).

High Usage Alerts

High usage alerts are digital communications sent through email, SMS, and voice to inform customers when they are expected to receive a higher energy bill.

A personalized alert threshold is available to customers who have High Bill Alerts AMI. For information on the applicable cloud service, see the Oracle Utilities Opower Proactive Alerts (Getting Started). Depending on the characteristics of a customer's accounts, the customer is provided one of the following options to define an alert threshold:

- **Cost threshold**: The cost threshold allows customers to specify a dollar amount as their personalized threshold. When the cost threshold is set, the customer will only receive a high bill alert when their cost exceeds the cost threshold. All active utility accounts for a customer must have modeled rates and are not defined as budget billing accounts for the customer to define a cost-based threshold.

  If a customer does not set their personalized threshold, they will only receive high bill alerts when they exceed the combined usage and cost threshold set by the utility. The recommended combined threshold is 30 percent.
- **Usage threshold**: The usage threshold allows the customer to set a percentage-based personalized threshold. When the usage threshold is set, the customer will only receive an alert when their energy use exceeds that threshold for the same billing period the previous year. The default usage threshold is 30 percent. The usage-based threshold is available to customers who are ineligible to define a cost-based threshold. This applies to customers with at least one active account without modeled rates or defined as a budget billing account.

Peak Pricing Alerts

Peak pricing alerts are digital communications sent through email, SMS, and voice to inform customers of peak pricing events. Customers can receive either Peak Time Rebate or Behavioral Demand Response communications. For more information on the applicable Cloud Services, see the Oracle Utilities Opower Behavioral Demand Response Cloud Service Product Overview and the Oracle Utilities Opower Peak Time Rebates Cloud Service Product Overview.

Login Details

For utilities that do not implement SSO authentication, a **Login Details** tab is available in the Account Center for customers who need to update their login email address and password. Any reset passwords must adhere to the password security requirements as defined during the utility's setup and configuration of the product.

Authentication

Authentication refers to the ways that a customer can access the Digital Self Service - Energy Management Web Portal securely. The two methods available are single sign-on (SSO) and stand-alone account management. Each utility chooses which one of these to implement when

launching the Oracle Utilities Opower program. In addition, some CSRs may be able to access a customer's Digital Self Service - Energy Management Web Portal accounts to help them troubleshoot issues they encounter. The authentication method in place depends on each utility's setup and configuration.

Single Sign-On (SSO)

SSO allows customers to use the same username and password to access the web portal and any other web applications provided by a utility. All usernames and passwords are created, maintained, and updated on the utility's web site. Oracle Utilities uses Security Assertion Markup Language (SAML) 2.0 to implement SSO with utilities. Moreover, Oracle Utilities supports Identity Provider (IdP) Initiated and Service Provider (SP) Initiated SSO using HTTP POST binding. As part of the SSO implementation process, the utility must provide a SAML Metadata file and a SAML insertion with required information. This allows Oracle Utilities to identify the customer and authenticate the request. See the Oracle Utilities Opower SSO Configuration Guide for details.

SSO requires that all authentication is handled by the utility's website. After a customer has been authenticated using the utility website sign-in options, the customer has access to all features and pages of the Digital Self Service - Energy Management Web Portal. This can include individually hosted pages as well as content that has been embedded directly within the utility's website.

Note: Since SSO credentials are maintained by the utility's web site, customers cannot use the Account Center in the Digital Self Service - Energy Management Web Portal to change their password.

Standalone Authentication

Standalone account management requires customers to create a Digital Self Service - Energy Management Web Portal account (including a user name and password) that is separate from any other utility-provided web applications or accounts. When stand-alone account management is implemented, customers can access the web portal by navigating directly to it and creating a new account once they get there.

Account Creation

The landing page of the Digital Self Service - Energy Management Web Portal provides customers an option to create a new account. New customers are often directed to this landing page through communications such as Home Energy Reports.

Confirming the Customer's Account: Customers creating a new account must provide their name and account number exactly as it appears on their Home Energy Report or utility bill. If a customer provides incorrect information, error messages are displayed which help guide the user in how to provide the information accurately.

Entering an Email and Password: After a customer provides accurate account information, they must provide an email and password for their new account. Passwords must be at least eight characters in length, and must not be or contain the customer’s name or email address. Depending on the utility's setup and configuration, the following additional password requirements may apply:

- Minimum number of digits
- Minimum number of special characters
- Minimum lower case characters

- Minimum upper case characters
- Must be different than previous password

Completing this step sends a confirmation email to the email address the customer supplied, which the customer then uses to verify the email address.

Account Sign In and Sign Out

Customers who have created their account can use their account email address and password to sign in from the landing page. A standard link is available throughout the Digital Self Service - Energy Management Web Portal for signing out. By default, the session lasts for 30 minutes before timeout, at which point the user is automatically signed out.

Password Reset

Customers can request a password reset if they have forgotten their current password. To complete this process, a customer first selects the **Forgot password?** option included with the account sign-in options. The customer is prompted to enter their utility account email address, to which a reset password email is sent. The email includes a link that directs the customer to a reset your password page, which prompts the customer to create and confirm their new password.

> **Note**
>
> If a customer knows their password and wants to change it, they can use the Account Center rather than using the password reset feature. See Account Center for more information.

Bill Comparison

The Bill Comparison allows customers to compare their current bill to their previous bill and to the corresponding bill from the same time period the previous year. A statement indicates whether the customer is spending more, less, or about the same as the compared bill. The feature also highlights factors (such as weather or rate plan changes) that may have contributed to differences between the compared bills.

Requirements

Utility Requirements

Category	Description
Required Cloud Service	Same as listed in the product-wide requirements.
Scale	No applicable scale requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly, bi-monthly, and quarterly.

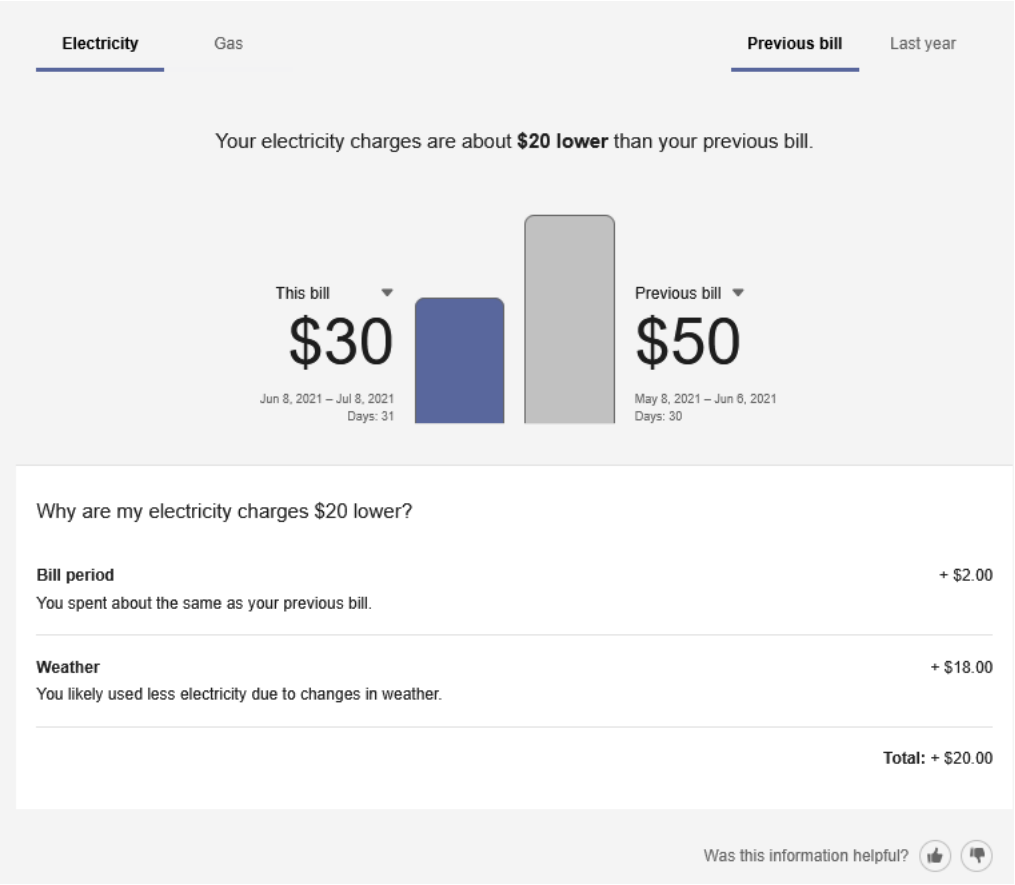
Category	Description
Data Delivery Frequency	Monthly, bi-monthly, and quarterly.
Data Requirements	**Billing Data**: Billed usage data from the utility is the minimum data requirement. **Weather Data**: Weather data is required for the weather insight to appear. The customer must have a minimum of nine months of historical AMI usage data with 75% coverage in order to calculate customer-specific rather than utility-wide heating and cooling coefficients. **Peak Event Data**: Peak event data (day and time of the peak event, as well as rebate amounts) is required for the peak energy savings insight to appear. The utility must also purchase the Peak Management: Peak Time Rebates cloud service. **AMI Data**: AMI data is required for AMI-based insights to appear. To use AMI data, utilities must purchase the Digital Self-Service Energy Management AMI cloud service. See Requirements and Limitations for details. **Rates Data**: One of the Rates Engagement cloud services must be purchased and customers' rates must be modeled for rates insights (such as rate plan changes, time-of-use information, and appliance use insights) to appear.
Data History	The customer must have two historical bills to compare energy use between bill periods. Billing data from the previous year's bill period is required for the year-over-year comparison.
Data Coverage	100% coverage of billing data is required for the bill periods being compared. (There can be no null reads for the bill periods being compared.)
Supported Fuels	Electricity, gas, and dual fuel. Water and Wastewater are also supported when the Bill Comparison is integrated as part of Digital Self Service - Transactions.

Limitations

- **Quarterly Bills**: Utilities that use quarterly bills must send both energy use and cost data for the same billing period. The bill comparison will not work, for example, if monthly usage data and quarterly cost data are sent separately.
- **Estimated Bills**: If one of the compared bills was estimated (that is, if a bill is designated by the utility as "estimated" during the data transfer process), the billed usage amount will be shown with an indicator that the bill was estimated.

User Experience

This section describes the user experience for customers who have a desktop screen, gas and electricity, and rates modeled.



Fuel or Resource Menu

The fuel menu allows customers to select which fuel or resource to view a bill comparison for. By default, the **Electricity** fuel label and data is shown. An additional gas menu only appears for dual fuel customers.

Time Menu

The bill comparison can show a comparison between the current bill against the previous bill, or the same bill period from the previous year. A time menu allows customers to select which comparison to use. If data from the previous year is not available, only the previous bill period can be shown. By default, the **Previous Bill** label and comparison is shown.

A bill period from the previous year is defined as the bill period that overlaps the most with the current bill period. Customers can also use the **This Bill** drop-down in the bar chart to select a historical bill to review a previous bill comparison.

Insight Statement

Above the bar chart is an insight statement that explains whether the customer's bill is lower, higher, or about the same as the bill from the previous bill period, or from the same bill last year. If data from the previous year is not available, only an analysis against the previous bill period displays. A bill period from the previous year is defined as the bill period that overlaps the most with the current bill period. The messaging varies depending on the results of the comparison.

The cost of the difference is displayed in bold within the insight statement, if applicable. In some cases, there is no significant cost difference, and so none is shown. The dollar figures are rounded to the nearest dollar. For example, $1.51 would be rounded to $2, $1.50 would be rounded to $2, and $1.49 would be rounded to $1.

Bar Chart

The bar chart presents a visual comparison for customers so that they can see at a glance how their two bills compare. Annotations on the bars in the comparison graph identify the bill date, the number of days, and the cost amount of the compared bills. The bar for the current bill uses the "you" color, which is blue by default. The bar for the previous bill or last year's bill uses a gray color by default.

- **This Bill**: From this menu, customers can select a different historical bill to compare, if the data is available.
- **Previous Bill**: From this menu, customers to choose to view a comparison to the current bill, or to the same bill from the previous year.

Reasons for Bill Differences

Comparisons for a higher or lower bill can include the most likely reason for the cost difference. Customers can view a list of insights explaining the difference, along with the contribution of each insight to the cost of the bill.

Bill Length Insight

This refers to differences due to a different number of days in the bill periods being compared. For example, one bill period might be 6/1-6/30/2020, whereas the other might be 6/10-7/9/2019. A bill period that has fewer days in it usually costs less than a bill period with more days. The calculation for determining the cost impact of this difference is as follows:

(Reference Bill Length - Compared Bill Length) / (Compared Bill Length)) * Compared Bill Amount

For example, suppose that the reference bill length (this month) is 29 days, and the compared bill length (the bill from last month or the same month last year) is 30 days. Let's also say that in the compared bill period, the customer's bill was $105. This means the calculation would be:

(29-30)/30 * 105 = -3.49999

Rounding is then applied to the nearest hundredth decimal point, which in this case would bring the number to -$3.50. This means the messaging would say that the customer used $3.50 less in the reference bill period than in the compared bill period.

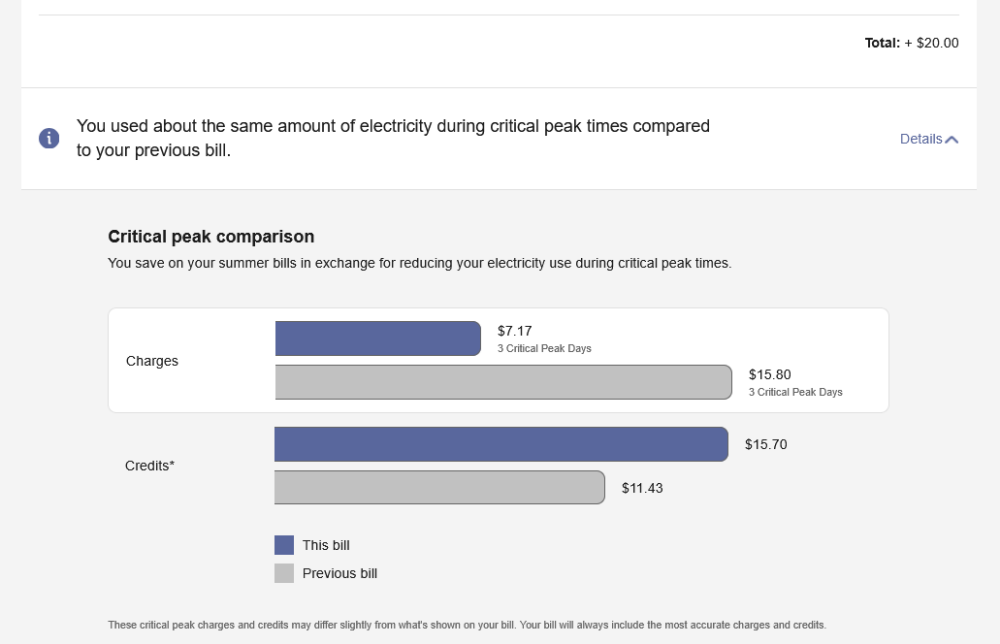
Weather Insight

If sufficient weather data is available, the bill comparison can show differences due to changes in the weather. This insight only appears if weather data is available for both of the two periods being compared, and there is sufficient data to do weather normalization.

In the standard bill comparison experience, Oracle Utilities calculates the adjusted total usage for the compared bill periods using a weather normalization algorithm. The algorithm is based on Heating Degree Days, Cooling Degree Days, and weather sensitivity coefficients. See Weather Insight Calculation for details.

Peak Energy Savings Insight

Rebates received during peak events can be included in the list of cost differences when comparing bills. Peak energy savings credits reduce the total bill and are displayed as a negative credit value. Due to the nature of peak events, it is common that only one of the compared bills includes a peak energy savings credit.



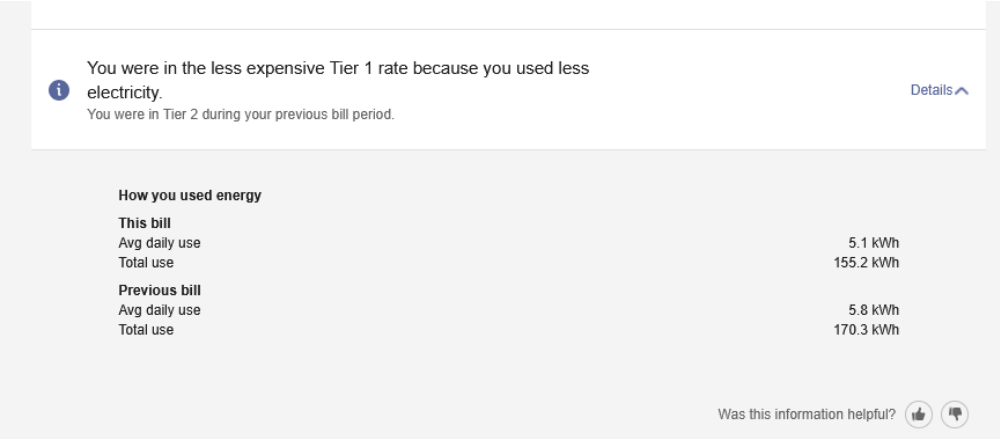
Rate Plan Insight

The rate plan insight highlights cost differences in bills due to the customer switching rate plans. This information can only appear if the customer's rate plan is different for the two bills, and both rate plans have been modeled in the Rate Engine. The cost of the reference period's usage on the previous rate plan is calculated and subtracted from the cost during the reference period on the actual rate plan to determine the difference. Note that differences in prices between bills charged on the same rate plan are not called out separately.

A rate plan in the Oracle Utilities Opower system has two parts: a base plan and one or more components added onto it. For example, a base plan may be an electricity plan for residential customers in a utility's territory, but different versions of that plan could be: (1) electricity residential customers on a community assistance program, and (2) electricity residential customers on a solar plan. The rate plan change insight can be triggered if a customer moves from one of these combinations to another, even though the base plan—electricity residential customer—is the same.

Rate Tier Insight

For customers on a tiered rate plan, the bill comparison can display cost differences due to being on a cheaper or more expensive rate tier between bill periods. The switch between rate tiers depends on how much energy the customer uses.



Requirements:

- Rates must be modeled. See Rates Modeling for details.
- The rate plan structure must not be substantially different from those which the tool already supports. Contact Your Delivery Team for more information.
- The customer's tier has changed between the bills being compared.

Time of Use Insight

Information about a customer's energy costs due to time-of-use rates can be displayed below the cost difference information, if a utility applies different rates during different times of day.

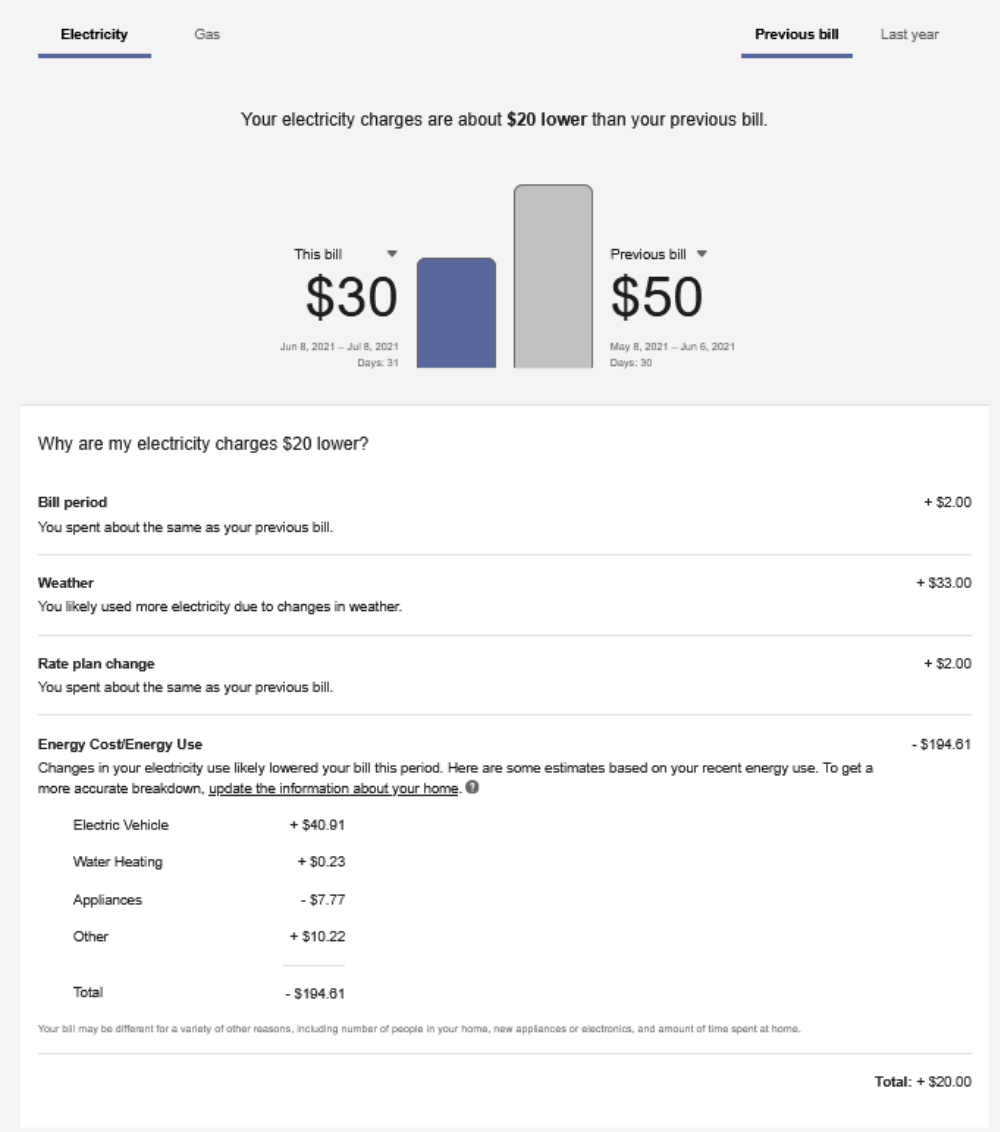
Requirements:

- Rates must be modeled. See Rates Modeling for details. For more information and examples about modeling a time of use (TOU) rate plan, see Rates Data File Specifications - Time of Use Rate Plan.

- The rate plan structure must not be substantially different from those which the tool already supports. Contact Your Delivery Team for more information.

Appliance Disaggregation Insight

Appliance Detection and Disaggregation insights can be displayed below the cost difference information. These insights explain how much of the cost difference between bills was due to changes in large appliance use (such as electric vehicle charging, water heating, or HVAC systems). This allows customers to better understand how their behavior affects their utility bill. Customers can increase the accuracy of the cost comparison by completing the Home Energy Analysis.



Requirements: Appliance disaggregation insights require more data in addition to the base data requirements. For example, for the year-over-year comparison, 13 months of historical AMI data is required. Other requirements as well as setup and configuration apply. Contact Your Delivery Team for more information.

Solar Insights

Differences due to the use of solar technology. While negative bills can be shown in the interface whether or not a customer has solar technology, additional solar insights can be displayed if the utility has purchased the Distributed Energy Resources cloud service. See Solar Messaging in Bill Comparison for details.

Critical Peak Pricing Insights

For customers who are part of a critical peak pricing program, information about critical peak pricing charges and credits can be displayed below the cost differences section of the feature. This information may explain to customers how they can save energy on certain critical peak days in order to earn credits on their bills. Additionally it can display a bar chart that summarizes the customer's charges and credits in the current and previous bill periods.

Requirements:

- Rates must be modeled. See Rates Modeling for details.
- Peak event data (day and time of peak event, as well as rebate amounts) is required.
- The rate plan structure must not be substantially different from those which the tool already supports. Contact Your Delivery Team for more information.

Non-Usage Insight

Differences due to changes outside of a customer's normal energy consumption, such as taxes, flat fees, and adjustments. This information allows the Bill Comparison to better match the amounts that customers see in their bills. Displaying this information may require additional setup and configuration. Contact Your Delivery Team if you have any questions.

Other Factors

Differences due to factors not explained by the above reasons. Such reasons could include being on vacation, buying a new appliance, or having additional people at home. A call-to-action link is included with this insight, directing customers to the interactive Data Browser.

Customer Feedback Module

A customer feedback module is displayed at the bottom of the Bill Comparison. See Customer Feedback for more information.

User Experience Variations

Locale

This feature can display locale-appropriate language and units of measure. Additionally, this feature may compare quarterly bills as opposed to monthly or bi-monthly bills, since quarterly bills are more common in non-US locales.

Mobile Experience

The experience of the bill comparison for smaller mobile screen sizes consists of the same components as the desktop experience. However, the layout changes to fit the smaller screen size by stacking the components vertically.

Multiple Accounts

The multiple accounts experience varies depending on whether the feature has been configured for a standalone implementation or an embedded implementation.

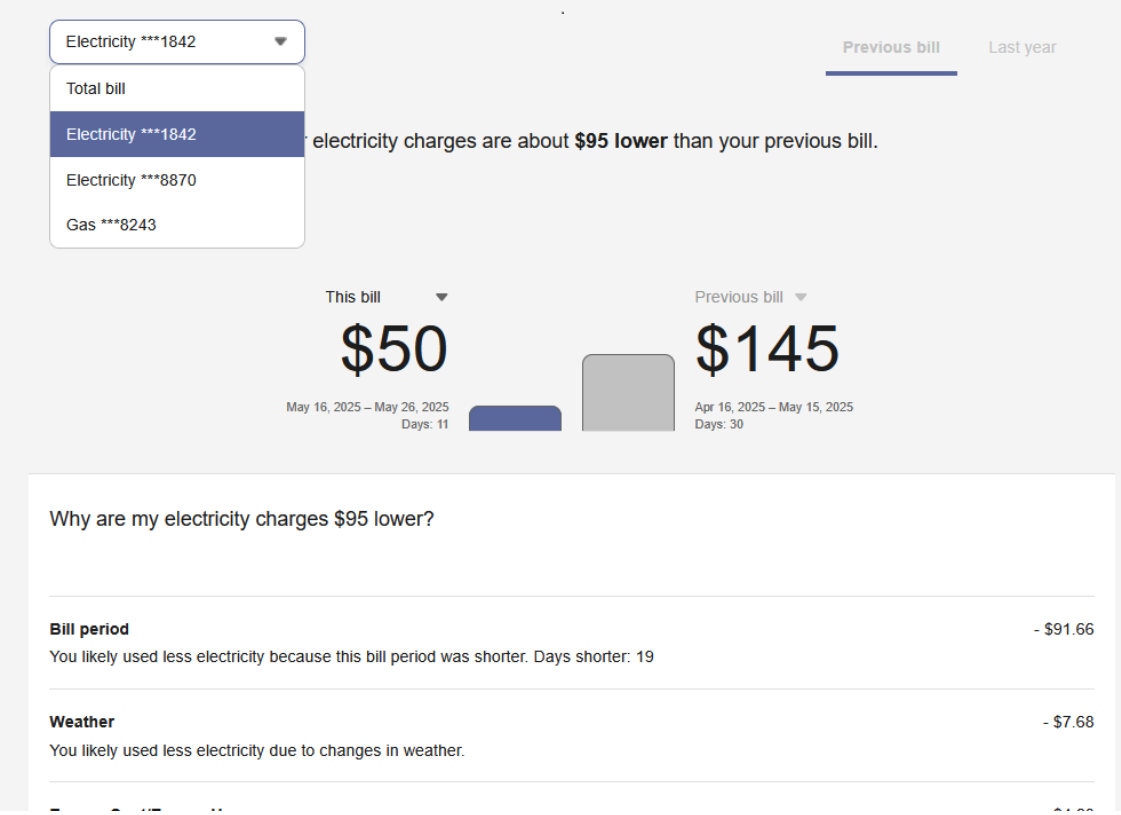
In a standalone implementation, the Bill Comparison shows a drop-down list that allows customers to choose which account to view. This drop-down list replaces the fuel type toggle.

In an embedded widget implementation, the account drop-down is hidden since the utility site is expected to have its own account selection tools. In this case, customers can switch between their accounts by logging into their utility account using single sign-on, and then clicking an account selector hosted on the utility website. All embedded widgets are then reloaded with data for the specified account.

Multiple Service Agreements

A drop-down menu is displayed if there are multiple service agreements for a billing account. If your customer has multiple service points (that is, multiple meters) for a single service agreement, the drop-down menu will not display.

The example below shows a case where a customer has a single gas service agreement and two electricity service agreements.



Negative Bill

Customers with a negative bill are shown the negative bill value, along with a message that explains the reason for the negative bill. The bar for the negative value uses a green color. A common cause of a negative bill is a utility applying a credit to the customer's account. Or, customers with solar technology might have produced more electricity than they used.

Quarterly Reads

If a customer has quarterly reads, the comparison will be between quarterly bills, with each bar representing a three-month period. The labels under the bars will show the start and end dates of the bill period, which will be in separate months. The cost and usage values will likely be higher because of the longer bill period. Furthermore, the feature will take longer to display data for a new quarterly-billed customer, because the feature requires two bill periods (or 6 months of data) before a comparison can be shown.

Single Fuel

If a customer only has one fuel type (such as electricity but not gas), then the Bill Comparison widget displays the label for the fuel type by default. However, utilities can choose to hide this label during the setup and configuration process.

Water and Wastewater Customers

When integrated as part of Digital Self Service - Transactions, water and wastewater customers can use the Bill Comparison widget to compare their water or wastewater bills in many of the same ways that customers can compare electricity and gas bills, providing a consistent bill comparison experience.

Insights for water and wastewater customers include a **Days in Bill Period** insight and **Other Water Use** insights. Other insights, such as weather and rate plan insights, are not currently available for water and wastewater services.

Calculations

Bill Comparison

The bill comparison calculation compares a customer's energy use and/or cost against the previous bill period, or against the same period from the previous year. At a high level, the calculation involves the following steps:

1. Identify the start and end date of the selected bill.
2. Identify the amount of energy consumed in the billing period, as well as the cost of the bill.
3. Identify the average temperature during the selected bill period (if weather data is available).
4. Check whether there was a change in the customer's rate plan.
5. Retrieve the same information for the compared bill.
6. Compare the information and generate a statement about how the customer is doing, as well as reasons why there may be a difference between the billing periods.

Weather Insight

The Bill Comparison feature estimates how much the customer *would* have spent during each compared bill period if weather conditions had been identical. The bill costs are adjusted as a result, and the likely impact of weather is the difference in cost between the two adjusted bills. This difference is then displayed as the weather insight.

Note: The weather normalization calculation does not use the Oracle Utilities Opower Rate Engine to calculate the dollar amount attributed to weather, even if rates are modeled at a

given utility. Instead it relies on bill charges and energy usage amounts for both the selected and reference bills.

More specifically, the feature calculates the adjusted total for each compared bill period using a weather normalization algorithm. The weather normalization algorithm is based on the following inputs:

- **Cooling Degree Days (CDD)**: A measure of how *warm* a location is over a period of time relative to a base temperature, specifically 65°F. You get CDDs when the average temperature of a day is over 65°F. For example, if the average temperature for a single day is 67°F, then the CDD for that day is 2, since it is two degrees over the base temperature. CDDs are proportional to the amount of cooling energy usage. The more CDDs, the more energy is used to cool a home or building.
- **Heating Degree Days (HDD)**: A measure of how *cold* a location is over a period of time relative to the same base temperature, 65°F. For example, if the average temperature for a single day is 55°F, then the HDD for that day is 10, since it is ten degrees under the base temperature. HDDs are proportional to the amount of heating energy usage. The more HDDs, the more energy is used to heat a home or building.
- **Weather Sensitivity Coefficients**: These coefficients are defined on a per-utility, per-fuel-type, and per-dwelling-type (if available) basis. If enough customer data is available, then the Bill Comparison can use *customer*-specific heating and cooling coefficients rather than *utility*-wide coefficients. Customer-specific coefficients result in more accurate and personalized assessments of how much money a customer spent or saved on their bill due to variations in weather. At minimum, nine months of historical AMI usage data and 75% data coverage are required for customer-specific coefficients. If there is not enough data, the feature will fall back to utility-wide coefficients.

Using these inputs, the weather normalization calculation performs the follow high-level steps:

1. Get the average temperature on each day of the *current* period and each day of the *comparison* period.
2. Derive the average heating degree days (HDD) and cooling degree days (CDD) for each period.
3. Calculate the difference in HDD and CDD between the periods.
4. Use the difference in HDD and CDD, along with utility-specific heating and cooling coefficients, to calculate an "adjustment factor."
5. Multiply the adjustment factor by the amount of energy usage from the bill period in question. The resulting "adjusted" usage data (or "normalized" usage data) can then be displayed to customers.

With weather normalization, the comparison between bill periods is more fair than making an unadjusted comparison, since it accounts for differences in weather conditions. The calculation automatically corrects for differences in bill length.

Bill or Usage Forecast

The Bill or Usage Forecast shows residential AMI customers their energy use or cost so far in the billing period, projected total energy use or cost for the period, and typical energy use or cost for the period based on their past energy use. The forecast informs customers before the end of the billing cycle if they are likely to have high energy use or cost compared to the same time period the previous year.

Requirements

Utility Requirements

Same as listed in the product-wide requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly or bimonthly.
Data Delivery Frequency	Utilities must be able to deliver customer data to Oracle Utilities Opower within 48 hours from the time of the last data read.
Data Requirements	**Billing Data**: Billed usage data from the utility is required. **AMI Data**: Daily, hourly, or subhourly AMI data is required. AMI data requires the Digital Self-Service Energy Management AMI cloud service. See Getting Started for details. **Rates Data**: The Rates Engagement cloud service must be purchased and customers' rates must be modeled for cost information to display. Otherwise, usage information will be displayed.
Data History	The customer must have at least one historical bill in order for the forecast to be calculated. A year's worth of billing history is required to show the customer how their forecast compares to their typical usage from the same time last year. If the customer does not have a year's worth of billing history, they are still shown their current and projected usage or costs.
Data Coverage	The customer must have AMI data going back to the beginning of the current billing cycle. By default, at least 75% of the possible reads for the current billing cycle are required to calculate a usage forecast. For cost forecasts, at least 95% of AMI usage reads must have rates modeled in order to ensure an accurate forecast.
Supported Fuels	Electricity and gas. Water and wastewater are also supported when Bill Forecast is integrated as part of Digital Self Service - Transactions.

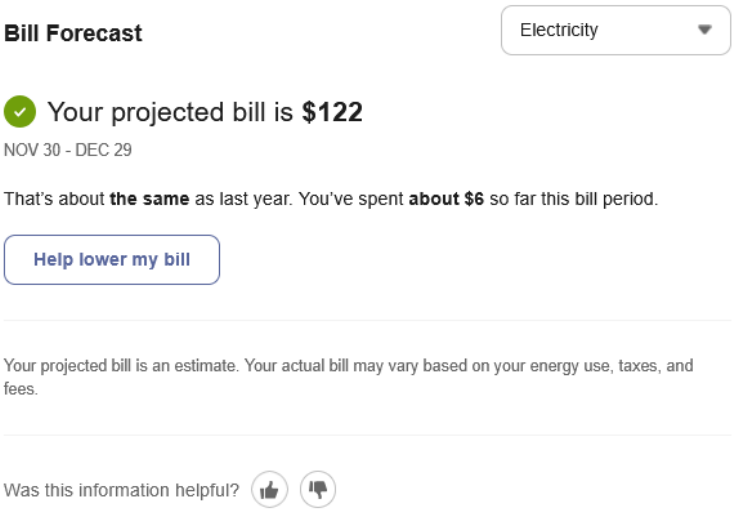
Limitations

Rate Plan Switch: If a customer switches rate plans from a modeled to an un-modeled rate in the middle of the bill period, there may be a brief span of time during which the cost forecast will be inaccurate.

User Experience

The user experience described in this section is for customers who have a desktop screen, gas and electricity, and rates modeled.

Fuel Drop-Down Menu: The fuel drop-down list allows customers to select which fuel to view a forecast for. By default, the Electricity fuel label is shown. Gas is the second label. A fuel drop-down only appears for dual fuel customers and is hidden for single fuel customers.



Forecast Amount: The forecast amount is a projection of how much the customer's bill could be if they continue their current energy-spending behavior through the end of the billing period. The forecast is an estimate, not an exact amount, and is based on the estimated length of the bill. It is rounded to the nearest $5 to reinforce the fact that it is an estimate. Depending on your setup and configuration, the forecast may show a cost range instead of a specific cost.

Normative Icon: The normative icon provides a visual indication of how well the customer is doing and shows whether or not their cost or energy use is unusual compared to their typical cost or energy use.

A threshold controls which icon displays. By default, the threshold that causes the high alert icon to display is when a customer's energy use or cost increases by more than 30% above their baseline. *Baseline* in this case refers to the customer's usage or cost from the same bill period last year. The threshold may vary for each utility depending on what is configured during the setup and launch process.

Condition	Normative Icon
Customer is using less than or equal to 30% above their baseline	Check mark
Customer is using more than 30% above their baseline	Exclamation point
Customer will see a forecast calculated in *n* days	Information icon
Customer does not have a baseline or estimated bill period	Information icon

See Cost Forecast Variations below for visual examples of how the normative icon and other components of the forecast display in different scenarios.

Billing Period Date Range: The billing period shows the start and end date that the forecast covers. It comes from the average bill period length that is estimated based on a customer's AMI data and bill period end date.

This component may be hidden if there is not enough AMI data to estimate the average length of a customer's billing periods. For example, there may be two days of AMI data for the customer, but not enough historical AMI data to know how long their average bill period is throughout the year.

Comparison Message: The comparison message explains how much the customer is on track to spend compared to the same bill period from the previous year. The message varies slightly depending on the customer's performance and the data that is available.

Spent So Far: A message explains the cost for energy already used in the current billing period, which is the basis for the projection.

Help Lower My Bill: This link directs customers to energy efficiency tips designed to help them save money and energy. See Ways to Save for more information.

Disclaimer about Estimated Bill: The widget includes a brief disclaimer about how the forecast is estimated and can vary from a customer's final bill amount.

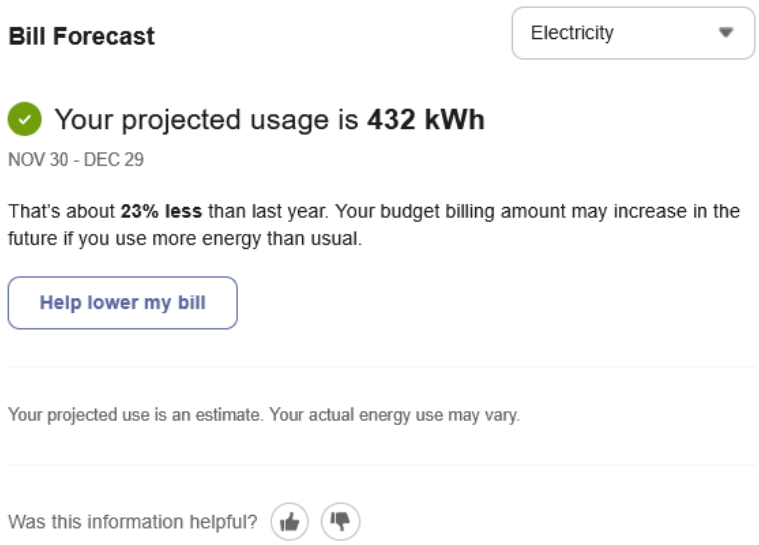
Customer Feedback: A customer feedback module is displayed at the bottom of the forecast. Customers can give feedback to help lead to feature improvements. See Customer Feedback for more information.

User Experience Variations

Budget Billing Experience

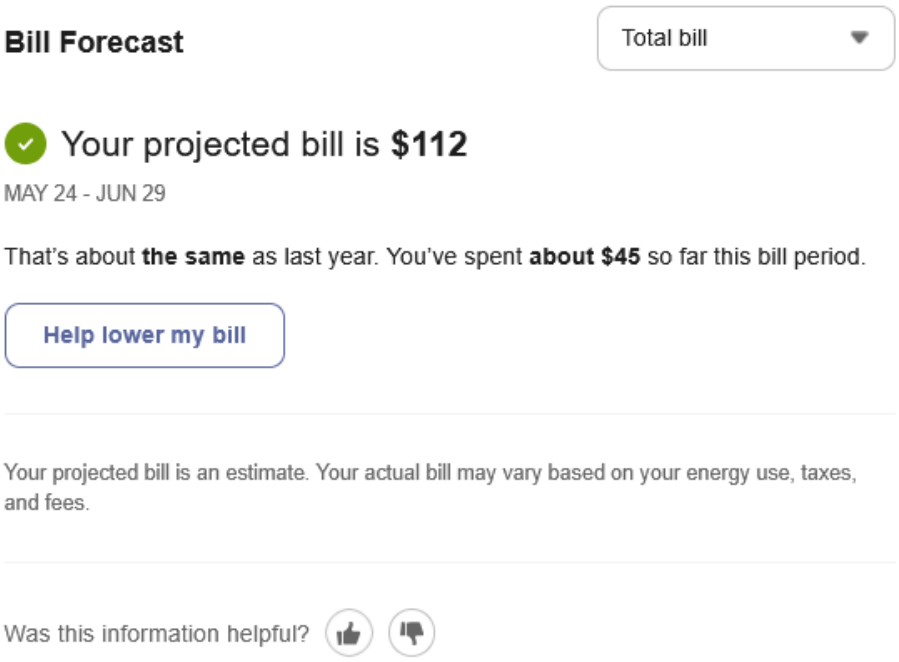
Budget billing is a type of billing in which the customer pays a set amount of money each bill period for their energy use. This amount may be adjusted each year depending on factors such as inflation and the customer's overall energy use patterns.

For budget billing customers, the Bill Forecast includes an additional message encouraging them to lower their usage since their future budget billing amount may increase if they use more than usual.



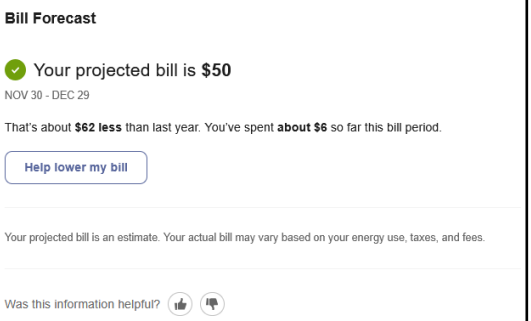
Combined Fuel Bill Forecast

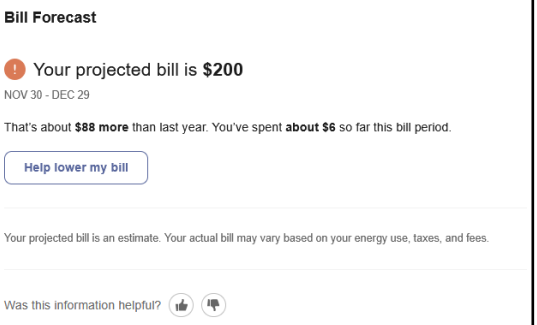
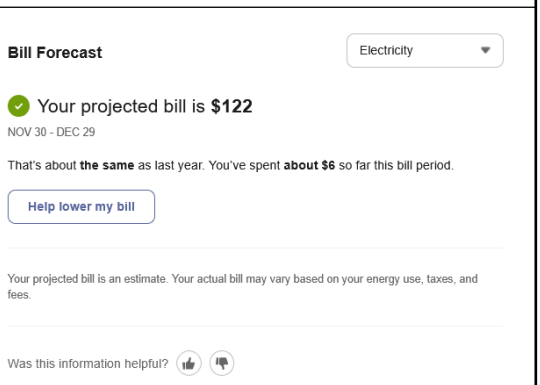
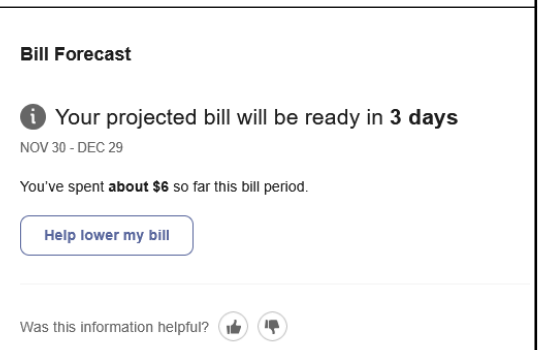
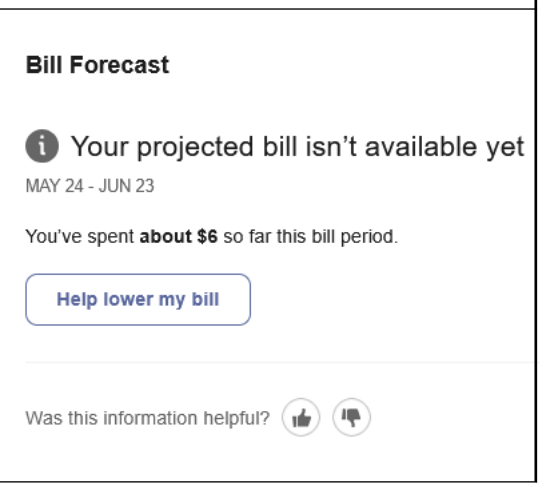
The Bill Forecast for dual fuel customers can show a forecast for combined gas and electric costs. In this case, the forecast displays a drop-down menu which includes a bill forecast of a customer's total gas and electricity costs. This is meant to match how dual fuel customers often think of their utility bill as one entity, as opposed to separate gas and electricity charges.

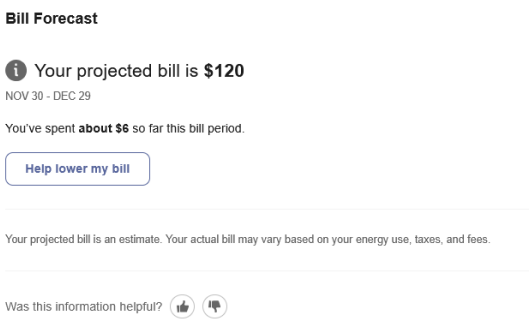


Cost Forecast Variations

The table below describes user experience variations of the Bill Forecast for customers who are dual fuel (gas and electricity) and have rates modeled. *Baseline* in this case refers to the customer's cost from the same bill period last year.

Variation	Screenshot
Low Cost Forecast The customer has a cost baseline and an estimated bill period date range, and is using *less than* their baseline.	

Variation	Screenshot
High Cost Forecast Customer has a baseline cost and estimated bill period date range, and is using *more than 30% above* their baseline.	
Similar Cost Forecast Customer has a baseline cost and estimated bill period date range, and is using *0 - 30% above* their baseline. This means that the customer is projected to use about the same as their baseline cost.	
Days Until Forecast Ready and Cost to Date Customer sees a message that their cost forecast will be available soon and is shown their cost-to-date in the meantime. A forecast is not shown in this case because seven days in the bill period have not yet passed. This is done to avoid a forecast based on too little data.	
Cost to Date Customer does not have a baseline or an estimated bill period length. A cost to date is shown because some AMI data is available for the customer. However, there is not enough data to determine the average length of the customer's bill period and calculate a forecast.	

Variation	Screenshot
Cost Forecast But No Baseline Customer does not have a baseline. However, the customer has an estimated bill period date range and enough AMI data for a cost forecast to be calculated, as well as the customer's cost to date.	
Error State Customer is eligible for a forecast but there is a problem with retrieving the data for it. It is possible for a user to see forecast for one fuel type but an error state for another. If not enough data can be retrieved for either fuel type, the same error message is shown in both views. If data is available for only one view, the widget defaults to that view and shows the error message if the customer switches to the other fuel.	An error message is shown stating that the forecast information is not available.

Cost Forecast Displayed as a Range

Utilities can display a numeric range rather than a single value for the forecast. For example, if a customer's projected bill is $100, and the cost range is configured to be 15%, then the forecast message would state something like, "Your project bill is $100-$115".

A range can only be displayed for cost forecasts. A range cannot be enabled for usage forecasts.

Forecast Lower Than Cost to Date

There may be a case where a customer's cost forecast is rounded down to the nearest five and becomes less than the customer's cost to date as a result.

For example, imagine it is late in the billing period and the customer's cost to date is $41. If the widget calculates a cost forecast of $42, then it would round this number down to $40. However, this would be a confusing user experience, since the forecast would say $40, whereas the cost to date would say $41. Therefore, for these situations, the widget contains logic to keep the original $42 forecast, instead of rounding down to the nearest five. This is the only case in which the widget will round to the nearest whole number instead of the nearest five.

Mobile Experience

The Bill Forecast is designed to adapt smoothly to both mobile and desktop screen sizes. When the screen size changes, the layout of the feature changes dynamically to reduce the size of the elements and keep them stacked vertically.

Multiple Billing Accounts

The multiple billing accounts experience varies depending on whether the feature has been configured for a standalone implementation or an embedded implementation.

In a standalone implementation, the Bill Forecast shows a drop-down list that allows customers to choose which billing account to view.

In an embedded widget implementation, the billing account drop-down is hidden since the utility site is expected to have its own account selection tools. In this case, customers can switch between their billing accounts by logging into their utility account using single sign-on, and then clicking an account selector hosted on the utility website. All embedded widgets are then reloaded with data for the specified account.

For more information about embedding widgets, see the Oracle Utilities Opower Embeddable Widgets Integration Guide.

Multiple Service Agreements

A drop-down menu is displayed if there are multiple service agreements for a billing account. For example, a customer might open the menu and see different items for a gas service agreement and any applicable electricity service agreements. When the service agreement is selected, the Bill Forecast widget refreshes to show a forecast for it.

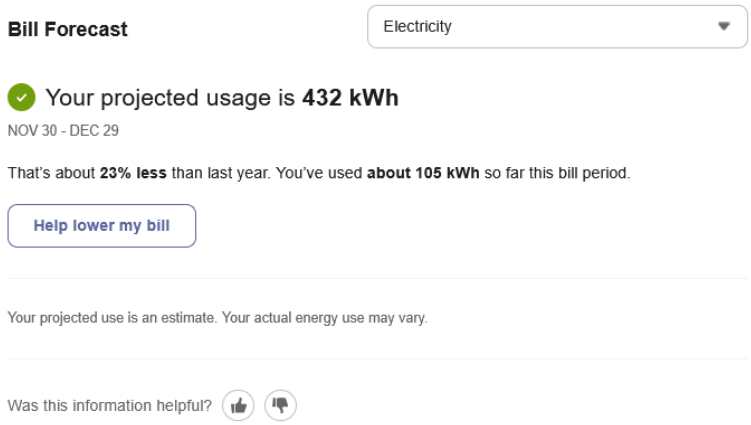
If the customer has multiple service points (that is, multiple meters) for a single service agreement, the drop-down menu will not display since forecasts cannot shown at the service point level.

Solar Customers

Customers with negative usage or bill forecasts will see negative numbers in the feature, regardless of whether the Oracle Utilities Opower Distributed Energy Resources cloud service has been purchased. However, if a utility has purchased the Distributed Energy Resources cloud service, then additional solar insights are displayed. For information about the solar customer experience, see Solar Messaging in Bill Forecast in the *Distributed Energy Resources Cloud Service Overview*.

Usage Forecast

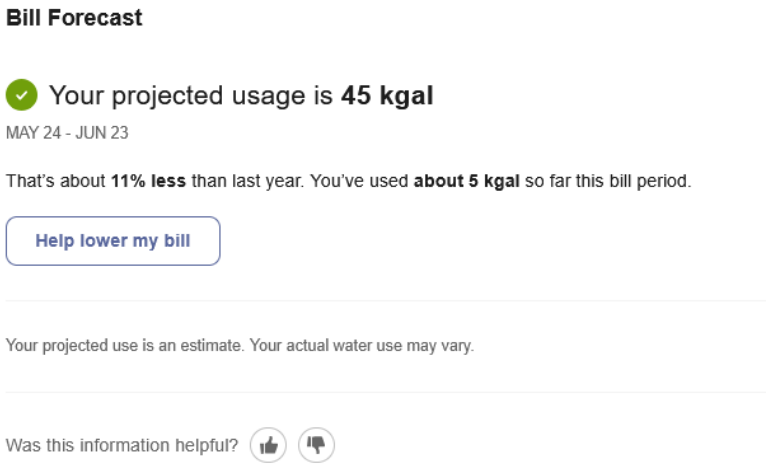
If rates are not modeled for the customer, then an energy use forecast is shown instead. The variations of the energy use forecast are identical to those of the cost forecast variations, except the forecast is shown in a kilowatt-hour (kWh) value. To provide context, the comparison message includes the percentage that this value represents.



Water and Wastewater Experience

> **Note**
>
> This experience is only available when the Bill Forecast is integrated as part of Digital Self Service - Transactions.

In this experience, customers can see a forecast of their water and wastewater service. The options to view water and wastewater are included for selection in a drop-down menu. If rates are not modeled, customers are presented with a usage forecast, as shown in the example image below.



Calculations

Bill Forecast

At a high level, the Bill Forecast calculation involves the following steps:

1. Calculate the baseline cost and energy values using the customer's bills from the previous year.
2. Estimate the customer's billing period end date.
3. Calculate how much energy the customer has used to date.
4. Take the customer's energy use and project it forward to the estimated billing period end date.
5. Convert the resulting energy use values to cost values, based on the customer's rate plan. The output is an actual cost value (to date) and a projected cost value (going forward). Note that the projected cost can also be displayed as a range, depending on the configuration.

Bill Guide

The Bill Guide is a summary of billing insights that helps customers better understand their most recent billed usage charges. It includes a bill breakdown, weather insight, and neighbor comparison insight.

Utility Requirements

Same as listed in the product-wide requirements. Additionally, utilities that plan to use Bill Guide for embedded implementations (as opposed to standalone implementations) must be on the latest technical framework available from Oracle Utilities Opower. See Bill Guide in the *Oracle Utilities Opower Embeddable Widgets Integration Guide* for embedding guidance.

Customer Requirements

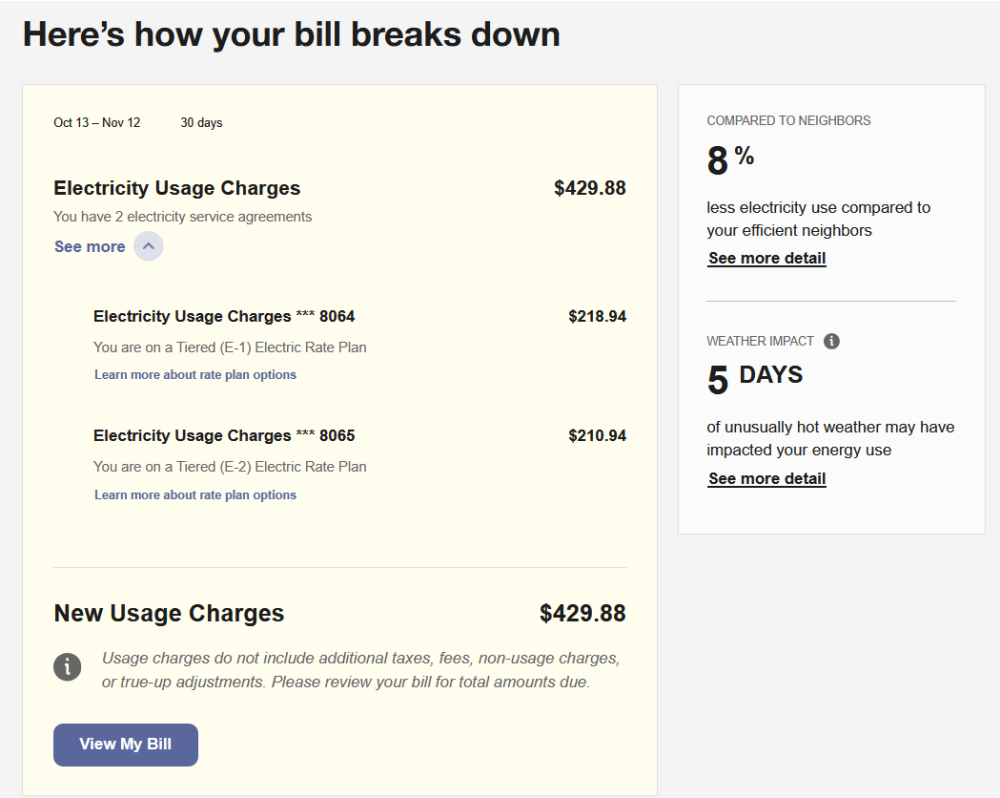
Billing data is required for most Bill Guide features. Other data requirements apply depending on the feature and whether the new or legacy data transfer specification is used. See the links to individual feature descriptions under User Experience below for more information.

Limitations

- **US English Only**: The Bill Guide is currently available in US English only.
- **Non-Supported Billing Frequencies**: The Bill Guide only supports customers on monthly bills. Bimonthly and quarterly bills are not currently supported.
- **Non-Supported Customer Types**: Small and Medium Business (SMB) customers, Commercial and Industrial (C&I) customers, and water and wastewater customers are not currently supported.

User Experience

The user experience is organized into a summary of billing insights paired with a neighbor comparison and weather insight. The level of detail displayed in each widget depends the available data and whether rates have been modeled for the utility.



Bill Breakdown: A detailed look at the components of the customer's most recent energy bill, including the date range, specific charges, total amount due, and a link to a copy of the bill.

Neighbor Comparison: A brief insight showing how a customer's energy use from their most recent bill compares to that of their neighbors.

Weather Insight: A display of the number of extreme weather days that occurred in the most recent bill period.

User Experience Variations

New Versus Legacy Data Transfer

Several features in the Bill Guide show variations in the user experience depending on whether the latest billing data transfer specification or legacy billing data transfer specification is in use. The latest billing data transfer specification can support more data and features than the legacy data transfer specification. These variations are described in more detail in the individual widget descriptions. Contact Your Delivery Team if you have questions.

Multiple Premises

If there are multiple addresses or premises associated with a customer's web account, a selector appears in the title bar of the Bill Guide. The selector is hidden if there is only one address associated with the account.

Bill Guide Bill Breakdown

The Bill Breakdown presents a detailed view of a customer's most recent energy bill, including the date range, specific charges, and total amount due. This information is meant to educate customers about their bill, reduce calls to the utility support center, and motivate customers to take preventive steps to lower their energy use before their next bill. The user experience varies slightly depending on which data transfer specification the utility uses.

Requirements

Utility Requirements

Same as described in Bill Guide.

Customer Requirements

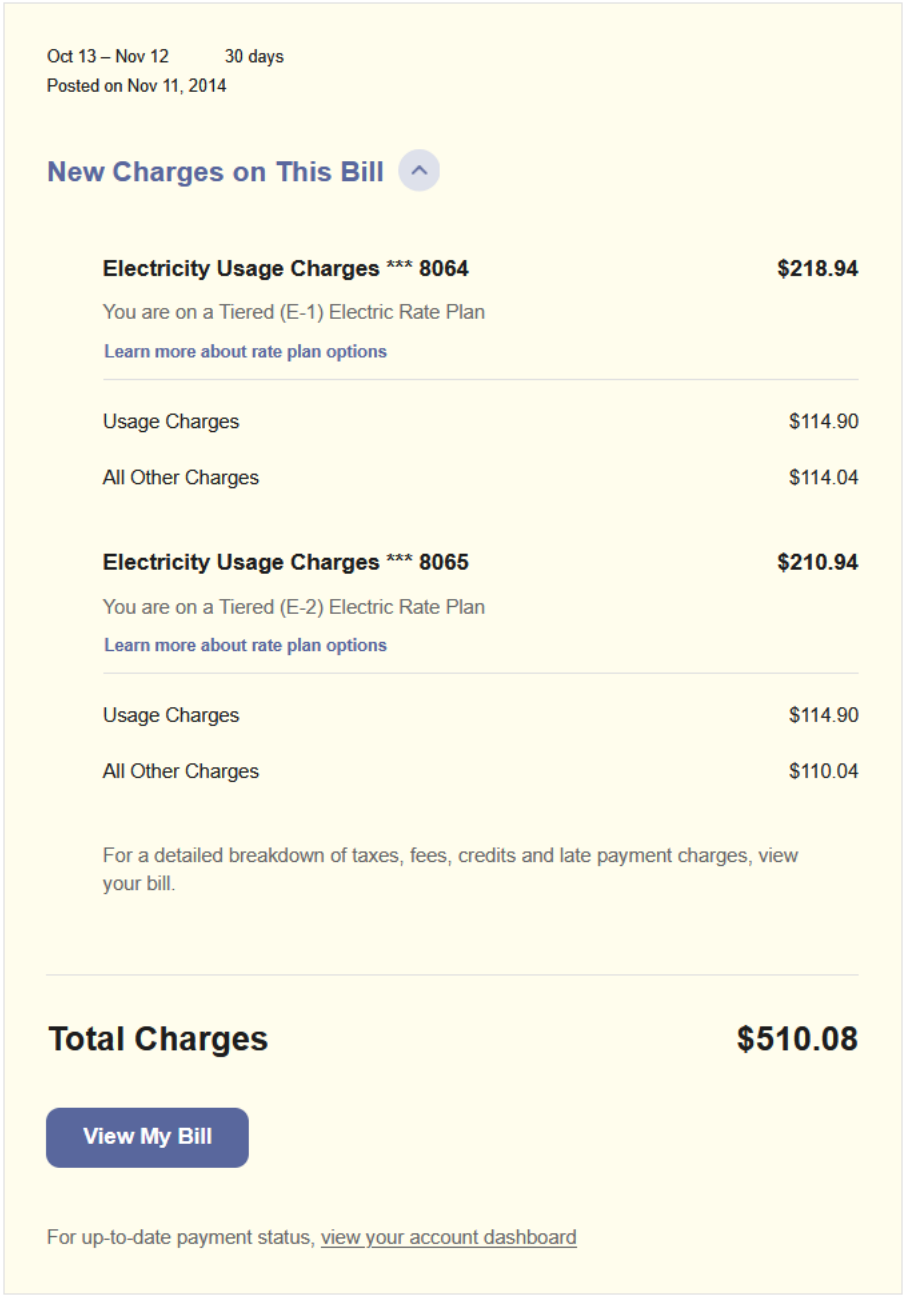
Category	Description
Billing Frequency	Monthly.
Data Delivery Frequency	Monthly.
Data Requirements	**Billing Data**: Billed usage data from the utility is the minimum data requirement. Utilities can use one of two billing data specifications to transfer data to Oracle Utilities Opower: • Legacy Billing Data Transfer: In this case, utilities must send data in the `usage_charge` field described in the Usage Fields specification. (Normally, this is an optional field.) Fields such as non-usage charges cannot be displayed. • Billing Data Transfer (preferred): Utilities that use this specification can display the following additional information: Posted on date, past due charge, non-usage charges (such as taxes and fees), total due, and due date. **Rate Plan Names**: Rates modeling through the Rates Engagement cloud service is required to display rate plan names.
Data History	The customer must have at least one historical bill.
Data Coverage	Not applicable.
Supported Fuels	Electricity, gas, and dual fuel.

Limitations

The feature supports bill amounts that were estimated. However, there will be no indicator in the interface that the bill was estimated.

User Experience

This section describes the user experience for electricity customers whose rates are modeled and who are using the latest Billing Data Transfer specification in order to display non-usage charges.



Title: A title appears above the widget telling customers that the following information presents a detailed picture of their bill or usage.

Date Range: A date range for the bill period is displayed at the top of the breakdown so that customers have a time-based reference. The number of days in the bill period is also shown to give a more specific reference, and to help indicate why the bill might be lower or higher than their previous bill.

Posted On: This refers to the date on which the customer's bill was generated and posted to their account.

New Charges: This section displays money owed for energy use during the most recent bill period. For dual fuel customers, new charges for electricity and gas are displayed on separate lines. Within each new charges section, the following details are available:

- **Usage Charges**: Charges for energy consumed during the most recent bill period.

- **All Other Charges**: Charges that are not related to usage, such as taxes and fees.
- **Rate Plan Names**: If the customer's rates are modeled and rate plan information is available, each new charge summary displays the name of the rate plan that the customer is on. This is followed by a link to the Rate Comparison where customers can learn more about available rate plans that they can switch to.
- **View Bill Statement**: A statement appears at the bottom of the new charges section to encourage customers to view their bill for a more detailed breakdown of taxes, fees, credits, and other charges.

Rolled Over Charges: If applicable, this section displays outstanding amounts not paid on the account. Rolled over charges may include any fees or penalties the customer incurred, or remaining or unpaid bill amounts. If the rolled over charge is zero, then zero is shown in the interface.

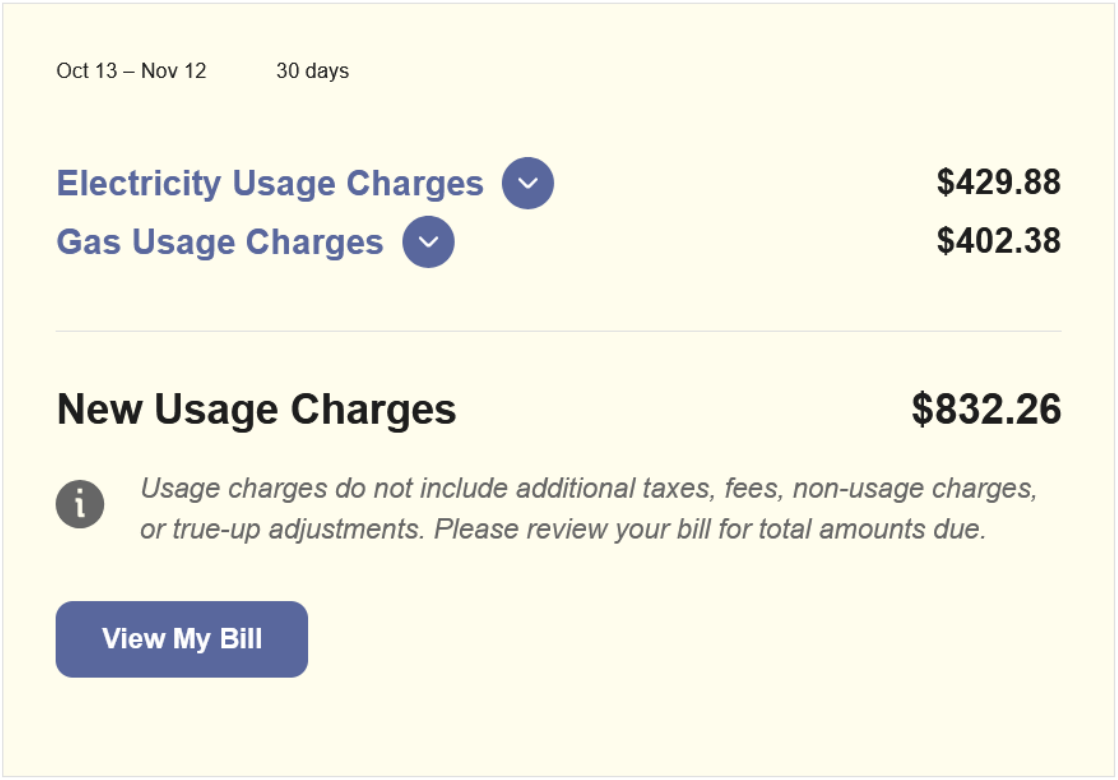
Total Charges: This amount refers to the customer's current balance. It is a sum of past due charges (if applicable) and new charges. It includes the date on which payment is due.

View My Bill: This is a configurable link to take users to a utility-hosted system for presenting billing information. It requires discussion between the utility and the Oracle Utilities Opower Delivery Team to configure.

User Experience Variations

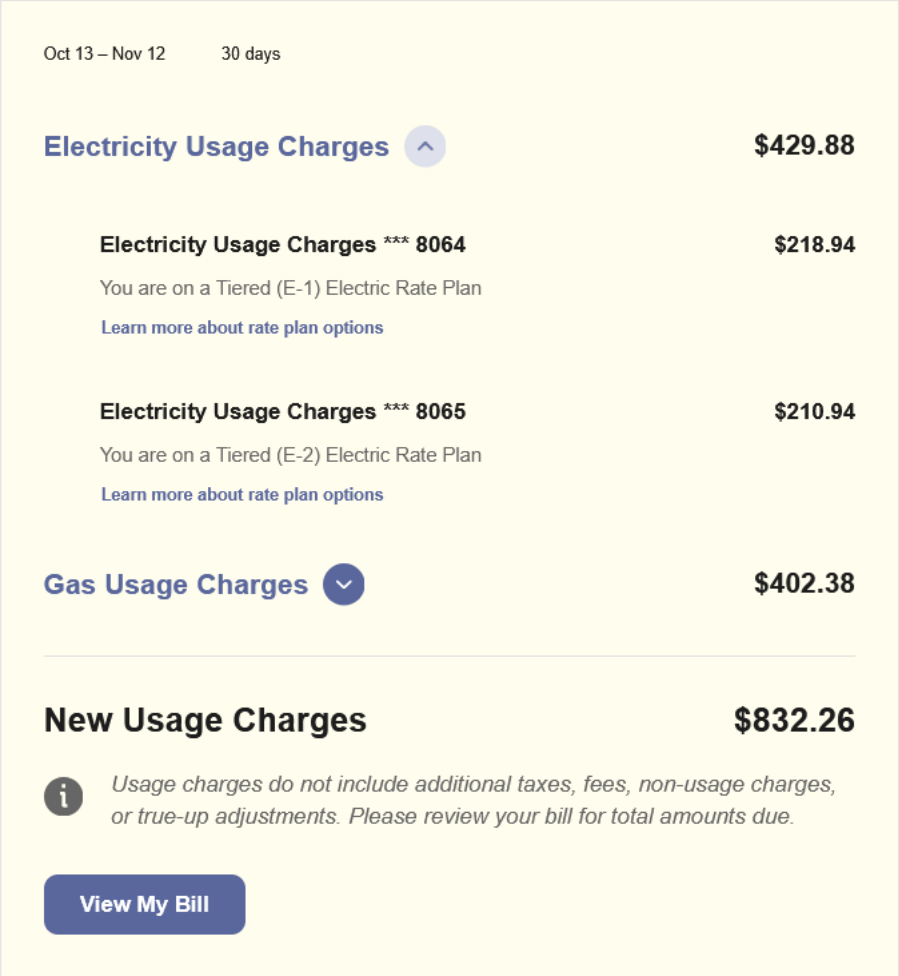
Legacy Billing Data

If the utility is using the Legacy Billing Data Transfer specification, then menus for **Electricity Usage Charges** and **Gas Usage Charges** from the most recent bill period are shown. These sections are followed by a New Usage Charges section, which displays a total of all usage charges, as well as a disclaimer about how taxes and fees are excluded. The breakdown does not include the following information: Posted On, Past Due Charges, All Other Charges, Total Charges, and Due Date.



Multiple Service Agreements

If a customer has multiple service agreements for a fuel type, the breakdown shows additional information about each service agreement when the menu is expanded for each set of charges. This state is available for single and dual fuel customers.



The details displayed for each agreement vary slightly depending on whether the utility is on the latest Billing Data Transfer specification or the Legacy Billing Data Transfer specification.

For example, if the utility is using the legacy specification, then the charges shown for each service agreement will not include taxes and fees. If the utility is using the latest specification, then customers will see a breakdown of usage charges and other all other charges.

Rates Not Modeled

If the customer's rates are not modeled, then the name of the customer's rate plan will not be displayed, and there is no link to learn more about rate plans.

Single Fuel

If the customer is single fuel, then the following differences apply depending on which data model is in use:

- If the utility is on the latest Billing Data Transfer specification, there will be one subsection under **New Charges** for the customer's single fuel type.
- If the utility is on the Legacy Billing Data Transfer specification, there will only be one **[Fuel Type] Usage Charges** section.

Bill Guide Neighbor Comparison

The Neighbor Comparison in the Bill Guide is an abbreviated version of the standard Neighbor Comparison. It is designed to motivate customers to save energy based on how they see themselves in relation to their neighbors. Rather than show a bar chart, the Bill Guide Neighbor Comparison displays a percentage, a short evaluative statement, and a link to the more detailed neighbor comparison.

Requirements

Same as described in the standard Neighbor Comparison, except that the Neighbor Comparison shown in the Bill Guide currently only works with monthly billed usage data.

Limitations

Same as those described in the standard Neighbor Comparison.

User Experience

The user experience described in this section is for customers who have gas, electricity, or both.

Percentage Insight: A percentage is displayed to show how much more or less energy the customer used in their most recent bill compared to their neighbors. If the customer uses about the same as their neighbor, the percentage is replaced by a house icon.

Insight Statement: An evaluative insight statement explains how the customer's energy use compares to neighbors or efficient neighbors. Efficient neighbors are defined as the most efficient 20% of the customer's neighbors.

The insight statement that displays is based on how much more or less the customer used compared to their "efficient neighbors", or how much more or less the customer used compared to "all neighbors". The `fuelType` portion of the insight displays "electricity", "gas", or "energy" based on whether the customer is electric-only, gas-only, or dual fuel.

Note: If similar homes language is used in the widget, then all instances of the term "neighbors" are replaced with "similar homes." The terminology depends on your setup and configuration. Contact Your Delivery Team if you have any questions.

See more detail: This link takes customers to the standard Neighbor Comparison, which contains more details such as energy use amounts and how neighbors are defined.

User Experience Variations

Similar Homes

If similar homes language is used, then all instances of the term "neighbors" in the feature are replaced by "similar homes."

Bill Guide Most Recent Bill Weather Insight

The Most Recent Bill Weather Insight highlights how many unusually hot or cold days may have impacted the customer's energy use in the previous bill period. The goal is to help customers better understand the factors influencing their bill. The insight includes a tooltip to define what counts as an unusually hot or cold day.

Requirements

Utility Requirements

Same as described in Bill Guide.

Customer Requirements

Category	Description
Billing Frequency	Monthly.
Data Delivery Frequency	Monthly.
Data Requirements	Not applicable. Weather data is obtained from a third-party weather service.
Data History	Not applicable.
Data Coverage	Not applicable.
Supported Fuels	Electricity, gas, and dual fuel.

User Experience

The user experience described below is for customers who have gas, electricity, or both.

Title: The title of the widget reflects a focus on the impact of weather on the customer's bill.

Tooltip: A tooltip icon appears next to the title to explain what is meant by weather impact. When selected, it displays a short description of an "unusually hot day" or "unusually cold day" (whichever is applicable).

For example, the tooltip may define an "unusually hot day" as a day with temperatures above 95 degrees Fahrenheit, and an "unusually cold day" as a day with temperatures below 20 degrees Fahrenheit.

Number of Days: A number is displayed to show how many days in the bill period were unusually hot or cold, and which may have had a significant effect on the customer's energy use. If there were no unusually hot or cold days, the insight displays 0 DAYS.

Insight Statement: An insight statement briefly explains that the weather may have impacted the customer's energy use.

See more detail: This link takes users to the Data Browser, which contains a more detailed picture of the weather and the customer's energy use over time. It opens the bill view of the most recent completed bill period (as opposed to an in-progress bill period). The energy use or energy costs view may be displayed depending on which view has been set as the default for the utility.

Calculations

Extreme Weather Days

The number of extreme weather days is calculated as follows:

1. Identify the days that can be classified as unusually hot or cold. The following criteria are used:
   - The day must be actually hot or cold (for example, above 20 degrees Celsius, or below 16 degrees Celsius).
   - The mean temperature for the day must be eight degrees above (for hot days) or below (for cold days) the mean temperature during the same date range from the previous year.
2. Sum up the days that meet above criteria.

> **Note**
>
> For customers who are billed for multiple premises, the extreme weather days number can be an aggregate from across those premises. For example, if a customer has three premises, and one premise had one extreme weather day and another premise had three extreme weather days, then the calculation would add these days together and display four (4) days as the number in the widget.

Billing Account Selector

The Billing Account Selector widget allows customers to select a billing account from a menu and view its energy use trends and insights. It is used in standalone implementations of the Digital Self-Service Energy Management web portal and the Energy Efficiency web portal.

Requirements

The main customer requirements for this widget are to send billing account data to Oracle Utilities Opower through the Account Data Transfer data feed, and to provide all authorized billing accounts for each username and login as part of the single sign-on (SSO) integration with Oracle. These requirements are typically addressed during the setup and launch phase of your program.

Limitations

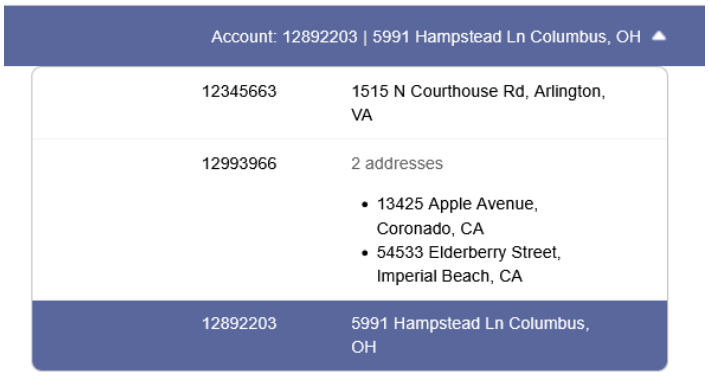
Embedded Implementations: The Billing Account Selector is designed for use in standalone web portal implementations. It can be used in embedded implementations as well, but it is not recommended. This is because (1) any selections from the Billing Account Selector do not persist across other utility-hosted web pages, and (2) utility websites usually already have an account selector menu which will conflict with the Billing Account Selector.

User Experience

In the simplest case, the Billing Account Selector is displayed in a banner at the top of a page and contains a menu of billing account numbers and addresses. When the menu is selected and a new account is chosen, the widgets reload to reflect the selection.

> **Note**
>
> If the customer only has one billing account, the widget will not display.

If there are multiple premises associated with a billing account, then the premise addresses will be grouped within the billing account number and displayed as a list.



The behavior of the Billing Account Selector menu changes slightly depending on how many billing accounts there are.

- If there is only one billing account, the Billing Account Selector does not display.
- If there are 10 or fewer billing accounts, the Billing Account Selector displays but does not have a search field.
- If there are more than 10 billing accounts, the Billing Account Selector displays a search field which you can use to filter through the account numbers.

User Experience Variations

Data Browser: Billing Account with Multiple Premises

If a billing account with multiple premises is selected, the Data Browser displays an additional submenu in the year view which contains a list of the associated service agreements grouped by premise. Customers can then use the submenu to select individual service agreements and view related monthly energy usage or cost information.

Data Browser: Premise with Multiple Service Points

If there are multiple service points within a service agreement, then the customer can go a level deeper and see energy cost or usage for each service point in the *bill* or *day* view of the Data Browser. In this case, the Data Browser displays a submenu showing all service points for the billing account grouped by service agreement and premise.

Confirmation Message

The Confirmation Message displays web content to customers who respond to a feedback prompt (such as Customer Feedback) or a question-based module (such as Mini Home Energy Analysis) in an email communication. The content of the Confirmation Message varies depending on which feedback prompt or question is selected. Customers may be thanked for their input, asked a follow up question, or presented with targeted offers that enable deeper personalization in future experiences.

Customers do not need to enter a username or password to view the Confirmation Message. A pre-authenticated link is used to associate the customer's answer with their account and keep a record of the answer.

Requirements

Same as listed in the product-wide requirements. Additional notes:

- Current or historical energy use data is not required for this feature. The message displayed is based on parameters passed in the URL when a customer clicks on a question or feedback prompt in an email.
- Some configuration is needed to enable this feature. If you are interested in using it, Contact Your Delivery Team .

Limitations

The Confirmation Message is available as an embeddable widget or as part of the standalone Digital Self Service - Energy Management web portal. When using the embeddable widget, there may be some technical limitations about where the message content is hosted. Contact Your Delivery Team to discuss the details of your situation.

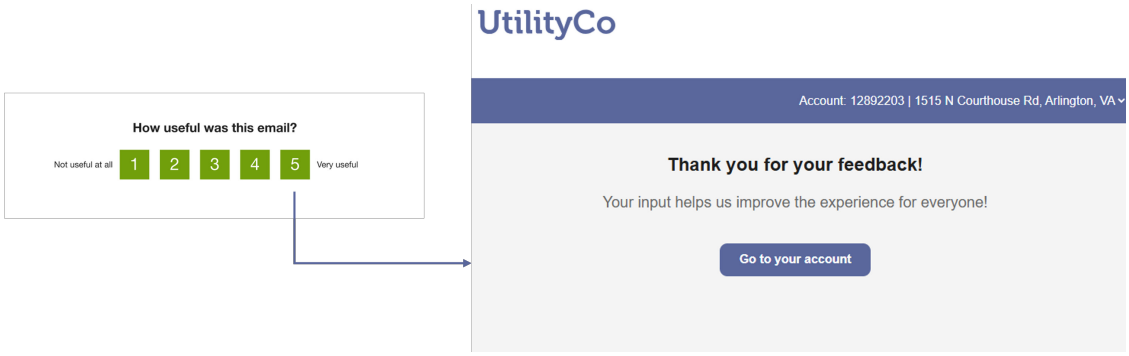
User Experience

The user experience varies depending on which email module is used to collect a response from the customer, as well as which confirmation user experience is configured for the utility. The available user experiences are:

- Customer Feedback Confirmation
- Mini Home Energy Analysis (HEA) Confirmation

Customer Feedback Confirmation

The Customer Feedback Confirmation flow is used for customers who respond to a Customer Feedback module in their outbound communication. In this experience, customers are taken to a simple thank-you message.



A button is included below the thank-you message to take the customer to the login page for their account. If the utility is using the standalone web portal, then clicking the button redirects customers to the Welcome page. If the utility is using embeddable widgets, then clicking the button redirects customers to a utility-hosted account login page.

Mini HEA Confirmation

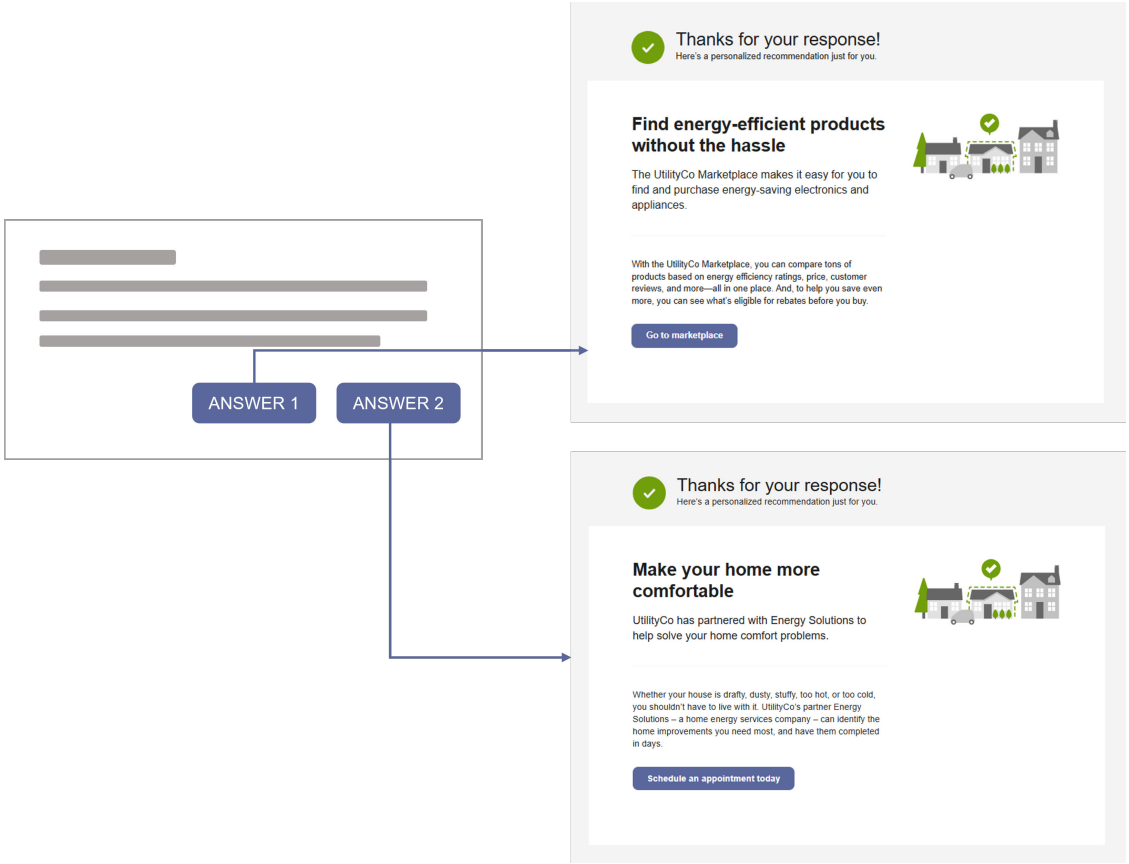
The HEA Confirmation flow is used for customers who respond to Home Energy Analysis (HEA) questions in an email module (such as in the Mini Home Energy Analysis module). The version varies depending on which flow has been configured. The URL clicked by the customer includes parameters that determine which version to display.

Link to Full Survey Flow

In this experience, customers are directed from a HEA question in an outbound communication to a confirmation page that prompts them to take the full HEA survey.

Targeted Offer Flow

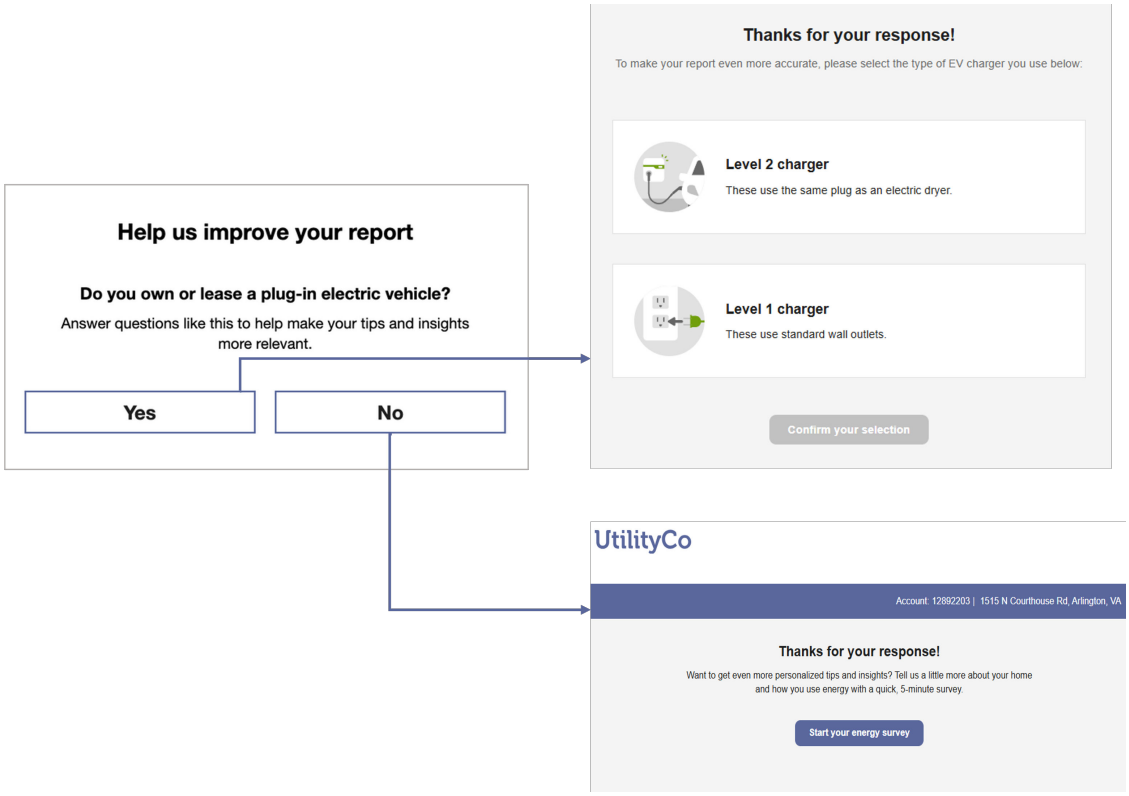
In this experience, customers are redirected from a HEA question in an outbound communication to a confirmation page that presents targeted promotions or recommendations. The confirmation message thanks customers for their response and presents a promotion depending on the customer's answer.



The promotional content can include copy, illustrations, and links to utility-hosted pages containing resources and functionality on how to engage with the promotion. To offer this experience to customers, utilities must Contact Your Delivery Team to design and configure the promotional content.

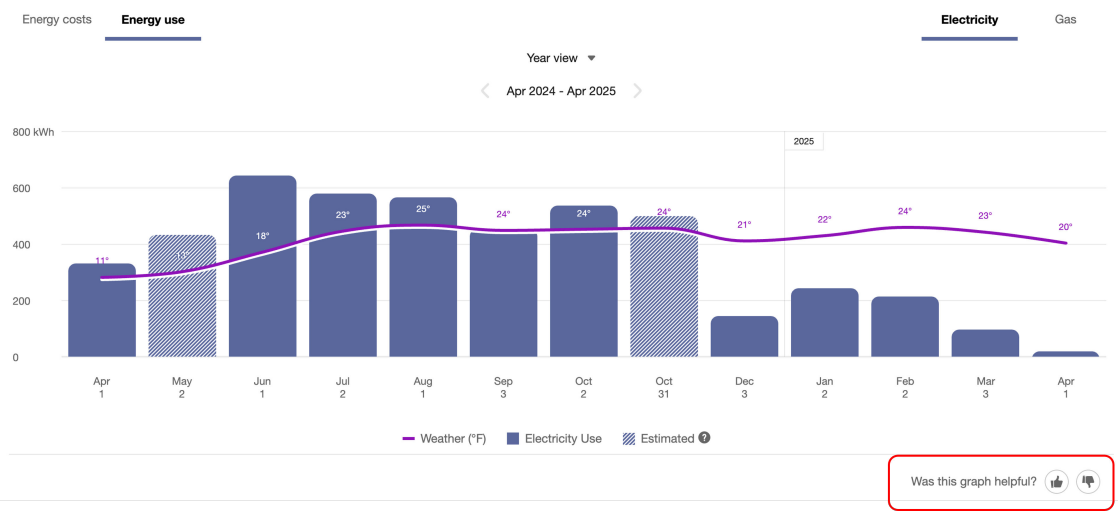
Follow-Up Question Flow

In this experience, customers are redirected to a confirmation page that presents a follow-up question. For example, if customers confirm that they own an electric vehicle, they are directed to a confirmation page that thanks them for their response and presents a follow-up question regarding the type of charger they use. After confirming their charger type, they are shown another confirmation message that thanks them again and prompts them to complete the full HEA survey.



Customer Feedback

The Customer Feedback module can be added to certain widgets to gather input from users and support product improvements. Typically this module is displayed at the bottom of a widget.



Supported Widgets: The module can be displayed on supported widgets. Supported widgets include the Data Browser, Bill Comparison, Bill or Usage Forecast, and Home Energy Analysis. Depending on each utility's setup and configuration, some of these widgets may or may not be available. Contact Your Delivery Team if you need more information.

The Customer Feedback module is displayed by default on each supported widget except for the Data Browser. In order to enable the module on the Data Browser, utilities must coordinate with their Delivery Team.

Icons and Statement: The module displays icons and a statement such as, "Was this information helpful?" The exact wording will vary based on the content of the widget and each utility's configuration. For example, the module may include statements like the ones below:

- Did this graph have what you're looking for?
- Did you understand this graph?
- Did this graph have accurate information?
- Did this graph help you understand your energy use?
- Did this graph help you understand your energy costs?
- Was this graph useful?
- Did you get any helpful insight from this graph?
- Was this information helpful?

Customers can select one of the available icons to respond to the statement. The customer's choice is logged, and the module displays a message thanking the customer for their feedback. This message is displayed for a short period of time before being hidden from view. The feedback module is then hidden for that widget, and for the customer who provided their feedback.

Module Display: The local storage of a customer's browser is used to determine if the feedback module is displayed in a given widget. If a cookie exists for a customer's feedback for a widget, then the feedback module is hidden from view for the customer for that widget. However, the module is displayed if a cookie is not present in the customer's browser, which can occur in situations such as:

- The browser storage has been cleared and the applicable cookie is removed.
- The customer uses a different browser on the same device which does not yet have a feedback module cookie.

- The customer uses a different device which does not yet have feedback module cookies for its browsers.

These scenarios allow customers to provide feedback for a widget multiple times. Clearing browser storage could be used by a customer to provide new feedback on a widget after an updated version of a widget is provided, which may change a customer's experience and satisfaction with a widget.

Data Browser

The Data Browser is an interactive tool that allows customers to visualize and explore their energy use trends and costs, and make comparisons to useful benchmarks such as weather and similar homes. One or more views for Energy Costs, Energy Use, Usage Breakdown, and Neighbors are available in the feature. If applicable, customers can also use menus to switch between multiple accounts or service points.

Utility Requirements

Same as listed in the product-wide requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly, bi-monthly, and quarterly.
Data Delivery Frequency	Monthly, bi-monthly, and quarterly.
Data Requirements	**Billing Data**: Customers must have a minimum of one historical bill to view data in the Year view. **Weather Data**: Weather data is required for the weather line graph to display. If the Oracle Utilities Opower Premise Data Transfer specification is being used, then the country field in the Premise data entity is required. **AMI Data**: AMI data is required for daily or subdaily energy use insights to display. **Rates Data**: The Rates Engagement cloud service must be purchased and rates must be modeled in order for rates or cost insights to display in certain parts of the Energy Costs View. Additional data requirements may apply for other "views" and features of Data Browser. See User Experience below for more details about each view.
Data History	A minimum of one historical bill is required for data to display in the **Year** view. For AMI customers, a minimum of one historical bill which includes at least one day of historical AMI data is required for the **Bill view** and **Day view**.
Data Coverage	Not applicable. By default, all graphs and views of the Data Browser display any data that is available, even if some reads are missing.
Supported Fuels	Electricity, gas, and dual fuel. Customers with two fuels can switch between electricity and natural gas views. A combined view, which combines electricity and natural gas use, can also be enabled.

Limitations

- **Taxes and Fees Limitation**: The amounts shown for energy use typically do not include taxes or fees, so they will not match the customer's bill. However, with additional setup and

configuration, the costs can be made to match a customer's bill. Contact Your Delivery Team for more information.

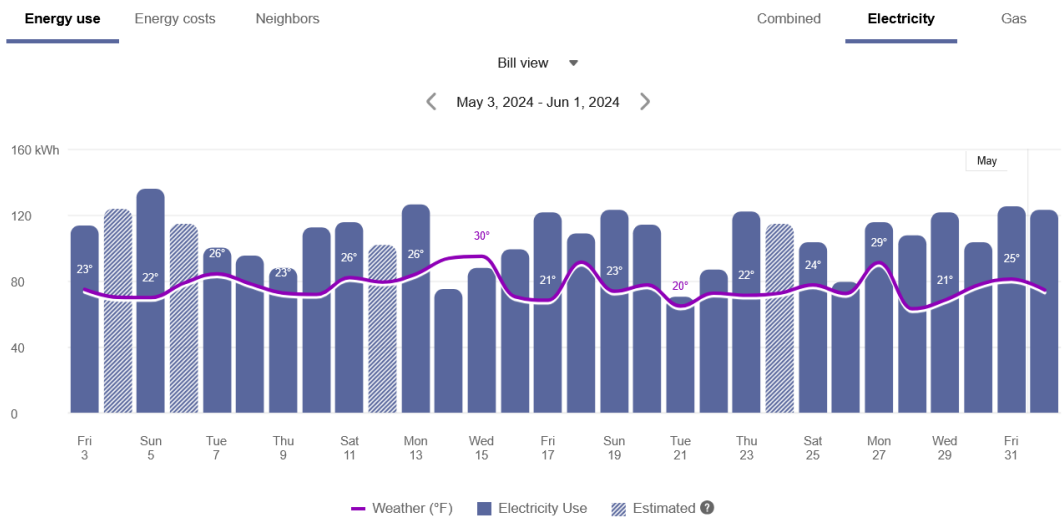
- **Solar or Multi-Register Data**: Utilities must be on the latest data transfer specifications in order for enhanced solar data to display in the Energy Use view for customers with multi-register data. Your Delivery Team will work with you to identify which data transfer specifications you need.
- **Responsive Display**: Daily energy use can be displayed in 15 or 30-minute intervals for all customers with sub-hourly read data. When viewed on smaller screens such as for mobile devices, the responsive design displays hourly intervals to account for reduced screen space.

User Experience

The Data Browser is an interactive visualization tool that allows customers to analyze their energy use trends by fuel type, time period, and a series of other views. Customers can hover over or select a data point in the Data Browser to see a tooltip containing more information about it. The major views available are:

- Demand View: The amount of energy demand over time, alongside weather data.
- Energy Costs View: The cost of energy usage over time, alongside factors such as a weather and solar power (if applicable).
- Energy Use View: The amount of energy usage over time, alongside factors such as a weather and solar power (if applicable).
- Usage Breakdown View: The top costs of energy by disaggregation categories over time.
- Neighbors View: The amount of energy use compared between the customer and their neighbors.

The image below is an example of the Energy Use view.



Depending on what data is available, each of these views presents different kinds of trends and insights at varying levels of granularity over time:

- **Year view**: Energy cost or usage by each bill period in a year. Monthly, bi-monthly, and quarterly bills are supported.

- **Bill view**: Energy cost or usage by each day in a bill period, as well as the day with the highest demand.
- **Day view**: Energy cost, usage, or demand by each hour of a day, as well as the interval with the highest demand.

For more information on how the feature behaves and displays data, see General Display Rules below. Some insights may not be available depending on data availability and the customer's fuel type.

General Display Rules

Year View

For all major views (Energy Costs, Energy Use, and so on), the Year view will always display any available data, even if some data is missing. For example, if 12 out of 13 months are missing data, the Data Browser will still show data for the one month that is available.

Energy use and cost data for a bill must be sent to Oracle Utilities Opower for the same billing period. For example, if a customer has quarterly bills, the utility cannot send monthly energy use data, and then later send the total cost of the customer's bill at the end of the quarter. Both the total usage and cost of the quarter must be sent together in order for it to display it in the Year view of the Data Browser.

Data points are always shown for a full year plus one additional data point. This means that there are 13 data points for monthly billing, 7 data points for bi-monthly billing, and 5 data points for quarterly billing.

Bill View

Daily AMI data is required to display the Bill view. In general, the Bill view will display any available data, even if some data is missing. For example, if only four days of data are available, the Data Browser will still show data for those four days.

Day View

Subdaily AMI data is required to display the Day view. Data reads are shown by hour or by whatever time interval matches the customer's AMI meter. The supported intervals are 60-minute, 30-minute, and 15-minute.

For the Energy Costs and Energy Use graphs, the Day view will always display any available data, even if some data is missing. For example, if only five hours of data is available, data for those five hours will be shown. Since 24 hours in a day can be assumed, missing data is shown as gaps in the graph.

High and low temperatures are not displayed in the tooltips for the Day view. However, average hourly temperature data will be displayed if it is available.

X-Y Axis

The Data Browser displays data in the form of lines, bars, and data points along an X-Y axis. Customers can hover over a given data point for more information and see a tooltip containing standard details such as a date range, energy use amount, and other information depending on the view selected.

The labels on the X-axis of the graph represent an interval of time (months, days, or hours).

View	Display Rules
Year view	The abbreviated month and final day for each bill is displayed. For example, if a customer is billed monthly on the 20th of every month, the label for September is Sep 20. This ensures that if more than one bill ends in a given month, each bill can be distinguished by the day information. Labels appear across the X-axis for every bill. Labels are hidden in a manner to ensure that labels do not overlap for reduced screen sizes. For example, labels can be displayed for every other bill when a browser window is reduced.
Bill view	The abbreviated day of the week and numeric day for each daily read is displayed. Labels appear across the X-axis for every other day. Labels are hidden in a manner to ensure that labels do not overlap for reduced screen sizes. For example, labels can be displayed for every third bill when viewing area is reduced due to viewing the graph on a mobile device.
Day view	Time of day intervals are displayed, such as 12am, 6am, 12pm, and so on. Labels appear across the X-axis for every six hours. Labels are hidden in a manner to ensure that labels do not overlap for reduced screen sizes. For example, labels can be displayed for every twelfth hour when viewing area is reduced due to viewing the graph on a mobile device.

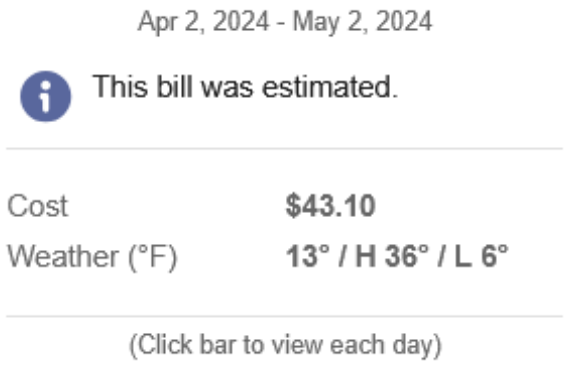
The labels on the Y-axis of the graph represent an applicable unit of consumption, cost, or demand. The axis begins at 0 and displays increments up until an applicable maximum value that ensures all data can be shown.

Estimated Bills and Usage Reads

Utilities are sometimes unable to obtain billing reads or AMI usage reads for their customers, in which case such bills or reads may be estimated.

- **Estimated Bills**: An estimated bill is an approximate monetary amount that is calculated based on the energy that a customer has consumed in the past rather than the present billing period. Estimated billing reads are marked in the data file sent by the utility to Oracle Utilities Opower. Estimated bills are corrected the next time the customer's meter is read. Any extra costs they were charged will be adjusted in the following bill, ensuring that customers never pay for more energy than they actually used.
- **Estimated AMI Reads**: An estimated AMI read (that is, granular usage reads such as daily or subdaily reads) is an approximate usage amount that is calculated based on the energy that a customer that has consumed in the past rather than in the present billing period. Like estimated bills, estimated AMI reads are marked in the data file sent by the utility to Oracle Utilities Opower.

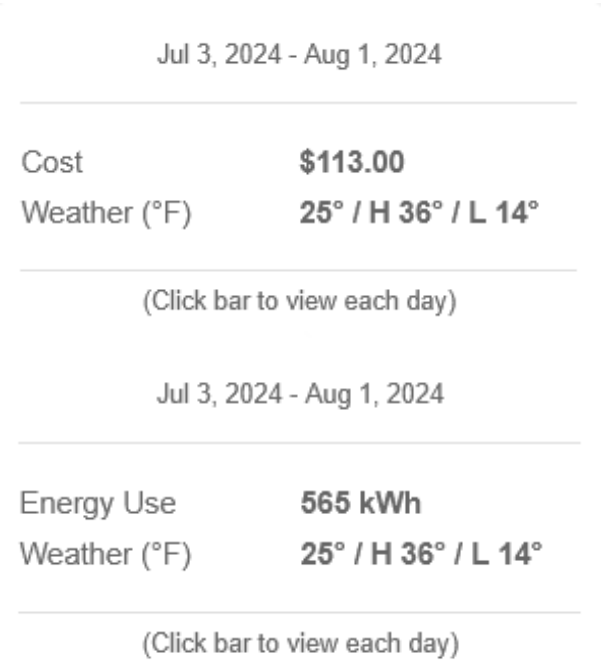
In the Data Browser, estimated bills or AMI reads are indicated by a tooltip message that displays when the customer hovers over an applicable data point. This message will appear if any bill or usage read shown in the Data Browser was estimated. For example, a single bill period could be estimated or a single day could contain three hourly reads which are estimated.



> **Note**
>
> Estimated bills and AMI reads are flagged separately in the data files sent by the utility to Oracle Utilities Opower. If a utility has not marked that a billing read was estimated, then no indication of an estimated bill will be displayed for any of the bill periods shown in the Year view of the Data Browser—even if one of the billing periods contains one or more *daily* estimated AMI reads.

Energy Tooltips

A tooltip is displayed when a customer interacts with a data point in the Data Browser. At minimum, the tooltip includes the time period covered and the amount of energy used by the customer. Other elements of a tooltip vary depending on which view of the Data Browser is selected and what data is available.



Time Period: The time period for the selected data point. The information shown varies slightly depending on the interval of time being viewed.

- **Year View**: The tooltip shows the month and date range of a bill period. Example: May 3, 2020 - June 1, 2020
- **Bill View**: The tooltip shows details about a day in a bill period. Example: Thurs, May 8, 2020
- **Day View**: The tooltip shows an hourly or sub-hourly interval in a bill period. Example: 9:00 - 10:00am

Energy Cost: The cost of energy for the selected fuel type and time period. Energy costs are shown on tooltips for the Energy Costs graph. Hyphens are displayed for any data that is missing. The cost amounts typically do not include taxes and fees, and so do not match a customer's bill. However, with additional setup and configuration, the costs can be made to match a customer's bill. Contact Your Delivery Team if you have any questions about this configuration.

Energy Use: The energy used for the selected fuel type (kWh, therms, and so on) and time period. Hyphens are displayed for any data that is missing.

End-Use Category: In the Usage Breakdown view, the tooltip shows the customer's top categories of energy use and associated costs for a given bill period. All other fields are hidden from the tooltip. If a customer chooses to view a single category, the tooltip adjusts to show the cost of the selected category and the cost of all other categories.

Energy Insight: In the Neighbors view, the energy tooltip provides insight into the customer's energy use for the applicable time period as compared to their neighbors. For example, the tooltip may show that a customer used more, less, or about the same as their neighbors.

Weather: The average temperature for the selected time period. Weather data is available in the Energy Costs and Energy Use views. High and low temperatures are also provided when using the Year view or Bill view.

Click Bar to View Each Day or Hour: For customers with AMI data, a message is displayed in tooltips in the year view and bill view, directing customers to more granular data. This message allows customers to quickly view data for the days in a bill period or the hours in a day.

Estimated Bills: Estimated bills are listed as estimates in a tooltip. When unusual circumstances prevent a utility from obtaining an actual billing read for a customer, it is sometimes necessary to calculate an estimate. See Estimated Bills and Usage Reads above for details.

Virtual Bills

A virtual bill shows a customer's daily energy use and energy costs up to the present day in the Data Browser, even though the bill period is not finished yet. This is accomplished by determining the maximum number of days to display along the horizontal axis in the Bill view. This feature requires AMI data.

A virtual bill is useful because it assumes an end date for an in-progress bill, and it therefore allows daily usage data to be displayed in the Data Browser before the bill period is finished. Because of virtual bills, customers can go to the Bill view and navigate past their most recent bill period to see their daily usage data up to the present day.

Solar Data

The Data Browser supports solar data by displaying a customer's net energy usage in a given interval of time on the horizontal axis. (This may also be referred to as net energy metering, or NEM.) For example, if a customer has solar power and generates more energy than they consume, the Data Browser will show the customer's energy use as a credit or as a negative value. This data can be configured to display in different ways for a utility. See the Energy Costs view and Energy Use view for details.

Weather Data

Any weather data displayed in the feature is based on the geolocation (latitude and longitude coordinates) of the customer. A weather service is used to select the closest weather station with weather data for the customer. This usually corresponds to the nearest airport station, usually within ~40 kilometers from the customer. Daily average temperatures are based on hourly temperatures.

Multiple Billing Accounts, Premises, Service Agreements, and Service Points

The experience with the Data Browser varies depending on how many billing accounts, premises, service agreements, and service points a customer has.

> **Note**
>
> The subsections below are meant to cover the most common scenarios for utilities who send data to Oracle Utilities Opower using the core data transfer specifications. If you are not sure how you are sending data to Oracle Utilities Opower, Contact Your Delivery Team. There may be a different experience depending on several other factors, such as the use of the legacy billing data transfer specification, the specifics of your setup and configuration, and any data extract and transformation scenarios.

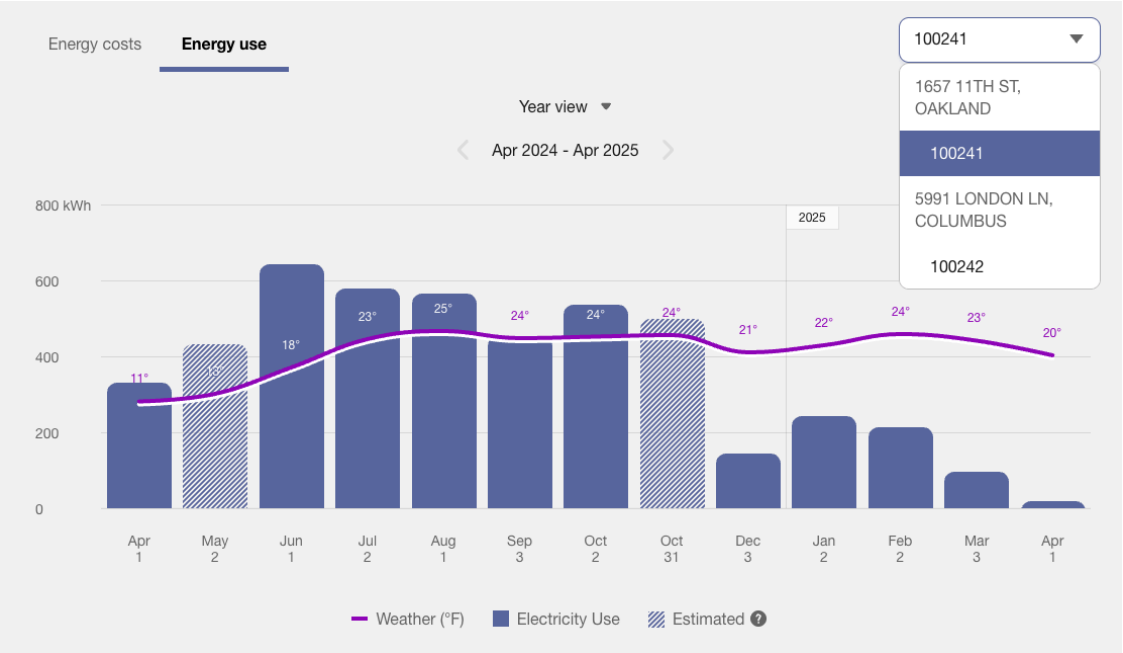
Multiple Billing Accounts

A customer may have one or more billing accounts, and each billing account may include one or more premises. In such cases, the utility typically has an account selector that allows customers to switch to a different billing account to view associated energy information.

> **Note**
>
> When a customer selects a billing account, the Data Browser refreshes and displays data for it. Data can only be displayed for one selected billing account at a time.

Multiple Premises

A premises is a location that receives energy service from the utility. If a customer has a billing account with multiple premises, then in the year view of the Data Browser, a menu displays a list of premises. The premises are represented as addresses. In the example below, each premises has one service agreement.



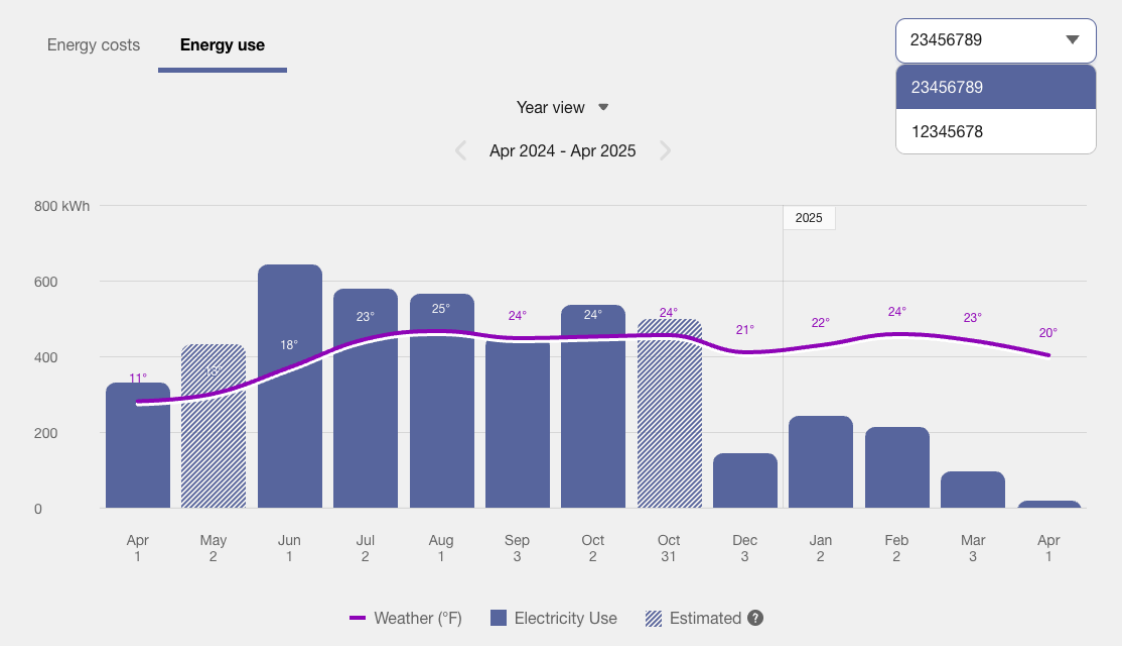
Premises will display in the bill and day views of the Data Browser as well, with service agreement or service point information grouped under them.

Multiple Service Agreements

A service agreement defines the type of service the premises receives, as well as the cost of that service. Even in the case of single-fuel utilities (for example, utilities that only provide electricity to customers), a customer could have multiple service agreements associated with a premises.

For example, a customer could have two or more electricity service points—one for a house and one for some other purpose like a shed or an electric vehicle—each of which could be under its own separate service agreement.

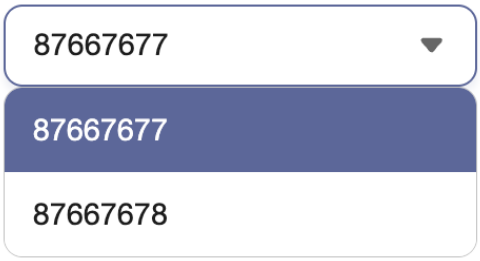
In such cases, in the year view of the Data Browser, a menu displays a list of service agreements grouped by premises. Customers can select a service agreement to see the usage associated with it. In the example below, the customer has a premises with multiple service agreements.



Multiple Service Points

A service point is the physical channel through which gas or electricity flows into the home, unit, or building. If a customer has multiple service points within a premises, then in the bill or day view of the Data Browser, a menu displays a list of service points grouped by premises. (The customer must navigate back to the year view in order to switch to a different premises.) If the customer only has one fuel type, the services points are represented by service point ID. If the customer has gas and electricity, then the service points are represented by fuel type as well as ID (such as "Gas <ID>" and "Electricity <ID>").

The screenshot below shows an example of a single fuel customer with two service points. In this case, only the service point IDs are displayed since the customer only has one fuel.



If a premises has multiple service agreements, each of which has one or more service points, then in the bill or day view of the Data Browser, a menu displays a list of service points grouped by service agreement. However, the service agreement value does not actually appear in the menu. The service point numbers or IDs display in the order in which the service agreements would be listed if they were shown.

For example, let's say there is a customer with the following premises and service agreements:

- **Premises 1**: 1234 Main Street
- **Electric Service Agreement 1**: 9876543210
- **Electric Service Point 1**: 11100097
- **Electric Service Point 2**: 11100013

- **Electric Service Agreement 2**: 3456789012
- **Electric Service Point 3**: 11100099

In this case, the menu would display all the service point IDs as follows:

- 1234 Main Street
- 11100097
- 11100013
- 11100099

The first two numbers, 1110097 and 1110013, are grouped together even though their associated service agreement is not shown.

Missing Data

As discussed above, all available data is displayed in the Data Browser even if there is missing data.

For the Year and Day views, any missing bills, data reads, or weather data are displayed as missing data points on the graph. In the case of bar graphs, gaps will be shown for each interval of missing data. In the case of line graphs (such as the Neighbors View), a dotted line is displayed for the missing data point if the missing data is between other data points. If it is at the end, a gap will be shown with no line. The tooltips for these data points use hyphens in place of any missing data.

Customer Feedback

A customer feedback module can be displayed at the bottom of the Data Browser to collect input and inform ongoing improvements. See Customer Feedback for more information.

Demand View

The Demand view allows customers to monitor household electricity demand over time alongside weather data. It shows electricity usage at specific intervals and identifies when demand is highest. Customers can view demand data by day to understand usage patterns and how weather affects demand.

Requirements

Utility Requirements

Same as listed in Data Browser. Additionally, the Advanced Rates Engagement Cloud Service is required if the utility chooses to restrict the Demand view to customers who are on a demand rate.

Customer Requirements

Category	Description
Billing Frequency	Same as listed in Data Browser.
Data Delivery Frequency	Same as listed in Data Browser.

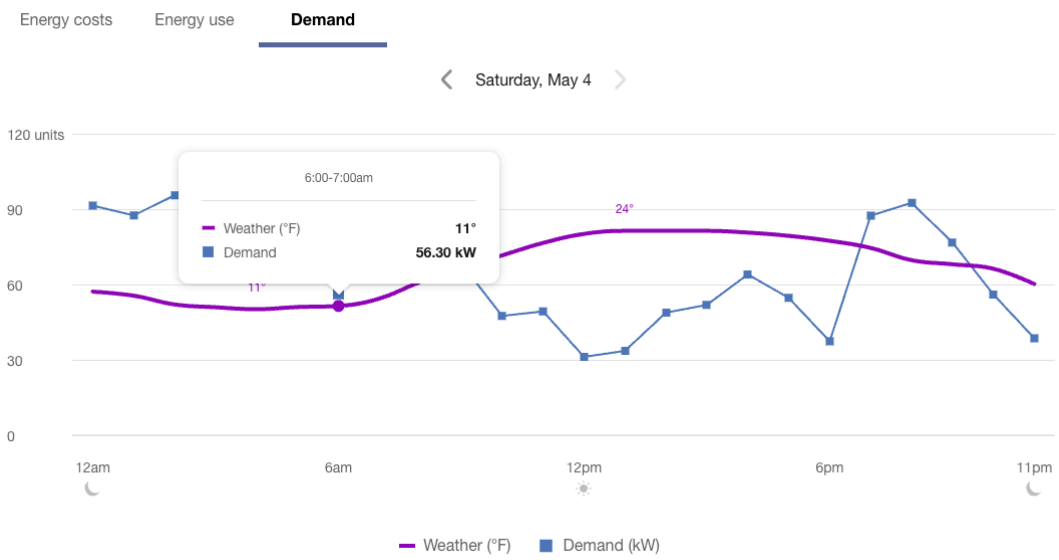
Category	Description
Data Requirements	**Billing Data**: Billing data is required to display demand data in the Year view. The billed usage data must include an indication of the demand per bill period. **Interval and Demand Data**: Electric interval (AMI) data in kilowatt (kW) or kilowatt-hour (kWh) units is required for the Bill and Day views. (If kWh data is sent, it is used to calculate demand data in kW units.) For information on providing this data, see the *Oracle Utilities Opower Interval Data Transfer specification*. **Premise Data**: Premise data is required. See the *Oracle Utilities Opower Premise Data Transfer specification* for more information. **Rates Metadata (Advanced Rating)**: Rates metadata (Advanced Rating) can be used to identify residential customers who are on a demand rate. When configured, this data determines whether the Demand view is shown, ensuring it is displayed only to customers who are eligible based on their rate plan. This metadata is optional and is only required if the utility chooses to restrict the Demand view to customers on demand rates. It is available when the utility has purchased the Advanced Rates Engagement Cloud Service and uses the advanced Rate Engine to model demand rates.
Data History	Same as listed in Data Browser.
Data Coverage	Same as listed in Data Browser.
Supported Fuels	Electricity and dual fuel. Demand data for gas cannot be shown.

Limitations

Peak Demand Icon: The Highest Demand Interval shown in the Demand view may not match the interval used to calculate peak demand charges on a customer's bill. For example, the Demand view may highlight an *hourly* interval as the highest demand period, while the customer's bill may be based on *30-minute* intervals, resulting in different peak usage values.

User Experience

The Demand view displays a customer's demand for a given time period, with Energy Tooltips providing the exact values for each data point. The image below shows an example of the Demand view for a single day. If the required data is available, the Demand view can show data by bill period and by year.



Fuel Menu

Only electricity data can be shown in the Demand view. If the customer also receives gas from their utility, then a gas menu may be displayed but it will be grayed out in the Demand view so it cannot be selected.

Time Menu

In the Demand view, the Day is shown by default. The backward and forward buttons can be used to view data for one 24-hour period at a time.

A menu containing options for the Bill view and Year view can be made available as well, depending on the available data and configuration. See the Customer Requirements for details.

Line Graph

In all time resolutions of the Demand view, there is a line graph which uses a horizontal axis (X-axis) to show time intervals and a vertical axis (Y-axis) to show weather and demand data. Data points are displayed only if the corresponding data is available. The Y-axis label shows a generic "Units" label, since the different data types use different units of measure.

In the Day view only, customers can view demand weather data to better understand the energy being used at any given moment.

On desktop displays, each data type has a different color-coded shape or icon so it is more easily distinguishable and accessible. On mobile displays, the icons are hidden and color-coded toggles are shown instead.

Demand

Demand refers to the rate at which a household consumes electricity, not the actual amount that is consumed. Demand is expressed in kilowatts (kW) rather than kilowatt-hours (kWh). This information allows customers to see the point in time when they draw the most energy from the grid, identify irregularities, and consider how to lower their usage during those times in the future.

Weather

Weather data shows the temperature for a given interval in the Demand view. Customers can use this data to infer how weather impacts their energy demand measurements. See Weather Data for more information about how weather data is obtained.

Highest Demand Interval

An icon is displayed over the highest demand interval in the Day View and over the day with the highest demand in Bill View to indicate when the demand for energy was at its peak. This icon is also shown in the bill and day views of the Energy Use View, where customers can quickly determine which day in a bill period or which interval in a day contained the highest demand. The customer can then view that day in the Demand view to see the exact hour when demand was highest.

Because demand refers to the *rate* at which a household consumes electricity, not the actual amount consumed, the interval with the peak demand icon may not always be the same as the interval with the highest amount of energy use. See Demand Versus Energy Use below for more information.

The peak demand icon is not shown for days in the bill period that did not include the highest demand interval. There are cases when multiple peak demand icons can display within a day. See Multiple Peak Demand Icons below for details.

Tooltips

Tooltips are displayed when customers interact with a data point on the graph. At the day level of the Demand view, the tooltip provides the specific units of measure for each type of power.

See Energy Tooltips for details on what the tooltips may include in other views of the Data Browser.

Disclaimer

Disclaimer messages can be added to the Demand view that are specific to the view. For example, a disclaimer message can explain demand charges. The disclaimer messages can also include links to resources where customers can find more information.

Demand Versus Energy Use

Energy use is expressed in kilowatt-hours (kWh), and demand is expressed in kilowatts (kW). Demand can be thought of as the *rate* at which energy is drawn from the grid, rather than how much energy was consumed.

Demand can be compared to the rate at which water flows through a pipe, while energy use represents the total volume of water over time. The pipe itself can only let so much water through at a time. The pipe is like "demand": its size determines how fast the water flows through to meet the need for water.

Consider two customers:

- Mary’s usage is measured hourly. From 4–5 p.m., she uses 100 kWh. Her demand during that hour is 100 kW.
- Bob’s usage is measured every 30 minutes. From 4:00–4:30 p.m., he uses 100 kWh, and from 4:30–5:00 p.m., he uses none. His peak demand is 200 kW, even though his total energy use for the hour is also 100 kWh.

This example shows that two customers can use the same total energy but have different demand values depending on how that energy use is distributed over time.

User Experience Variations

Multiple Peak Demand Icons

If the demand values for two or more intervals are the same, and these values technically represent the highest demand of the bill period, then multiple peak demand icons are displayed within the same day in the Demand view.

This may be the case, for example, at households where a specific set of high-power machinery or equipment needs to be turned on at regular points in time, resulting in a demand spike that consistently reaches the same amount multiple times in a day, or on multiple days in a bill period.

This behavior can also occur in the Energy Use view. See Energy Use View - Multiple Peak Demand Icons for details.

Energy Costs View

The Energy Costs view of the Data Browser displays how much a customer was billed for energy use, based on historical bill amounts. Customers can view energy costs for each bill over a 13-month period. Daily and subdaily views are also available if there is enough data.

Requirements

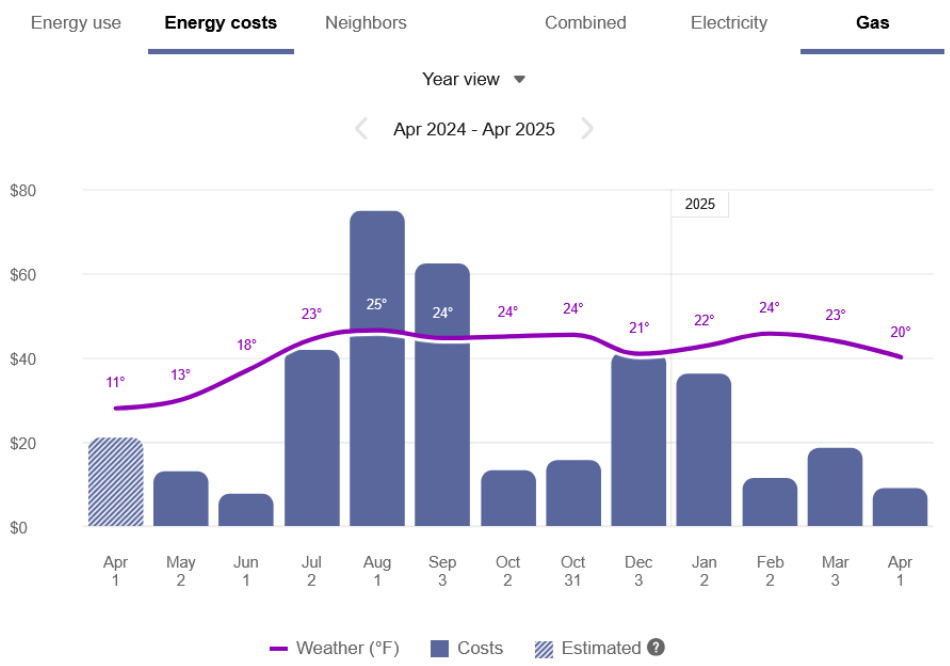
Same as listed in Data Browser. Additional data and cloud service requirements may apply depending on the types of insights (such as rate plan insights or peak time rebates) that the utility chooses to display. See the feature descriptions and User Experience Variations below for details.

Limitations

Same as listed in Data Browser.

User Experience

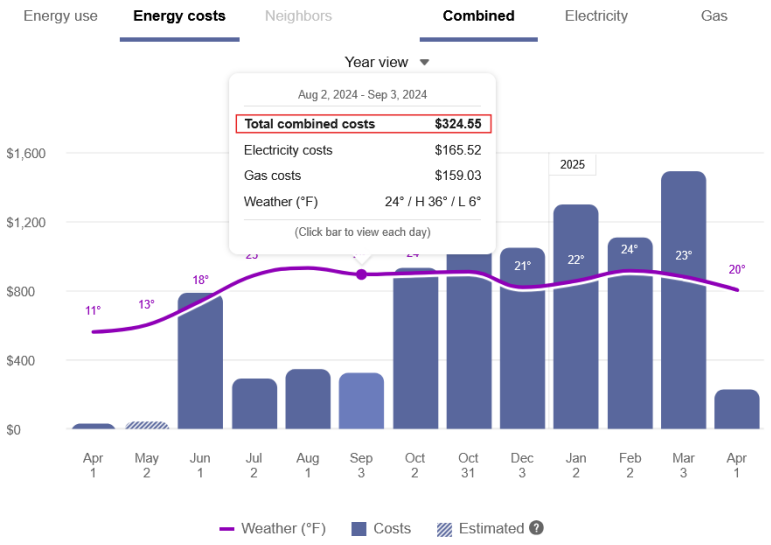
The Energy Costs view displays how much a customer was billed for energy use over time. This section describes the user experience for customers who have billing data and daily AMI data.



Fuel Menu

The fuel menu allows customers to select which fuel to view data for. By default, electricity is shown. An additional gas menu only appears for dual fuel customers.

A Combined view can be displayed, which combines electric and gas costs into a single number using a price-weighted index. When the Combined view is enabled, the data point tooltips also display combined totals.



Time Menu

Depending on what data is available, the Energy Costs view presents different kinds of trends and insights at varying levels of granularity over time:

- **Year view**: Energy cost by each bill period in a year. Monthly, bi-monthly, and quarterly bills are supported.
- **Bill view**: Energy cost by each day in a bill period. AMI data is required for this view.
- **Day view**: Energy costs by each hour of a day (or another subdaily interval such as quarter of an hour). AMI data is required for this view.

There are also forward and backward buttons that customers can select to display contiguous blocks of time. In the Year view, for example, clicking the forward or backward button displays contiguous 13-month blocks of time for customers on monthly billing.

Bar Graph

The bar graph uses a vertical axis (Y-axis) to show the cost, and a horizontal axis (X-axis) to show the time period. The bars use the "You" color, which is blue by default and commonly changed to the utility's brand color. See General Display Rules for details on how the graph behaves and how the data visualization can change depending on the selected view.

Weather Data

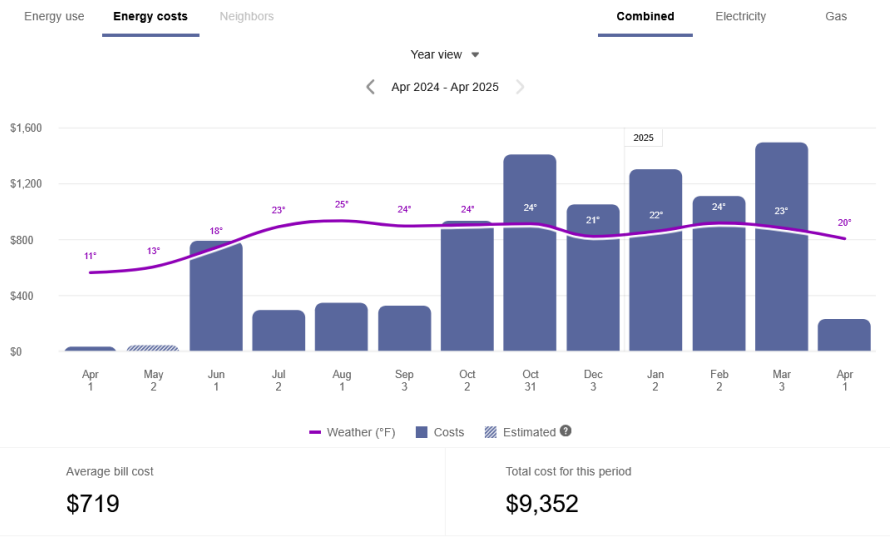
A line graph representing the average temperature during each time period is overlaid on the bar graph. This allows customers to see how their usage relates to local weather patterns. The weather data is based on data from the airport weather station closest to the location of the customer. See Weather Data for details on how weather data is retrieved.

Cost Insights Bar

For each fuel type available in the Energy Costs view, a bar is displayed beneath the graph to show additional cost insights. This bar is available for single fuel and dual fuel customers and displays only in the Year and Bill views.

Year View: The bar displays the average bill cost and total annual cost for the selected year. If the year is not yet complete, the average bill and total cost-to-date is shown. The bar can also include an insight about how the customer's energy use equates to miles driven, if applicable.

In the example below, the year is complete, and the customer is using the Combined view.



Bill View: The bar displays the customer's average daily cost and total bill cost for the selected bill. If the bill period is not yet complete, then the daily average and cost to date is shown, and

a link is displayed to take the customer to the Smart Dashboard, which includes a bill forecast. The bar can also include an insight about how the customer's energy use equates to miles driven, if applicable.

Carbon Emissions / Miles Driven Insight: The cost insights bar can include an insight explaining how the customer's energy use equates to carbon emissions and miles driven. This information allows customers to understand their energy use in more practical, familiar terms. The insight is followed by a link to the US Environmental Protection Agency's greenhouse gas equivalencies calculator.

> **Note**
>
> The carbon emissions insight is disabled by default since it depends on data from the US Environmental Protection Agency. It is therefore only available to utilities in the US. It can be enabled for US utilities upon request.

Tooltips

Tooltips are displayed when customers interact with a data point on the graph. See Energy Tooltips for details on what the tooltips may include.

For AMI customers, a message is displayed at the bottom of tooltips for data points for each bill. This messaging acts as a tip for how a customer can quickly view hourly or sub-hourly data for a given bill.

Customers can also view data points for energy costs that have not yet been included on a bill. By default, up to 30 days of in-progress billing data can be displayed to a customer, which can be configured to align with the length of a customer's billing cycle. See Virtual Bills for details.

Legend

A legend below the graph defines the elements displayed in the graph. If applicable, the legend includes an indicator for estimated bills.

Disclaimer

Disclaimer messages can be added to the Energy Costs view that are specific to the view. For example, if applicable, a disclaimer message can explain that the amounts shown do not include taxes and other fees. The disclaimer message can also include links to other resources where customers can find more information.

User Experience Variations

Multiple Accounts and Service Points

If a customer has multiple accounts and service points, a drop-down list is displayed above the graph allowing customers to choose one and view data related to it. See Multiple Billing Accounts, Premises, Service Agreements, and Service Points for details.

One-Day Bill Period

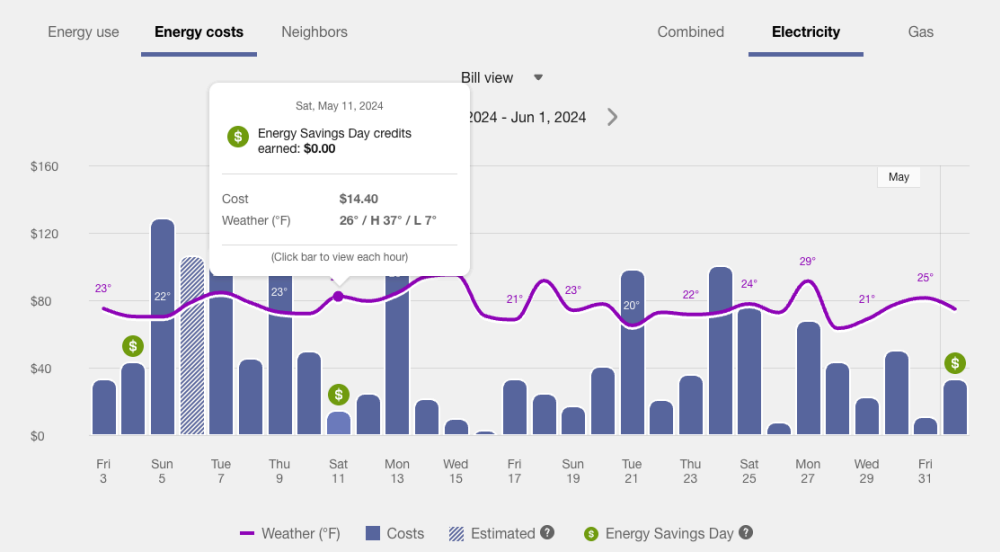
In some cases, customers may see a one-day bill period. This can occur when a customer is on their first day of the bill period, and Oracle Utilities Opower has received interval usage data for that day but has not yet received billing data for the bill period's end date. When this

happens, a single bar is displayed in the Bill view, centered on the graph, for the single day. The weather data line graph is disabled.

Peak Time Rebates Experience

Customers who participate in a Peak Time Rebates program can view information about credits earned during a peak event. This information can be viewed in the Bill or Day views.

Bill View: An icon displays above the days when a customer had an opportunity to receive a peak time rebate. You can click on the icon to view the tooltip, which displays the amount of any credits earned.



Day View: An icon displays above the hours when a customer had an opportunity to receive a peak time rebate. You can click on the icon to display a tooltip with details about that hour. Additionally, you can see any credits earned during that day below the graph.

Requirements:

- The Peak Time Rebates cloud service must be purchased.
- Peak time rebates data (such as the day and time of the peak event, as well as rebate amounts) is required.
- Daily or subdaily AMI data is required.

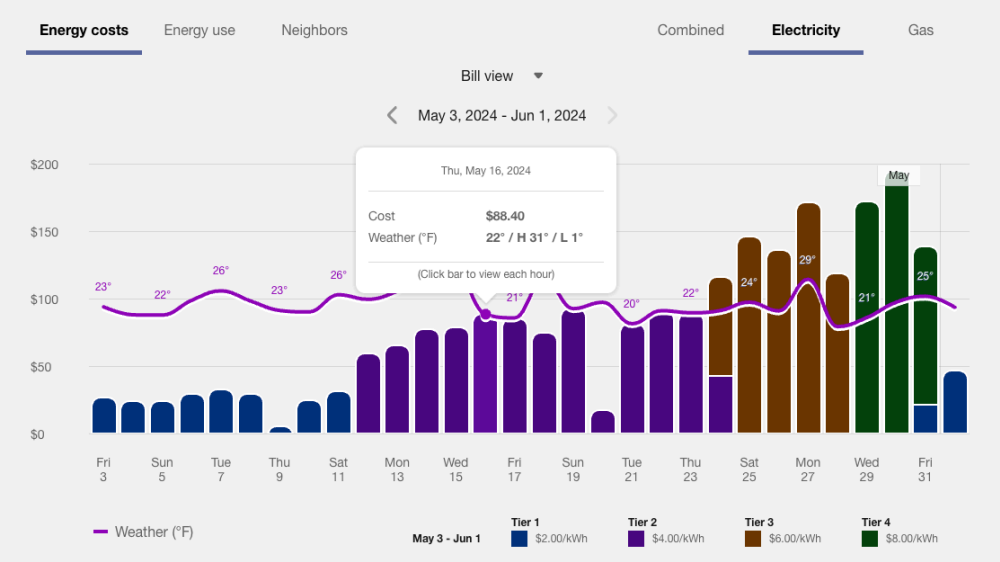
Rates Experience

Rates or cost information be displayed in the daily and subdaily views of the Energy Costs view. Different types of rate plans are supported. The Rates Engagement cloud service must be purchased and rates rates must be modeled. Contact Your Delivery Team for more information.

Tiered Rate Plans

In a tiered rate plan, the cost of energy depends on the amount of energy used in the current billing period. For example, the first 500 kilowatt hours (kWh) might be billed at $0.06 per kWh, while the next 500 kWh would be billed at a higher rate. Each tier is listed in the graph legend and a customer's energy costs or use for each tier are depicted in the graph, as shown in the image below.

> **Note**
>
> The Data Browser can display a maximum of four rate tiers.

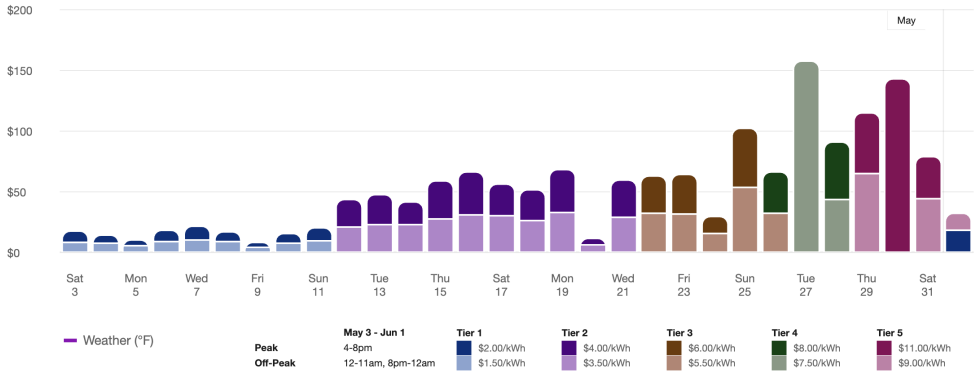


The legend in this case only displays tiers that are found in the chart. For example, the legend shows a rate plan that includes three tiers. But the third tier may be hidden from the legend if data is only available for two tiers.

The legend can account for the prices that are displayed for each tier. For a given tier, if a customer is charged multiple different prices on the graph, the tier is listed as a price range in the legend.

Time of Use Plans

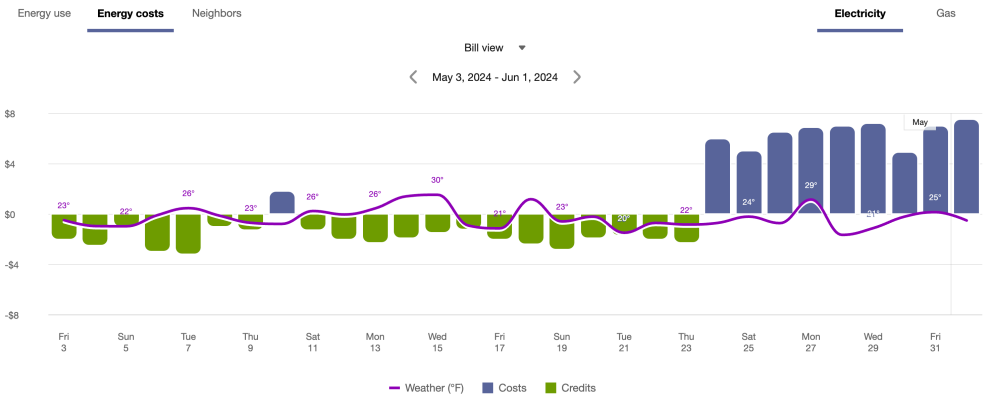
In a Time of Use plan, the cost of energy depends on the time of day and how the utility defines "on-peak" versus "off-peak" hours. For example, peak hours for a utility can be defined as weekdays between 1:00 PM to 7:00 PM from May through September. The example below uses a tiered rate plan in addition to a Time of Use rate plan.



The legend shows pricing for different tiers and peak periods. All the available rate tiers are displayed regardless of which tiers have data represented on the graph.

For customers with both Net Energy Metering (that is, solar power) *and* Time of Use plans, the display on the Bill view is simplified. For each day that includes a time-of-use period with

negative cost, a net positive or net negative energy use is displayed for the entire day and removes the distinction between the different time-of-use periods.



Peak Days

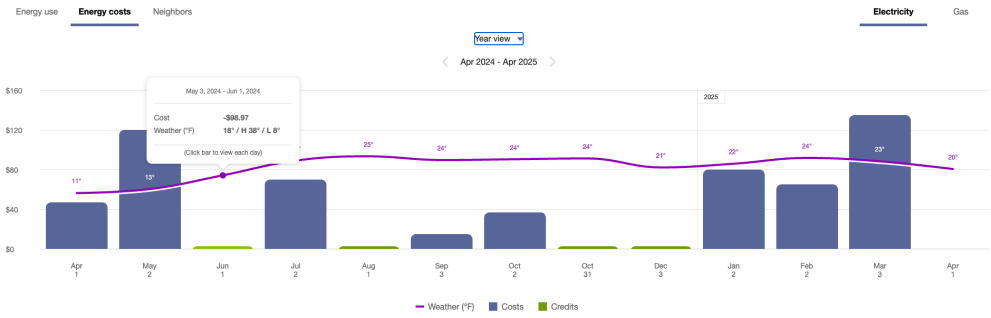
In rate plans that use peak day events, energy costs more money during peak days due to higher demand. The peak day event pricing is listed in the graph legend and a customer's energy costs or use for each event are depicted in the graph.

Rates Not Modeled

For customers who have AMI data but do not yet have their rate plan modeled in the system, there is not enough information to determine specific costs at a level more granular than the bill. In this case, the Data Browser will show an error message in the Bill or Day View for costs.

Solar Customers

If a customer has solar power and generates more energy than they consume, the Energy Costs view will show the customer's energy use as a credit. The example below shows short green bars for negative values. Additionally, a tooltip denotes the negative cost value. This default experience can be configured to display in different ways. Utilities must coordinate with their Delivery Team to determine which display to use.



Additional solar insights and messaging can be displayed if the utility has purchased the Oracle Utilities Opower Distributed Energy Resources cloud service. See Solar Features on the Data Browser for more information.

Year-over-Year View

Depending on your utility's setup and configuration, the Data Browser time menu may contain an additional year-over-year view that allows customers to compare energy usage or costs for the past 12 months against the same period from the previous year. With this side-by-side

comparison, customers can identify patterns, assess progress on savings, and understand fluctuations in energy use or cost. The view is available for gas and electricity fuels in the **Energy Use** and **Energy Costs** tabs.

When the year-over-year view is selected, the main graph displays grouped bars for each month over a 12-month period. Each grouping compares the cost for the past 12 months (darker bar) to the same month from the previous year (lighter bar). A legend at the bottom of the chart clarifies what the bars mean.

The year-over-year view is also available if the **Combined** fuel tab is enabled in the year view of the Data Browser. Customers can go to the **Energy Costs** or **Energy Use** view, select **Combined**, and select the year-over-year option. An aggregated comparison of costs or usage is displayed for electric and gas service agreements in each bill period. (For aggregated usage, the unit of measure is expressed in “Units”, since it is a combination of gas and electricity usage.) The tooltip that displays on hover expands to show a full breakdown of electricity and gas costs that make up each month’s total.

Estimated Reads: The graph highlights estimated reads using visual and textual indicators. When an estimated bill appears for either the past 12 months or the previous year, a message is shown in the tooltip and the corresponding bar uses a stripe pattern. The legend displays an "Estimated" entry only if at least one estimated read exists. When estimated reads are present for both periods, the tooltip and legend clearly distinguish between them using matching color schemes and styles.

Navigating through Time: When the year-over-year view loads, it uses the current date to determine the current month and displays the most recent 12 months of data. Forward navigation to future dates is disabled since no data would be available for display. Users can navigate backward to earlier data if it is available, and navigate forward again. The legend at the bottom, labeling the bars as “Previous year” and “Past 12 months,” only appears when the most current data is being shown.

Requirements: Customers must be billed monthly, and at least one bill is required for the year-over-year view to display any data. If no data is available, an error message is shown. The ideal state is to have 24 months of billed usage data for a complete year-over-year view.

Limitations:

- Bi-monthly or quarterly bills are not supported.
- To keep the year-over-year view simple and easy to read, weather data is not displayed.
- The year-over-year view is not available for solar customers. Solar customers can be provided with the Compare to Last Year View available through the Distributed Energy Resources Customer Engagement cloud service, which must be purchased separately.

Energy Use View

The Energy Use view of the Data Browser displays how much energy a customer consumed over specific periods of time. Customers can view energy usage for each bill over a 13-month period. If the required data is available, the customer can also view daily and subdaily data.

Requirements

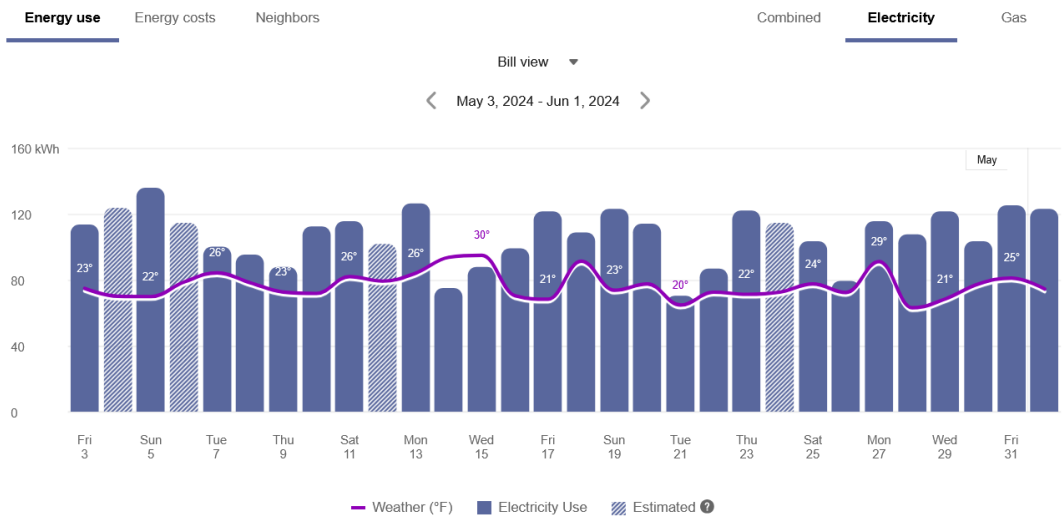
Same as listed in Data Browser. Additional data and cloud service requirements may apply depending on the types of insights (such as solar insights) that the utility chooses to display. See the feature descriptions and User Experience Variations below for details.

Limitations

Same as listed in Data Browser.

User Experience

The Energy Use view displays how much energy a customer is using over time. This section describes the user experience for customers who have billing data and daily AMI data.



Fuel Menu

Electricity is displayed by default. Dual fuel customers will see options that allow them to switch between electricity and gas use.

A Combined view can be displayed, which combines electricity and gas costs into a single number using a price-weighted index. When the Combined view is enabled, the data point tooltips also display combined totals.

Time Menu

Depending on what data is available, the Energy Use view presents different kinds of trends and insights at varying levels of granularity over time:

- **Year view**: Energy use by each bill period in a year. Monthly, bi-monthly, and quarterly bills are supported.
- **Bill view**: Energy use by each day in a bill period. AMI data is required for this view.
- **Day view**: Energy use by each hour of a day (or another interval such as quarter of an hour). AMI data is required for this view.

There are also forward and backward buttons that customers can select to display contiguous blocks of time. In the Year view, for example, clicking the forward or backward button displays contiguous 13-month blocks of time for customers on monthly billing.

Bar Graph

The bar graph uses a vertical axis (Y-axis) to show the cost, and a horizontal axis (X-axis) shows the time period. The bars use the "You" color, which is blue by default and commonly changed to the utility's brand color. Lighter bars represent estimated bills or usage reads. See General Display Rules for details on how the graph behaves and how the data visualization can change depending on which view is selected.

Highest Demand Day or Interval

In the bill and day views, an icon is displayed over the day or interval when demand was at its peak. *Demand* refers to the *rate* at which a household consumes electricity, not the actual amount that is consumed. This means that the day or interval with the peak demand icon may not always be the same as the day or interval with the highest amount of energy use. See Demand Versus Energy Use for more information about the difference between these units of measure.

The peak demand icon can also be shown in the Demand View of the Data Browser to indicate the highest demand interval within a specific day. Additionally, there are cases when Multiple Peak Demand Icons can be displayed.

Weather Data

A line graph representing the average temperature during each time period is overlaid on the bar graph. This allows customers to see how their usage relates to local weather patterns. The weather data is based on data from the airport weather station closest to the location of the customer. See Weather Data for details on how weather data is retrieved.

Tooltips

Tooltips are displayed when customers interact with a data point on the graph. See Energy Tooltips for details on what the tooltips may include.

For AMI customers, a message is displayed at the bottom of tooltips for data points for each bill. This messaging acts as a tip for how a customer can quickly view hourly or sub-hourly data for a given bill.

Customers can also view data points for energy use that has not yet been included on a bill. See Virtual Bills for details.

Disclaimer

Disclaimer messages can be added to the Energy Use view that are specific to the view. For example, a disclaimer message can explain estimated usage. The disclaimer messages can also include links to resources where customers can find more information.

User Experience Variations

Multiple Accounts and Service Points

If a customer has multiple accounts and service points, a drop-down list is displayed above the graph allowing customers to choose one and view data related to it. See Multiple Billing Accounts, Premises, Service Agreements, and Service Points for details.

Multiple Peak Demand Icons

If the demand values for two or more days or subdaily intervals are the same, and these values technically represent the highest demand, then multiple peak demand icons are displayed in the Energy Use view.

This may be the case, for example, at households where a specific set of high-power machinery or equipment needs to be turned on at regular points in time, resulting in a demand spike that consistently reaches the same amount multiple times in the same bill period.

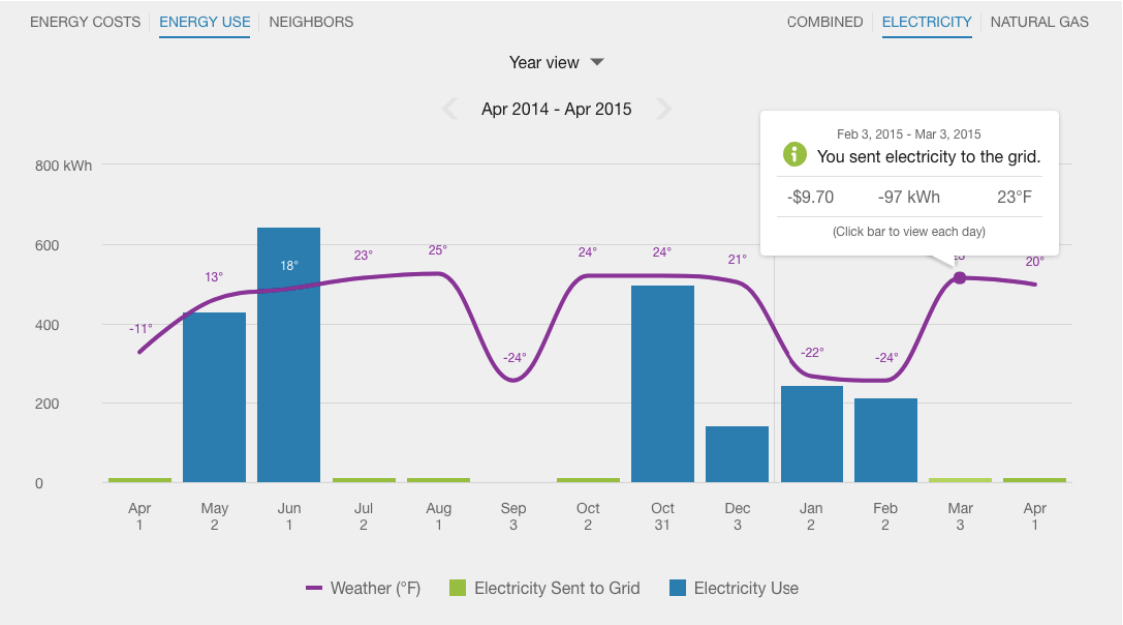
Multiple peak demand icons are displayed in the Energy Use bill or day view under the following conditions:

- **Bill View**: Multiple days in a bill period contain an interval with the same demand value, and this value represents the peak demand for the bill period.
- **Day View**: Multiple intervals in a day have the same demand value, and this value represents the peak demand for the bill period.

This behavior can also occur in the Demand view. See Multiple Peak Demand Icons for details.

Solar Data and Net Energy Display

If a customer has solar power and generates more energy than they consume, the Energy Use view will show the customer's energy use as being sent to the grid. The example below shows short green bars for negative values. Additionally, a tooltip denotes the negative use value.

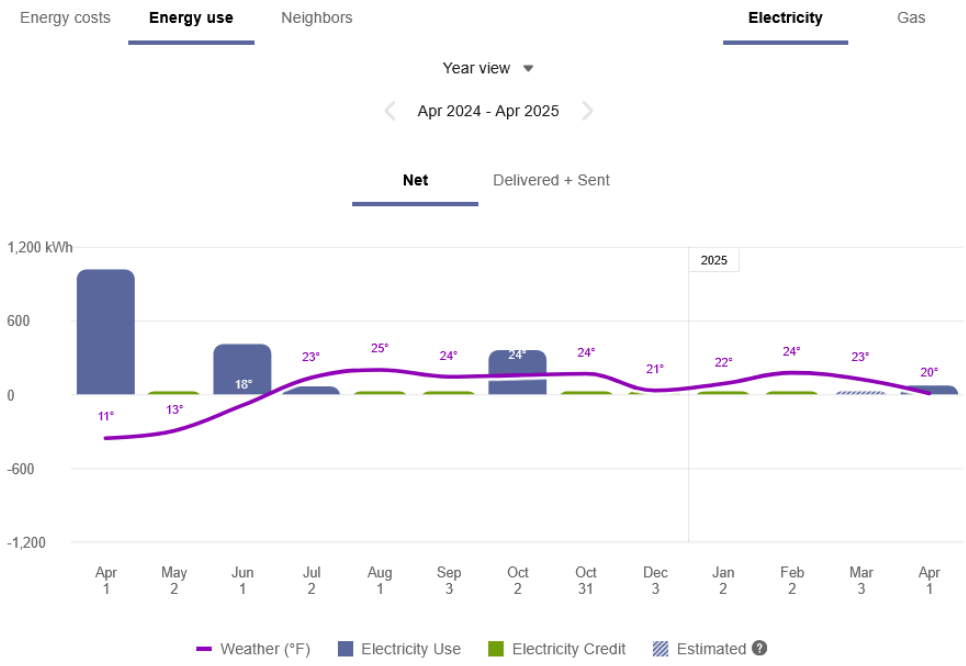


This default experience can be configured to display in different ways. Utilities must coordinate with their Contact Your Delivery Team to determine which display to use.

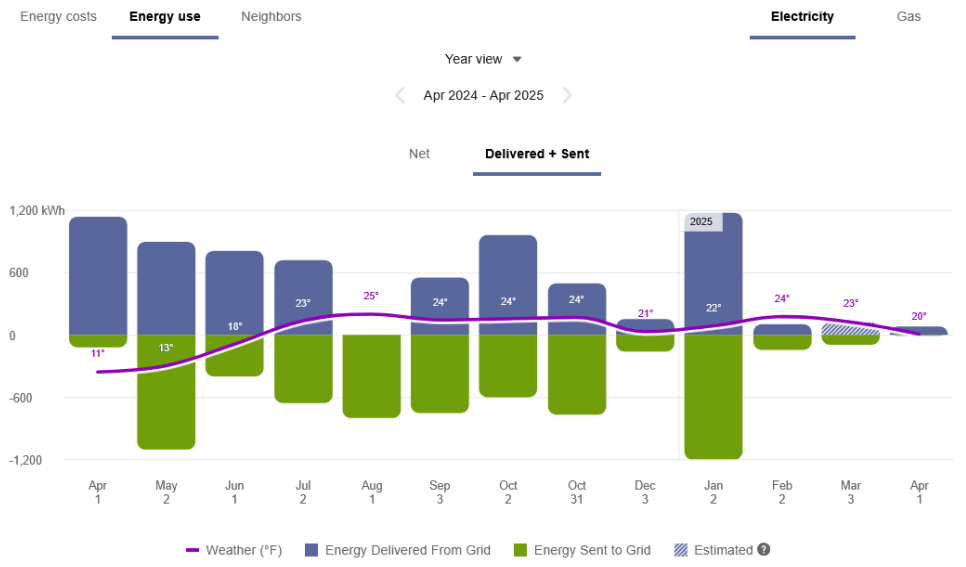
Solar Data, Net Usage, and Delivered + Sent Toggle

If a customer has solar power, the Energy Use view can display a toggle between **Net** and **Delivered + Sent** tabs when electricity is selected from the fuel menu. The toggle appears beneath the time menu. Customers can use the tabs of the toggle to gain insight into their electric energy usage and solar production separately, as well as their net usage. This information is available in all time resolutions (year, bill, and day views) if there is sufficient data.

Net Tab: The Net tab displays the customer's final amount of energy consumption or energy generation for a given interval of time. It is determined by subtracting the customer's solar power generation amount from their energy consumption amount. If the customer has a net usage amount, it is displayed as electricity use. If the customer has a net generation amount, it is displayed as an electricity credit.



Sent + Delivered Tab: This tab displays the customer's energy consumption and production data in the same time interval on the horizontal axis of the graph. "Sent" refers to energy sent to the grid through solar technology. "Delivered" refers to energy delivered from the grid to the customer's premise.



Requirements

- The customer must be on a net metering rate. Customers on a net billing rate or a non-net metering or billing rate are not eligible.
- Account, Billing, and Premise data feeds must be established with the utility.

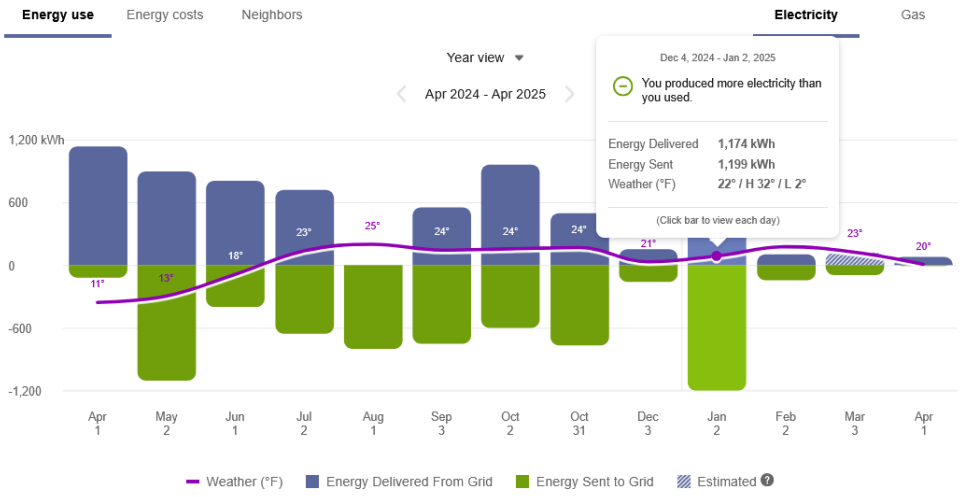
- Billing data is required to display energy information in the year view. Interval (AMI) data is required to display energy information in the bill and day views. (If the customer only has billing data, then only the year view will be available.) The data must contain an indication of how much energy was consumed and how much was exported or sent back to the grid.
- Some additional configuration is required to enable the view. Contact Your Delivery Team for more information.

Solar Data and Bidirectional Energy Display

The Energy Use view of solar data can be enhanced for customers who have multi-register rather than single-register meters. Single-register meters only provide one data stream that provides total net energy use data (kWh). Multi-register meters can provide more details within an interval, such as the amount that goes from the grid to the house or from the house to the grid due to solar power.

When this view is configured, the Energy Use view can display both energy consumption and production data in the same time interval on the horizontal axis of the graph. Usage data is shown as a positive value and solar data is shown as a negative value, indicating a bidirectional flow of energy. The usage and production data is also reflected in the Green Button feature.

Solar Bidirectional Enhancement: Year View Example



Requirements:

- The customer must have multi-register meters.
- Account, Billing, and Premise data feeds must be established with the utility.
- Some additional configuration is required to enable the view. Contact Your Delivery Team for more information.

Solar Generation Data Display

The Energy Use view of the Data Browser can display solar data in different ways for customers who have a meter that tracks gross solar generation data.

Solar generation data shows the total amount of electricity produced by a customer's solar panels over a certain period. By contrast, *net energy data* shows the difference between the

amount of energy produced by solar panels and the amount a household consumes. Net energy data reflects only the balance—what the customer household sends to the grid or draws from the grid—not the total produced or consumed. Solar generation data is valuable because it tells customers if their solar panels are working as expected, and enables them to understand how much energy they are consuming overall in various time increments.

The way solar generation data is displayed in the Energy Use view depends on how the customer's utility service agreement is structured. There are two main supported scenarios.

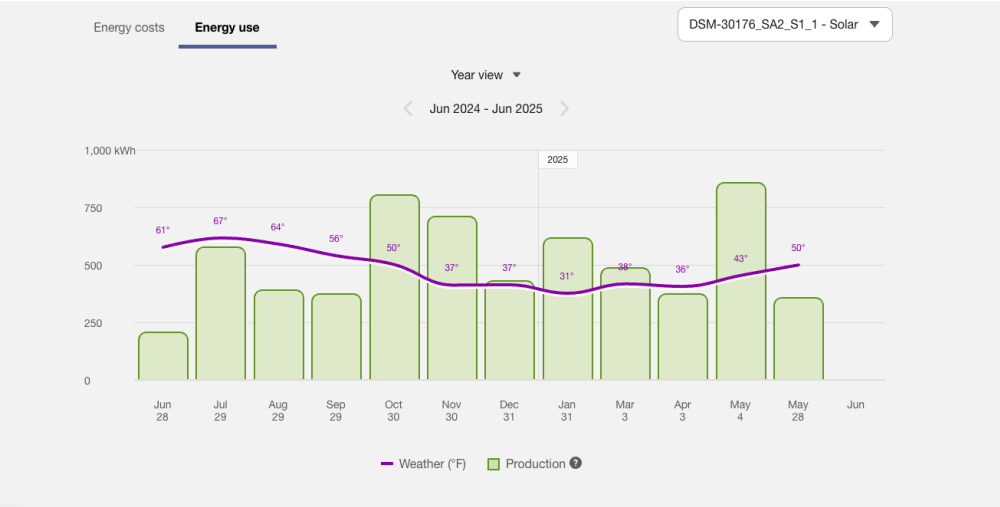
Scenario 1: One Service Agreement, Two Service Points

In this scenario, customers have one service agreement with two service points: a main service point for billing, and another service point for tracking gross solar generation. When a relevant electricity account is selected, the Energy Use view displays a submenu that allows the customer to see **Usage** and **Production** tabs in addition to the default **Net** tab. (If the customer has a net billing rate, there will be a **Purchased and Sold** tab instead of a **Net** tab.)

- The **Usage** tab shows the customer's total energy usage.
- The **Production** tab shows the total energy generated by the customer's solar panels.
- The **Net** tab shows the net energy balance---the difference between the amount of energy produced and consumed.
- If configured, the **Purchased and Sold** tab replaces the **Net** tab and shows a combination of information: the amount of energy bought from the utility and used, alongside the amount of energy generated by solar power and sold to the utility.

Scenario 2: Two Service Agreements, Two Service Points

In this scenario, customers have two separate service agreements: one service agreement with one service point for billing, and another service agreement with a service point for solar generation. The solar generation service agreement can be selected from a drop-down menu. The Energy Use view then displays gross solar production data for that service agreement.



If the customer switches service agreements and selects the main billing service agreement, the data refreshes and the standard view of net energy data is displayed.

Alternatively, depending on the setup and configuration, the data shows a combined view of electricity delivered by the utility and used, alongside the amount of electricity generated by solar power and sent to the utility.

Requirements

Scenario	Data Requirements
Scenario 1: One Service Agreement, Two Service Points	**Entity Attribute Data**: The Entity Attribute data feed must be established. The value PHOTOVOLTAIC = 1 is required for the solar generation service point only (it should not be included for the billing service point). **Core Data Feeds**: Data feeds for the core data standards (Account, Billing, and Premise) must be established. In the Billing data feed, the following values are required for the `service_quantity_identifier` field: • GENERATED • CONSUMED • USAGE (also known as NET) and/or DELIVERED and RECEIVED **Interval Data**: For data at the daily or subdaily level to be displayed, the Interval data feed must be established. • For the solar generation service point, the NET and/or RECEIVED and DELIVERED values are required for the `service_quantity_identifier` field. Any NET data is shown in the **Production** tab. • For the main billing service point, the NET and/or RECEIVED and DELIVERED values are also required for the `service_quantity_identifier` field. Consumption data is calculated by Oracle Utilities Opower and does not need to be sent.

Scenario	Data Requirements
Scenario 2: Two Service Agreements, Two Service Points	**Entity Attribute Data**: The Entity Attribute data feed must be established. The value PHOTOVOLTAIC = 1 is required for the solar generation service point only. **Core Data Feeds**: Data feeds for the core data standards (Account, Billing, and Premise) must be established. The USAGE (also known as NET) field is required for *both* the billing service agreement and solar generation service point. **Interval Data**: For data at the daily or subdaily level to be displayed, the Interval data feed must be established. The same `service_quantity_identifier` interval data values are required as described in scenario 1. However, for scenario 2, note that usage data is not calculated or shown when the customer selects the solar generation service point.

Year-over-Year View

Depending on your utility's setup and configuration, the Data Browser time menu may contain an additional year-over-year view that allows customers to compare energy usage or costs for the past 12 months against the same period from the previous year. With this side-by-side comparison, customers can identify patterns, assess progress on savings, and understand fluctuations in energy use or cost. The view is available for gas and electricity fuels in the **Energy Use** and **Energy Costs** tabs.

When the year-over-year view is selected, the main graph displays grouped bars for each month over a 12-month period. Each grouping compares the cost for the past 12 months (darker bar) to the same month from the previous year (lighter bar). A legend at the bottom of the chart clarifies what the bars mean.

The year-over-year view is also available if the **Combined** fuel tab is enabled in the year view of the Data Browser. Customers can go to the **Energy Costs** or **Energy Use** view, select

Combined, and select the year-over-year option. An aggregated comparison of costs or usage is displayed for electric and gas service agreements in each bill period. (For aggregated usage, the unit of measure is expressed in “Units”, since it is a combination of gas and electricity usage.) The tooltip that displays on hover expands to show a full breakdown of electricity and gas costs that make up each month’s total.

Estimated Reads: The graph highlights estimated reads using visual and textual indicators. When an estimated bill appears for either the past 12 months or the previous year, a message is shown in the tooltip and the corresponding bar uses a stripe pattern. The legend displays an "Estimated" entry only if at least one estimated read exists. When estimated reads are present for both periods, the tooltip and legend clearly distinguish between them using matching color schemes and styles.

Navigating through Time: When the year-over-year view loads, it uses the current date to determine the current month and displays the most recent 12 months of data. Forward navigation to future dates is disabled since no data would be available for display. Users can navigate backward to earlier data if it is available, and navigate forward again. The legend at the bottom, labeling the bars as “Previous year” and “Past 12 months,” only appears when the most current data is being shown.

Requirements: Customers must be billed monthly, and at least one bill is required for the year-over-year view to display any data. If no data is available, an error message is shown. The ideal state is to have 24 months of billed usage data for a complete year-over-year view.

Limitations:

- Bi-monthly or quarterly bills are not supported.
- To keep the year-over-year view simple and easy to read, weather data is not displayed.
- The year-over-year view is not available for solar customers. Solar customers can be provided with the Compare to Last Year View available through the Distributed Energy Resources Customer Engagement cloud service, which must be purchased separately.

Neighbors View

The Neighbors view of the Data Browser allows residential customers to compare their energy use against their neighbors over each billing period from last year. Three lines are displayed on the graph to compare the energy use of the customer, all neighbors, and efficient neighbors. If there are not enough neighbors for a customer or the customer is ineligible for a neighbor comparison, then an applicable message is displayed in place of the view.

> **Note**
>
> The term **Neighbors** is used in this view by default, but it is often replaced with the term **Similar Homes**. The terminology is configurable for each utility.

Requirements

Same as listed in Data Browser.

Limitations

Same as listed in Data Browser.

User Experience

The Neighbors view allows customers to compare their energy use against similar homes over each billing period that falls in the last year. This section describes the user experience for customers who have billing data.

Fuel Menu

Electricity is displayed by default. If the customer is dual fuel, they will see options that allow them to switch between electricity and gas use.

A Combined view can be displayed, which combines electricity and gas costs into a single number using a price-weighted index. When the Combined view is enabled, the data point tooltips also display combined totals.

Time Menu

Above the data graph are forward and backward buttons that customers can select to display contiguous blocks of time. In the year view, for example, clicking the forward or backward button displays contiguous 13-month blocks of time for customers on monthly billing.

Since the data granularity available for a customer does not always match that of their neighbors, the energy use trends are only shown on the year view. Customers do not have the option of switching to a more granular view of data (such as the bill or day view).

Line Graph

The line graph uses a vertical axis (Y-axis) to represent energy use, and a horizontal axis (X-axis) to represent the time period. Three lines are displayed on the graph:

- **You (the customer):** Uses the "You" color, which is blue by default and commonly changed to the utility's brand color.
- **All Neighbors**: Uses a gray or neutral color.
- **Efficient Neighbors**: Commonly uses a green color because green is associated with energy efficiency.

See General Display Rules for details on how the graph behaves and how the data visualization can change depending on which view is selected.

Neighbor Details

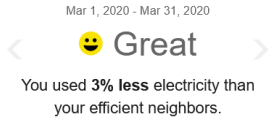
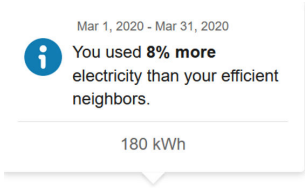
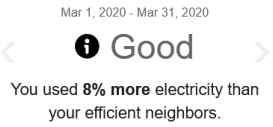
The Neighbors view includes a section in the legend of the graph that, when clicked, displays a **What homes are compared?** or **Who are my neighbors?** dialog, which shows the characteristics of the homes that the customer is being compared to. The description can be dynamic or static.

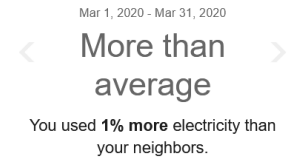
The static neighbor description is nearly identical to the dynamic neighbor description, except that it is much shorter and does not dynamically display neighbors' characteristics based on available data. The dynamic description includes a list of comparison characteristics and other information about the comparison, followed by a link to the Home Energy Analysis survey.

- **Summary Message**: A summary message provides the number of neighbors or similar homes that are included in the comparison.
- **Comparison Characteristics**: A list of characteristics that a customer shares with their neighbors is displayed with a green check mark. If a characteristic is unknown for a customer, it is not included in the comparison and hidden from view.
- **Neighbors or Similar Homes Definition**: A brief line defining neighbors or similar homes as the 20% that use the least amount of energy.
- **Link to Survey**: Clicking this button takes the customer to Home Energy Analysis survey so that they can provide the latest details about their home and make the neighbor comparison more accurate. **Note**: The neighbor comparison does not get automatically updated in real time based on a customer's updates. This link will still appear even if the user has already visited the Home Energy Analysis.

Tooltips

Tooltips are displayed when customers interact with a data point on the graph. In addition to showing the time period and the customer's energy use, the tooltips in the Neighbors view also show an insight about how the customer compares to their neighbors or similar homes.

Comparison State	Description
Customer is using less than efficient neighbors.	**Logic**: Customer uses at least 1% less than efficient neighbors. **Example Message**: "You used n% less than your efficient neighbors." **Example Desktop Tooltip**:  **Example Mobile Tooltip**: 
Customer is using the same as efficient neighbors.	**Logic**: The difference between the customer and efficient neighbors is 0%. **Example Message**: "You used about the same as your efficient neighbors." **Example Desktop Tooltip**: 
Customer is using less than average neighbors, but more than efficient neighbors.	**Logic**: Customer uses at least 1% or more than efficient neighbors. **Example Message**: "You used n% more than your efficient neighbors." **Example Desktop Tooltip**:  **Example Mobile Tooltip**:  **Notes**: • The **Good** label in the mobile tooltip means that the customer used more than efficient neighbors but less than average neighbors. The customer could be using significantly more than efficient neighbors (such as 90% more), and the mobile state will still display **Good** as long as the customer is using less than average neighbors. • The **Good** label in the mobile tooltip is meant to parallel the **Good** label that can appear in the Energy Use Benchmark module of customers' print Home Energy Reports. The goal is to motivate customers to keep doing better even though they are already doing better than their average neighbors.

Comparison State	Description
Customer is using about the same as average neighbors.	**Logic**: The difference between the customer and average neighbors is 0%. **Example Message**: "You used about the same as your average neighbors." **Example Desktop Tooltip**: 
Customer is using more than average neighbors.	**Logic**: Customer uses at least 1% or more than average neighbors. **Example Message**: "You used n% more than your average neighbors." **Example Desktop Tooltip**:  **Example Mobile Tooltip**: 

Disclaimer

Disclaimer messages can be added to the Neighbors view that are specific to the view. For example, the disclaimer in the Neighbor view might provide information about how neighbors are determined. The disclaimer messages can also include links to resources where customers can find more information.

User Experience Variations

Multiple Accounts and Service Points

If a customer has multiple accounts and service points, a drop-down list is displayed above the graph allowing customers to choose one and view data related to it. See Multiple Billing Accounts, Premises, Service Agreements, and Service Points for details.

Usage Breakdown View

The Usage Breakdown view of the Data Browser allows customers to explore their top energy costs by disaggregation category (or "end use category") over time. This helps customers see how their end uses (such as heating, cooling, and lighting) and appliances (such as dishwasher or dryer) contribute to their overall energy use, and to identify trends that may be leading to higher than normal bills.

Requirements

Same as listed in Data Browser. Additional requirements include:

- Average energy use data for households in a utility's region, as well as billing data and weather data.
- AMI data is required in order to show appliance-level insights (such as energy costs associated with an oven, refrigerator, or dishwasher). Contact Your Delivery Team for more information.

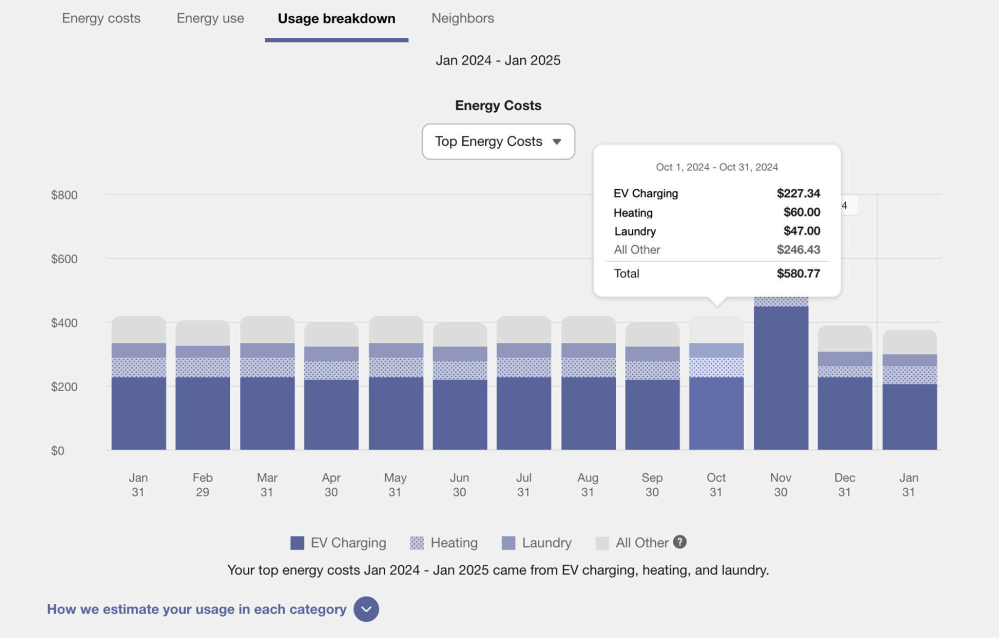
Limitations

Same as listed in Data Browser. Additional limitations include:

- The Usage Breakdown view is not available for customers with solar power. This is because the feature uses data science models which have not yet been trained on homes with solar power, and so the disaggregation results would not be accurate.
- The following types of customers and utilities are not supported: Small and medium businesses (SMB) customers, commercial and industrial customers, and water and wastewater utilities.
- Customers cannot navigate to a previous 13-month historical period to view a usage breakdown.

User Experience

The Usage Breakdown view displays how much money a customer is spending on energy in top end-use categories. This section describes the user experience for AMI electricity customers whose top costs are heating, cooling, and electric vehicle (EV) charging.



Date Range

A date range appears at the top of the feature to indicate the time period for the data. The range always shows the current month and the previous 12 months (for a total of 13 months), so that customers can get a full year's worth of comparison. Customers cannot navigate to a previous 13-month historical period.

Energy Costs Menu

A menu appears above the graph to allow customers to choose which end-use category to view. The menu defaults to the customer's top three energy costs from the current month and the previous 12 months (for a total of 13 months). If a customer selects to view a single category, then the bar chart adjusts accordingly. Other notes about the menu's behavior include:

- Only categories that apply to the customer are available in the menu. For example, customers who own an electric vehicle (EV) may see a menu option for "EV charging," but this option will not appear for customers who do not own an EV.
- The categories in the menu match most of the categories in the customer's Home Energy Analysis breakdown. The exception is that the menu does not display an option for "Other Energy Use," since in this context it is too vague and not granular enough to be useful.
- The menu can display categories for individual appliances (instead of the generic "Appliances") depending on available data and the utility's setup and configuration. See Appliance-Level Insights below for details.

Bar Chart

The bar chart displays a customer's top three energy cost categories over the last 13 bill periods. The categories are displayed in different colors in each bar. The bar also shows a gray color to refer to other categories of energy use. Customers can use this information to understand which category costs the most money at different points in time. Additional notes about the bar chart include:

- The bar chart shows top energy costs by bill period across a year. Customers cannot view data at a more granular view, such as monthly or daily.
- If a customer selects to view a single category, then the bar chart adjusts to show two colors: the color of the category selected and a gray color for all other categories.
- The top cost or costs shown in each bill period will match the disaggregation results of Home Energy Analysis for that same bill period. For example, if a customer hovers over a data point and sees that the electric heating cost was $64 for January, then the same number will be displayed in the Home Energy Analysis breakdown for January.

Tooltips

Tooltips are displayed when customers interact with a data point on the graph. The tooltip includes the date range of the selected bill period, the top usage categories, the cost associated with each category, and the total cost for the bill period. If a customer selects to view a single category, the tooltip adjusts to show just two items: the cost of the selected category and the cost of all other categories.

See Energy Tooltips for details on what the tooltips may include in other views of the Data Browser.

Legend

The legend below the bar chart shows the color of each category displayed in the chart. If a customer selects to view a single category, the legend adjusts to show just two colors: the color of the selected category and a gray color for "All Other". The "All Other" category is present in the chart legend and tooltip, but not in the Energy Costs Menu since it varies depending on the selection.

- If "Top Energy Costs" is selected in the Energy Costs menu, then the "All Other" category in the legend refers to the total bill cost *minus* the top three energy category costs.
- If an individual category is selected in the Energy Costs menu, then the "All Other" category in the legend refers to the total bill cost *minus* the selected category cost.

Energy Costs Insight

An insight statement below the bar chart legend explains the customer's top costs in three categories for a specific time period. The statement remains the same even if the customer selects to view the breakdown for a single category. This is so that the customer is reminded of the top three costs when selecting to view a single category.

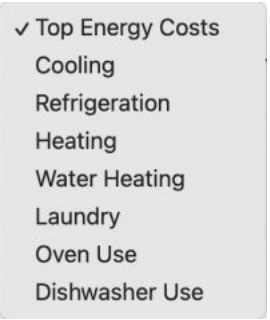
Explainer

A message below the graph explains how the customer's breakdown is determined. The message varies slightly based on whether the customer has AMI data and has started or completed the Home Energy Analysis survey. There is also a disclaimer about how account-level charges and credits are excluded, and how minimum bill charges can impact the accuracy of the cost information. The message concludes with a link to the Home Energy Analysis survey, where customers can update their home profile so that they receive the most accurate insights.

User Experience Variations

Appliance-Level Insights

If sufficient data is available and the proper configuration has been completed, the Energy Costs Menu and chart can display specific appliances as top cost categories, rather than a general "Appliances" category. For example, the breakdown can include categories such as laundry, refrigerator, or oven.



Requirements: Weather data, subdaily AMI data (at the hourly or quarter of an hour resolution), billing data from at least one bill period, and more. Contact Your Delivery Team for details.

Dual Fuel

For dual fuel customers, the bar chart combines the data for electricity and gas into a single bar chart. There is no toggle to see a breakdown for each fuel type. This aligns with the breakdown that dual fuel customers see in the Home Energy Analysis, in which a single graphic containing gas and electricity data is shown to dual fuel customers.

Gas-Only

Gas-only customers can receive the Usage Breakdown view in the Data Browser. The user experience can change for them in the following ways:

Disaggregation: The disaggregation only shows end-use categories for which gas is a supported fuel type. For example, categories for cooling, electric vehicle, and individual appliances would be hidden.

Two Categories: Gas-only customers may not have enough information to determine their energy use in three top categories. In such cases, two top categories can still be shown. See Two or Three Categories below for details.

Less Than 13 Months

If less than 13 months of data are available, the bar chart still shows data for bill periods in which data is available.

Missing Data

If there are four or less bill periods with missing data, then the bar chart shows a missing data icon and error message in the tooltip for each bill period where the data is missing. If there are more than four bill periods with missing data, then the Usage Breakdown view selector is hidden.

Multiple Accounts and Service Points

If a customer has multiple accounts and service points, a drop-down list is displayed above the graph allowing customers to choose one and view data related to it. See Multiple Billing Accounts, Premises, Service Agreements, and Service Points for details.

Non-AMI Data

For customers with non-AMI (billing) data, the explanation beneath the bar chart changes slightly to say that the customer's breakdown is based on "meter data" instead of "smart meter" data.

Solar Customers with Net Metering

For AMI customers with solar power and net metering, there are several differences in the Usage Breakdown view when compared with non-solar customers.

- The Usage Breakdown view shows top energy uses only. Top energy costs are not shown because a net metered customer's electric bill is based on *net* electricity drawn from the grid—not the home's *total* energy use. If solar panels supply most of the home's energy, a customer might use a lot of electricity, but only be billed for a small amount received from the grid. This means that cost information wouldn't match directly with how electricity was used inside the home.

- The explainer below the graph mentions that all of the customer's energy uses are accounted for regardless of whether their energy came from solar panels or the grid.

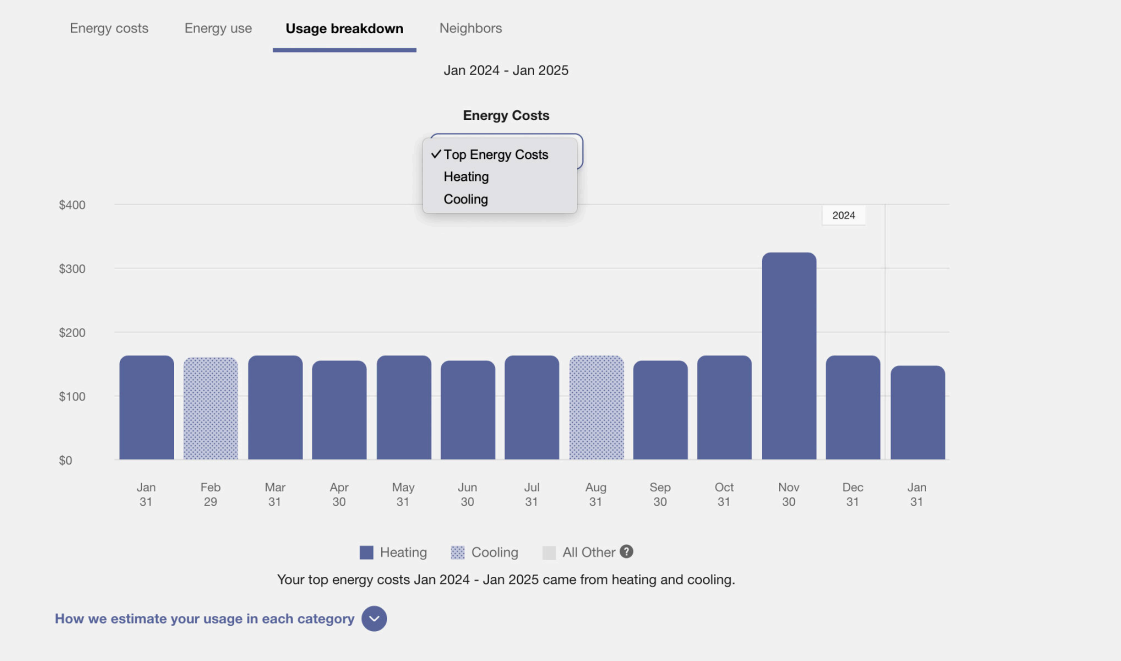
For more information about how energy disaggregation is estimated for solar customers, see Solar Generation Based on Net Usage.

Requirements:

- Subdaily AMI net usage data is required.
- Customers must be identified as having solar power. There are several ways to do this using Oracle Utilities Opower data transfer standards or a data model science model. Your Delivery Team will work with you to choose the best method.
- The appropriate energy disaggregation model must be set up and configured. Contact your Delivery Team for more information.

Two or Three Categories

If only two or three disaggregation categories are available for a customer, then the Energy Costs Menu will show the available categories as well as the Top Energy Costs category. Customers will be able to view a single category at a time.



Efficiency Zone

The Efficiency Zone widget replaces the standard Neighbor Comparison for customers who receive the Efficiency Zone module in their print or email Home Energy Reports v3 experience. The widget includes a two-bar graph that compares customer and similar homes usage against an "Efficiency Zone" threshold, and displays insights that place the customer's usage in context. The Efficiency Zone represents the 20% of similar homes that used the least during that bill period. The customer's status within the zone can change with each report.

> **Note**
>
> The customer's web experience with the Efficiency Zone mirrors whatever is in their print or email report experience. For example, customers who receive the Efficiency Zone in their print or email report will also see an Efficiency Zone widget in the Digital Self Service - Energy Management web portal. Utilities have the option to replace the Efficiency Zone with the standard Neighbor Comparison.

Requirements

Utility Requirements

Category	Description
Required Cloud Service	Same as listed in the product-wide requirements.
Scale	No applicable scale requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly, bi-monthly, or quarterly.
Data Delivery Frequency	Monthly, bi-monthly, or quarterly.
Data Requirements	Billing data is required. Additionally, some third-party data (geospatial data and parcel data, for example) is required to select other similar homes for the comparison. The feature will not display if it is unable to select the minimum number of neighbors. The minimum threshold may vary depending on your utility's setup and configuration. Contact Your Delivery Team if you have any questions.
Data History	A single bill from the last bill period or previous to last bill period.
Data Coverage	Not applicable. Data at the bill level is used.
Supported Fuels	Electricity, gas, and dual fuel.

User Experience

The Efficiency Zone experience re-frames the "efficient neighbors" concept in order to improve customer satisfaction without heavily compromising energy efficiency. To do this, the Efficiency Zone experience presents a bar graph that compares customer and similar homes' usage against an "efficiency zone", and provides insights that place the customer's usage in context.

Heading: The heading uses the language of a social comparison to entice customers to learn more about their energy use.

Hero Insight Statement: The hero insight statement conveys the customer's energy efficiency status relative to one of two benchmarks: Efficiency Zone or Similar Homes. The icon that appears in the statement varies depending on the customer's state. If the customer is within the Efficiency Zone, a green check mark appears. If the customer is not within the Efficiency Zone, a gray exclamation icon appears.

Secondary Insight: The secondary insight states whether the customer's energy use was inside or outside of the Efficiency Zone.

Threshold Label: The threshold label appears above the graph to introduce the maximum Efficiency Zone threshold (for example, "Up to 500 kWh").

The Efficiency Zone threshold represents the average energy use of the 20th percentile of similar homes that used the least amount of energy in the last billing period. A green tinted rectangle and dark green vertical line indicate the range and upper boundary of the zone, enabling customers to quickly see their status in relation to it. The back-end logic used to calculate the Efficiency Zone is identical to the logic used to calculate "efficient neighbors" in the standard Neighbor Comparison.

Graph: The two-bar graph displays the customer's energy use ("You" bar) and how the customer compared to Similar Homes. The Similar Homes bar represents the average energy use of the customer's selected neighbors during the last bill period.

Date Range: The date range displays the time period covered by the comparison. The comparison always covers the last completed billing period. The year accompanies both the start date and end date (for example, Dec 20, 2019 – Jan 20, 2020).

What Is the Efficiency Zone: When this link is clicked, information is displayed to describe the characteristics that match between the customer's home and the homes they are being compared against. It is similar to the Who Are My Neighbors section of the standard Neighbor Comparison.

Call to Action: At the bottom of the feature is a call-to-action button that prompts customers to update their Home Energy Analysis, provide the latest details about their home, and make the efficiency zone more accurate. Note, however, that the efficiency zone is not automatically updated in real time based on a customer's updates. Moreover, the call-to-action does not change if the user has already visited the Home Energy Analysis.

Energy Use Overview

The Energy Use Overview compares customers' energy use from their most recent bill period to their energy use in the same bill period from the previous year. An analogy insight may appear to help customers understand how their usage relates to real-world examples. The Energy Use Overview is included in the Smart Dashboard.

On this page:

Requirements

Utility Requirements

Same as listed in the product-wide requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly, bi-monthly, and quarterly.
Data Delivery Frequency	Daily, monthly, bi-monthly, and quarterly.
Data Requirements	Bill-level reads from two service points at most (for example, one for gas and one for electricity). The start and end dates for each service point may not differ by more than three days.
Data History	At least one bill is required for the feature to render. A total of 12 bills or more is required to display the most recent bill period and compare it with the same period in the previous year. Customers with less data may see: • A comparison to the previous bill period • Energy use for the current bill period only • A message that indicates additional information will be displayed once enough data is available
Data Coverage	Not applicable. By default, any data that is available is displayed, even if some reads are missing.
Supported Fuels	Gas, electricity, and dual fuel.

Limitations

- **Sub-Bill Views**: Because the widget uses bill-level data rather than AMI data, customers cannot select any sub-bill views, such as daily or hourly views. Users who want this level of detail can go to the Data Browser.
- **Negative Values**: The display of negative energy use or cost information is not supported. If a customer has a negative bill, then no data is displayed for it in the bar chart.

User Experience

The Energy Use Overview displays the most recent bill period's energy use in comparison to that of a bill period in the past. Energy use for dual fuel customers is displayed in combined energy units, while an applicable energy unit of measurement is used for single-fuel customers. Dual fuel customers do not see a menu to view bill trends for a specific fuel type.

Title: The name of the widget reflects its focus on energy usage patterns over time.

Insight Statement: An insight statement appears above the bar chart telling the customer whether their most recent bill period's usage is higher, lower, or about the same as the same period last year. The exact amount is shown in bold to draw the customer's attention to the comparison point of the insight. If there is no historical bill from the same period last year, the insight statement simply shows the cost or usage of the present bill period, without any comparison.

- **Threshold**: The default threshold that controls the statement is 6%. For example, if the customer's usage is 6% above or below the compared period, then the appropriate insight message will display. If the customer's usage does not exceed the threshold, then the insight message states that the customer's usage is about the same.
- **Data States**: The insight statement is different depending on how much energy the customer used.

Data State	Insight
Usage compared to past period is lower	"This <month>, you used X% less energy than last <month>."
Usage compared to past period is higher	"This <month>, you used X% more energythan last <month>."
Usage compared to past period is about the same	"This <month>, you used about the same amount of energy as last <month>."
Usage of current bill period without any comparison to a previous bill period	"This <month>, you used X."

Energy Use Analogies: An analogy may appear in the feature comparing the customer's difference in energy use to common energy use scenarios. For example, energy use can be expressed in the number of days it would light your home. An analogy only displays if there is a difference in energy use. It will not display if the customer used the same amount of energy as in the last comparison period.

Bar Chart: The bar chart highlights the most recent bill in a blue color, and the previous comparison period in a dark gray color. Other bill periods that occurred between those points are shown in a light gray color. The y-axis shows the bill amount, and the x-axis shows the month and year of the bill period.

- **Hover**: When hovering over a bar in the bar chart, both the associated dollar amounts and energy units for the bill period are displayed in a tooltip above the bar. The energy units resolve to electricity-only, gas-only, or combined energy units depending on whether the customer is single or dual fuel.
- **Data States**: The bar chart displays differently based on how many bills are available.

Data State	Bar Chart Display
12 or more bills	The most recent bill period is highlighted and compared with the same bill period from the previous year.
2 to 12 bills	The most recent bill period is highlighted and compared with the previous bill period using an analogy.
1 bill	The bill period cost or usage is displayed. There is no previous bill period show, and no comparison to the same bill period from the previous year.
No data (or less than one bill's worth of data)	A message is displayed indicating that there will be data available soon. This message encourages customers to complete the Home Energy Analysis while they wait for their data to be available.

User Experience Variations

Single Fuel

The Energy Use Overview uses the applicable unit for the fuel type. For gas-only customers, energy use analogies are limited to a set that are applicable for gas-only customers. All analogies are available to dual-fuel and electric-only customers.

Green Button - Download My Data

The Green Button - Download My Data feature allows customers to export their billing data into CSV or XML format. It is typically located beneath the Data Browser. When a customer clicks the Green Button link, a **Download my data** section displays and allows the customer to choose between downloading their data in CSV or XML format. Customers can use this capability to review their data in a spreadsheet program, or send their data to third parties for use in some type of analysis software.

Requirements

Utility Requirements

Same as listed in the product-wide requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly, bi-monthly, and quarterly.
Data Delivery Frequency	Daily, monthly, bi-monthly, and quarterly.
Data Requirements	**Billing Data**: Billed usage data from the utility is the minimum data requirement. **AMI Data**: AMI data is required for additional download options to appear. AMI data requires the Digital Self-Service Energy Management AMI cloud service. See Getting Started for details. **Rates Data**: One of the Rates Engagement cloud services must be purchased and customers' rates must be modeled for cost values to display for interval AMI data reads in the exported file. **Enhanced Solar Data**: Utilities must be on the latest data transfer specifications in order for solar data IMPORT and EXPORT columns to display in the exported file. Contact Your Delivery Team to identify which data transfer specifications you need.
Data History	At a minimum, one historical bill is required for customers who do not have AMI data. For customers who have AMI data, a minimum of one read (that is, one day of data) is required.
Data Coverage	Not applicable. Missing or null reads are marked as such in the downloaded file.
Supported Fuels	Gas, electricity, and dual fuel. Customers can only export the data relevant to their service types. Water and wastewater are also supported when integrated as part of Digital Self Service - Transactions.

Limitations

- **Multilingual Limitations**: The CSV data download is available for US English, non-US English, and non-English languages. The XML data download is available for US English clients only.
- **Comparison to Green Button Connect**: The Oracle Utilities Opower Green Button feature is not the same as Green Button Connect. Green Button is a solution for downloading data in XML format, whereas Green Button Connect is a solution that allows customers to make their energy data available to a third party through an API.
- **ESPI Format**: Green Button allows customers to download their data in the Energy Services Provider Interface (ESPI) format. However, the feature is not Green Button Download certified.

User Experience

This section describes the user experience for dual fuel customers who have billing data and who do not have rates modeled.

Green Button

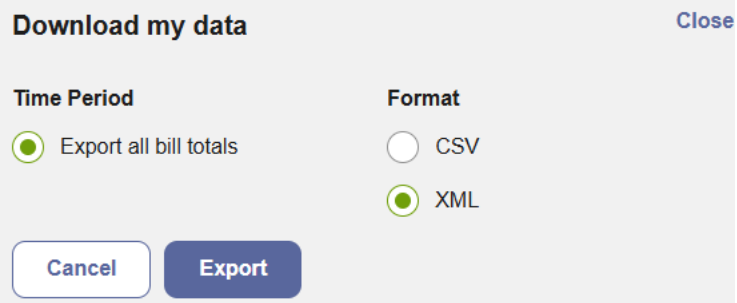
Customers can select the **Green Button** link to download their billing or AMI data to CSV or XML formats. The link is most commonly available at the bottom of the Data Browser.

The Green Button link is based on an initiative called the "Green Button initiative," an industry-led effort that responds to a White House call-to-action to provide electricity customers with easy access to their energy usage data. The goal is for customers to be able to go to their utility website and securely download their energy usage information in a platform-neutral format (specifically, XML). Customers can then send this data to third-party web apps or developers to create visualizations or perform additional analysis.

See The Green Button for Residential Use for more information on how this data is intended to be used.

Download My Data

When a customer clicks the Green Button link, a **Download my data** section displays and allows the customer to choose between downloading their data in CSV or XML format. The customer can then click **Export** to download the file. Depending on which web browser they are using, they may be prompted to save the file to their desktop rather than seeing an automatic download to their Downloads folder.



Download My Data - AMI Experience

Customers with AMI data have additional data download options. One option is that customers can download data for a specific bill period from a drop-down list.

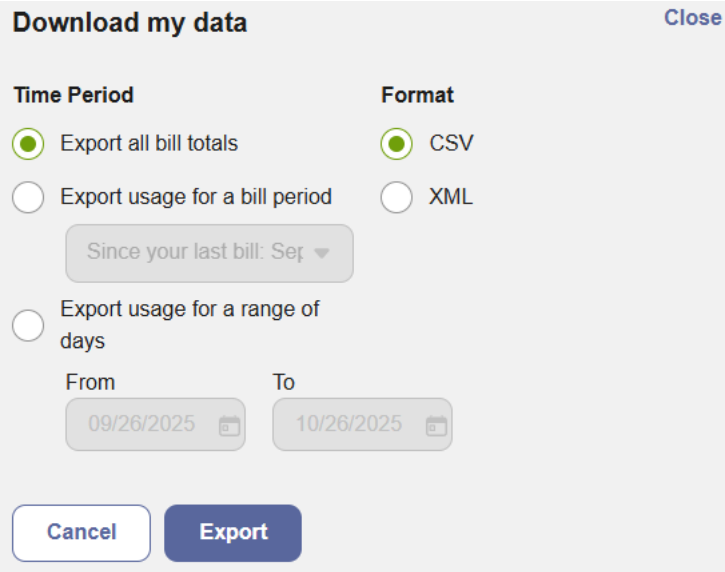
For example, if a customer has historical bills going back three months, then the customer might see a list of bill periods like the following:

- Dec 21, 2024 - Jan 22, 2025
- Nov 20, 2024 - Dec 21, 2024
- Oct 22, 2024 - Nov 20, 2024

The customer can then choose from the list to export data for the selected date range.

If a customer has multiple service agreements, each with slightly different start and end dates, then the date range for a given period displayed in the drop-down list will encompass the dates for all available service agreements. For example, imagine a customer who has two service agreements, one for gas and one for electricity. The gas bill period is Oct 21 - Nov 20 while the electricity bill period is Oct 22 - Nov 22. In this case, the date range shown in the Export usage for a bill period menu might be Oct 21 - Nov 22 to cover the date ranges of both service agreements. When the file is downloaded, however, the customer will see a .zip file that contains a separate CSV or XML file for each fuel type, and the data in the file will have slightly different start and end dates.

Customers can also select **Since your last bill** to view energy usage and costs that have not yet been included on a bill. By default, up to 30 days of in-progress billing data can be downloaded, which can be configured to align with the length of a customer's billing cycle. Alternatively, a start and end date can be selected to define the range of days.



Downloaded Files

The contents and structure of the downloaded file depend on whether the customer has billing or AMI data, and on which download options the customer has selected in the Download My Data screen.

> **Note**
>
> Green Button supports the download of data in units of measure that are applicable for the customer's resource types. For information on the units of measure supported by Oracle Utilities, see the Oracle Utilities Opower Premise Data Transfer specification.

CSV File Structure

If the customer chooses to export their data in CSV format, then the .zip file contains one or more applicable CSV files—one for each resource type that is applicable for the customer (gas, electricity, water, or wastewater). The screenshot below is an example of a downloaded CSV file showing monthly electric billing data.

	A	B	C	D	E	F	G	H	I	J
1	Name	First_Name Last_Name								
2	Address	760 MARKET ST 61f4, SAN FRANCISCO CA 94103								
3	Account Number	123456789								
4	Service	Service 1								
5										
6	TYPE	START DATE	END DATE	USAGE	UNITS	COST	NOTES			
7	Electric billing	2/28/2020	3/29/2020	1027.9	kWh	$1,027.90				
8	Electric billing	3/29/2020	4/28/2020	771.41	kWh	$771.41				
9										
10										
11										

The most common columns in the CSV file are described below.

CSV File Header

- **Name**: The customer's first and last name.

- **Address**: The address of the premise or property associated with the customer.
- **Account Number**: The customer's utility account number.
- **Service**: The ID of the customer's service agreement with the utility. Alternatively, this field may display a nickname for the service agreement. There is some logic in the widget to determine which value to show. A nickname will be shown if one is available. If a nickname does not exist, then the widget looks for the service agreement ID. **Note**: The downloaded file currently cannot show service point IDs. It can only show the service agreement ID or nickname—even if a customer opens the Bill or Day view of the Data Browser, selects an individual service point, and downloads a file.

Depending on your data, setup, and configuration, the following fields may also be enabled in the header. The core data transfer standards are required to show this information.

- **Service Point**: The ID of the service point associated with the service agreement. If you export billing data for an account with only one service point, then the field will display the service point ID. If you export billing data for an account with multiple service points, the field will simply say "Multiple" and will not list all of the service point IDs.
- **Meter**: The ID of the meter device associated with the service agreement. If you export billing data for an account with only one service point and meter device, then the field will display the meter ID. If you export billing data for an account with multiple service points and devices, the field will simply say "Multiple" and will not list all of the meter IDs.

CSV File Body

- **TYPE**: The type of billing data, such as electricity, gas, or water billing.
- **START DATE**: The bill start date.
- **END DATE**: The bill end date.
- **USAGE**: The energy use value. In some cases, this may show blank values. For example, if a customer has AMI data, but selects a date range that does not have any data, then blank values will appear in the USAGE column. If a customer has sub-daily data for one fuel but only daily data for another fuel, the start and end time columns are left blank for the daily data.
- **UNITS**: The applicable unit of measure for the resource type, such as therms or kWh.
- **COST**: The cost of the bill. This is the total bill cost, not a value from the Rate Engine.
- **NOTES**: This column displays the statement, "* This <bill or read> was estimated" when applicable. Otherwise it is left blank. An estimated read is an approximate energy or resource use amount calculated based on what a customer has consumed in the past, rather than what the customer has consumed in the present billing period.

The downloaded spreadsheet may have additional columns for customers with multi-register meters and solar technology. See Solar Data and Multi-Register Meters for details.

XML File Structure

If the customer chooses to export their data in XML format, then the .zip file contains one or more XML files, one for each resource type that is applicable for the customer (gas, electricity, water, or wastewater). The XML file includes the customer's address and usage information. Contact Your Delivery Team if you need assistance understanding the structure of the XML file.

User Experience Variations

Account Nickname in CSV File Header

Depending on how the utility program is set up, an account nickname might appear below or instead of the account number in the header of the downloaded CSV file. The account nickname helps customers identify which account the data is from, which can be useful if account numbers are long or hard to remember.

Requirements: The Account data transfer feed must be established.

Customer Switches to AMI Data

If a customer is converted from a non-AMI meter to an AMI meter, there are variations from the standard user experience during the transition.

For each customer, there is an in-progress bill, or virtual bill, that is taken into account. This virtual bill is calculated by adding a defined number of days to the end date of the customer's most recent bill. Customers can download the virtual bill using the **Export usage for a bill** period drop-down list and selecting the **Since your last bill** option.

For example, a non-AMI customer may become an AMI customer on 05/10. The last bill the customer received was on 05/03. In this scenario, a virtual bill period is created from 05/03 to 06/02. Because this customer has become an AMI customer, both the additional AMI options are available after 5/10.

In a similar scenario, the customer becomes an AMI customer on 05/10, but this customer received their last bill on 04/03. This scenario creates a virtual bill period from 04/03 to 05/03. Due to this delay in bills, another virtual bill is not created. If the customer downloads their data on 05/12 and a new bill still is not available, the standard download options for AMI customers are not available to the customer.

Demand or Reactive Power

If a customer has demand or reactive power data related to their electricity use, that data is available for download.

Multiple Billing Accounts and Service Points

If a customer has multiple billing accounts, the customer can download a file for each account. However, the feature does not display a menu for switching between accounts. Customers must switch by clicking an account selector hosted on their utility's website.

The contents of the file will vary depending on what is selected in the Data Browser. Examples include:

- In the **Year** view of the Data Browser, customers can see data for a specific fuel at the service agreement level. This means that if they click Green Button to download their usage, the downloaded file contains data at the service agreement level for whichever fuel they selected.
- In the **Bill** and **Day** views of the Data Browser, customers can see data at the service point level if they have multiple service points associated with the same service agreement. This means that if they click Green Button to download their usage, the downloaded file contains data at the service point level. However, note that the service agreement ID (and not the service point ID) is what will be listed in the downloaded file.

- If a customer has two fuels, they can download data separately for their gas and electricity usage. If a customer has two or more service points of the same fuel type (for example, a customer with one for regular electric usage and one for an electric vehicle) and clicks to download data, then a zip file is generated containing a CSV or XML file for each service point.
- If a dual fuel customer is in the combined view in the Data Browser and clicks to download data, then a zip file containing two CSV or XML files is generated: one file for electricity and one file for gas.

Resources, AMI Data, and Cost Data

The table below provides the user experience variations depending on the number of fuels or resources, the availability of AMI data, and whether or not the customer has modeled rates. For example, customers with daily AMI data and rates modeled will see daily cost values. Customers with subdaily AMI data and rates modeled will see cost values broken down into the appropriate intervals, such as per hour, half hour, or quarter of an hour. Customers with these same levels of AMI data but without rates modeled cannot see the cost values, but instead can view the energy use values at the same data intervals. The table below lists these and other possible user experience variations.

Customer Scenario	User Experience
Fuels: Single. **Available Data**: Billing data. **Rates Modeled?**: No.	• Customer can choose to export their data in CSV or XML format. • Single CSV or XML file downloads. • Downloaded file contains billing data.
Fuels: Single. **Available Data**: Billing and AMI data. **Rates Modeled?**: No.	Customer can choose to export their data in CSV or XML format. **CSV** • Customer can choose to export billing data. • Customer can choose to export AMI data for a range of days. • Customer can choose to export AMI data for specific billing periods. • Single CSV file downloads and contains either billing or AMI data. **XML** • Customer can choose to export billing data. • Customer can use a more flexible date picker to export AMI data for specific days. • Single XML file downloads and contains either billing or AMI data.
Fuels: Single. **Available Data**: Billing and AMI data. **Rates Modeled?**: Yes.	Customer can choose to export their data in CSV or XML format. **CSV** • Customer can choose to export billing data. • Customer can choose to export AMI data for a range of days. • Customer can choose to export AMI data for specific billing periods. • Single CSV file downloads and contains either billing or AMI data. • CSV file with AMI reads contains cost information for each read. **XML** • Customer can choose to export billing data. • Customer can use a more flexible date picker to export AMI data for specific days. • Single XML file downloads and contains either billing or AMI data. • XML file with AMI reads contains cost information.

Customer Scenario	User Experience
Fuels: Multiple. **Available Data**: Billing data. **Rates Modeled?**: No.	Customer can choose to export their data in CSV or XML format. **CSV** • Customer can choose to export billing data. • Single .zip file downloads and contains separate CSV files for electricity, gas, water, and wastewater as applicable. • Downloaded files contain billing data. **XML** • Customer can choose to export billing data. • Single .zip file downloads and contains separate XML file for electricity, gas, water, and wastewater as applicable. • Downloaded files contain billing data.
Fuels: Multiple. **Available Data**: Billing and AMI data. **Rates Modeled?**: No.	Customer can choose to export their data in CSV or XML format. **CSV** • Customer can choose to export billing data. • Customer can choose to export AMI data for a range of days. • Customer can choose to export AMI data for specific billing periods. • Single .zip file downloads and contains separate CSV file for electricity, gas, water, and wastewater as applicable. **XML** • Customer can choose to export billing data. • Customer can use a more flexible date picker to export AMI data for specific days. • Single .zip file downloads and contains separate XML file for electricity, gas, water, and wastewater as applicable.
Fuels: Multiple. **Available Data**: Billing and AMI data. **Rates Modeled?**: Yes.	Customer can choose to export their data in CSV or XML format. **CSV** • Customer can choose to export billing data. • Customer can choose to export AMI data only for a range of days. • Customer can choose to export AMI data for specific billing periods. • Single .zip file downloads and contains separate CSV file for electricity, gas, water, and wastewater as applicable. • CSV file with AMI reads contains cost information for each read. **XML** • Customer can choose to export billing data. • Customer can use a more flexible date picker to export AMI data for specific days. • Single .zip file downloads and contains separate XML file for electricity, gas, water, and wastewater as applicable. • XML file with AMI reads contains cost information.

Solar Data and Multi-Register Meters

The downloaded spreadsheet may have additional columns for customers with multi-register meters and solar technology. This is because multi-register meters can provide more details about energy use within an interval of time, such as the amount of energy consumed from the grid, as well as the amount sent back to the grid due to solar power.

When support for multi-register meter customers is enabled, the downloaded spreadsheet displays columns for IMPORT (energy consumed from the grid) and EXPORT (energy sent back to the grid). The spreadsheet also displays columns for the start and end time of each interval if the customer has subdaily AMI data.

The image below shows an example output for the **Export All Bill Totals** option in the download menu.

TYPE	START DATE	END DATE	IMPORT	EXPORT	UNITS	COST	NOTES
Electric billing	8/27/19	9/25/19	656	884	kWh	$9.52	
Electric billing	9/25/19	10/27/19	674	902	kWh	$9.56	
Electric billing	10/27/19	11/25/19	1414	414	kWh	$131.47	
Electric billing	11/25/19	12/25/19	2062	186	kWh	$243.17	
Electric billing	12/25/19	1/25/20	2094	218	kWh	$247.72	
Electric billing	1/25/20	2/24/20	1785	448	kWh	$196.87	
Electric billing	2/24/20	3/25/20	1117	868	kWh	$85.08	
Electric billing	3/25/20	4/26/20	937	938	kWh	$60.92	
Electric billing	4/26/20	5/26/20	521	1320	kWh	$9.95	
Electric billing	5/26/20	6/24/20	388	1264	kWh	$9.96	
Electric billing	6/24/20	7/26/20	596	0	kWh	$9.97	
Electric billing	7/26/20	8/25/20	545	0	kWh	$9.96	
Electric billing	8/25/20	9/26/20	504	0	kWh	$15.24	

Requirements

- Customers must have multi-register meters.
- Account, Billing, and Premise data feeds must be established with the utility.
- Some additional configuration is required to enable the IMPORT and EXPORT columns. Contact Your Delivery Team for details.

Five-Minute Data Reads

For customers with five-minute AMI data resolution, the downloaded file may show rows for each five-minute usage read. This allows for a more granular view of a customer's subdaily usage.

Five-minute AMI data is required for this experience, and some additional configuration is needed. Contact Your Delivery Team for more information.

Solar Generation Data

For solar customers who have a meter that tracks solar generation data, the contents of the downloaded file vary slightly. *Solar generation data* shows the total amount of electricity produced by a customer's solar panels over a certain period. By contrast, *net energy data* shows the difference between the amount of energy solar panels produce and the amount a household uses.

The contents of the downloaded file depend on how the customer's service agreement with the utility is structured. There are two main supported scenarios.

Scenario 1: One Service Agreement, Two Service Points

In this scenario, customers have one service agreement with two service points: a main service point for billing, and another service point for tracking gross solar generation.

- When a customer downloads their energy information at the *bill level*, the file contains a USAGE (kWh) and PRODUCTION (kWh) column after the END DATE column. Depending on the configuration and other available data, there may also either be a NET (kWh) column, or an IMPORT (kWh) and EXPORT (kWh) column within the file.

- When a customer downloads a file at the *interval level*, two files are downloaded ---one for each service point. One file contains standard billing information, and the other contains solar generation information.
  - The file with solar generation information contains a PRODUCTION (kWh) column showing the total amount of power produced in each interval. Additionally, the Service header row contains the term "SOLAR".
  - Alternatively, depending on the configuration and other available data, the file with solar generation information contains IMPORT (kWh) and EXPORT (kWh) columns showing how much energy the customer's household received from the grid or sent back to the grid based on what their solar panels produced.

Scenario 2: Two Service Agreements, Two Service Points

In this scenario, customers have two separate service agreements: one service agreement with a service point for billing, and another service agreement with a service point for solar generation.

- When a customer downloads their energy information at the *bill level*, two files are downloaded---one for each service agreement. The main billing service agreement file contains standard billing information. The solar generation service agreement file contains a PRODUCTION (kWh) column. Additionally, the Service header row contains the term "SOLAR".
- When a customer downloads their energy information at the *interval level* (that is, for a day or a range of days), two files are downloaded---one for each service agreement's service point. One file contains the standard usage and cost information, and the other contains solar generation information.
  - The file for the solar generation service point contains a PRODUCTION (kWh) column showing the total amount of power produced in each interval. Additionally, the Service header row contains the term "SOLAR".
  - Alternatively, depending on the configuration and other available data, the solar generation file contains IMPORT (kWh) and EXPORT (kWh) columns showing how much energy the customer's household received from the grid or sent back to the grid based on what their solar panels produced.

Requirements:

The requirements for including solar generation data in the downloaded files are similar to the requirements for displaying solar generation data in the Data Browser. See Solar Generation Data Display for details.

Highest Energy Use Days

The Highest Energy Use Days calendar highlights the top five days of the month in which a customer used the most energy, helping them identify patterns in their energy use. If a given weekday has five percent or more energy use than all other days of the week, it is highlighted as the day with the most energy use. For example, Saturday can be highlighted for a customer who uses considerably more energy on Saturday than any other day of the week. A link to the Data Browser allows customers to explore their energy use in more depth.

Requirements

Utility Requirements

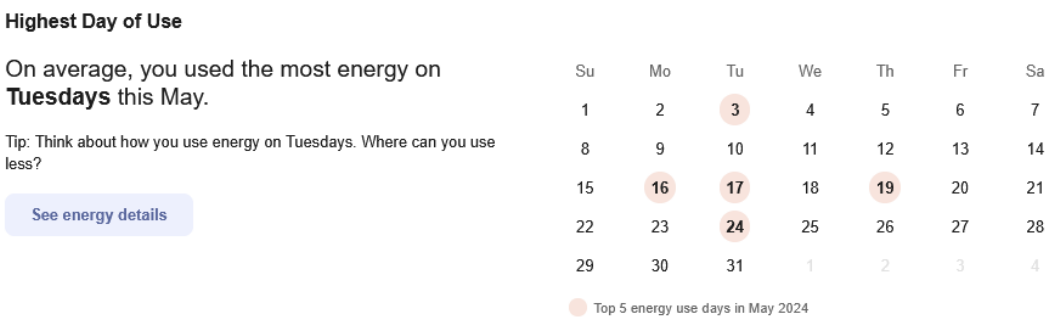
Same as listed in the product-wide requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly, bi-monthly, and quarterly.
Data Delivery Frequency	Daily, monthly, bi-monthly, and quarterly.
Data Requirements	Daily, hourly, or sub-hourly AMI reads from at least one service point.
Data History	A total of 14 days or more of data for a month is required for the most common user experience, which highlights the top five energy use days and includes an insight indicating what day of the week most of the energy use happened.
Data Coverage	Not applicable.
Supported Fuels	Gas, electricity, and dual fuel.

User Experience

Customers with AMI data can view the highest usage days of the month, revealing patterns around the days of the week in which they used the most energy.



Highest Day of Use Insight: An insight message is displayed highlighting high energy use for a particular day of the week if that day has 5% more energy use than any other day of the week. For example, Saturday can be highlighted for a customer who uses considerably more energy on Saturday than any other day of the week.

Tip: A tip message appears below the insight to prompt customers to consider how to use less energy on days when they use the most.

See Energy Details: This button redirects customers to the Data Browser for a more detailed view of their energy use patterns.

Top Energy Use Days Bubbles: Customers who click on one of the Top 5 energy use days bubbles are redirected to the Data Browser to explore their energy use patterns for those days.

Available Data: The widget is designed to present a complete picture of the month's highest usage days. The last month is shown as long as it has a full month's worth of data. In general, the previous month is shown if it has more data than the current month, but the widget shows whichever month has more data: current month versus previous month. If the previous month has less data than the current month, the widget shows the current month. Specific cases are shown below.

Condition	Behavior
The previous month has 0-6 days of data, and the current months has 15+ days of data.	Show the current month.
The previous month has 7- 14 days of data, and the current months has 15+ days of data.	Show the current month.
The previous month has 15+ days of data, and the current month has 7- 14 days of data.	Show the previous month.
The previous month has 7- 14 days of data, and the current month has 7- 14 days of data.	Show the current month.
The previous month has 15+ (but less than 30) days of data, and the current month has 15+ days of data.	Show the current month.
The previous month has 30 days of data, and the current month has 15+ days of data.	Show the previous month.

User Experience Variations

Multiple Accounts and Service Points

The widget includes all applicable service points for a given customer. There is no multi-account selector. If there are two electric AMI service points, then AMI data from those two service points is added and shown in the widget. Reads from multiple service points are merged before processing regardless of fuel type (for example, electricity and gas are aggregated).

New Customers

New customers who do not yet have a full month's of data have different experiences depending on how many days of data are available.

- **More than 14 days of data**: The top five energy use days of the month are highlighted, and an insight indicates on which day of the week most of the energy use happened.
- **7 to 14 days of data**: The top energy use day of the month is highlighted.
- **Less than 7 days of data**: A message is displayed indicating that there is not enough data to provide an energy insight.

  Note: Customers who have new accounts or newly available AMI data after the start of the month cannot view data on this widget until the following month. For example, if a new AMI meter is operational beginning on February 14, the customer is presented with a message that there is not enough data until March 1.

Usage Is Evenly Spread

If there is not a single day that, on average, has usage that is more than 5% than any other day of the week, then customers will see a message stating that their usage is evenly spread.

Home Energy Analysis

The Home Energy Analysis is a visual, interactive survey that prompts customers to answer simple questions about their home attributes and energy habits. This information is used to

provide customers with a more detailed breakdown of how they use energy. Additionally, utilities can use this information for more targeted Oracle Utilities campaigns and promotions.

There are two versions of the Home Energy Analysis. If you need help identifying which version is applicable to you, Contact Your Delivery Team.

- Home Energy Analysis v1
- Home Energy Analysis v2

Home Energy Analysis v1

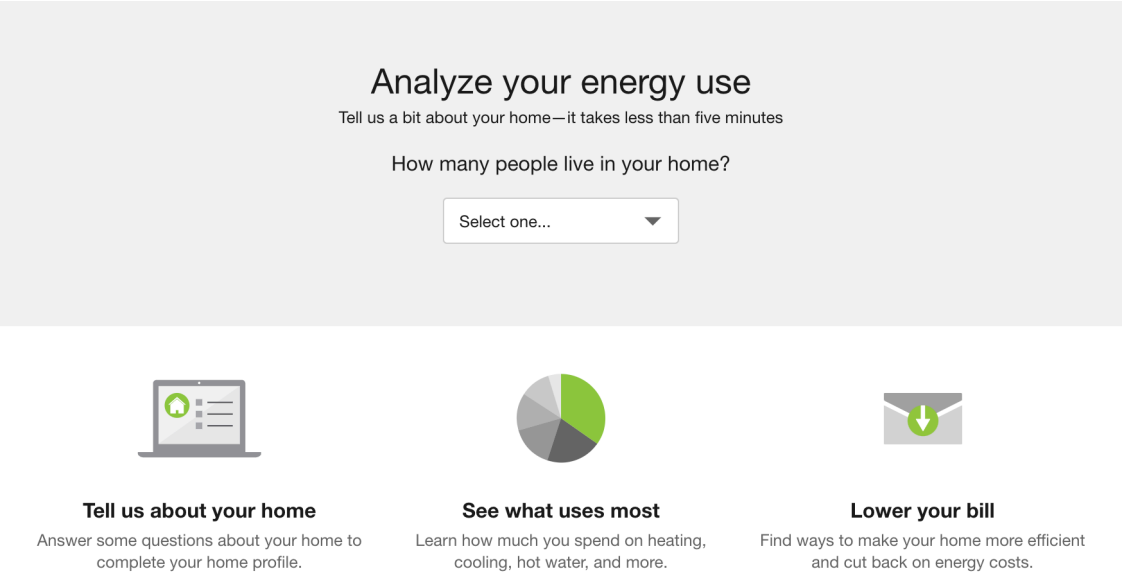
Home Energy Analysis v1 is a visual, interactive tool that prompts customers to answer simple questions about their home attributes and energy habits. A customer's responses to the questions are used to create an energy use disaggregation that estimates how much energy the customer is consuming in different categories, such as heating, cooling, lighting, and so on. The breakdown is paired with personalized tips designed to help customers lower their energy use. The more information a customer provides, the better prioritized the tips will become.

Pre-Survey

A customer can follow several different paths to the survey. The path taken depends on how the survey is promoted and the utility's setup and implementation. Below are some examples of common pathways.

- A customer follows a link in an Oracle Utilities Opower email communication (such as an Email Home Energy Report) to the survey.
- A customer signs in to the Web Portal, and then clicks a promotional banner on one of the pages or navigates directly to the survey (for example, by clicking the **Home Energy Analysis** tab).
- A customer visits their utility's website and clicks a banner promoting the survey, or signs in to their account and navigates to the survey by browsing the available links.

Survey Not Started: For customers who have not yet started the survey, the Home Energy Analysis displays information about the survey and provides the first question to begin the analysis. This messaging can include information on the estimated time it would take to complete the survey, as well as the benefits of completing the analysis. Customers who select to take the survey are directed to the full survey.



Survey Started, Not Completed: If the customer has started but not completed the survey, the pre-survey screen shows a progress bar and returns the customer to where they left off.

Survey

The survey prompts customers with individual questions about their home and their energy use. It is designed to be easy to understand and simple to complete. Customers should be able to answer all of the questions they are asked, even if their answer is to skip the question.

Note: Customers are not required to answer every question. They can skip questions and complete the survey to see an energy use breakdown and top tips based on what the survey knows about them so far. However, customers are encouraged to answer every question in order to receive the most accurate results.

- **Question Types**: Each question is broken down into a single question and answer. The default question types include a majority of single-select or multi-select radio buttons, drop-downs, checkboxes, or image checkboxes. Free text entry questions are also included. Customers should be able to answer all the questions they are asked, even if their answer is “I don’t know.”
- **Answers to Multi-Select Questions**: Some questions in the survey are multi-select questions that allow customers to choose more than one answer, such as which appliances and which electronics are in the home. If a customer does not select a particular answer option, the value for that answer option is recorded as false. For example, if a customer does not select "clothes dryer" or "stand-alone freezer" when responding to the question about which appliances are in the home, then the values for those answer options are recorded as false, and it is assumed that the customer does not have those appliances. The customer will not receive any tips, promotions, or other types of content that are only applicable to households with dryers or stand-alone freezers. If the customer later acquires one or both of those appliances, the customer can re-take the survey and update their answers, and become eligible for tips or promotions related to those appliances.
- **Free Text Entries**: There are free text entry answers, such as when indicating the size of their home. If a customer does not enter a valid number (for example, if a customer accidentally enters "10" in the square feet field) a message displays asking the user to change their entry.

- **Pre-Populated Questions**: Some questions may be pre-populated with any data that already exists for the customer. Customer data may already come from sources, such as demographic data provided by the utility (for example, data indicating whether the customer has a "single family home" or "apartment / condo"), data in the **My Account** section of the Web Portal, or previously-answered survey questions (if the customer started or completed the survey at a previous time).
- **Irrelevant Questions Skipped**: The survey will skip irrelevant questions based on answers to previous questions. For example, the survey will not ask how the customer heats their pool if they answered that they do not have a pool.
- **Questions Variations by Locale**: Certain questions and response options in the survey may vary based on a utility's locale. For example, for some countries or regions, the "Cooling" category is not applicable and therefore may be hidden from a utility's customers. Or, the question "What is the main way you heat your home?" may present different response options depending on what heat types are commonly-used in a customer's country or region.
- **Saved Questions**: Customers can click a link at the top of the survey to exit the survey at any time. Any questions the customer has answered are saved prior to exiting the survey.

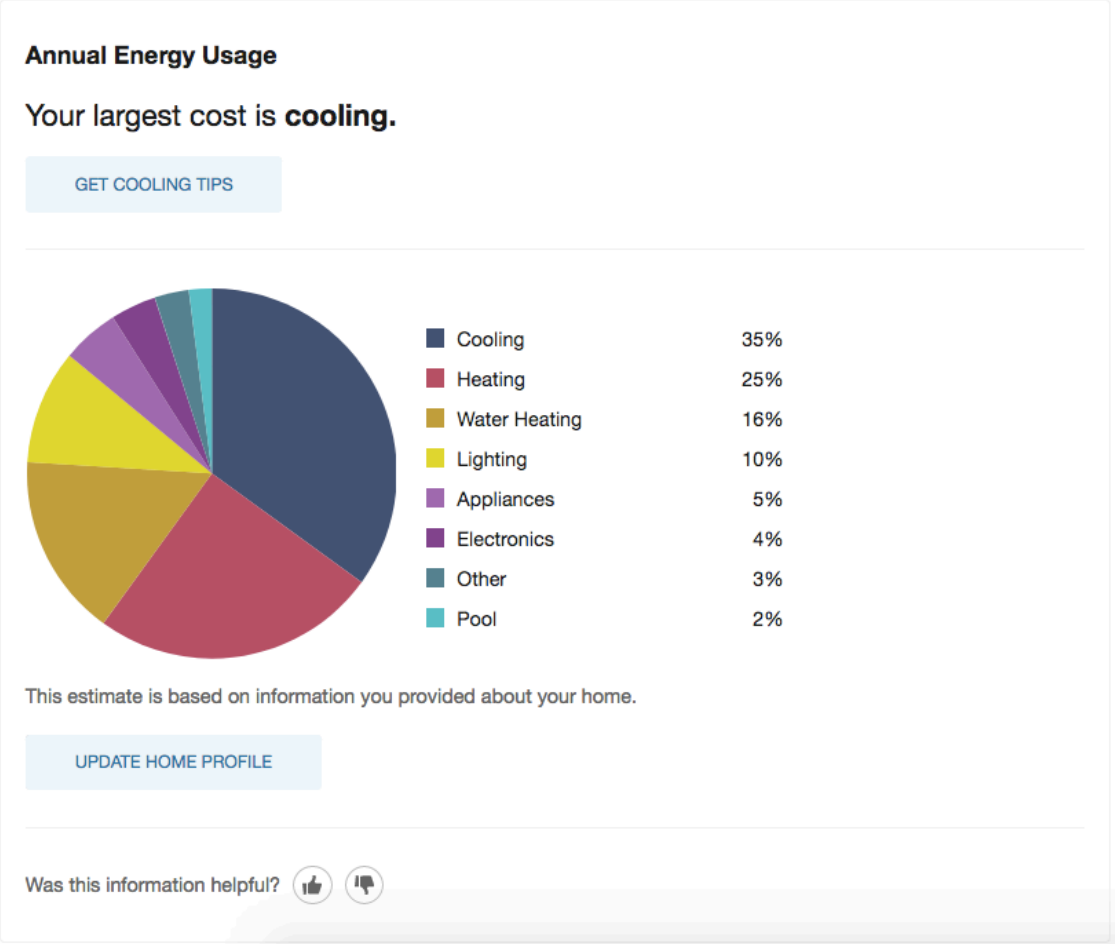
As customers answer questions, visual cues provide customers a gauge to see how quickly they are progressing through the survey.

If a customer begins the survey but does not finish it, when the customer returns to the survey they are automatically taken to the question that comes after the last question they answered. If a customer completed the survey while not logged in to their utility account, all answers are saved for their account and are available when the customer logs in to their utility account.

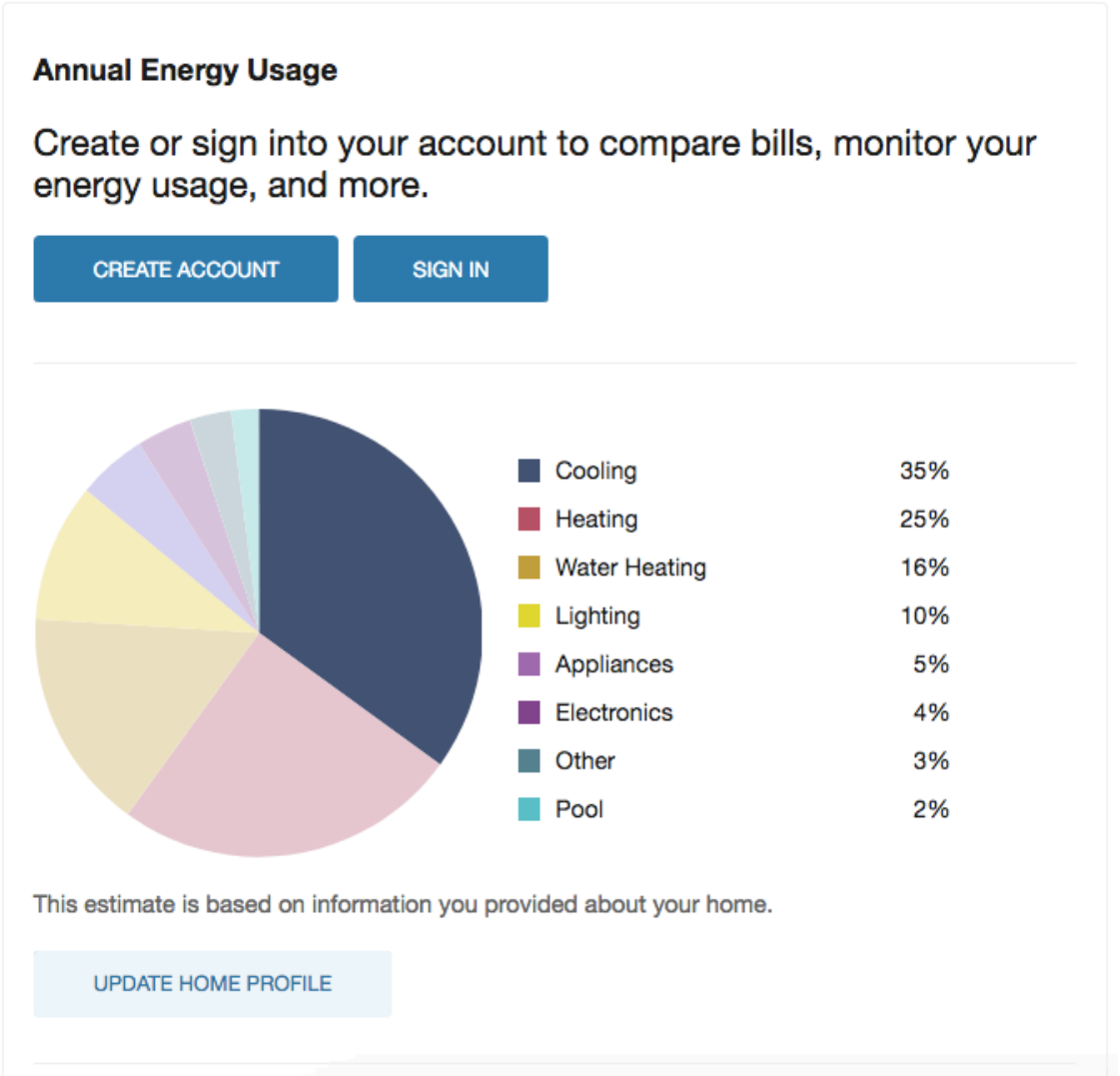
Disaggregation

After the customer answers the last question and finishes the survey, the Home Energy Analysis displays their energy use breakdown based on their responses. Customers can select each individual energy use category to see what percentage of their home’s energy use it comprises, category-specific tips, and a list of what contributes to energy use for the category. The category that has the highest energy costs is highlighted, along with a link for related tips.

Customers who have already completed the survey are taken directly to the energy use breakdown the next time that they access the Home Energy Analysis. They can use the **Update Home Profile** link at any time to view the survey again and update their answers.



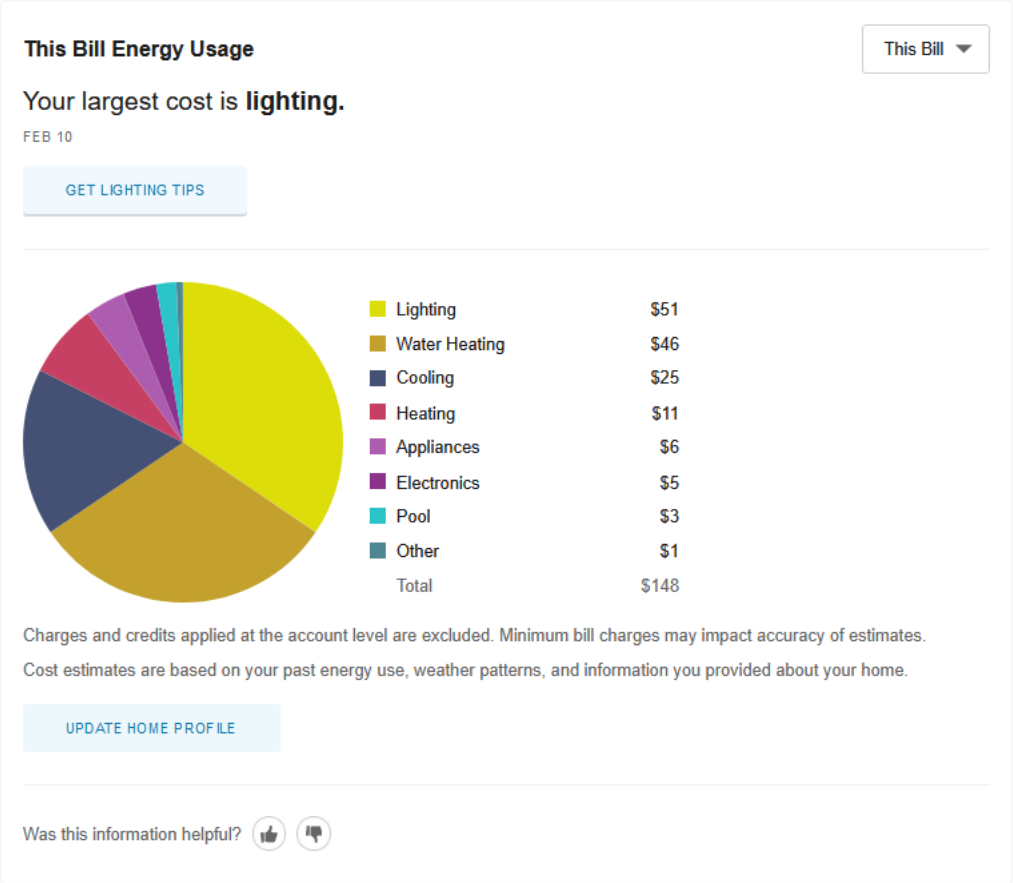
If customers complete the survey without being logged in to their utility account, the energy use breakdown includes links for the customer to create an account or sign in to their account.



A set of buttons can be shown beneath the breakdown allowing customers to provide feedback about the usefulness of the feature. See Customer Feedback for more information.

Bill-Level Disaggregation

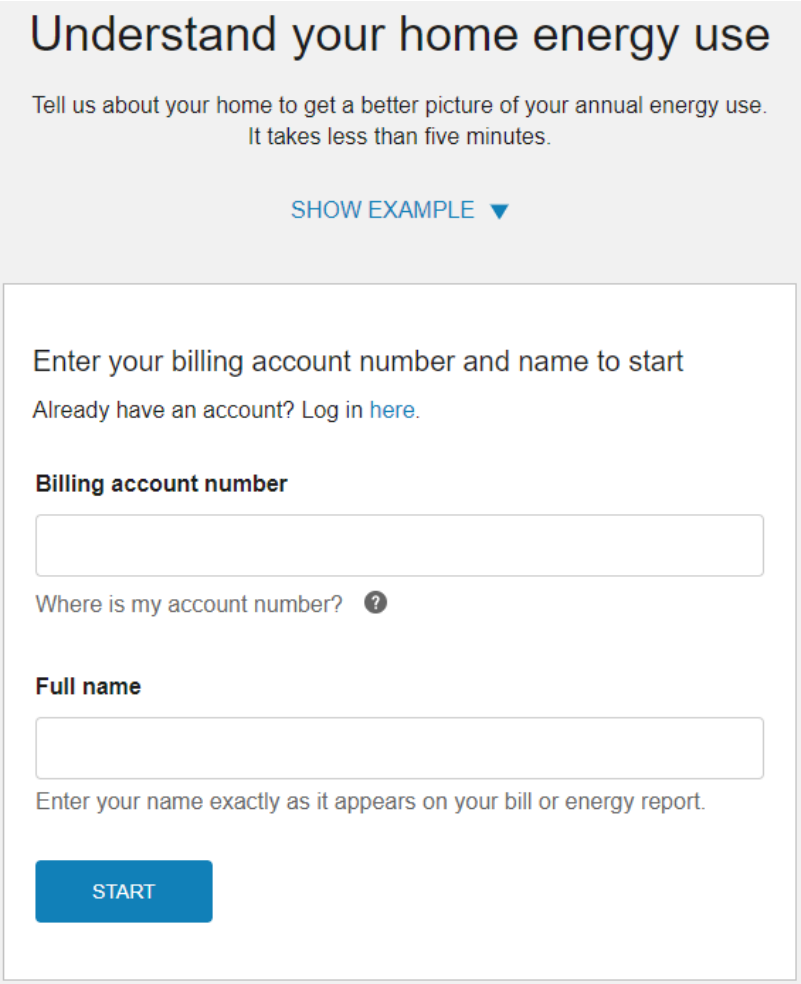
The bill-level disaggregation provides the customer with a breakdown of their energy use and costs by bill period, as opposed to an annual energy use breakdown as shown in the standard disaggregation. Customers can switch between an **Annual** and **This Bill** view. Costs are totaled for gas and electric if applicable.



If the feature is unable to deliver a bill-level disaggregation for any reason, the **This Bill** navigation is hidden, and the annual results are shown. Insufficient historical billing data is the most common reason for this fallback.

Pre-Authenticated - EasyOpen

Customers can also access the survey without logging in to their utility account. For example, customers who receive Email Home Energy Reports can follow a link from within the email to begin the survey, which includes a token to automatically identify the customer. If the customer navigates directly to the survey rather than following a link from an email communication, they are prompted to provide their billing account number and their full name as it appears on their bill.



After completing the survey, customers can view the energy use breakdown the same way that an authenticated user can. All survey responses are saved for the user account and are available to the customer when they log in to their account. Differences in the user experience include:

- Links are provided for the customer to either create an account or log in to their account.
- Only an annual breakdown with percentages can be shown. A bill-level breakdown containing more personalized cost information is disabled to protect a customer's privacy. (A customer can still view their bill-level disaggregation if they sign in to their account.)

Data Requirements and Limitations

Requirements

- At a minimum, average energy use data for households in a utility's region and responses to the survey are required. The survey then uses the customer's responses to adjust the average energy use values and yield personalized results.
- The recommended minimum is to use weather data and at least six historical bills, as this will support a bill-level disaggregation and lead to more accurate disaggregation results.
- There are other data requirements to show the bill-level disaggregation for AMI customers. Contact Your Delivery Team for more information.

Limitations

- The customer must be residential, and can be electricity-only, gas-only, or dual fuel.
- The customer may see different categories, questions, and response options in the assessment based on the utility locale.
- Customers can access and complete the survey without logging in to their account. Any answers to the survey are saved for the customer's account. For subsequent attempts, customers must then be logged in to their utility account to view the Home Energy Analysis results for their account. This functionality is available for standalone deployments. To implement this experience in embedded deployments, refer to the Oracle Utilities Opower Digital Self Service - Energy Management Embeddable Widgets Integration Guide .
- The Home Energy Analysis does not allow customers to switch between accounts.

Home Energy Analysis v2

Home Energy Analysis v2 is a visual, interactive survey tool that prompts customers to answer simple questions about their home and energy habits. A customer's responses to the questions are used to create an energy use disaggregation of a customer's top three categories of energy use. The disaggregation is paired with personalized tips related to each top category, as well as a more granular breakdown of additional energy use categories. If sufficient AMI data is available, the feature can also include insights about a customer's individual appliances as well as their energy use for devices that are always on.

Requirements

Utility Requirements

Category	Description
Required Cloud Service	Same as listed in the product-wide requirements. The base requirement is to purchase the Digital Self Service - Energy Management cloud service. For any AMI enhancements in the appear in the product, the Digital Self Service - Energy Management AMI cloud service must also be purchased.
Scale	No applicable scale requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly.
Data Delivery Frequency	Monthly.

Category	Description
Data Requirements	**Minimum**: Average energy use data for households in a utility's region. This data is typically obtained from public data sources. The feature then uses the customer's responses to the survey to adjust the average energy use values and yield personalized results. This requirement applies to both the authenticated as well as pre-authenticated user experiences of the feature. **Recommended**: The recommended minimum is to use weather data and at least six historical bills, as this will provide more accurate results for annual as well as bill-level disaggregations. Without this data, only an annual disaggregation can be made available. **AMI Requirements**: There are additional AMI data requirements to show advanced insights such as appliance-level insights or insights about a customer's always-on devices. See always-on usage and appliance-level insights below for details, or Contact Your Delivery Team for more information.
Data History	Varies depending on the utility's setup and configuration. At a minimum, the Home Energy Analysis requires utility-wide disaggregation percentages obtained from a public data source and approved by the utility. The percentages are then adjusted and personalized for customers based on their responses to the survey. If AMI data is used, then additional data history requirements may apply.
Data Coverage	Varies depending on the utility's setup and configuration.
Supported Fuels	Electricity, gas, and dual fuel.

Limitations

- **Non-Residential Customers**: The Home Energy Analysis was built and optimized for residential customers. Non-residential customers such as commercial, industrial, and small and medium business customers are not currently supported.
- **Customers with Multiple Accounts**: To view the Home Energy Analysis for a particular account, customers must log in to the account through their utility's website, which provides access to the Web Portal through single sign-on. The Home Energy Analysis does not provide customers an option to switch between accounts.
- **Survey Updates**: If a utility updates the content of the survey by adding a new question, customers who have previously taken the survey are required to take the survey again from the start. The answers to questions they previously answered are pre-populated when the customer completes the survey again. The customer can click **Confirm** instead of re-answering the question.
- **Deep Linking**: Utilities are encouraged to support deep linking capabilities. Deep linking allows an unauthenticated user to click a link to the Home Energy Analysis from another part of the utility web site, log in with their credentials, and automatically continue to the intended page instead of being redirected to a landing page, such as the utility's home page.
- **Feature Eligibility**: Some customers may not be eligible for the Home Energy Analysis if their disaggregation has any of the following characteristics:
- – There is only one category with a non-zero energy use value.
  – There is one category that is greater than 90% of the customer's total energy use.

  - The survey returns negligible energy use for all categories. ("Negligible" in this case means that based on the survey's back-end logic, no energy use is predicted to come from utility-supplied fuels or resources.)
  - All service points have zero or negative costs or energy use.
- **Customers with Electric Vehicles or Heat Pumps**: Custom survey questions about electric vehicles (EVs) or heat pumps could potentially be added to the Home Energy Analysis survey, but responses to these questions will not impact a customer's neighbor selection. See Neighbor Comparison - Limitations for details.

User Experience

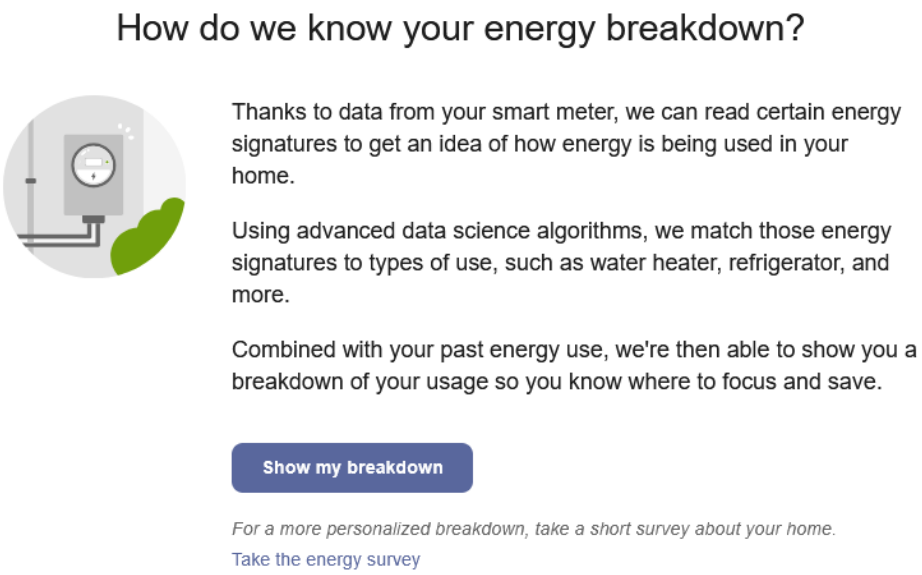
This section describes the user experience for dual fuel utility customers who are logged into their account and have not yet taken the Home Energy Analysis survey. Additionally, it describes customers who have enough data to see a bill-level and annual disaggregation of their energy use before completing the survey.

Pre-Survey

A customer can follow several different paths to the survey. The path taken depends on how the survey is promoted and configured. Below are some examples of common pathways.

- A customer follows a link in an Oracle Utilities Opower email communication (such as an Email Home Energy Report) to the survey.
- A customer signs in to the Web Portal, and then clicks a promotional banner on one of the pages or navigates directly to the survey (for example, by clicking the **Home Energy Analysis** tab).
- A customer visits their utility's website and clicks a banner promoting the survey, or signs in to their account and navigates to the survey by browsing the available links.

Onboarding Screen: Depending on the utility's configuration, an introductory onboarding screen can be presented to explain the energy breakdown, and to allow customers to view a disaggregation of their energy use before completing the survey. This screen lets customers bypass the effort it takes to answer questions and see results.

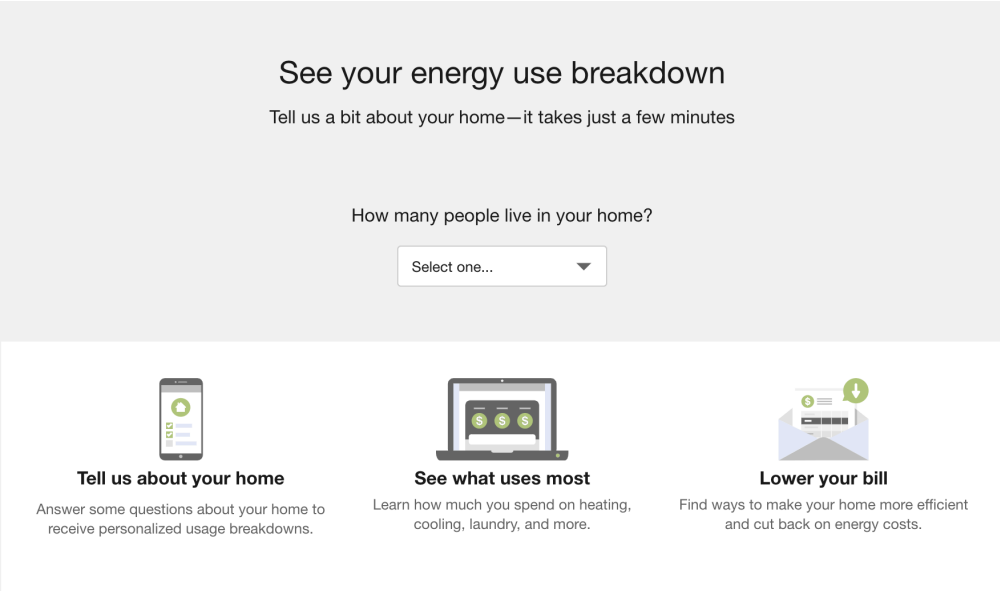


If the onboarding screen is enabled, it is only displayed once for customers who have either not started the survey or who have started but not completed it. For all subsequent return visits to the Home Energy Analysis, a customer will be presented with a disaggregation of their energy use.

> **Note**
>
> There may be cases when a utility launches the survey but decides not to enable the onboarding screen until a later time. If any customers complete the survey before the onboarding screen is enabled, they will not see the onboarding screen at a later time even though it is enabled.

The messaging in the onboarding screen varies slightly depending on whether the customer has AMI data or not. For customers with AMI data, the message will include language about a smart meter. For customers with non-AMI data, the message will include language about energy use patterns.

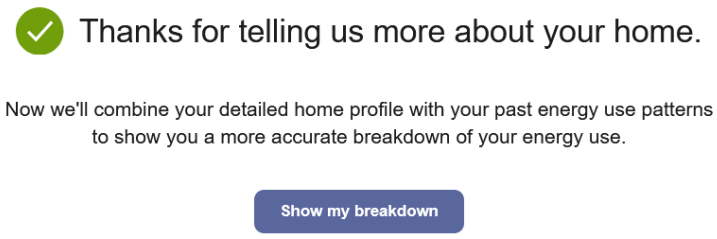
Survey Not Started: For customers who have not yet started the survey, the Home Energy Analysis displays information about the survey and provides the first question to begin the analysis. This messaging can include information on the estimated time it would take to complete the survey, as well as the benefits of completing the analysis. Customers who select to take the survey are directed to the full survey.



Survey Started, Not Completed: If the customer has started but not completed the survey, the pre-survey screen shows a progress bar and returns the customer to where they left.

Survey

The survey prompts customers with individual questions about their home and energy use. The user experience with the survey is the same as that described in Home Energy Analysis v1, except that when the survey is finished, an additional screen appears to thank the customer for providing answers. The messaging of this final screen varies slightly depending on whether the customer has AMI data or not. For customers with AMI data, the message includes language about a smart meter. For customers with non-AMI data, the message includes language about energy use patterns.



Disaggregation

After customers complete the survey, they are shown a disaggregation (also called a "breakdown") that displays their energy use divided into top three categories. The top three categories are followed by personalized tips and an additional list of end-use categories. Customers can take different paths to the disaggregation:

- If the onboarding screen is used, customers can click to see their disaggregation without taking the survey. The onboarding screen is only displayed once. This means that the next

time a customer clicks to see the disaggregation, they are taken directly to it and will not be shown the onboarding screen.

- If no onboarding screen is used, customers must complete the survey before seeing the disaggregation. Customers must complete all of the required questions before the disaggregation can be displayed. Required questions cannot be skipped.

Your energy use breakdown This bill

Your top energy costs came from water heating, EV charging, and cooling.

MAY 06 - JUN 07

Top energy costs **$100** of $148

Water heating	EV charging	Cooling
$45	$30	$25

Tips for reducing energy use

More energy costs (6)

$48 of $148

Select a category to see relevant tips.

Lighting	$20
Heating	$10
Appliance use	$5
Pool energy use	$5
Electronics	$4
Other energy use	$4

Your always-on use

About 12% of your electricity costs came from always-on energy use—the small amount of power appliances and electronics draw simply because they are plugged in. Learn more.

How do we determine your energy breakdown?

Cost breakdowns are based on your past energy use, smart meter data, and information you provided about your home. Charges and credits applied at the account level are excluded. Minimum bill charges may impact accuracy.

Title: The title of the widget reflects its focus on giving customers a more detailed view into how they consume energy. If there is not enough historical data for a customer to choose between an annual or bill-level breakdown, then the title changes to specify that it is an annual breakdown.

Time Period Selector: A selector is displayed at the top to let users choose between a breakdown for This Bill or Annual. If the annual time period is selected, percentage values are displayed in the breakdown. If the bill time period is selected, dollar amounts are displayed in the breakdown.

If there is not enough weather data and historical billing data to show a breakdown by bill period, then the time period selector is hidden, and the feature shows an annual breakdown only. (See the Customer Requirements above for more information about what is required to enable both annual and bill-level disaggregations.)

Insight Statement: An insight statement appears above the breakdown explaining where the customer used the most money or energy. The language of the insight varies slightly depending on different data states, such as whether the customer has completed the survey. It also changes slightly if there are only two top categories or if the insight focuses on usage instead of cost information.

State	Example Insight Statement
Survey completed	"Your top energy costs came from ..."
Survey not started or completed	"It looks like your top energy costs came from ..."

Date Range: A date range is displayed at the top of the breakdown to communicate that the breakdown applies to a specific bill period. This information is hidden if the Annual time period is selected from the time period selector.

Cost or Usage Summary: A cost or percentage is displayed at the top of the breakdown to show how much of the customer's total cost or usage can be attributed to their top three categories. For example, when a bill period breakdown is shown, the summary might show "$123 of $159." If an annual view is shown, the summary might show "75%." These values are meant to reinforce the idea that the top three end uses make up a large part of the customer's overall usage or bill, not the full amount.

Note: The annual view can only show estimated annual usage percentages for each category rather than estimated annual costs. This is because a customer's bill periods do not align exactly with a 12-month period, and so the feature is unable to retrieve and calculate costs for that time period.

Top Energy Costs or Uses: The focus of the feature is a breakdown showing up to three top end-use categories. See End-Use Categories below for a list of all available categories. Each category includes the following elements:

- **Category Name**: Each category includes a name, such as "Cooling," "Water Heating," or "Electronics."
- **Category Cost**: Each category shows a cost rounded to the nearest whole dollar. The costs represent the portions of a customer's energy use in each category, and are not meant to add up to the customer's total bill. The breakdown can show percentages if cost information is not available. It can also show two categories instead of three. See User Experience Variations below for details.
- **Category Icon**: Each category is paired with a graphic so that customers have a visual reference and can more quickly understand the meaning of the category.

- **Category Tooltip**: A tooltip is displayed when a customer hovers their pointer over a category. The tooltip prompts the customer to view a personalized tip related to that category. Selecting the tooltip takes the customer to that tip lower on the screen.
- **Category Order**: The categories are shown from left to right, in the order of most expensive to least expensive. If the cost of two or more categories is the same, there is system logic to determine which ones are displayed, and in what order.

Personalized Tips: Beneath the top three categories is a set of tips related to each category. Each tip message includes:

- An illustration that allows customers to quickly recognize the concept or purpose of a tip.
- A short title that summarizes the purpose of the tip.
- A brief description of the tip and actions the customer can take.
- The estimated annual savings if the customer completes the tip.
- If applicable, a message about a rebate offer from the utility and a link to where the customer can learn more about the rebate. This is hidden if there is no applicable rebate.
- A link to more detailed information about the tip. See Ways to Save - Tip Details.
- A link to a tip guide containing tips about the top end-use category. See Ways to Save - Tip Guides.

More Energy Costs or Uses: Beneath the tips is a breakdown of the rest of the customer's end uses. The section begins with a cost or usage insight stating how much of the customer's overall usage or bill is attributable to the additional categories. The insight is followed by the list of end-use categories.

- **Category Order**: The categories are ordered from highest to lowest. The exception is the 'Other' category, which always appears at the bottom. If two or more categories have the same value, there is system logic to determine the order.
- **Category Links**: Users can hover each item in the list for a link to a tip guide related to that category. Upon hovering, the title of an item dynamically expands to include the word "tips." For example, when hovering over the Heating category, the title expands to say "Heating tips." When clicked, the link points to a tip guide called "Heating tips to help you save."

For the full list of categories that could be displayed, see End-Use Categories below.

Breakdown Explanation: Beneath the breakdown is a link to more details about how the customer's breakdown is determined. This is meant to educate customers about the method behind their breakdown. The explanation may prompt the customer to update their answers to the survey.

Feedback Prompt: A set of buttons can be shown beneath the breakdown allowing customers to provide feedback about the usefulness of the feature. See Customer Feedback for more information.

End-Use Categories

After customers complete their survey, they are shown a disaggregation (also called a "breakdown") of their total energy use divided into specific end-use categories. The table below lists the categories available and their supported fuel types.

If a customer does not have the required fuel type for a category, then the customer will not see that category. For example, a gas-only customer would not see the Cooling category since that category is only available for the electricity fuel. There are also cases in which additional

rules are used to show or hide a category. If you need more insight about these rules, Contact Your Delivery Team.

End-Use Category	Supported Fuels
Heating: The impact of how a home is heated.	Gas, Electricity
Cooling: The impact of how a home is cooled.	Electricity
Appliances: The impact of common household items such as refrigerators and ovens. Depending on your utility's setup, configuration, and available data, this category may be the sum of several other categories (such as 'Dishwasher' and 'Laundry'). It will not be shown if an appliance-level disaggregation is shown.	Electricity
Refrigerator: The impact of food storage appliances.	Electricity
Oven: The impact of oven use.	Electricity
Dishwasher: The impact of dishwasher use.	Electricity
Laundry: The combined impact of a washing and drying machine. Depending on your utility's setup, configuration, and available data, this category may be the sum of several other categories (such as 'Clothes Washer' and 'Dryer').	Electricity
Clothes Washer: The impact of a clothes washing machine. This category is not shown if the 'Laundry' category is shown.	Electricity
Dryer: The impact of a clothes drying machine. This category is not shown if the 'Laundry' category is shown.	Electricity
Electric Vehicle: The impact of owning and charging an electric vehicle in one's home. Depending on your utility's setup, configuration, and available data, you may only be able to see a breakdown for Level 2-charged electric vehicles.	Electricity
Lighting: The impact of lighting. This category accounts for devices like energy efficient bulbs as well as indoor and outdoor lights.	Electricity
Water Heating: The impact of a water heating device such as a heat pump or conventional storage tank. Depending on your utility's setup, configuration, and available data, this category may show up as 'Electric Water Heating'.	Gas, Electricity
Electronics: The impact of electronics such as TVs, computers, and DVD players.	Electricity
Pool: The impact of owning and maintaining a pool.	Gas, Electricity

End-Use Category	Supported Fuels
Other: The impact of all other devices in a home that do not fall into a clear category. This may include small kitchen appliances, humidifiers, or medical devices. **Note**: 'Other' is never shown as a top end-use category since it contains uncommon devices that are hard to categorize. Even if the impact of the category is high (for example, a customer may use a medical device that consumes a lot of electricity), it will not be shown in top end-use displays.	Electricity

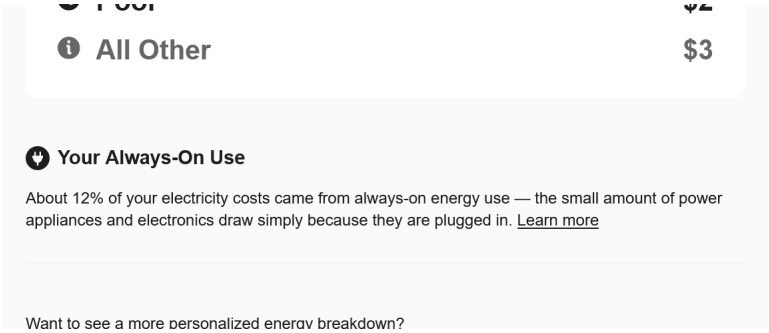
Smart Dashboard (HEA Light)

The Smart Dashboard or other utility-hosted web page can include a separate version of the user experience called Home Energy Analysis (HEA) Light. Customers viewing HEA Light are either encouraged to take the survey if they have not started (or not completed) the survey, or they are shown disaggregation results if they have completed the survey. Customers that select to take or continue the survey are directed to the full survey experience, which is hosted on a separate page. Depending on the utility's configuration, customers can also be shown the disaggregation before completing the survey.

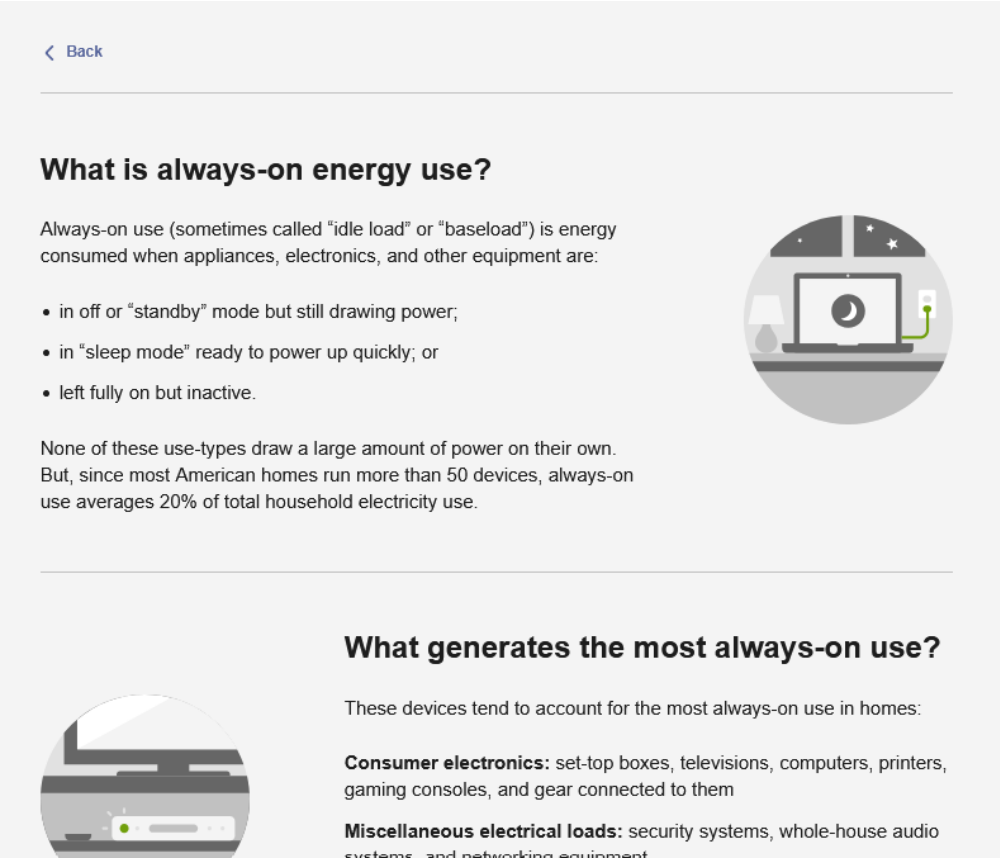
User Experience Variations

Always-On Insight

If sufficient AMI data is available, an insight about "always-on" usage can display below the breakdown. The insight specifies the customer's estimated energy use in a bill period for devices that do not get unplugged, such as game consoles and security systems.



Within the insight is a **Learn More** link. When this link is selected, the widget refreshes and loads a detailed explanation about always-on devices. (Clicking the link does not open a web page with a new URL.)

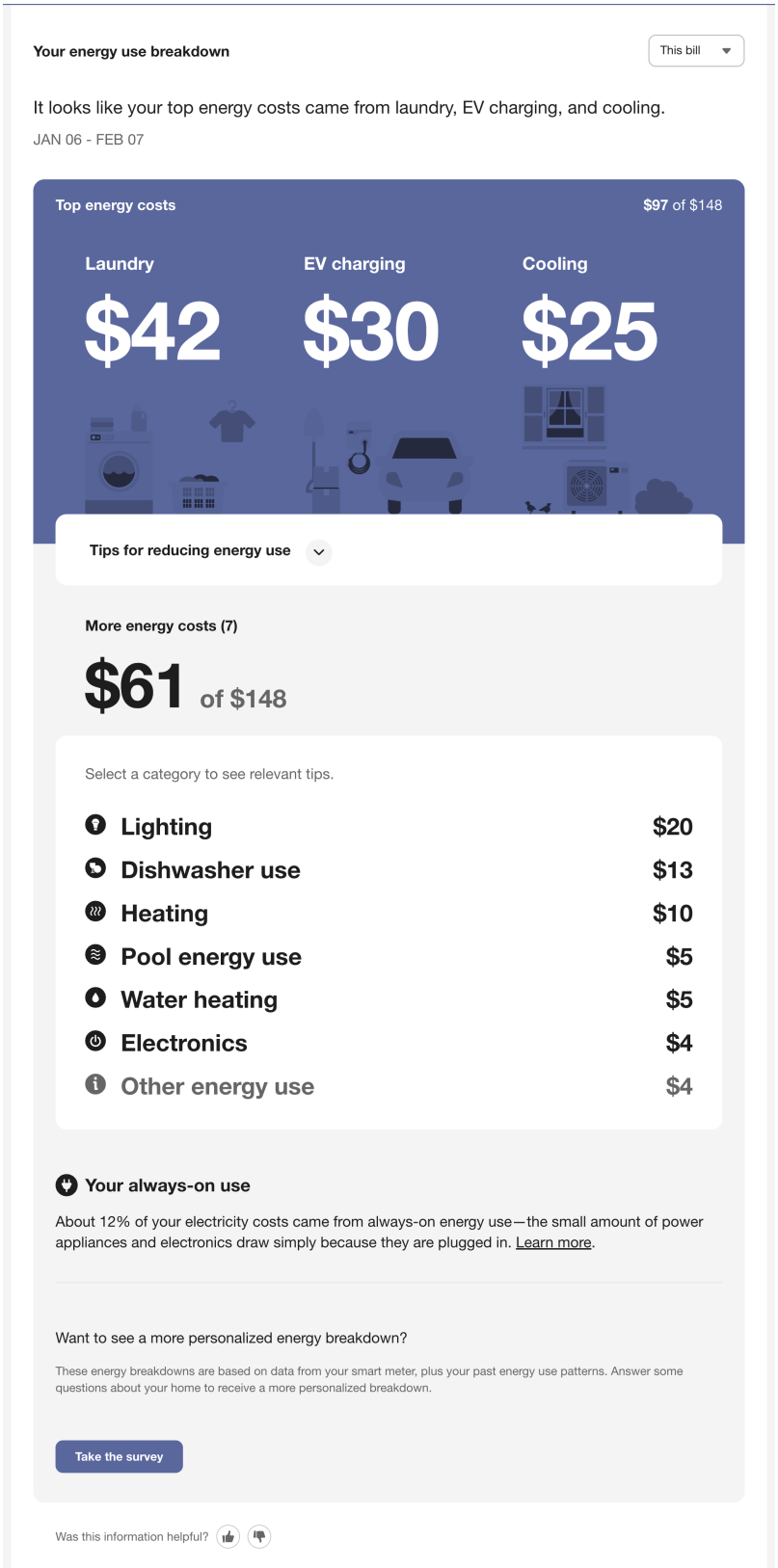


Requirements

One historical bill and hourly AMI data for the bill period are required.

Appliance-Level Insights

If sufficient data is available and the proper configuration has been completed, the usage breakdown can display specific appliances as top end-use categories rather than a general "Appliances" category. For example, the breakdown can include categories such as laundry, dishwasher, refrigerator, or oven.



Requirements

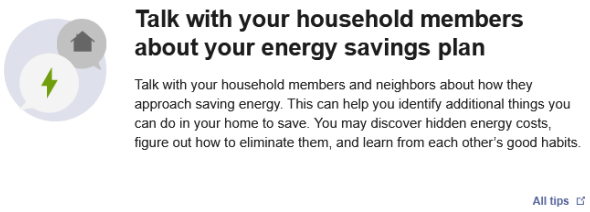
Appliance-level insights require about one year's worth of AMI data at hourly or sub-hourly resolutions.

Embedded Experience

The Home Energy Analysis consists of multiple widgets that can be embedded within a utility's web pages. An overview of the widgets and the embedding guidelines is below. For details on how to embed widgets, see the Embeddable Widgets Integration Guide.

Fallback Tip

There may be cases where a top end-use category tip is not available. For example, a customer may have marked all tips related to a specific end-use category as "Done" or "Won't Do." In these cases, a generic fallback tip is shown, along with a link to a list of all available tips.



Gas-Only Customers

Gas-only customers can be part of gas-only utilities or dual-fuel utilities. The user experience can change for gas-only customers in the following ways:

Survey: The survey is modified to hide questions and results that are not applicable to gas-only energy use. For example, questions related to cooling, lighting, electronics, and electric vehicles would be hidden.

Disaggregation: The disaggregation can only show categories for which gas is a supported fuel type. For example, categories for cooling and appliances would be hidden. See End-Use Categories for a complete list of the categories available for each fuel type.

Higher Percentage for Appliances: Gas-only customers for dual-fuel utilities may see a percentage of energy use for their appliances that is higher than the *actual* energy use for those appliances. This is because the same baseline disaggregation percentages are being applied for *all* customers of the utility—customers who are gas, electric, and dual fuel. The baseline disaggregation percentages would therefore more closely align with dual fuel or electricity-only customers.

Two Categories: Gas-only customers may complete the Home Energy Analysis survey but still not have enough information to determine their energy use in three top categories. In such cases, two top categories can still be shown. See Two Categories below for details.

Always-On Insight: The always-on insight is not available for the gas fuel type, and so it will not display for gas-only customers.

Locale

This feature can display locale-appropriate language and units of measure. A few examples include:

- Some countries might use "flat" instead of "apartment," while others might use number of bedrooms as a measure of living space instead of square feet.

- Some survey questions might be modified or hidden to be more relevant to a utility or locale. For example, in countries where it is hot all year round, the question about heating your home might be hidden.
- Some survey answers might be unique to a utility's locale. For example, for utilities outside of the US, certain answers might specify different heating and cooling technologies that are common to that utility's country.

Mobile Experience

The experience of the Home Energy Analysis for smaller mobile screen sizes consists of the same components as the desktop experience. However, the layout changes to fit the smaller screen size by stacking the components vertically.

> **Note**
>
> In Home Energy Analysis v2, the mobile breakpoint is based on the container size as opposed to the whole browser window. This means that the tablet view may be displayed in the desktop view if the widget is embedded within a container that has a small width. This could happen, for example, if the survey is embedded on a utility website in which the container size is smaller than the minimum width of 1025px needed to display the desktop version of the widget.

Multiple Accounts and Service Points

If a customer has multiple accounts, the customer can view the Home Energy Analysis survey for a different account by clicking an account selector hosted on the utility website. All embedded widgets are then reloaded with data for the specified account.

If customers have multiple service points associated with their account (for example, one for electricity and one for gas), then the survey and the disaggregation behave as expected. However, note that the user interface does not display a menu for switching between individual service points.

If a customer has two or more service points of the same fuel type (for example, if there is one service point for regular electric usage and another for an electric vehicle), there are several limitations. The survey can be completed, but the disaggregation is limited to an annual disaggregation based on average energy use data for households in a utility's region. A bill-level disaggregation cannot be shown, and more advanced insights and personalization based on AMI data are not supported. Contact Your Delivery Team if you have any questions.

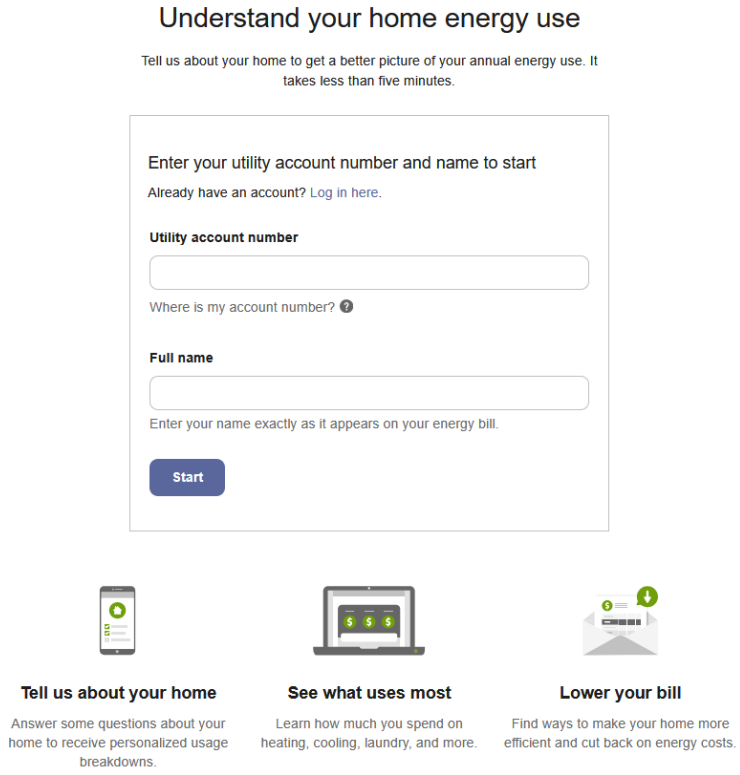
Percentage-Based Breakdown

Cost values are shown in the breakdown by default. However, if cost information cannot be calculated for the top three categories, then the feature falls back to a percentage-based personalized breakdown. In this case, the insight shows percentage values, and the insight statement emphasizes where the customer's top energy *uses* came from. The percentages represent the major portions of a customer's entire energy use, and are not meant to add up to 100%.

Pre-Authenticated User Experience

In some cases, customers can access the survey without logging in to their utility account. For example, customers who receive Email Home Energy Reports can follow a link from within the email to begin the survey, which includes a token to automatically identify the customer. If the

customer navigates directly to the survey rather than following a link from an email communication, they are prompted to provide their billing account number and their full name as it appears on their bill.



After completing the survey, customers can view the energy use breakdown the same way that an authenticated user can. All survey responses are saved for the user account and are available to the customer when they log in to their account. Differences in the user experience include:

- Links are provided for the customer to create an account or log in to their account.
- Only an annual breakdown with percentages can be shown. A bill-level breakdown containing more personalized cost information is disabled to protect a customer's privacy. (A customer can still view their bill-level disaggregation if they sign in to their account.)
- Personalized tips for the top end uses cannot be shown.
- Links to tip guides for the **More energy uses** section cannot be shown.
- The background color of the top three categories section is 20% lighter than the primary color. This is meant to convey that the pre-authenticated experience is not the complete experience.
- If a user has previously started but not completed the survey and clicks a link to it from an email communication or the web, they are taken directly to where they left off in the survey.
- If a user has completed the survey already and clicks a link to it from an email communication or from the web, they are taken directly to the disaggregation.

There are a few known limitations in the pre-authenticated experience. The limitations include:

- Customers who follow a link from an email to the HEA is provided with a token that only authenticates the customer for the HEA. If a customer tries to navigate to another widget, they will need to first sign in (or create an account). The ability to navigate to another widget will also depend on what navigation is shown on the pre-authenticated HEA pages.

It is possible that there will not be any navigation to another widget available if the HEA has been embedded on a utility-hosted webpage.

- A **Create Account** button is displayed in the pre-authenticated disaggregation even if a customer has already created an account. The button cannot be hidden for customers who already have an account. This is because the token that identifies a customer does not include enough information to determine whether or not the customer has already created an account.

Solar Customers

The Home Energy Analysis is supported for solar customers. For utilities that have a lower amount of data (for example, utilities that do not have sufficient customer usage or weather data), the disaggregation is based on the coefficients that adjust based on known customer attributes that are mainly provided when a customer completes the Home Energy Analysis survey.

For utilities that have more advanced data capabilities (for example, utilities that have enabled Oracle Utilities Opower appliance detection capabilities), there are fallback strategies in place. These fallback strategies are necessary until the underlying data models for appliance detection have been trained on solar households. In this case, utilities should Contact Your Delivery Team to determine the best method for identifying solar customers and adjusting the disaggregation for them.

Solar Customers with Net Metering

For AMI customers with solar power and net metering, there are several differences in the Home Energy Analysis when compared with non-solar customers.

- The breakdown shows top energy uses only. Top energy costs are not shown because a net metered customer's electric bill is based on *net* electricity drawn from the grid—not the home's *total* energy use. If solar panels supply most of the home's energy, a customer might use a lot of electricity, but only be billed for a small amount received from the grid. This means that cost information wouldn't match directly with how electricity was used inside the home.
- The explainer below the breakdown mentions that all of the customer's energy uses are accounted for regardless of whether their energy came from solar panels or the grid.

For more information about how energy disaggregation is estimated for solar customers, see Solar Generation Based on Net Usage.

Requirements:

- Subdaily AMI net usage data is required.
- Customers must be identified as having solar power. There are several ways to do this using Oracle Utilities Opower data transfer standards or a data model science model. Your Delivery Team will work with you to choose the best method.
- The appropriate energy disaggregation model must be set up and configured. Contact your Delivery Team for more information.

Two Categories

If customers complete the Home Energy Analysis survey but there is still not enough information to determine their energy use in three top categories, then the top two categories can still be shown. This experience is only the case for gas customers, since the number of end-use categories that can be displayed for the gas fuel type is much shorter than for

electricity customers. See End-Use Categories above for a complete list of the categories available for each fuel type.

If there is only data for one category or less, an error message is displayed.

Calculations

Bill Period Cost Calculation

After customers complete the Home Energy Analysis survey, they are shown a disaggregation that displays their energy use divided into three top categories, followed by personalized tips and an additional list of end-use categories. If sufficient data is available, customers can see how much money each end-use category costs for a given bill period.

The first step in this calculation is for the feature to determine the percentage of energy consumption for each end-use category. For example, based on the customer's answers in the survey, the feature may determine that the Electric Vehicle category accounts for 15% of a customer's total usage.

Next, the Home Energy Analysis multiplies the percentage of each category by the total usage charge for the bill period. Continuing with the example above, let's say that the total usage charge for the customer's bill period is $300. The cost calculation would be:

*Electric vehicle usage (15%) * total usage charge ($300) = $45*

This means that the Home Energy Analysis disaggregation would show that the customer's Electric Vehicle usage accounts for $45 of the total $300 in the last bill period.

Disaggregation / Energy Use Breakdown

To calculate the energy use disaggregation (also called an "energy use breakdown") for a customer, the Home Energy Analysis begins by obtaining the average end-use percentages of all utility customers in a utility's service territory. These percentages are obtained from a public source and are aggregated to serve as baseline values; they are not personalized to each individual customer. These average, baseline values represent the typical energy use of a home in a utility's service territory. For many utilities in the U.S., data is available for the following energy use categories: Space Heating, Cooling, Hot Water, Appliances, Lighting, Electronics & Other, and Pool.

The Home Energy Analysis calculation then uses each customer’s responses to the survey to adjust the baseline values and yield personalized energy use percentages. Each answer option is associated with a multiplier, which represents whether the customer uses more, less, or the same amount of energy as the average household in a given energy use category, based on that particular response.

For example, the question “Do you turn off lights when nobody is in the room?” has the following response options: Always, Sometimes, and Never. “Always” has a multiplier of less than 1, since that customer is likely to spend less electricity on lighting than a customer who never turns off the lights. “Sometimes” has a multiplier of 1, since it was determined to be the average behavior, and “Never” has a multiplier greater than 1.

Recalculations: The disaggregation calculations are run dynamically each time the user accesses their energy breakdown.

Solar Generation Based on Net Usage

Utility customers with solar panels typically have *net usage data*: the difference between their total home energy consumption and the amount of solar energy they generate (Net Usage =

Consumption – Generation). However, most disaggregation models for estimated appliance-level energy use are trained on total consumption data, not net usage data, making them inaccurate for solar customers.

To address this, Oracle Utilities Opower uses an AI model to estimate solar generation based on net usage data. At a high level, the steps in the estimation process include:

1. Start with the solar customer's net usage data for the bill period.
2. Estimate how much energy was generated by the customer's solar panels. This is done by using a deep learning model to analyze the customer's net usage data and predict a solar generation amount.
3. Add the estimated solar generation amount back to the customer's net usage amount. This provides an estimated amount of total home energy consumption.
4. Run the total estimated consumption through the Oracle Utilities Opower energy use disaggregation model, resulting in a breakdown of categories where energy was used the most.

For more information, Contact Your Delivery Team.

Home Energy Analysis Light

The Home Energy Analysis (HEA) Light widget encourages customers to complete the HEA survey if they have not taken it already, and displays an energy use disaggregation for customers who have completed the survey. The widget is designed to be included in the Smart Dashboard or embedded on other utility-hosted web pages to promote the survey and lead customers to the full Home Energy Analysis experience.

There are two versions of Home Energy Analysis Light. If you need help identifying which version is applicable to you, Contact Your Delivery Team.

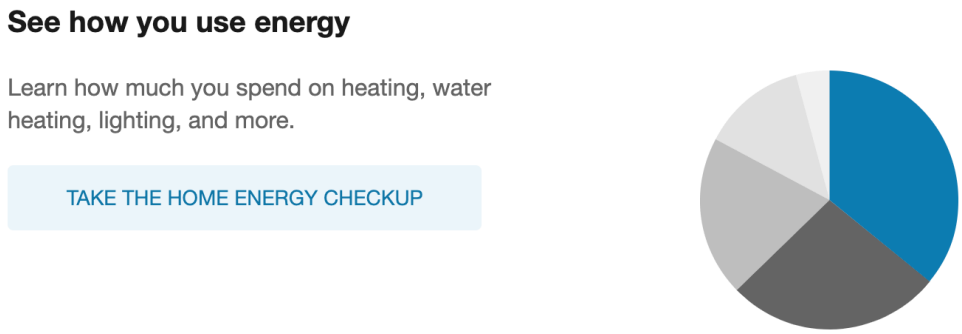
- Home Energy Analysis Light v1
- Home Energy Analysis Light v2

Home Energy Analysis Light v1

The Home Energy Analysis Light v1 widget encourages customers to complete the Home Energy Analysis v1 survey if they have not taken it already, and displays an energy use disaggregation for customers who have completed the survey. The disaggregation is shown as a pie chart and is included in the Smart Dashboard.

Survey Prompt

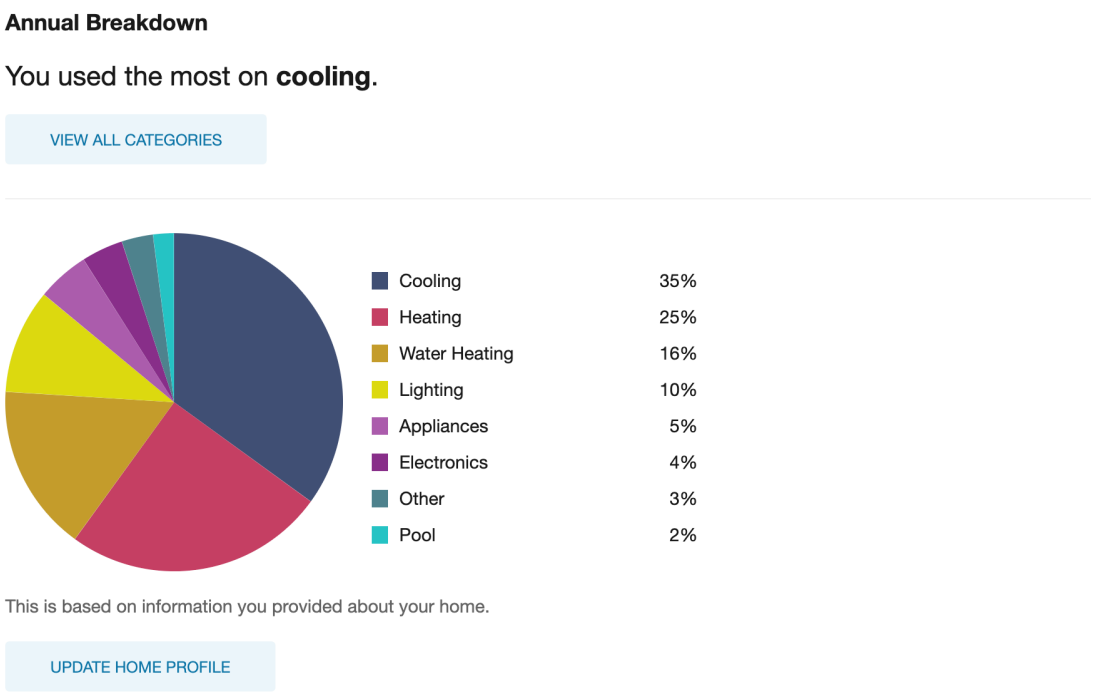
If the customer has not started the Home Energy Analysis v1 survey, then the Home Energy Analysis Light v1 widget shows a prompt to encourage survey completion. The appearance of the prompt is the same whether the customer has not started the survey, or started but not completed the survey.



Disaggregation

If the customer has completed the survey, then the Home Energy Analysis Light v1 widget is updated to display an energy use disaggregation in the form of the pie chart. Compared to the full Home Energy Analysis v1 experience, the Home Energy Analysis Light v1 disaggregation includes the following differences:

- The **View All Categories** link directs the customer to the full HEA v1 disaggregation experience
- The pie chart categories are not interactive
- Only an annual time resolution can be shown (a bill-level disaggregation cannot be shown)



Requirements and Limitations

The data requirements for Home Energy Analysis Light v1 are the same as those described in Home Energy Analysis v1.

> **Note**
>
> Home Energy Analysis Light v1 can only be shown in the Smart Dashboard and is not embeddable on other utility-hosted web pages.

Home Energy Analysis Light v2

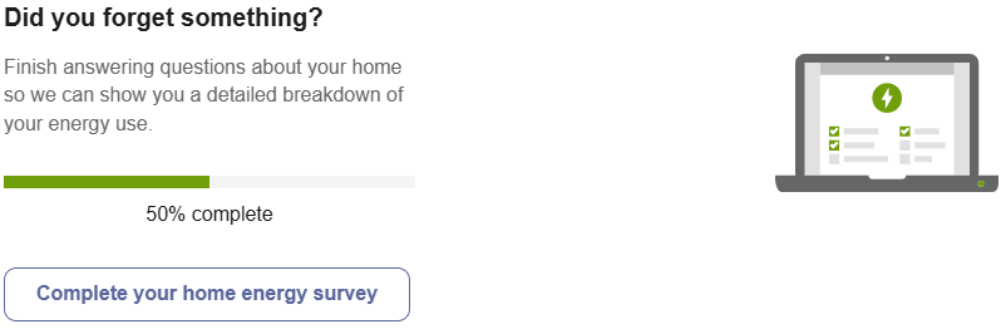
The Home Energy Analysis (HEA) Light v2 widget encourages customers to complete the Home Energy Analysis v2 survey, and can display a disaggregation of a customer's top three categories of energy use before or after the survey has been completed. HEA Light v2 is designed to be included in the Smart Dashboard or embedded on another utility-hosted web page to promote the survey and lead customers to the full Home Energy Analysis v2 experience.

Survey Prompt

A survey prompt is shown if a customer has not started or completed the HEA v2 survey. The appearance of the prompt varies depending on the survey status.

Survey Not Started: The customer sees a prompt to take the Home Energy Analysis survey. It includes a link to the survey and some language about the benefits of completing it.

Survey Started, Not Completed: If the customer has started but not completed the survey, the widget shows a progress bar and returns the customer to where they left off in the survey.



Disaggregation

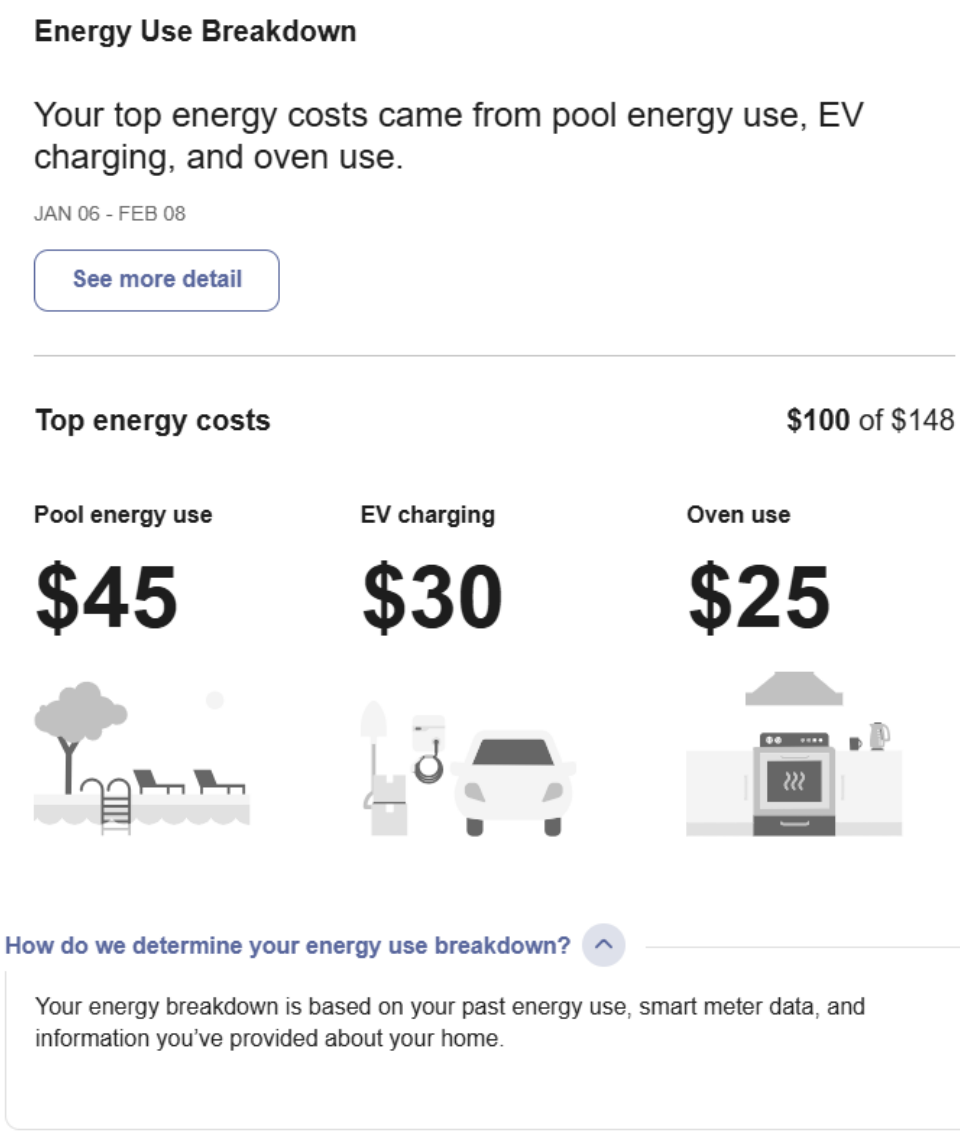
Before or after the HEA v2 survey has been completed, the HEA Light v2 widget can display a disaggregation of the customer's top three categories of energy use. The pathway used depends on the utility's setup and configuration.

- **Post-Survey Disaggregation**: A disaggregation is shown after the survey has been completed.
- **Pre-Survey Disaggregation**: A disaggregation is shown before the survey has been completed so that customers have quicker access to the results. Customers can still take the survey, and their answers may update the disaggregation results.

Post-Survey Disaggregation

In the post-survey disaggregation flow, customers must complete the survey before seeing a disaggregation. When the survey is complete, the HEA Light v2 widget is updated to display an energy use disaggregation in the form of top three categories. Compared to the full Home Energy Analysis v2 experience, the HEA Light v2 disaggregation has the following differences:

- Only the top three end-use categories are displayed (there are no additional end-use categories, personalized tips, or advanced AMI-based insights).
- The **See More Detail** link directs the customer to the full disaggregation experience.



Explainer: A message below the graph explains how the customer's breakdown is determined. The message varies slightly based on whether the customer has AMI data or solar data, and whether the customer has started or completed the Home Energy Analysis survey. For customers with solar data, the message mentions that all of the customers' energy uses are considered regardless of whether their energy came from solar panels or the grid.

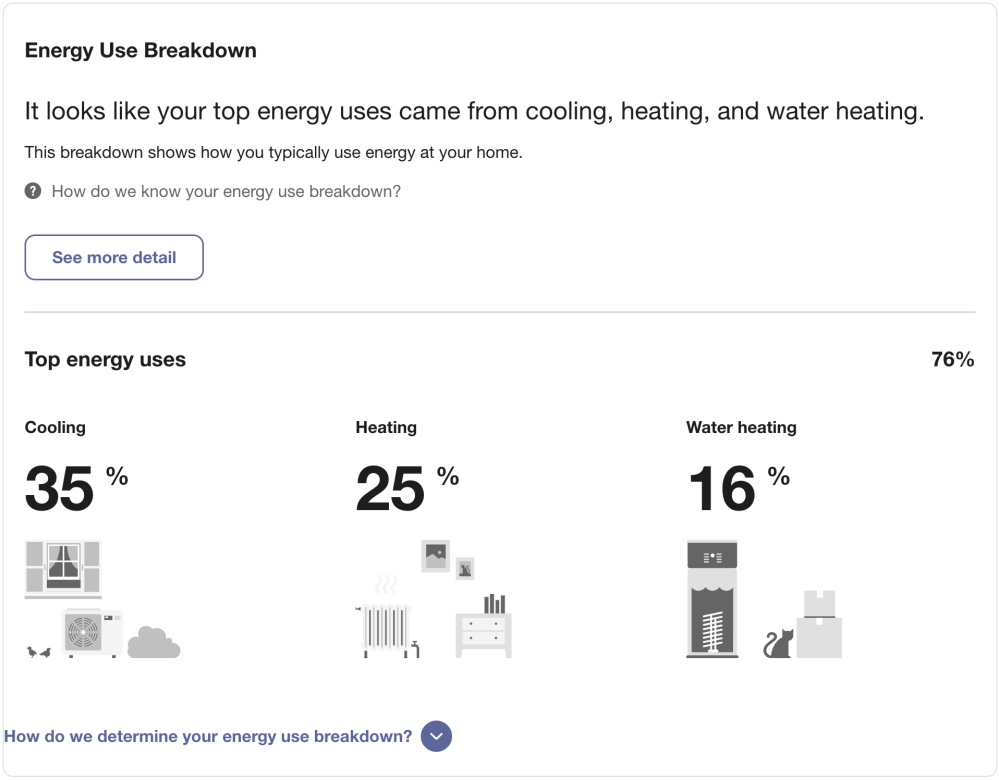
Time Resolution: If a bill-level time resolution is configured, then a date range is displayed to refer to a specific bill period. If an annual time resolution is configured, then no date range is displayed.

Appliance Use Tooltip: If appliance use is highlighted as a top category, customers can click a tooltip for an explanation of what is included in that category. For example, the tooltip may state that the category takes into account the customer's energy use for a stove or refrigerator. The tooltip message changes dynamically to list the appliances that are known to exist at the customer's site based on survey responses or third-party data.

Pre-Survey Disaggregation

In the pre-survey disaggregation flow, the HEA Light v2 widget displays a disaggregation automatically based on available data. In this case, there are no survey prompts, and the disaggregation looks the same as in the post-survey disaggregation flow, except that the messaging changes slightly. The top categories insight says, "It looks like your top energy costs came from...". The phrase "looks like" emphasizes that the disaggregation is an estimate.

Customers can still visit the full Home Energy Analysis v2 experience. When they click the **See More Detail** link, they are taken to a one-time onboarding screen that explains how their disaggregation is determined, and that includes a link to the full survey. Any changes that result from taking the survey will be reflected in both the full HEA disaggregation and in the HEA Light disaggregation.



Requirements and Limitations

- The data requirements for HEA Light v2 are the same as those described in Home Energy Analysis v2.
- The data requirements for the pre-survey disaggregation flow vary slightly depending on what data is available. For utilities with billing data only, the disaggregation can be based on utility-wide disaggregation percentages for customers. For utilities with AMI data, the

disaggregation can be based on a combination of billing, AMI, and weather data to produce more accurate results. Utilities must work with their Oracle Utilities Delivery Team to determine the best approach.

User Experience Variations

Solar Customers with Net Metering

For AMI customers with solar power and net metering, there are two main differences in the breakdown when compared with non-solar customers.

- The breakdown shows top energy uses as percentages only. Top energy costs are not shown because a net metered customer's electric bill is based on *net* electricity drawn from the grid—not the home's *total* energy use. If solar panels supply most of the home's energy, a customer might use a lot of electricity, but only be billed for a small amount received from the grid. This means that cost information wouldn't match directly with how electricity was used inside the home.
- The explainer below the breakdown mentions that all of the customer's energy uses are accounted for regardless of whether their energy came from solar panels or the grid.

For more information about how energy disaggregation is estimated for solar customers, see Solar Generation Based on Net Usage.

Requirements:

- Subdaily AMI net usage data is required.
- Customers must be identified as having solar power. There are several ways to do this using Oracle Utilities Opower data transfer standards or a data model science model. Your Delivery Team will work with you to choose the best method.
- The appropriate energy disaggregation model must be set up and configured. Contact your Delivery Team for more information.

Mini Bill Comparison

The Mini Bill Comparison allows customers to compare their current bill to their previous bill, and to see whether they are spending more, less, or about the same. A link below the comparison directs customers to the full Bill Comparison. The Mini Bill Comparison is intended for use on dashboards or summary pages in a utility website for faster loading and reference.

Requirements

Utility Requirements

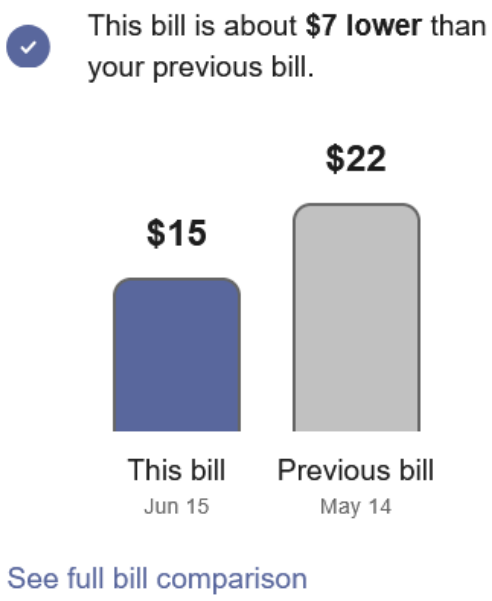
Category	Description
Required Cloud Service	Same as listed in the product-wide requirements.
Scale	No applicable scale requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly, bi-monthly, and quarterly.
Data Delivery Frequency	Monthly, bi-monthly, and quarterly.
Data Requirements	Billed usage data from the utility is required.
Data History	The customer must have two historical bills to compare energy use between bill periods.
Data Coverage	100% coverage of billing data is required for the bill periods being compared. (There can be no null reads for the bill periods being compared.)
Supported Fuels	Electricity, gas, and dual fuel.

User Experience

This section describes the user experience for customers who see the Mini Bill Comparison on a dashboard or summary section in their utility website.



Insight Statement: Above the bar chart is an insight statement that explains whether the customer's bill is lower, higher, or about the same as the previous bill. The messaging varies depending on the results of the comparison.

The cost of the difference is displayed in bold within the insight statement, if applicable. In some cases, there is no significant cost difference, and so none is shown. The dollar figures are usually rounded to the nearest dollar. For example, $1.51 would be rounded to $2, $1.50 would be rounded to $2, and $1.49 would be rounded to $1.

Bar Chart: The bar chart presents a visual comparison of customers' last two bills so that they can see at a glance how their bill costs compare. Annotations on the bars identify the bill period dates and the cost amount of the compared bills. The bar for the current bill uses the "you" color, which is a darker shade by default. The bar for the previous bill or last year's bill uses a lighter gray color by default.

For dual fuel customers and customers with multiple service agreements, the bill amounts represent the total cost of gas and electricity charges across all service agreements. If taxes and fees are included in the bill totals that are sent to Oracle Utilities Opower as part of the data transfer process, then the amounts shown in the comparison include taxes and fees. Otherwise, taxes and fees are excluded.

Call to Action URL: Below the chart is a link to view the full Bill Comparison, which contains extra details about the reasons for the cost difference and other significant factors which affect a customer's bill.

User Experience Variations

The Mini Bill Comparison may vary depending on the configuration, available data, and whether the customer has solar technology. The list below provides the most common examples.

Text-Only Mode: Some utilities may have the Mini Bill Comparison configured to only show text information in order to save space. In this case, the bar graph is omitted. The insight is shown at the top and the bill amounts for the current bill period and previous bill period are shown.

Negative Bills: Customers with a negative bill in the current period or previous period are shown the negative bill value in a bar with a green color. Similarly, if both bills are negative, then both will be shown as negative values in a green bar. A common cause of a negative bill is a utility applying a credit to the customer's account. Or, customers with solar technology might have produced more electricity than they used.

Other Formatting Variations: The Mini Bill Comparison can have other visual variations, such as the content being aligned to the left, the bill periods having a date range format (instead of only showing the bill period end date), and the current bill period being shown on the right instead of the left.

Near Real Time Usage

The Near Real-Time Usage widget displays unvalidated electric interval usage data for customers with AMI (Advanced Metering Infrastructure) meters. The data for this widget is delivered through an API built in partnership between the utility and Oracle Utilities Opower, and is designed to provide users with energy usage data and trends that are nearly current, as opposed to delayed or batch-processed data.

Requirements

Utility Requirements

- Utilities must coordinate with Oracle Utilities Opower to develop an API endpoint that supplies near real-time AMI interval data at the service point level. Oracle Utilities Opower will provide a YAML specification for the API.

- The API must provide interval data that is updated in near real-time, allowing end users to see the most current usage data available. The data should be unvalidated and available for direct, on-demand retrieval by the widget, with no local data storage on the widget side.
- Utilities must provide access to the API endpoint through an application ID and application key (sometimes called API key and API secret). These credentials are used to verify and establish a secure connection for data exchange.
- Utilities must be able to maintain and update their API as data standards evolve, and to participate in ongoing validation or troubleshooting as new integrations are introduced.

Customer Requirements

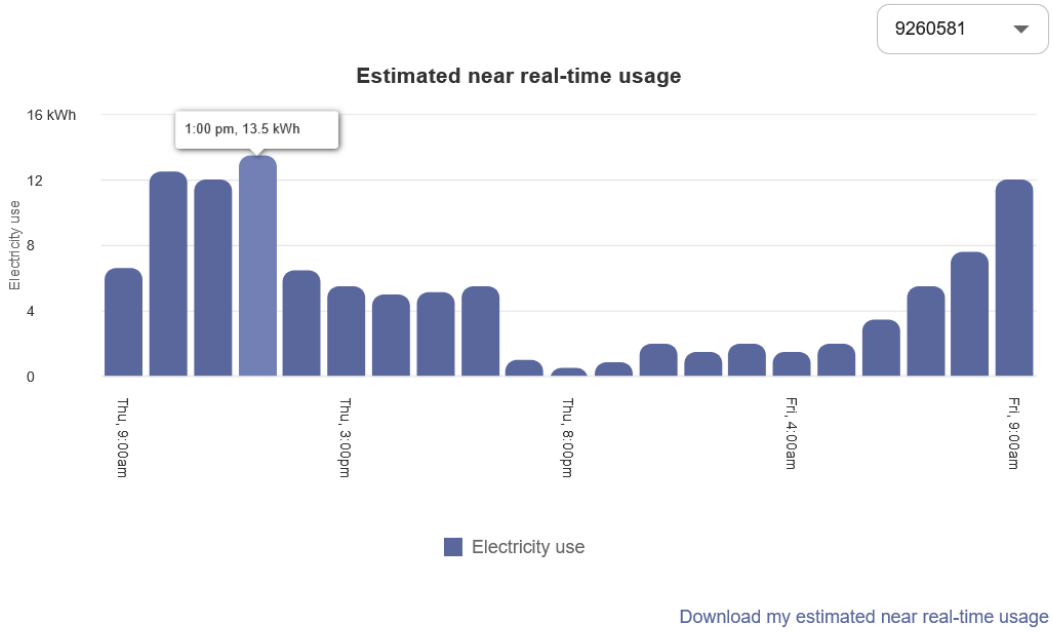
Category	Description
Billing Frequency	Not applicable. Bill-level information is not shown.
Data Delivery Frequency	Not applicable. The utility will coordinate with Oracle Utilities Opower to develop an API through which usage data can be retrieved on demand.
Data Requirements	Subdaily AMI usage data must be made available through the API. Reads at 60-minute, 30-minute, 15-minute, and 5-minute resolutions are supported. If five-minute reads are supplied, they are aggregated to 15 minutes and displayed as 15-minute intervals. Customer and account identification data is required, including support for unique account and service point IDs, to securely and accurately associate customers' data with their login. Your Delivery Team will work with you to understand the identification data that is required.
Data History	Subdaily usage data from the last 24-48 hours is required.
Data Coverage	The widget shows data for each read that is available. A blank space is shown for any missing reads. The bar graph displays as long as there is one read available. If there are no reads available in the past 24 hours, the widget displays an error message.
Supported Fuels	Electricity.

Limitations

The widget supports the display of net energy use data for customers with solar technology. However, it does not support the display of data for customers who have multi-register meters rather than single-register meters. (Multi-register meters provide more details within an interval, such as the amount of energy that goes from the grid to the house or from the house to the grid due to solar power.)

User Experience

The Near Real-Time Usage widget displays AMI electricity usage for customers in the form of a bar graph, showing intervals of energy use for a service point at a premise from the past 24 hours. Compared to the Energy Use View of the Data Browser, the Near Real-Time Usage widget displays data that has not been validated. (Data in the Data Browser takes longer to display since it must be validated and loaded.)



Title: The title emphasizes that the data is estimated and near real-time to help customers understand how the data differs from what is displayed in the standard views of the Data Browser.

Meter ID: If a customer has a service point with two or more meters, then a drop-down list is displayed above the graph allowing customers to choose a meter ID and view data related to it. If a customer only has one meter, then only one meter ID is displayed above the bar graph.

Bar Chart: The bar graph uses a vertical axis (Y-axis) to show the usage intervals, and a horizontal axis (X-axis) to show the time period. The data is visualized in intervals for the current time, minus 24 hours. For example, if a customer logs in at 3 p.m., the widget will show data going back 24 hours to 3 p.m. from the previous day. Only data from the past 24 hours is shown. Customers cannot view historical data beyond this time period.

Tooltips: When a customer hovers over one of the interval bars, a tooltip displays the time of day and energy usage amount for that interval.

Download: Customers can download a CSV file containing usage data for the 24-hour period. The data in the downloaded file matches what is viewed in the widget. It only includes columns specifying the start time, end time, usage value, and unit of the customer's energy usage.

User Experience Variations

Solar Data and Net Energy Display

If a customer has solar technology and net negative energy use, then the bar graph displays green bars for each interval when the customer's home produces more energy than it consumed. The tooltip in this case displays a negative usage value, and the downloaded file shows negative usage values as well.

Neighbor Comparison

The Neighbor Comparison compares the customer (“You”) to two groups: “Efficient Neighbors” and “All Neighbors.” The results are displayed in a horizontal bar graph, and a message explains how the customer compares to their efficient neighbors. The customer can fall into one of three states: "Great," "Good," or “Using more than average". "Efficient Neighbors" are defined as the most efficient 20% of the customer's neighbors. An informational section below the bar graph provides details about the comparison.

Requirements

Utility Requirements

Category	Description
Required Cloud Service	Same as listed in the product-wide requirements.
Scale	No applicable scale requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly, bi-monthly, or quarterly.
Data Delivery Frequency	Monthly, bi-monthly, or quarterly.
Data Requirements	Billing data is required. Additionally, some third-party data (geospatial data and parcel data, for example) is required to select other similar neighbors or households for the comparison. The feature will not display if it is unable to select the minimum number of neighbors. The minimum threshold may vary depending on your utility's setup and configuration. Contact Your Delivery Team if you have any questions.
Data History	A single bill from the last bill period or previous to last bill period.
Data Coverage	Not applicable. Data at the bill level is used.
Supported Fuels	Electricity, gas, and dual fuel.

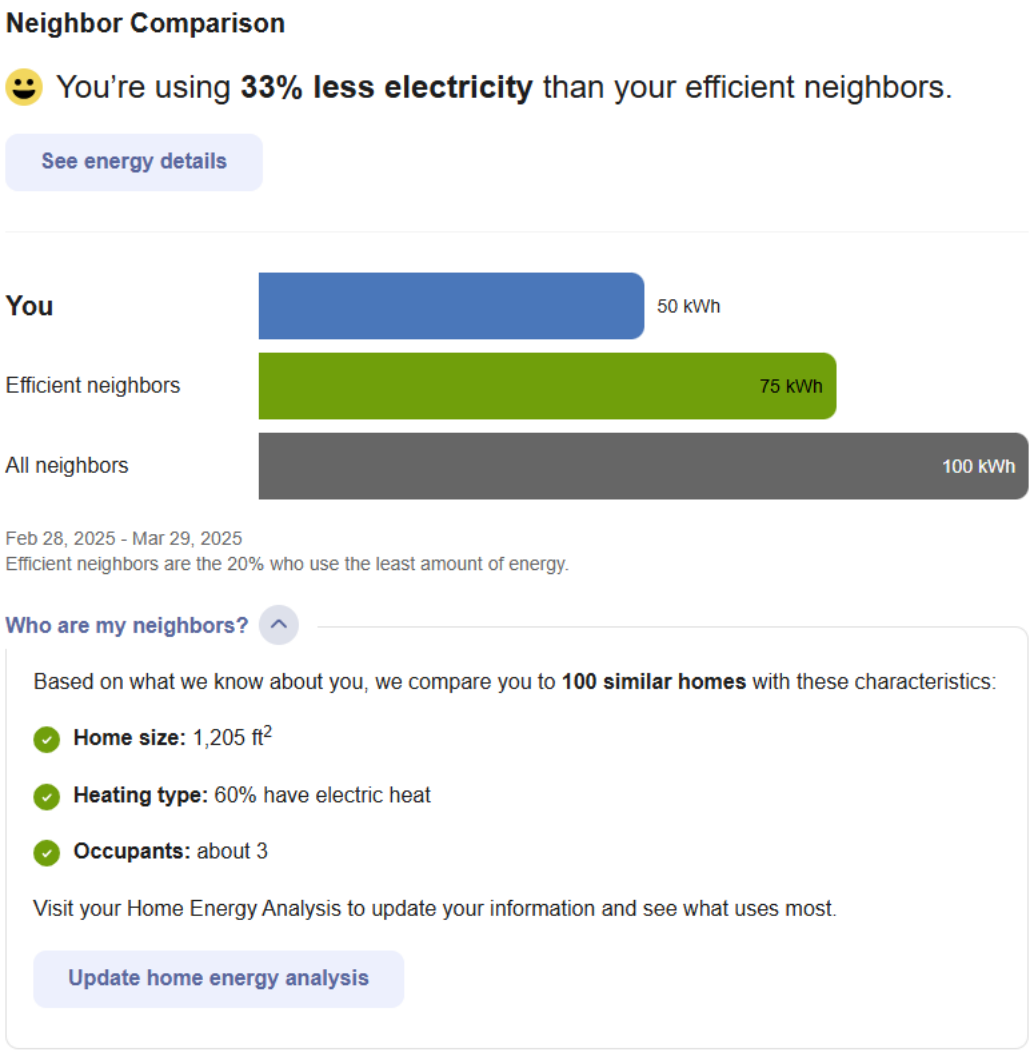
Limitations

- **Neighbor Comparisons on the Web Versus Printed Reports**: The neighbor comparison on the web may be slightly different than the neighbor comparison in printed Home Energy Reports. Both report types still depend on the same set of neighbors selected for a customer.
- **Dynamic Neighbor Calculations**: A new set of neighbors is not dynamically calculated whenever a customer signs in to their web account and views the neighbor comparison. This is because the neighbor selection algorithm is an intensive matching process that takes a non-trivial amount of time to run, and so the web version of the feature would take a very long time to load. This also means that if customers update their home information on the web (for example, by using the Home Energy Analysis survey), they will not see an updated neighbor comparison until Oracle Utilities systems are able to run neighbor re-selection processes at a time later.

- **Dual Fuel Customers and Combined Energy View**: Dual fuel customers see a combined "Energy" view as the default view in the neighbor comparison. If a customer has no gas data, but is part of a dual fuel utility, the customer will still see a neighbor comparison for electricity (and vice versa). Additionally, note that for dual fuel customers, the neighbor selection process selects neighbors based on all the home characteristics, but performs a comparison for each fuel independently. The gas values are calculated based on the gas bill periods, not the electric bill periods (and vice versa).
- **Customers with Electric Vehicles or Heat Pumps**: The neighbor comparison will not be impacted if custom survey questions about electric vehicles (EVs) or heat pumps are added to the Home Energy Analysis. In other words, customers who have these attributes will not be compared to other customers who have these attributes, because the data on these attributes is not widely available. Even if these specific questions were added as new rules in the neighbor selection process, most customers would end up matching with neighbors based on standard information about a premise (such as square footage), unless a very high number of people completed the Home Energy Analysis survey and provided enough data to affect the selection.

User Experience

The user experience described in this section is for customers who have a desktop screen, a single fuel (electricity), and "neighbor" terminology as opposed to "similar homes" terminology.



Insight Statement: The insight statement above the chart ("You used x% more [fuelType] than your neighbors") provides information about why the bar chart appears the way it does. Specifically, it displays a percentage for how much more or less the customer used compared to their "efficient neighbors", or how much more or less the customer used compared to "all neighbors" (including efficient neighbors).

How You're Doing Icon: This icon visually represents whether the customer is doing "Great," "Good," or "Using more than average." There are different states for the icon depending on the customer's state.

Customer State	Icon Displayed
Great	
Good or using more than average	

See Energy Details: This link takes customers to the Data Browser to explore their historical energy costs.

Bar Chart: The bar chart displays how much energy each group in the comparison used. The order of the bars should be: the bar with the smallest value on top and the bar with the largest value on the bottom.

- **You**: This bar indicates how the customer is doing. This is often a color that corresponds to the utility brand color.
- **Average Neighbors**: This bar indicates how all the customer's neighbors are doing. It is usually a gray or neutral color.
- **Efficient Neighbors**: This bar displays a usage value for the most efficient 20% of the customer's neighbors. It is usually colored green because green is commonly associated with energy efficiency. Note that the efficient neighbors value is not an average of the top 20% of neighbors. A threshold value—the 20th percentile neighbor—is used to determine the value.

Date Range: The date range displays the time period that is covered by the comparison. The comparison always covers the last completed billing period. The year accompanies both the start date and end date (for example, Dec 20, 2019 – Jan 20, 2020).

Who Are My Neighbors: When clicked, information about the characteristics that match between the customer's home and the neighbors' homes is displayed. See Who Are My Neighbors below for details.

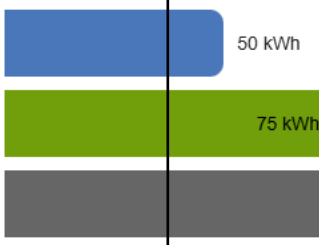
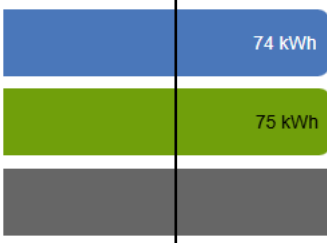
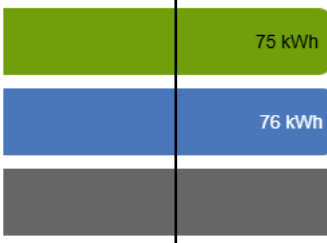
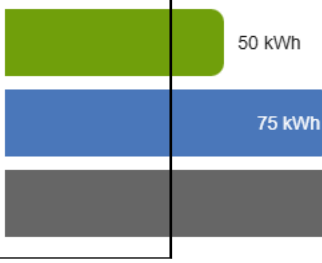
Call-to-Action: The call-to-action is a link (such as **See Energy Details**) that directs customers to additional information. The link varies depending on how well the customer is doing.

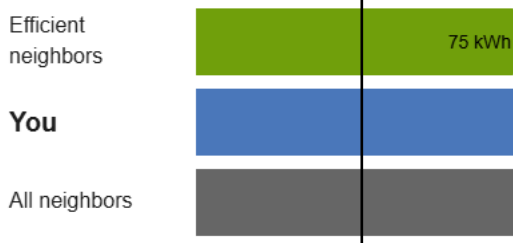
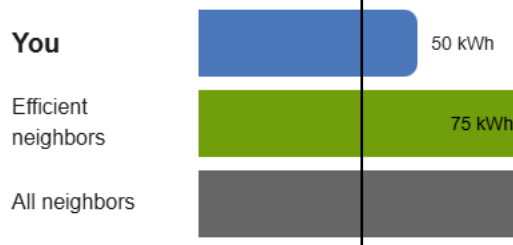
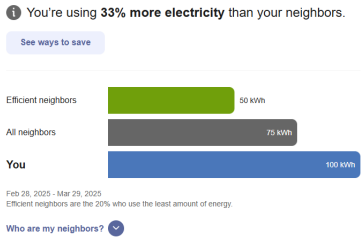
Customer State	Link Displayed
Customer falls in the "Great" or "Good" categories.	SEE ENERGY DETAILS Links to the interactive Data Browser.
Customer falls in the "Using more than average" category.	SEE WAYS TO SAVE Links to Ways to Save.

Neighbor Comparison States

Different components of the neighbor comparison module can take on different states depending on how the customer is doing. This section captures the different neighbor

comparison states that may be displayed. Most of these states apply to both single and dual fuel customers, though there is an edge case that applies only to dual fuel customers. See Edge Case: Less Than Neighbors below for more information.

Normative Message / Insight	Customer State	Description
"You're using X% less [fuelType] than your efficient neighbors."	Great	Customer uses the least of both groups. 
"You're using about the same amount of [fuelType] as your efficient neighbors."	Great	There is a negligible, less than, or equal to difference between the customer and efficient neighbors. 
"You're using about the same amount of [fuelType] as your efficient neighbors."	Good	There is a negligible, greater difference between the customer and efficient neighbors. 
"You're using X% more [fuelType] than your efficient neighbors."	Good	Customer used less than all neighbors, but more than efficient neighbors. 

Normative Message / Insight	Customer State	Description
"You're using X% more [fuelType] than your efficient neighbors."	Good	There is a negligible difference between the customer and all neighbors. 
"You used X% less than your neighbors"	Good	**Web Only**: This message may display for dual fuel customers when they select just electricity or just natural gas from the fuel selector, rather than the combined "energy" option. This is a known edge case, as most messages compare the customer to their efficient neighbors. 
"You're using X% more [fuelType] than your neighbors."	More than average	Customer has used the most. A warning icon is displayed is displayed as part of the messaging text. 

Who Are My Neighbors

Customers can click **Who are my neighbors?** to display information on the characteristics of the neighbors that the customer is being compared to. The purpose is to give customers a better idea of the fairness of the comparison. The contents of the description vary depending on what data is available. The information available is broken down into a message about the number of similar homes, a list of characteristics, and a link to the Home Energy Analysis. For an example of this section of the Neighbog Comparison, refer to User Experience.

Number of Similar Homes: A summary message specifies the number of similar homes that are included in the comparison. The number is targeted at 100, but if not enough qualified neighbors exist a smaller number may be used. Reports are only generated for households with a minimum number of qualified neighbors.

Note: Neighbors are defined by site rather than by occupant. For example, if an occupant of a neighbor home relocates over the course of the program and another resident moves in, the comparison will subsequently be to the new occupant of the same home. Neighbor sites are nearby homes that have characteristics that typically lead to similar energy needs, and only include homes that appear to be occupied at the time of the comparison. They are not necessarily homes on the same street.

Comparison Characteristics: A list of characteristics a customer shares with the neighbors included in the comparison are displayed with a green check mark. If a characteristic is unknown for a customer, it is not included in the comparison and hidden from view. The characteristics may include:

- **Location**: The average distance or proximity of the neighbors' homes. The number is rounded to the nearest whole unit and is meant to assure customers they are being compared against homes that are nearby.
- **Home Size**: The average home square footage among neighbors.
- **Heating Type**: The percentage of neighbors with the same heating type, such as gas or electric heating.
- **Building Type**: The percentage of neighbors with the same building type, such as apartments, condos, or single family homes.
- **Occupants**: The average number of occupants among the neighbors.

Update Home Energy Analysis: Clicking this button takes the customer to the Home Energy Analysis so that they can provide the latest details about their home and make the neighbor comparison more accurate. Note, however, that the neighbor comparison is not updated in real time based on a customer's updates. Additionally, the call-to-action button does not change even if the customer has already visited the Home Energy Analysis.

User Experience Variations

Competitive Markets Terminology

Utilities in competitive markets may choose to use different language in the neighbor comparison to make it clear that the customers is being compared to other customers of the same utility.

Insight Statement: The insight statement above the chart either says "similar ABC homes" or "your ABC neighbors," where ABC is the name of the utility.

Who Are My Neighbors Message: This message says "Based on what we know about you, we compare you to [numberOfHomes] similar [Utility] homes with these characteristics", where [Utility] is the name of the utility.

Dual Fuel Experience

If the customer is dual fuel, they will see an additional drop-down menu for switching between fuel types. By default, the "Energy" fuel label is shown, which is a view that combines natural gas and electricity using a price-weighted Energy Index. Electricity is the second label and gas is the third. The drop-down only appears for dual fuel customers. Single fuel customers only see a comparison for their fuel type, without a drop-down.

Edge Case: Less Than Neighbors

For dual fuel customers, the neighbor comparison has to compare the customer to the *same* neighbor group ("all neighbors" or "efficient neighbors") for *all three* options available in the fuel selector: energy, electricity, and gas. This rule results in an edge case where the customer may see a "You used less than your neighbors" message. (In most cases, the feature only compares the customer to *all* neighbors when the customer is using more than *all* neighbors. Otherwise, the module compares them to *efficient* neighbors in order to encourage more efficient behavior.)

Note: This limitation only applies to the neighbor comparison for the web.

For example, let's say a duel fuel customer signs in to their online account and views their neighbor comparison. Imagine that the comparison says the customer used 28% more *energy* than all neighbors. Then let's say the customer clicks the fuel selector and switches to *electricity*. Imagine they find that they used 88% more electricity than all neighbors. But then let's say they switch to *natural gas* and find that they used 22% less than all neighbors.

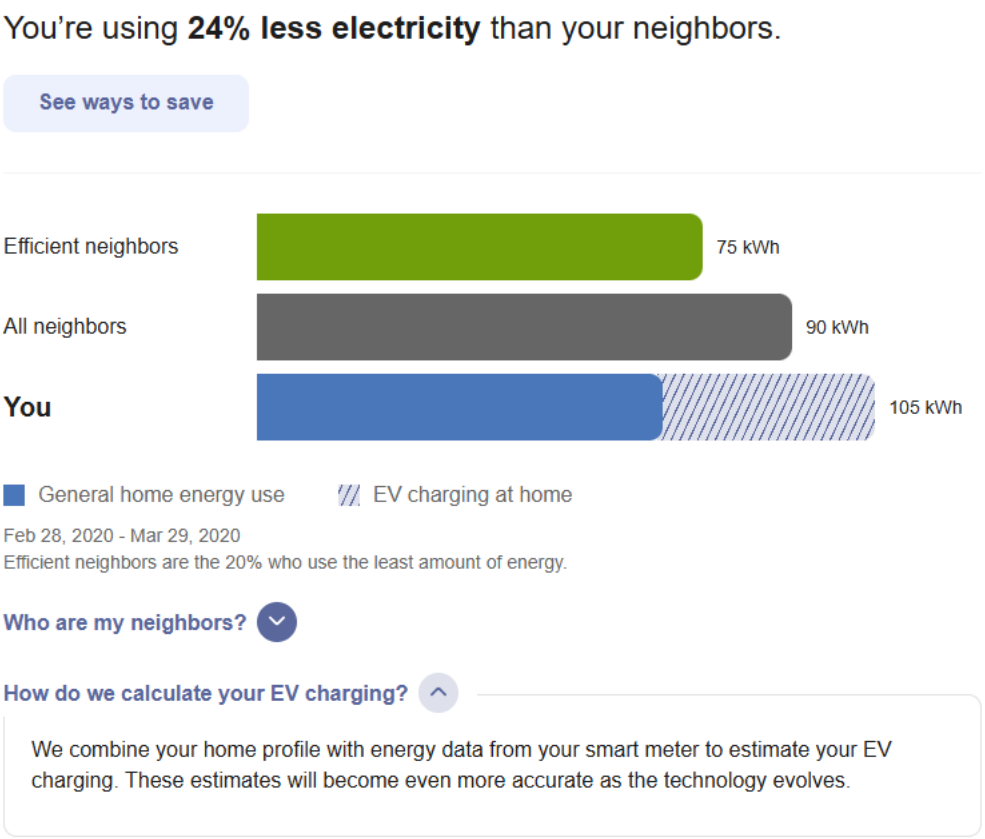
In this case, the statement about natural gas will compare the customer to all neighbors (not efficient neighbors), resulting in the statement, "You used X% less than your neighbors." This is the only scenario in which this particular wording will be used.

Efficiency Zone Experience

If the customer receives Home Energy Reports v3 (either the email or print version), they will see that an Efficiency Zone experience replaces the standard Neighbor Comparison experience on the web. See Efficiency Zone for more information.

Electric Vehicle Experience

Customers who receive the Email Home Energy Reports Electric Vehicle (EV) report edition or the print Home Energy Reports EV report edition can view personalized insights about the impact of EV charging on their overall energy use in the Neighbor Comparison web widget. The EV web experience takes into account the impact of the customer's EV charging on their total energy usage. It also incorporates additional insights (such as disaggregation and detection) and makes it clear to customers how their EV use factors into their report.



This experience is only available to EV customers with Level 2 (L2) chargers and varies from the standard experience in several ways.

Normative Message / Insight Statement: The normative message that appears above the chart includes a link to Ways to Save.

Bar Chart: The "You" bar in the bar chart displays two parts: a solid color to represent the customer's general home energy use, and a lighter shaded color to represent the customer's energy use attributable to EV charging. When a customer selects one of these parts of the bar, a tooltip appears to indicate how much energy use it represents. The usage amounts of each part add up to the total energy use amount displayed at the end of the bar. Additionally, beneath the bar chart is a short legend that explains what the colors of the "You" bar represent.

Who Are My Neighbors: This section contains the same information as in the standard user experience. There is no additional EV attribute highlighted as a reason for the comparison. Customers with an EV are compared against other customers based on standard premise information, such as home type and square footage. One reason for this is that EVs are not widespread, and finding other households where an EV is present is a challenge. However, the EV Neighbor Comparison experience shows customers the impact of EV charging on their overall usage, which helps explain why their comparison is the way it is.

How Do We Calculate Your EV Charging: When this link is clicked, information is displayed to explain that the customer's EV energy use is estimated based on what is known about their home profile as well as the energy use data available for their home.

Requirements

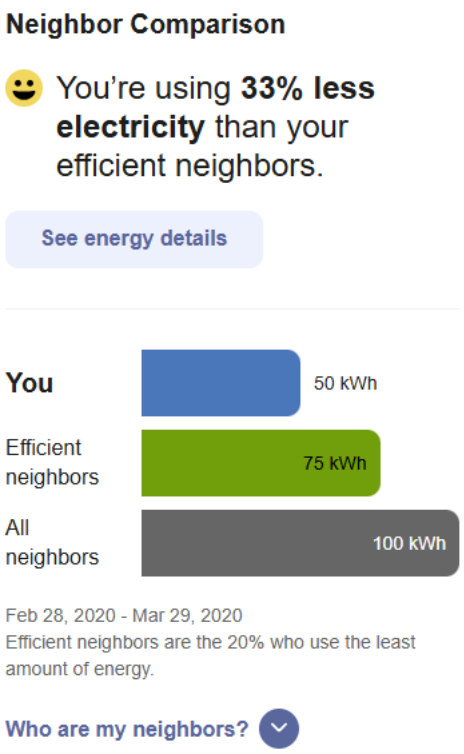
The preferred approach for the EV experience is to use an advanced AMI data science model, since this model generates the most accurate neighbor comparison results. In this case, there

are minimum AMI data and weather data requirements for the utility to meet. Contact Your Delivery Team for details.

If not enough data is available to use the advanced AMI data science model, then the "EV charging at home component" can be based on billing data and utility-wide average percentages for end use categories (including for EV end use), as well as the customer's answers to the Home Energy Analysis.

Mobile Experience

The Neighbor Comparison for smaller screen sizes consists of the same components as the desktop experience. The only difference is that the layout changes, and the components of the feature stack vertically to fit the screen. Since the Oracle Utilities Opower web features or widgets adapt their layout based on screen size rather than device type, the mobile experience may differ slightly between devices.



Calculations

The neighbor comparison calculation compares a customer's energy use against two groups: All Neighbors and Efficient Neighbors. At a high level, the calculation involves the following steps:

1. Identify the start and end dates of the period of comparison.
2. Identify the customer's neighbors. The number of neighbors is targeted at 100, but if not enough qualified neighbors exist, a smaller number may be used.
3. Identify the customer's efficient neighbors—the 20th percentile of neighbors with the lowest use for the selected period.
4. Calculate the customer's total energy use over the time period.
5. Calculate the average energy use of all of the customer's neighbors over the time period. This results in an energy use value for the "All Neighbors" group.

6. Calculate the 20th percentile of energy use of all the customers' neighbors over the time period. This results in an energy use value for "Efficient Neighbors" group.
7. Compare the information and generate a graph that indicates how the customer is doing.

Notes:

- **Report Generation:** Reports are only generated for households that have a minimum number of neighbors in the “good” state. Households that do not meet this requirement will not receive reports.
- **Neighbors Defined by Site**: Neighbors are defined by site rather than by customer. For example, if an occupant of a neighbor home relocates over the course of the program and another resident moves in, the comparison will subsequently be to the new occupant of the same home.
- **Neighbor Comparison Data**: The calculation can compare customers to neighbors who have been selected to participate in the program, as well as neighbors who have *not* been selected. However, it does not calculate or store comparison data for non-program customers.
- **Pro-Rating Neighbors' Bills**: A customer’s neighbors' previous bills do not always coincide exactly in time with the customer’s previous bills. To arrive at the neighbor averages used to calculate the comparison, it is necessary to align neighbors' past energy use amounts with the customer's past energy use amounts. In these scenarios, the application pro-rates, or "time-shifts," the neighbor bills to align with the customer bills by determining and adjusting for the amount of overlap. The time-shifted neighbor bills are then used to determine the neighbor averages.

Next Best Action

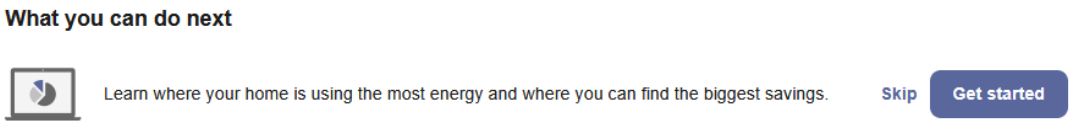
The Next Best Action widget provides dynamic, actionable tips and promotions that can be shared with all customers, or targeted to specific customer groups. The tips are displayed as mobile-responsive web banners containing information about valuable solutions and helpful tools for managing energy use and costs.

Requirements

Same as listed in the product-wide requirements. A segmentation process is used to determine which banners to display to business customers. This process can include presenting banners based on specific attributes or criteria, such as whether a customer is authenticated or not. Contact Your Delivery Team to configure the banners in support of your program goals.

User Experience

Banners can be displayed on any page to promote utility-specific programs and promotions, deliver notifications and tips, and suggest the best next web action to take.



Headline: A headline appears at the top of the widget to highlight the suggested action. Many banners use a "What you can do next" headline by default to keep the customer focused on actionable steps.

Icon: A graphical icon provides a visual to supplement the banner message.

Banner Message: The message provides additional information on the action that is being recommended to the customer.

Skip Button: Customers can select to skip the action listed. This displays the next available Next Best Action banner to the customer. If the customer skips through all banners, the customer is shown the first banner again.

Call to Action Button: A button with applicable messaging for the action redirects the customer to the valuable opportunities, solutions, or helpful tools to complete the suggested action.

> **Note**
>
> Utilities can choose to configure banners that a customer can completely close from view. The banner remains hidden for the customer from the current user session and reappears on subsequent user sessions. For more information, see the Next Best Action topic in the *Oracle Utilities Opower Digital Self Service - Energy Management Configuration Guide*.

User Experience Variations

Custom Banners

Next Best Action banners can vary widely by utility and by the type of promotional information they contain. The design and content are generally decided upon through collaboration between the utility and Oracle Utilities Opower.

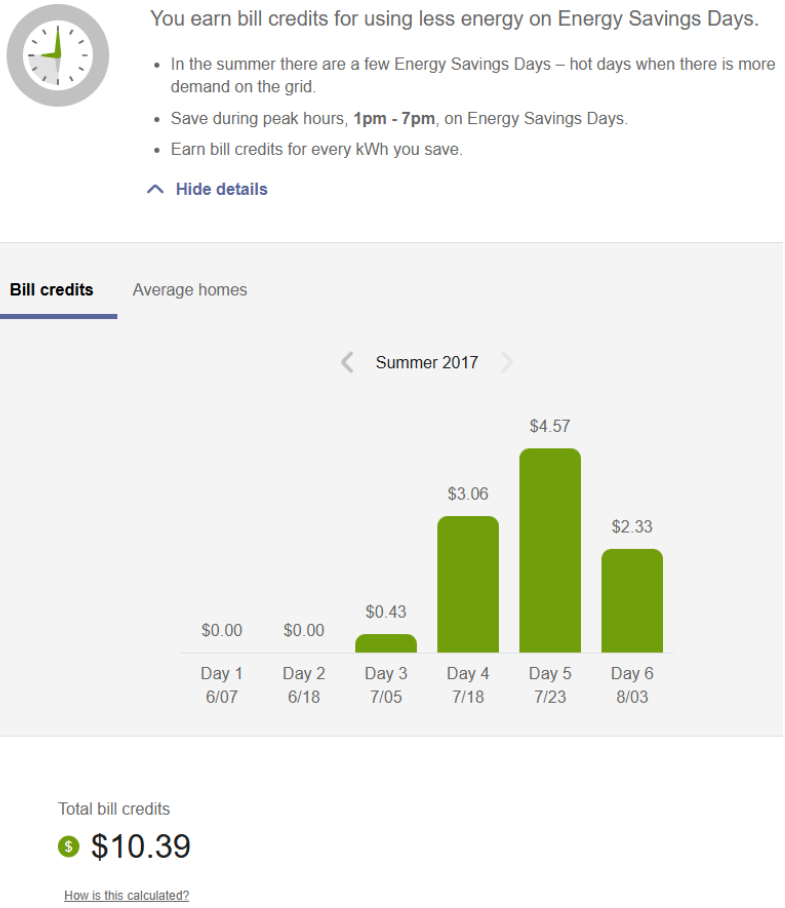
Single Sign-On

For utilities that enable single sign-on (SSO), the Next Best Action banners allow customers to click through to utility-hosted pages without needing to log in. For utilities that do not enable SSO, a customer must log in before they are redirected to a utility-hosted page.

Peak Time Rebates

The Peak Time Rebates program consists of web features as well as print and digital communications that encourage utility customers to reduce energy during peak event days in the summer or winter seasons, thereby lowering energy demand on a large scale. The program offers customers monetary credits towards their next bill when they reduce their energy use during peak events.

The Peak Time Rebate widget allows customers who are enrolled in Peak Time Rebates to view their historical peak event day rebate and energy saving information in a user-friendly graph.



Depending on what options are available from the utility, customers can view the following information:

- **Bill Credits**: This graph displays how much money a customer has earned by saving energy on peak rebates event days.
- **Average Homes**: This graph displays how much money a customer has saved compared to homes within 100 miles of them and who saved energy on an energy savings day. Average homes data is only available for the money comparison and peak rewards experiences.
- **Tool tip**: When hovering over the Bill Credits or Average Homes graphs, pertinent information about the day is displayed including date and day of the week, specific event hours and average temperature during that period, how much energy the customer saved compared to their baseline, and the rebate amount is displayed.
- **Total Bill Credits**: This section calculates the customer's cumulative rebate amount for the selected season.

See the Oracle Utilities Opower Peak Time Rebate Product Overview for more information about the product's requirements and features.

Resources

The following resources are available for customers to access and review as needed. Links to these resources can be included in a footer that is displayed on all pages.

Help and Contact Information

Oracle Utilities develops Frequently Asked Questions (FAQs) drawn directly from customer feedback. The list is kept small so that customers can quickly find the information that they need.

Customers who cannot find the answer to their questions in the provided FAQs can use the contact information to contact the utility. The contact information is specified by the utility.

Terms of Use

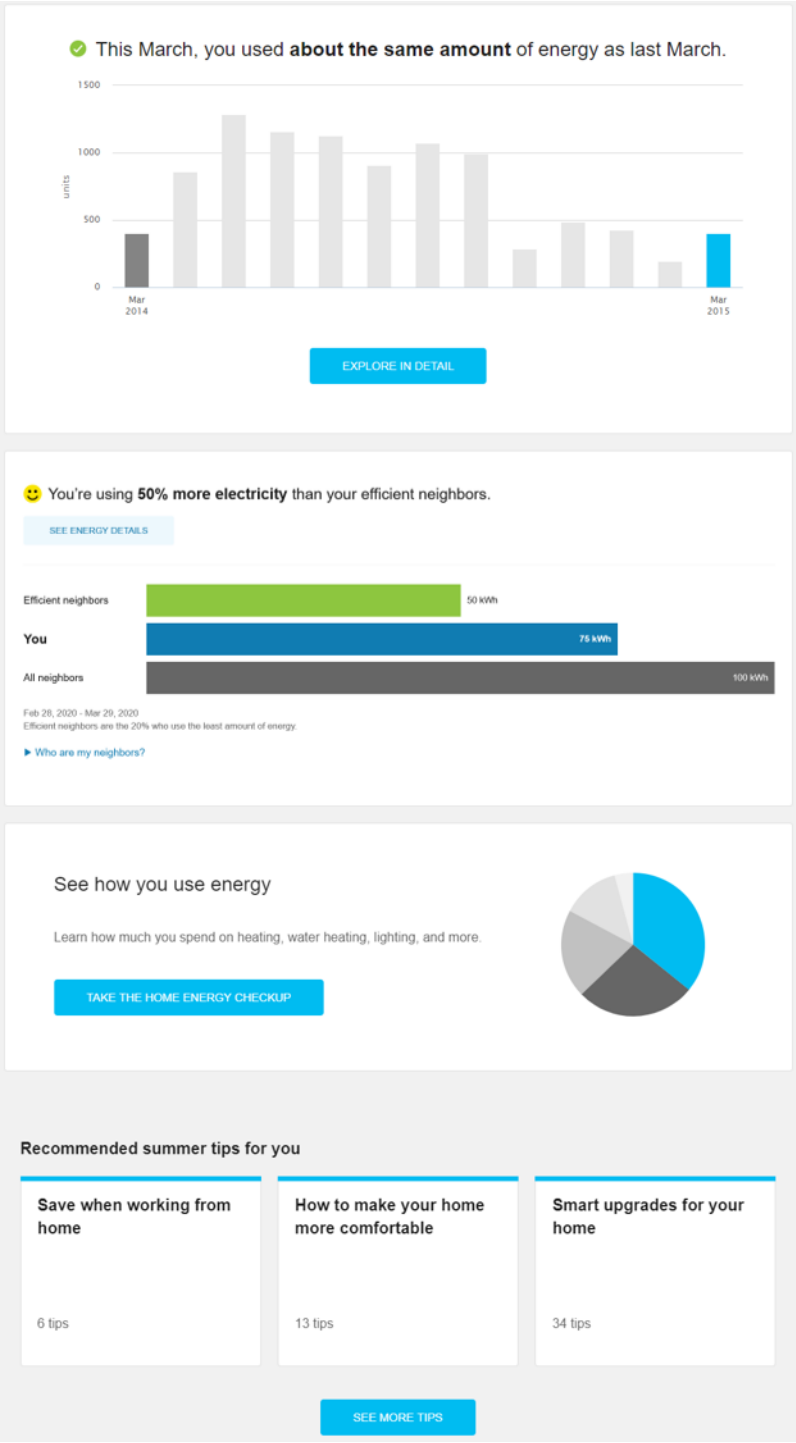
The customer must agree to the Oracle Utilities Terms of Use before creating an account.

Privacy Policy

The Privacy Policy is available to all customers.

Smart Dashboard

The Smart Dashboard displays an overview of customers' energy use and utility account tools and can be used as the initial page for users who have signed in. It combines multiple insights and experiences on a single page to help customers engage with the tools and information in their account.



Features of the dashboard are dependent on a customer's available data and can include:

- Bill Forecast (AMI data required)
- Energy Use Overview
- Highest Energy Use Day (AMI data required)
- Home Energy Analysis Light
- Neighbor Comparison
- Tips Light

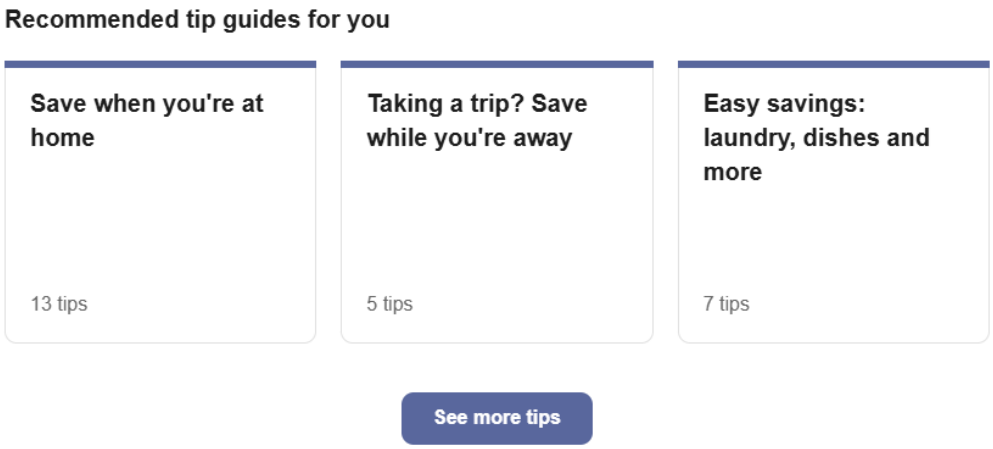
Data Requirements and Limitations

- **AMI Customers**: Some features in the Smart Dashboard require AMI data. These features in turn require the Digital Self Service AMI cloud service. For more information, see Getting Started.
- **Feature-Specific Requirements**: Additional data requirements vary by feature. See the applicable feature descriptions for more information.

Tips Light

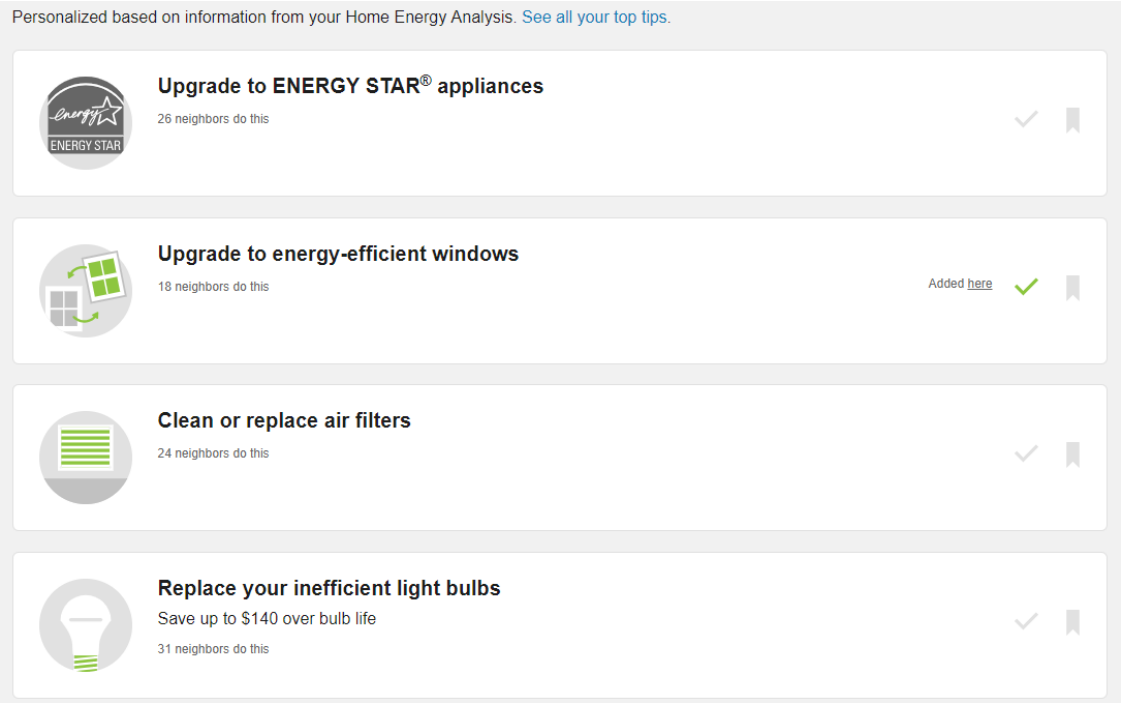
Tips Light displays the top three tip guides for the customer's household. These tip guides promote customer interest in tips and lead them to more detailed tip information. The Tips Light widget usually appears on the Smart Dashboard.

Selecting a tip guide sends customers to the Guide Details widget. A **See More Tips** button appears below the tip guides. Selecting this button sends customers to the Ways to Save landing page.



Tips List

The Tips List widget displays the top five energy efficiency tips for a customer's household. The priority and order of the tips is determined based on data that is available for the customer. The widget can be coupled with the Home Energy Analysis or it can be standalone. The purpose is to promote customer interest in tips and guide them to more energy efficient behavior.



Personalization Message: At the top of the widget is a message indicating that the tips are personalized for the customer based on their answers to the Home Energy Analysis. If the widget is not paired with the Home Energy Analysis, the text can be changed to convey a more appropriate meaning.

The message also includes a link to see more top tips. Clicking the link redirects the customer to a "top tips" guide that contains a list of all available tips for the customer, prioritized by Intelligent Tip Targeting. For more information about tip guides, see Ways to Save.

Tip Content: Each tip includes the components below.

- An illustration that allows customers to quickly recognize the concept or purpose of a tip.
- A short title that describes the tip.
- The estimated annual savings if the customer completes the tip.
- The number of utility customers who have completed the tip.
- Icons that let the customer mark a tip with an applicable tip action, such as marking it as done or saving it for later.

Customers can select any tip to go to a page containing additional details about the tip and how to implement it.

Widget Placement: While there is no technical restriction on where the widget is displayed, there are two recommended locations: beneath the Home Energy Analysis or the Bill Comparison. If the widget is placed under the Bill Comparison, then the default personalization message can be changed to convey a more appropriate note.

Pre-Authenticated Experience: Customers can access the Tips List widget without logging in to their account. In this case, personalized tip targeting is not applied, which means that the top five tips are drawn from allof the allowed tips for the utility. The tips are prioritized based on web tip actions—that is, whether other customers have done the tip, saved the tip for later, or said they won't do the tip. The most commonly completed tips are ranked at the top. Customers viewing this experience are prompted to log in if they attempt to save a tip or mark it as done.

Ways to Save

Ways to Save presents a personalized selection of energy saving tips. Customers can browse through the available tips to learn how they can save energy. The tips are organized into various tip guides based on filters like cost, appliance, and season of the year.

Requirements

Utility Requirements

Same as listed in the product-wide requirements.

Customer Requirements

Category	Description
Billing Frequency	Monthly, bi-monthly, and quarterly.
Data Delivery Frequency	Not applicable.
Data Requirements	Not applicable. A customer's data and attributes do not determine whether the Ways to Save feature is displayed. However, a customer's attributes and utility-specific configurations may affect which tips within the feature are displayed.
Data History	Not applicable.
Data Coverage	Not applicable.
Supported Fuels	Electricity, gas, and dual fuel.

User Experience

Ways to Save presents a selection of energy tips that customers can follow to lower their usage and save money. The tips are selected based on a customer's attributes and how likely the customer is to follow the tip, and organized into guides based on filters like cost, appliance, and season of the year.

Tip Guides

A tip guide is a collection of tips organized in behavior-oriented, seasonal, and end-use categories that provide customers with relevant cost-saving recommendations. For example, the "How to avoid an expensive summer" guide is displayed to customers during summer months.

A tip guide is only shown if tips are included in the guide after tip filtering is applied and irrelevant tips are excluded. Customers can view tips by browsing the tips guides or by selecting filters to identify all available tips that meet the filter criteria.

> **Note**
>
> Customers can access Ways to Save without logging in to their account. See Unauthenticated Experience below for more information.

Top 2 tips for this season

Install window shades such as blinds or shutters

Set your thermostat to 78°F in the summer

Save up to $1,200 per year

See all seasonal tips

Get more energy-saving advice

Easy to do | Cost type | Available rebates | Seasonal | Appliances and more

Top tips for homes like yours

71 tips

Want more relevant tips for your home? Take the survey

Ways to save at no cost to you

27 tips

High cooling bills? Here's how to cut back

9 tips

Heating tips to help you save

6 tips

Save every day with home appliances

12 tips

Show all

Tips you've saved

1 tip

Tips you've completed

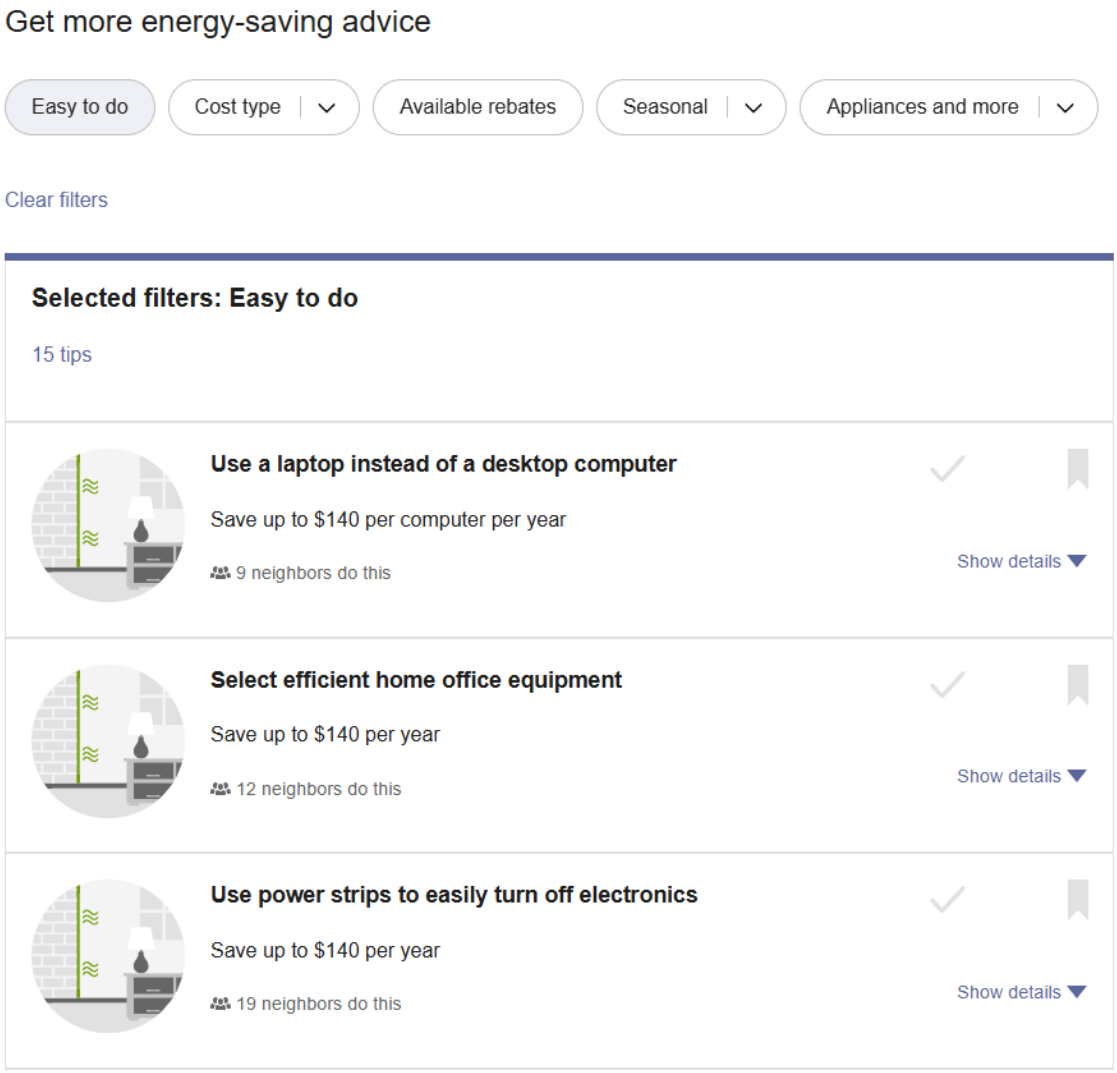
1 tip

Promoted Tips: A promoted tip guide containing the two most applicable tips of the season is displayed at the top of the Ways to Save page above all other tip guides. The top two tips are randomly chosen from the first seasonal guide shown on the page. These promoted tips can be selected, and they change upon each page refresh. The customer can also click a button to view all tips available in the seasonal tip guide.

Order of Tip Guides: The default order is to show a promoted seasonal guide first (if applicable), followed by a list of guides defined during the setup and configuration process.

List of Tips in a Guide: Customers can select a tip guide to view the list of tips included in that guide. From this list of tips, customers can review high-level information about each tip, and select a tip to view additional details. Information available for a tip from this list includes the following:

- An illustration allows customers to quickly recognize the concept or purpose of a tip.
- A short title that describes the tip.
- The estimated annual savings if the customer completes the tip.
- The number of utility customers who have completed the tip.



Customers can select a tip in the list to view additional details about the tip, or mark a tip with an applicable tip action.

Order of Tips within Tip Guide: The tips are ordered based on Intelligent Tip Targeting, a proprietary automated process that uses logic to show the most relevant tips for the customer at the top of each tip guide. One exception is the Most Popular Tips guide, which shows tips in order of popularity (that is, the tips marked completed by the most users).

In the unauthenticated experience of Ways to Save, the Most Popular Tips guide is still ordered by popularity, and the rest of the tip guides are ordered by the default savings estimates.

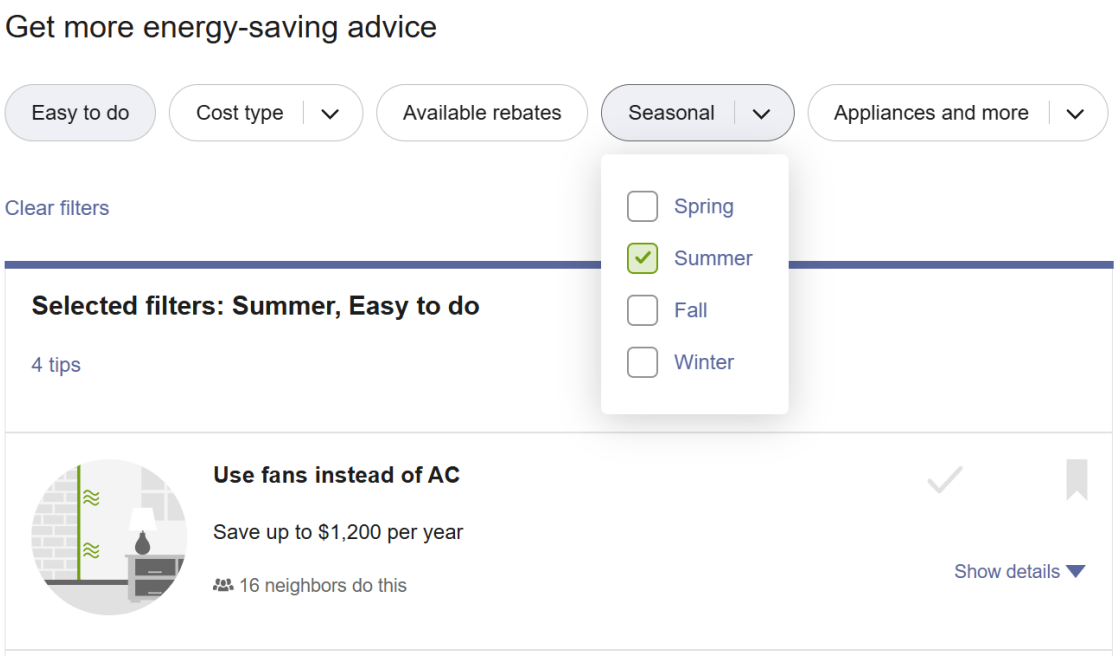
Tip Details

Customers can select a tip to view reasons why they should complete a tip. An option to **Read More** about the tip displays all available information for the tip. This can include the following:

- A tip title displayed at the top, along with the tip illustration.
- A list of financial incentives related to the tip, such as cost savings or tax incentives. By default, a maximum of three of the available financial benefits are displayed. If more than three financial benefits are available for the tip, a link is displayed to show or hide the additional financial benefits. The financial incentives can include:
  - Savings amount
  - Rebate information
  - Upfront costs
  - Tax incentives
  - Recycling information
  - Payback period
  - Other incentives
- Links to utility programs and incentives, if applicable.
- Why a customer would perform the tip.
- Information on what actions a tip includes or how to complete a tip can be provided. This optional information is commonly provided for tips that are not as straightforward as simple tips.
- Customers can save a tip to a list of tips to review later, or mark a tip as something they have completed.

Tip Filtering

Tips are automatically filtered for customers based on the characteristics of their home. These characteristics may include the customer's home type, whether they own or rent, the heating system and type (for electric systems), and the type of air conditioning. Customers can browse the tips available in each guide, or select filters to find the tips most relevant to them.



Filter categories and sub-categories include:

- **Easy Tips**: Easy to Do tips
- **Cost Type**: Free Tips, Low Cost Tips, Great Investments, and Rebates
- **Seasonal**: Spring, Summer, Fall, and Winter
- **Appliances and More**: Heating, Cooling, Water Heating, EV Charging, Pool Energy Use, Laundry, Dishwasher Use, Oven Use, Refrigeration, Electronics, and Lighting

Filters can be combined to display a smaller selection of tips. For example, the Free Tips and Summer filters could be combined so that only free seasonal tips for the summer are displayed. When the filters are cleared, the full list of tip guides is displayed.

Tip filtering is also affected by the Home Energy Analysis, which allows customers to answer questions about their energy use, including whether they live in an apartment and if they rent or own their home. After completing this survey, customers are shown tips that are more relevant to them. See Home Energy Analysis Completed below for details.

Tip Actions

Tip actions allow customers to save a tip or mark a tip as completed. Customers can view all saved tips and all completed tips in separate tip guides. The number of other utility customers who have completed the tip is displayed to encourage the customer to also complete the tip. If a customer is viewing Ways to Save without being logged in to their account, the customer is prompted to log in to their account to complete any tip actions.

Upgrade to an efficient room air conditioner

Potential savings Save up to $1,200 per year

Mark as done | Save for later | 2 neighbors do this

Why?

In the summer, air conditioning can account for a significant portion of your home's energy bill. When you replace your old room air conditioner or buy a new one, choosing an efficient, ENERGY STAR® certified unit could lower your cooling costs.

Next Best Action

A Next Best Action banner can be displayed at the bottom of Ways to Save to give customers next steps to lower their energy use. Customers can select Skip in the message to see the next best action, or follow a link to more information.

High cooling bills? Here's how to cut back

9 tips

Heating tips to help you save

6 tips

Save every day with home appliances

12 tips

Show all

What you can do next

Learn where your home is using the most energy and where you can find the biggest savings. Skip Get started

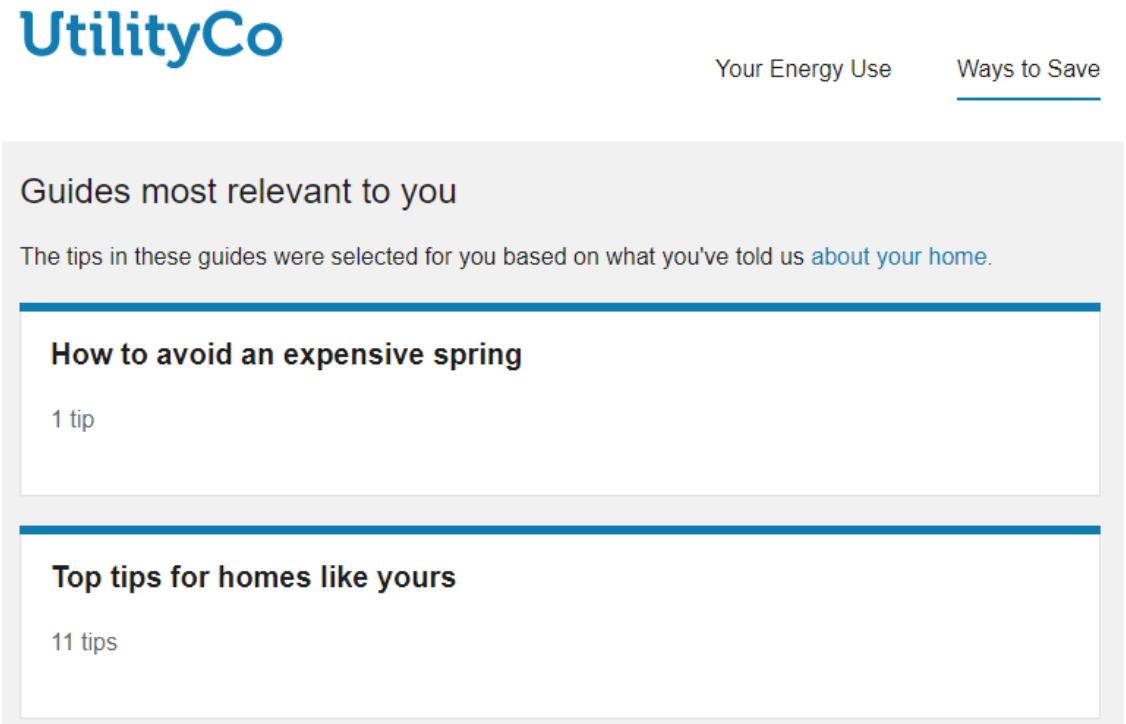
For example, the suggested actions could include taking the Home Energy Analysis survey, using the Rate Comparison, signing up for alerts, and so on.

> **Note**
>
> The Next Best Action banner requires some setup and configuration before it can be displayed. Contact Your Delivery Team to coordinate.

User Experience Variations

Home Energy Analysis Completed

A message is displayed just above the tip guides to customers who have completed the Home Energy Analysis survey. This message explains that the tip guides were selected based on the customer's responses to the survey, and provides a link to their Home Energy Analysis energy use breakdown.



Locale

If the customer lives in a non-US locale, the Ways to Save feature will display locale-appropriate language and units of measure. In addition, the tip library will likely vary based on the heating and cooling types available, the common appliances used in the locale, and so on.

Multiple Accounts and Service Points

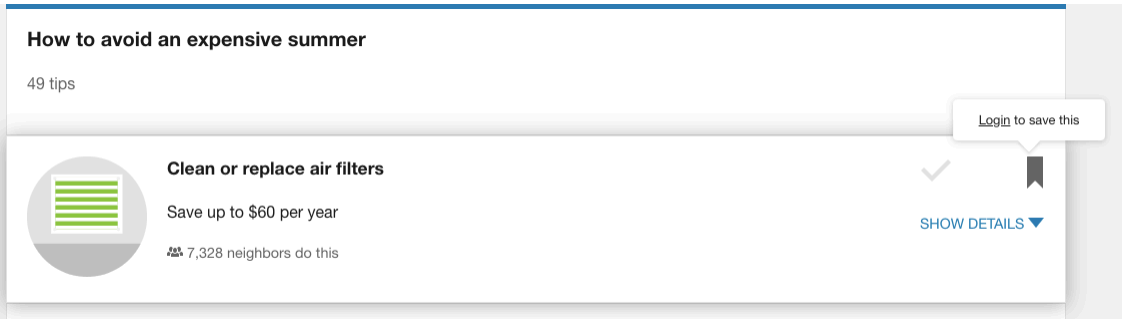
If a customer has multiple accounts, then the customer can view tips for a different account by clicking an account selector hosted on the utility website. All embedded widgets are then reloaded with data for the specified account.

If a customer has one service point for electricity and one for gas associated with their account, then the Ways to Save widget behaves as expected. The tips are prioritized based on the

customer's account or premise rather than individual service points. The user interface does not display a menu for switching between service points.

Unauthenticated Experience

Customers can access Ways to Save without logging in to their account. Tip filtering is not applied in this case, which means that all tip guides available for a utility are displayed to the customer. Customers viewing this experience are prompted to log in if they attempt to save a tip or mark it as completed.



Calculations

Intelligent Tip Targeting

The tips in Ways to Save are selected, ordered, and displayed for customers based on a programmatic process called Intelligent Tip Targeting. This process uses a series of logic and rules to filter, prioritize, and select the tips for display. See Intelligent Tip Targeting for more information.

Tip Heating and Cooling Disaggregation

The tips a customer receives are sometimes influenced by a proprietary heating and cooling disaggregation algorithm that Oracle Utilities Opower uses to estimate a breakdown of how much energy a customer consumes related to heating and cooling, based on local weather and AMI data. This breakdown, in turn, affects the weight that each tip has, which in turn affects how highly prioritized each tip is relative to other tips.

For example, customers who live in warm climates are more likely to lean heavily on air conditioning to cool their homes. They are therefore more likely to see tips related to air conditioning. As another example, if it looks like customers are spending a high amount of gas in the summer, then greater weight and priority will likely be assigned to gas-related tips.

Ultimately, the heating and cooling disaggregation informs the tip targeting process and generally results in tips that are better suited to the customer's context. It is especially useful for customers those who live in vastly different climate zones.

Note: The heating and cooling disaggregation is only available for utilities that meet the relevant customer data requirements, such as having weather data and AMI-level data.

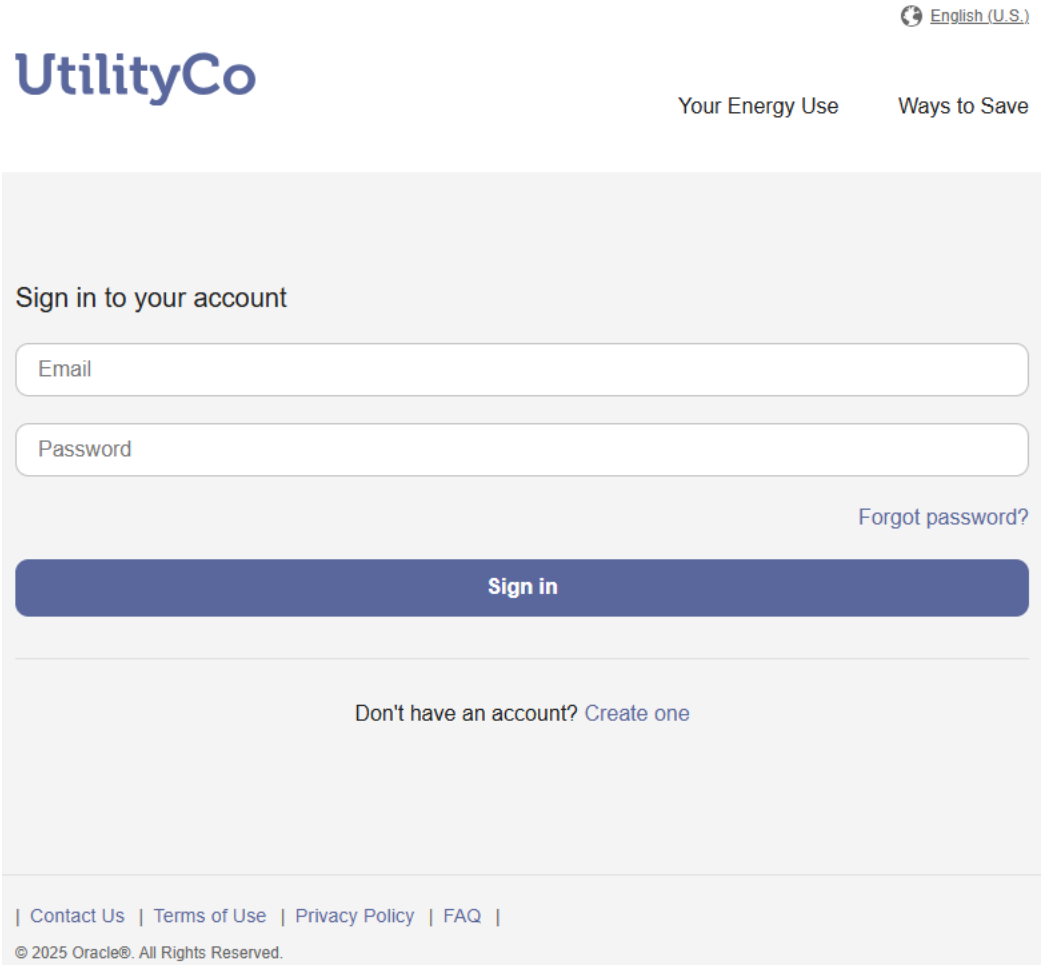
Tip Savings Estimates

Many tips contain an estimate of how much money a customer could save by completing the tip. To calculate these estimates, Oracle Utilities Opower conducts extensive research across many government, academic, and non-profit sources of energy information, and then derives a

set of proprietary tip-saving formulas. If necessary, Contact Your Delivery Team to discuss whether the tip savings estimates can be replaced with estimates of their own.

Welcome

A welcome experience is displayed when a customer has not signed in yet. Customers can sign in to their account, create a new account, or access tips on how to save energy.



Sign In: Customers can sign in to their account with their email address and password. There is a link to create an account if they have not already done so. There is also a link to recover a password if they forgot it.

Language Selector: A link at the top of the page allows the customer to select a preferred language for the content in the interface. Customers will only see options for languages that have been localized for their utility.

Your Energy Use Menu: The **Your Energy Use** menu includes links to the Smart Dashboard, Data Browser, and Bill Comparison widgets. Customers are prompted to sign in before they can access these features.

Ways to Save Menu: The **Ways to Save** menu includes links to the Home Energy Analysis and Ways to Save widgets. Customers are prompted to sign in or provide some uniquely identifying information before they can access the Home Energy Analysis. The Ways to Save page is accessible whether or not the customer has signed in. However, the tips are not personalized until the customer has signed in.

Providing Customer Support

The customer support capabilities of the Digital Self Service - Energy Management Web Portal vary depending on whether the portal is implemented as a standalone instance, or if it is seamlessly integrated with a utility's website and uses embeddable widgets.

Supporting Customers with Standalone Digital Self Service - Energy Management

Customer Service Representatives (CSRs) with the proper permissions have the ability to access customer web accounts in the standalone Digital Self Service - Energy Management Web Portal from a link in the Oracle Utilities Opower Customer Service Interface. CSRs are prompted to confirm that they have permission from the customer to view the account.

After logging in, the Digital Self Service - Energy Management Web Portal appears to the CSR much like it does to the customer, and the CSR is better positioned to answer questions about the customer's account. The only differences are that a CSR cannot modify the customer's email address or password.

CSRs can access the Digital Self Service - Energy Management Web Portal for every customer in the Oracle Utilities Opower program, regardless of whether the customer has created a web account. If a CSR and customer are making modifications at the same time, the changes are preserved for the last person that commits their changes.

See Supporting Digital Self Service - Energy Management for more information.

Supporting Customers with Embedded Digital Self Service Widgets

In embedded integrations of the Digital Self Service - Energy Management, one or more widgets are embedded within the pages of a utility's website. To provide customer support for these widgets, CSRs can open a customer's profile in the Customer Service Interface tool and access a widget gallery where they can view the widgets associated with that customer. The CSR can then view a widget as the customer sees it, and more quickly answer customer questions.

See Supporting Digital Self Service - Energy Management for more information.

5

Rates Engagement

The Oracle Utilities Opower Rates Engagement cloud services enable customers to view energy cost insights and trends, learn about available rate plans, and view projected energy cost savings from joining a new rate plan. This information helps customers better understand the cost implications of their energy use, and empowers them to be more energy efficient.

Rates Engagement cloud services are available for your program at an additional cost. For more information, see the Rates Engagement cloud services documentation.

For an overview of all cloud services available from Oracle Utilities, see the Oracle Energy and Water Cloud Service Descriptions online at Oracle Contracts - Cloud Services Service Descriptions.

6

Oracle Utilities Opower APIs

The Digital Self Service - Energy Management Cloud Service includes the Oracle Utilities Opower APIs. APIs provide programmatic resources to implement feature customizations or achieve deeper integration of features or data into utility applications. See the Oracle Utilities REST API for Digital Self Service Energy Management for more information.

> **Note**
>
> The REST APIs are only applicable to utilities who have purchased the legacy Oracle Utilities Opower Digital Self Service - Energy Management cloud service. They are not applicable to utilities who have purchased the new Oracle Utilities Opower Digital Self Service - Energy Management ***Residential*** cloud service. Contact Your Delivery Team if you need help determining what is applicable to your situation.

7

Inside Opower

The Digital Self Service - Energy Management Cloud Service includes access to Inside Opower. Inside Opower is an online, utility-facing suite of tools to help users across a utility stay informed of and manage their Oracle Utilities Opower program. Utility users can access key data such as program insights, analytics, reports, contact information, and documentation. See the Oracle Utilities Opower Inside Opower Product Overview for details.

8

Customer Service Interface - Program Management

The Digital Self Service - Energy Management Cloud Service includes access to Customer Service Interface - Program Management. The Customer Service Interface (CSI) is an online support tool that provides utility support staff with the information and functionality they need to manage the Oracle Utilities Opower program and answer customer questions. See the Oracle Utilities Opower Customer Service Interface - Program Management Product Overview for details.

9

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.