

# Oracle Utilities Opower Embeddable Widgets

## Integration Guide

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# Introduction

Many Oracle Utilities Opower web products consist of widgets. Widgets are modular pieces of functionality and content that have a responsive layout and flexible configuration options. For example, the [Bill Comparison](#) and [Data Browser](#) are both widgets.

Most widgets can be embedded directly on a webpage. For example, you may want to embed a widget on a page within your own utility website or on a page within your instance of the Oracle Utilities Opower Digital Self Service standalone web portal. Widgets are embedded using HTML5 [custom elements](#), a technology which allows widgets to be placed alongside other content on a webpage.

This guide provides recommendations on where and how to embed Oracle Utilities Opower widgets on your website. See [Guidelines for Embedding Widgets](#) for an overview of the factors to take into account, such as mobile breakpoints, CSS styling, and external links. You can also search or browse for the widget you are interested in to find recommendations specific to that widget.

Your Oracle Utilities Delivery Team is a useful resource in answering questions about embedding widgets and helping you with implementation. [Contact your Delivery Team](#) if you have any questions.

## Requirements

**Single Sign-On:** Oracle Utilities supports [OpenID Connect](#)-based single sign-on (SSO) for embedded widgets. Your Delivery Team will work with you to set it up.

**Warning:** Due to an updated handling of third-party cookies by the Safari browser, which is the native browser for iOS devices, SAML has been deprecated as an SSO integration method for embedded deployments of Digital Self Service - Energy Management widgets. Utilities that currently use SAML can work around the issue by asking users to [enable cross-site tracking](#). Oracle Utilities also strongly recommends that utilities migrate to OpenID Connect since SAML is no longer technically supported. [Contact your Delivery Team](#) if you have any questions or need guidance on this change. Standalone deployments of Digital Self Service - Energy Management can still use SAML-based SSO. For more information on configuring SSO, see the [Oracle Utilities Opower SSO Configuration Guide](#).

**Embedding Multiple Widgets:** For Oracle Utilities Opower products that consist of multiple widgets, you must complete the embedding process for each embeddable component. For more information, see "Guidelines for Embedding Widgets" on page 2 and "Embedding a Widget Using Web Components" on page 52.

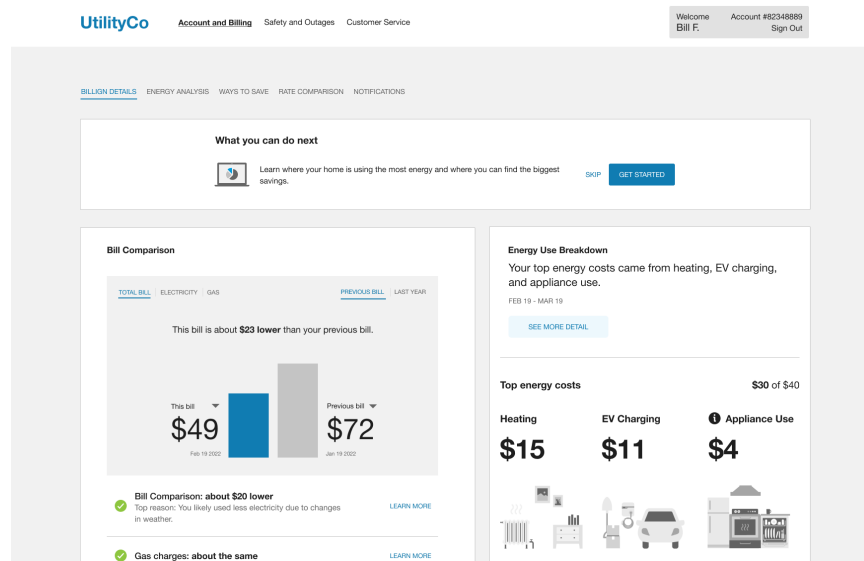
**Query Parameters:** Widgets can add query parameters to the URL of the pages on which they are embedded. For example, the [Ways to Save](#) widgets pass relevant tip information in the query parameters when customers interact with the widgets. Ensure that your infrastructure does not block or remove these widget-specific query parameters. Query string parameters are automatically detected and passed to the embedded widgets, which means the parameters do not need to be passed in the embedded script tag.

## Guidelines for Embedding Widgets

When embedding widgets on your website, there are multiple design and usability factors to consider, such as layout, CSS styling, and external linking. Use this page to review the main global factors. For guidance and recommendations for individual widgets, see [widget-specific guidelines](#).

## Embedded Widgets Example

An example of widgets embedded on a page is shown below. This example includes a [Next Best Action](#) banner, a [Bill Comparison](#), and a [Home Energy Analysis](#) breakdown. Together these widgets provide a consolidated view of billing details for a customer.



## Showing or Hiding Widgets for Different Customers

Not all widgets are applicable to all customers. For example, some widgets are available for residential customers but not non-residential customers. Other widgets can only show data for electricity use and so should not be displayed for gas-only customers. You may therefore want to create a list for yourself that identifies which widgets to show under different conditions. See [Determining a Widget's Applicability](#) for details.

## Layouts and Minimum Widths

When considering the placement of widgets on your website, it is important to note that Oracle Utilities Opower products only support certain layouts. Widgets respond to the size of the container that includes an embedded widget, and each widget requires a minimum amount of width in each screen layout design. Breakpoint ranges determine when the widget designs transition to a different layout design. All embeddable widgets use the following default breakpoint ranges, described in pixels (px), and have the following minimum width requirements:

Breakpoint Range	Minimum Width
640px and lower	320px
641px - 1024px	600px
1025px and higher	600px

## Authentication

Most widgets should be embedded on pages that are accessible only after the customer logs in to their utility account. Embedding widgets on a webpage that is accessible to pre-authenticated customers requires a redirect to fully authenticate customers before they can view the widget content.

Exceptions to this rule include widgets such as the optional [pre-authenticated workflow](#) for Home Energy Analysis and the [Confirmation Message](#). See the descriptions for these widgets for more details.

**Note:** You can embed more than one widget on a single webpage. See [Improving Widget Load Performance](#) and [Improving User Experience Scenarios with Custom Events](#) for tips on how to support this embedding strategy.

## Styling Widgets

Styles from the webpage can affect the widgets that are embedded on it. Oracle Utilities uses the utility branding guidelines to configure styles such as colors which include the primary color, efficient neighbors color, and the you color. Utilities provide colors as part of the utility branding guidelines in the [Oracle Utilities Opower Platform Configuration Guide](#).

Be aware of the following styling considerations related to embeddable widgets:

**Use Namespaces for Properties:** Use namespaces for properties to avoid overriding to widget styles. For example, it is recommended to use properties in the style of `.text-block {text-align:center}` rather than the more generic `td {align:center}`.

**Avoid Important Values:** Any styles defined as `!important` can override widget styles and could result in poor user experience.

## CSS Isolation

Widgets use web components rather than iframes, which means that the widgets are exposed to the Cascading Style Sheets (CSS) properties applied to the webpages that host the widgets. The [shadow DOM capability](#) is employed to prevent CSS conflicts between widgets and their respective webpages. This method isolates the widgets from the webpage CSS when viewed in browsers that support shadow DOM.

For browsers that do not support shadow DOM, widgets employ pseudo-shadow DOM logic which interprets the webpage's CSS and attempts to ignore it for the widget. This method can still encounter CSS conflicts if the top level CSS shares a class name with the widget CSS, and the top level CSS has a specific rule related to that class. If CSS conflicts are encountered, [contact your Delivery Team](#) to identify the conflict and determine a resolution.

## External Links to Widgets

If you plan to link to embedded widgets from external resources such as emails communications to customers, you can improve the user experience of these links by creating and linking to unique URLs for each widget experience. This technique is applicable when multiple widgets are embedded on the same webpage (URI) and are visually exclusive from other content. A common example of this is when widgets are embedded in different tabs of the same webpage.

Various techniques are available to uniquely identify specific content on a webpage, such as fragment identifiers, custom JavaScript, or single-page application routing. The utility is responsible for configuring and supporting any of these techniques to create unique links for the widget content embedded on their webpages. After the unique links are created, they can be used in customer communications and other external resources attempting to link directly to widget content.

For example, a customer email can use the unique link to link directly to a customer's [Bill Forecast](#) so that they see it immediately upon redirection, rather than linking to the top of the webpage which might not provide an immediate view of the Bill Forecast.



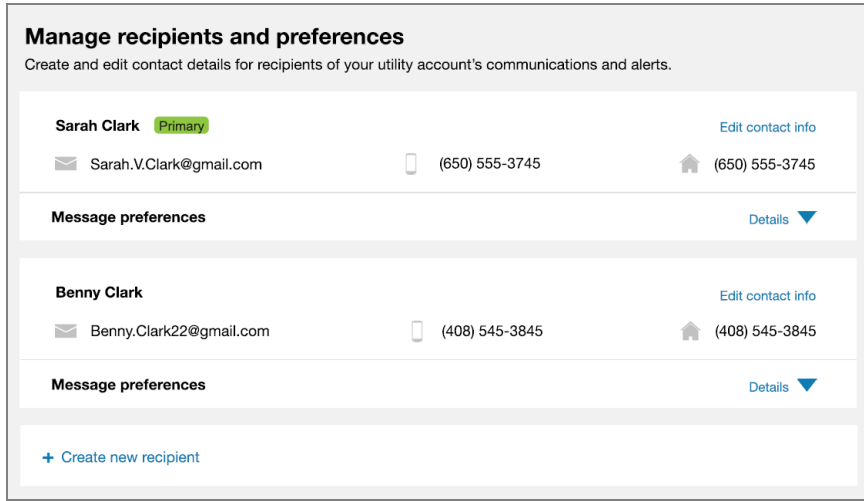
## Widget-Specific Guidelines

Utilities can choose which Digital Self Service widgets to embed on their website. At a minimum, you should consider including the [Bill Comparison](#), [Data Browser](#), [Home Energy Analysis](#), and [Ways to Save](#) widgets. Some widgets are best suited for a top-level page or dashboard in your website, while others are optimal for side-by-side displays. See individual widget descriptions for guidance and recommendations.

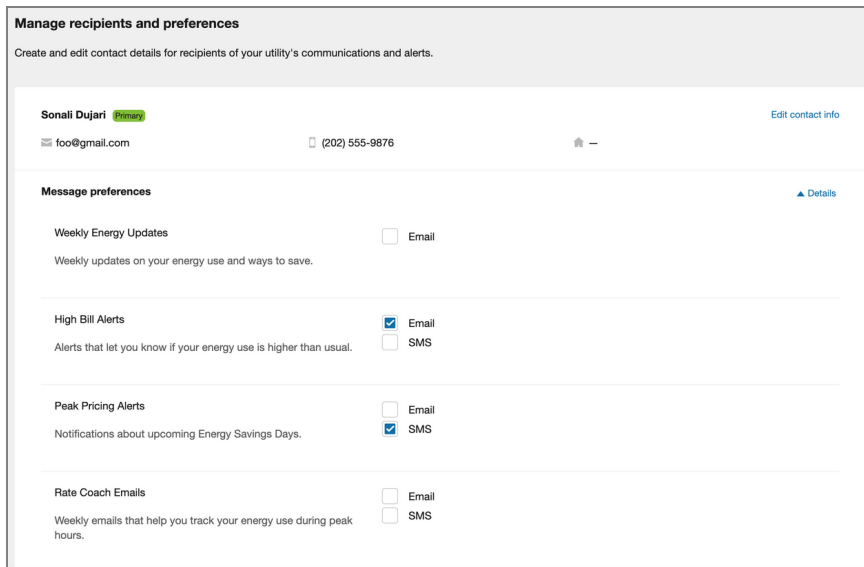
# Account Center

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. Users can edit the primary recipient's information, add additional recipients to the account, edit recipient details, and select alert preferences for each recipient. At a minimum, the Account Center displays information for the primary recipient.

## Example: Recipient Information Collapsed



## Example: Recipient Information Expanded



## Embedding Guidelines

**Widget Name:** widget-communication-preferences

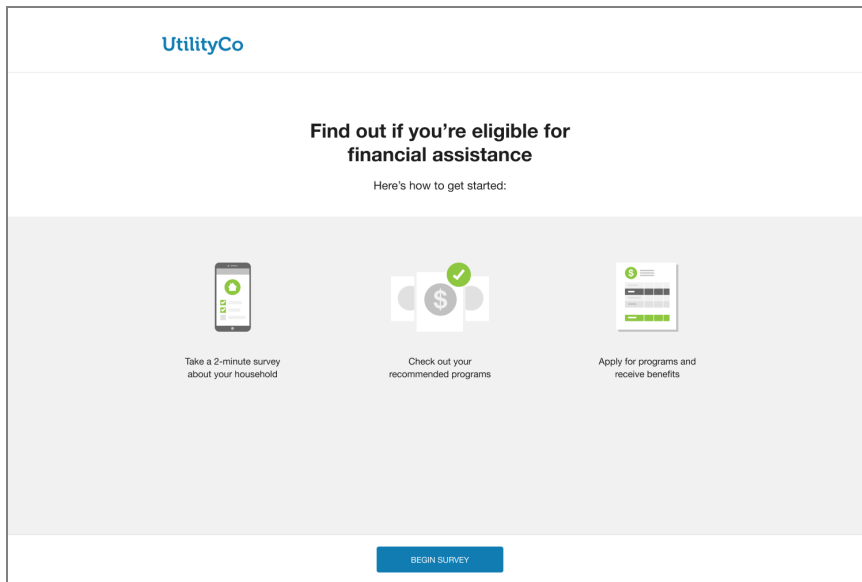
- This widget is well-suited for embedding in sections that use the full width of the page. Consider the use of tabs, accordions, or other elements that can show or hide content when embedding this widget on a webpage along with other widgets and content. [Your Delivery Team](#) will work with you to determine the ideal placement.
- Be aware that the number of recipients that a customer creates affects the vertical size of the widget. When more recipients are created, the vertical size of the widget expands. If the widget is embedded on a page with other widgets, then the expansion of the widget might push down any webpage content that is placed below it.

For more information about Account Center, including details about its data requirements and the overall user experience, see the resources below.

- [Account Center](#) for residential customers
- [Account Center](#) for business customers

## Affordability Savings Hub

The Affordability Savings Hub helps customers understand and apply for financial assistance programs at their utility. Customers can use the Savings Hub to learn what programs they are eligible for, and get direct access to enrollment instructions and the tools needed to begin the enrollment process.



## Embedding Guidelines

**Widget Name:** widget-lmi-survey-programs

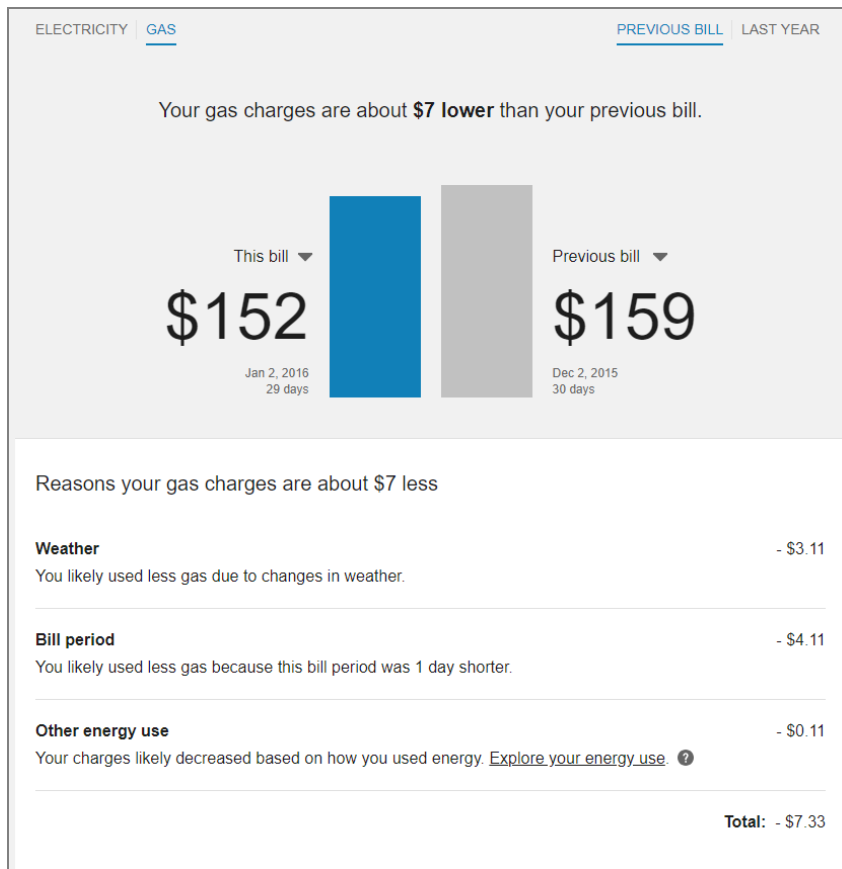
The Affordability Savings Hub consists of multiple sections, but is embedded as a single widget. There are several factors to consider when embedding it:

- The widget is a full-page experience, and so it must be embedded on its own page.
- It is recommended that you place the Savings Hub widget near the [Home Energy Analysis](#) widget or the billing section of your website. This is because customers will likely find a logical connection between signing up for an assistance program, learning more about where they use the most energy, and viewing their billing information. [Your Delivery Team](#) will work with you to determine the ideal placement.

For more information about Affordability Savings Hub, including details about its data requirements and the overall user experience, see [Affordability Savings Hub - Customer Experience](#).

## 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.



## Embedding Guidelines

**Widget Name:** widget-bill-compare-enhanced

- This widget is well-suited for embedding in sections that use the full width of the page. Consider the use of tabs, accordions, or other elements that can show or hide content when embedding this widget on a webpage along with other widgets and content.
- Embed this widget directly on highly-visited areas of the utility website such as an account overview dashboard. User research has shown that customers investigating a billing question want to know whether their bill is normal compared to historical energy use. The Bill Comparison widget displays current and most recent bill costs by default, which enables quick validation as to whether their energy use is normal.

Secondary links in the widget encourage further exploration through tools such as the [Data Browser](#).

For more information about Bill Comparison, including details about its data requirements and the overall user experience, see the resources below.

- [Bill Comparison](#) for residential customers
- [Bill Comparison](#) for business customers

## 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.



## Embedding Guidelines

**Widget Name:** `widget-bill-forecast`

- Due to its compact size, this widget does not adhere to the default widget breakpoints and minimum pixel widths. It is well-suited for embedding in sections that do not use the full width of the page.
- Embed the Bill Forecast on highly-visited areas of the utility website such as an account overview dashboard or billing pages. Customers that are motivated to take savings actions are directed to [Ways to Save](#).

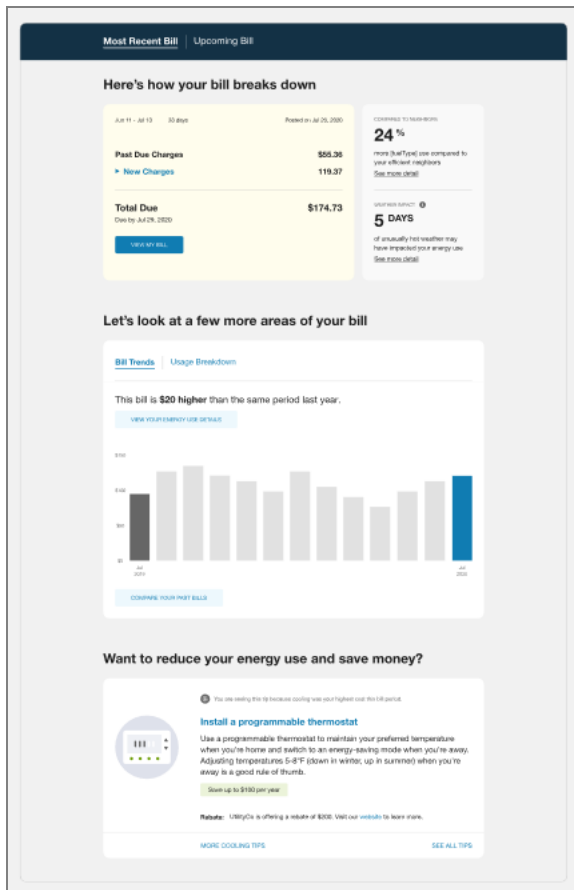
For more information about Bill Forecast, including details about its data requirements and the overall user experience, see the resources below.

- [Bill Forecast](#) for residential customers
- [Bill Forecast](#) for business customers

# Bill Guide

The Bill Guide is a unified dashboard of billing insights that helps customers better understand their most recent bill and upcoming bill. It includes a Most Recent Bill section, which displays a bill breakdown, weather insight, neighbor comparison, top end-use categories, and an energy efficiency tip. It also includes an Upcoming Bill section, which displays a forecast, an energy efficiency tip, and an insight about the weather in the bill period so far, as well as an insight about the remainder of the bill period.

**Note:** Bill Guide is embedded as a single widget rather than as multiple separate widgets. Utilities must be on the latest technical framework for widgets in order to embed it.



## Embedding Guidelines

**Widget Name:** widget-bill-guide



- Bill Guide is best suited for a prominent location on your website, since it presents a unified dashboard of key billing insights and has links to many other smaller widgets within it. It is recommended that you place it in a primary or top-level section on your website, such as the first among your tabs or pages related to energy efficiency.
- Bill Guide contains multiple components and insights. To keep the amount of information manageable for end users, consider embedding it on its own page rather than on the same page as another widget.

For more information about Bill Guide, including details about its data requirements and the overall user experience, see the [Bill Guide](#) description in the product overview.

## Business Profile

The Business Profile allows business customers to capture basic information about their businesses. This information can then be used in other features or widgets to provide valuable energy use insights.

UtilityCo Account & Preferences Logout

Energy Usage Bill Analysis Recommendations Business Profile

333 SOUTH MAIN STREET, HUNTINGTON BEACH, CA - 3452347

### Your Business Profile

Answer a few questions to help us customize your web experience.

**Business Profile**

Business name  
Coffee on Main

Business type  
Restaurant

Approximate square footage  
1,200 square feet

Primary heating fuel type  
Electric

Heating equipment  
Choose one

Cooling equipment  
Air Conditioning

**83%** complete

Your profile is only 83% complete  
Your answer selections are **private** and only used to help understand your business.

## Embedding Guidelines

**Widget Name:** widget-business-profile

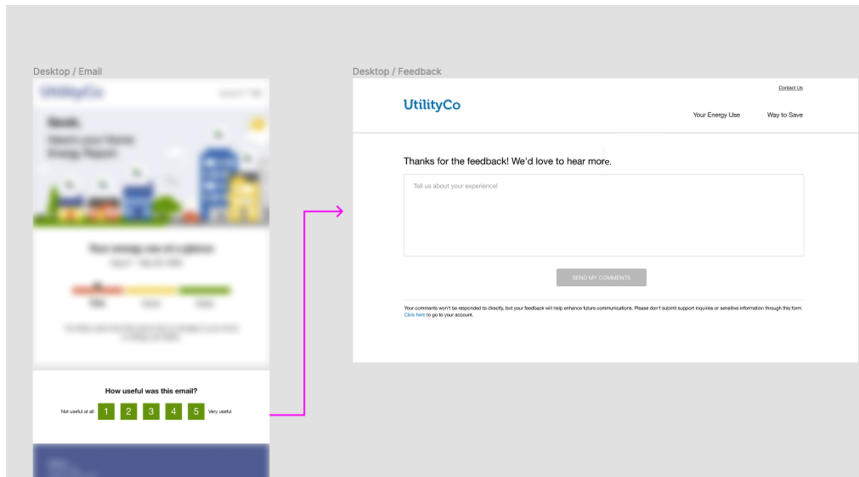
- Since this widget includes a header and two vertical sections of content, it is well suited for using the full width of its own page.
- Since this widget focuses on profile information, it is suitable for locations near any other profile features or account settings sections on your website. [Your Delivery Team](#) will work with you to determine the ideal placement.

For more information about the Business Profile, see the [Business Profile](#) description in the relevant product overview.

## 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.

The screenshot below shows an example of the open-ended feedback Confirmation Message that can be displayed to customers.



## Embedding Guidelines

**Widget Name:** widget-bite-sized

- There are different versions of the Confirmation Message. The version that is displayed varies depending on which query parameters are passed in the URL clicked by the customer. [Your Delivery Team](#) will work with you to give an overview of the different versions of the widget and the query parameters available. You can also learn more in the [Confirmation Message](#) description in the product overview.

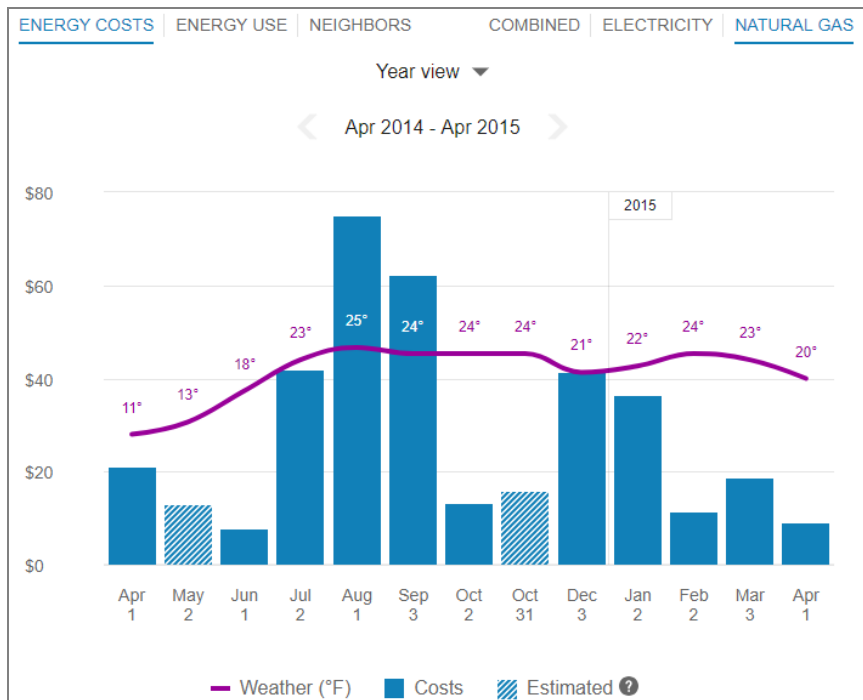
- As described in [Embedding a Widget](#), use the following code snippet convention to embed the widget: `<opower-widget-bite-sized></opower-widget-bite-sized>`. The code snippet does not need to include an `opower-instance` attribute.
- Ensure that URL query parameters are not removed when a customer arrives to the page where the widget is embedded. The widget uses those parameters to trigger the correct experience and successfully store data as part of the experience.
- Embed the widget on a pre-authenticated page so that customers do not need to enter their login credentials to see it. A pre-authenticated link is used to associate the customer's answer with their account and keep a record of the answer.
- The widget is meant to gather responses or feedback from customers, or to prompt them to take a survey or learn more about an offer. This requires them to focus and take action. With this in mind, consider embedding the widget on its own page so that there is little to no other content to distract them.

**Note:** If you are using widgets that are configured in the [Opower Configuration Tool \(OCT\)](#), then the Confirmation Message cannot be embedded on an Opower-hosted feedback webpage due to certain technical limitations. Contact your Delivery Team to discuss possible alternatives or workarounds. The widget can still be embedded a utility-hosted webpage.

For more information about Confirmation Message, including details about its data requirements and the overall user experience, see the [Confirmation Message](#) description in the product overview.

## 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 different kinds of energy or resource use are available in the feature. If applicable, customers can also use menus to switch between multiple accounts or service points.



## Embedding Guidelines

**Widget Name:** widget-data-browser

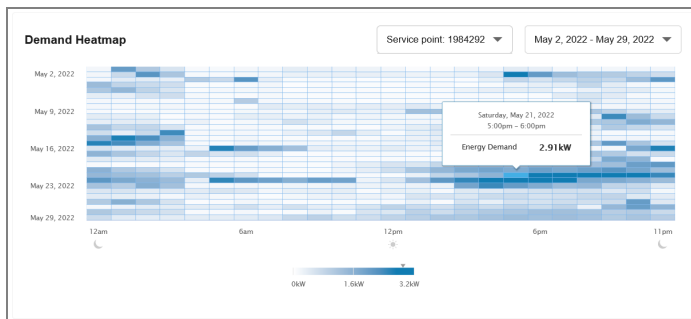
- This widget is well-suited for embedding in sections that use the full width of the page. Consider the use of tabs, accordions, or other elements that can show or hide content when embedding this widget on a webpage along with other widgets and content.
- Data Browser is intended for customers interested in further exploring their energy use or billing status. Other products and widgets (such as [High Bill Alerts AMI](#), [Weekly Energy Updates](#), [Energy Use Overview](#), [Bill Forecast](#), and [Neighbor Comparison](#)) can send customers directly to the Data Browser to perform this additional analysis. Since many customers are redirected to this widget, prominent utility site location is not as important a factor to drive user interaction with this widget.
- [Green Button](#) is commonly included along with the Data Browser, so consider embedding these two widgets on the same page.

For more information about Data Browser, including details about its data requirements and the overall user experience, see the resources below.

- [Data Browser](#) for residential customers
- [Data Browser](#) for business customers

## Demand Heatmap

The Demand Heatmap displays a business customer's demand data in a color-coded grid, and indicates the level of energy demand during specific times, days, and weeks of the year. This information shows at what point in time a business draws the most energy from the grid, allowing business customers to consider how to lower their demand during those times in the future.



## Embedding Guidelines

**Widget Name:** widget-demand-heatmap

- This widget is well-suited for embedding in sections that use the full width of the page. Consider the use of tabs, accordions, or other elements that can show or hide content when embedding this widget on a webpage along with other widgets and content.
- Keep in mind that the Demand Heatmap will grow vertically to include more rows of data for customers who have bi-monthly or quarterly bills. This means that any content that appears beneath the widget may be pushed down further for customers who are on these longer billing cycles.

For more information about Demand Heatmap, including details about its data requirements and the overall user experience, see the [Demand Heatmap](#) description in the relevant product overview.

## Green Button

The Green Button 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.

The 'Download my data' dialog box has a 'CLOSE' link in the top right. It contains two sections: 'Time Period' and 'Format'. Under 'Time Period', there are three radio buttons: 'Export all bill totals' (selected), 'Export usage for a bill period', and 'Export usage for a range of days'. Below the second option is a dropdown menu showing 'Since your last bill: Dec 01, 2010'. Below the third option are 'From' and 'To' date pickers with values '11/30/2010' and '12/31/2010'. Under 'Format', there are two radio buttons: 'CSV' (selected) and 'XML'. At the bottom are 'CANCEL' and 'EXPORT' buttons.

## Embedding Guidelines

**Widget Name:** widget-usage-export

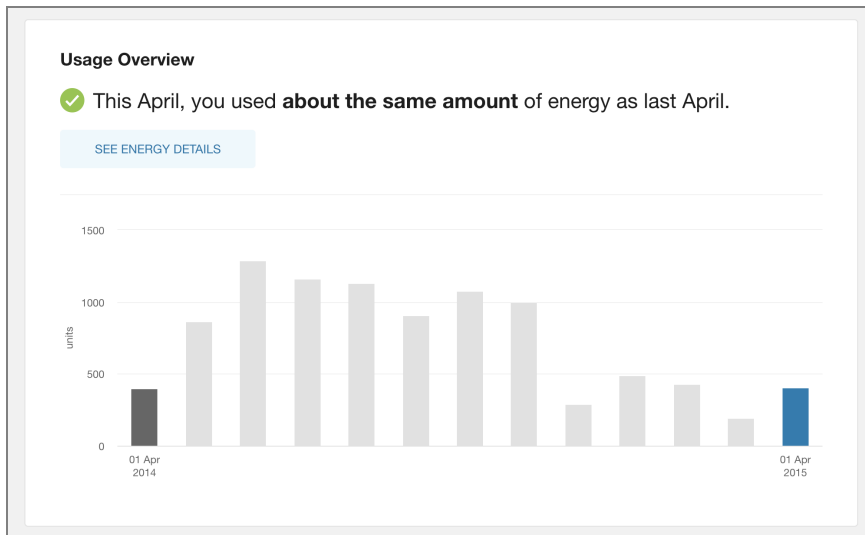
The Green Button is typically included under the Data Browser since it is natural for customers to see a connection between visualizing their data in a graph and then downloading more details about it. Consider embedding these two widgets on the same page when completing the steps in [Embedding a Widget](#).

For more information about Green Button, including details about its data requirements and the overall user experience, see the resources below.

- [Green Button](#) for residential customers
- [Green Button](#) for business customers

## Energy Use Overview

The Energy Use Overview displays the most recent bill period's energy use in comparison to that of a bill from the same bill period for the previous year.



## Embedding Guidelines

**Widget Name:** `widget-usage-overview`

- This widget acts as a customer's energy dashboard and is well-suited for a primary location on the utility website, such as the initial landing page after the customer has been authenticated. User research and customer interviews have shown that utility customers prefer personal comparison information available with this widget.
- You can also consider embedding this widget on the same page as the [Highest Energy Use Days](#) widget. When viewed together, these widgets make it easy for customers to see current use, explore details over time, and recognize use trends and patterns.

For more information about Energy Use Overview, including details about its data requirements and the overall user experience, see the [Energy Use Overview](#) description in the product overview.

## Guest User Access

The Guest User Access feature allows primary utility business account holders to invite guest users to have access to their Business Customer Engagement Digital Self Service - Energy Management account. This is particularly helpful for staff at large businesses who oversee multiple business locations and who want other users to have access to their energy use trends, insights, and tips on how to save energy.

The Guest User Access feature consists of several interrelated components: a widget to manage authorized account viewers, an email invitation, and a Guest User Portal. This page focuses on the widget used to manage authorized account viewers.

### Managed Authorized Viewers Widget Example

#### Manage authorized account viewers

Authorized account viewers are able to see your business' energy use, billing history, forecasted usage, and recommendations. Viewer accounts don't have access to pay bills, stop service, or make other changes to your account.

#### Add account viewers

Email address

First name

Last name

#### Pending accounts

Invitations have been sent to the following individuals with instructions on how to activate their accounts.

First name	Last name	Email	Revoke access	Resend invitation
John	Doe	john.doe@example.com	✕	📧
Jane	Smith	jane.smith@example.com	✕	📧

#### Active accounts

Accounts will appear in this table within 24 hours of activation.

## Embedding Guidelines

**Widget Name:** `widget-guest-user-access`

- Since this widget consists of several sections and columns of contact information, it is recommended that you embed it on its own page with no other widgets that might



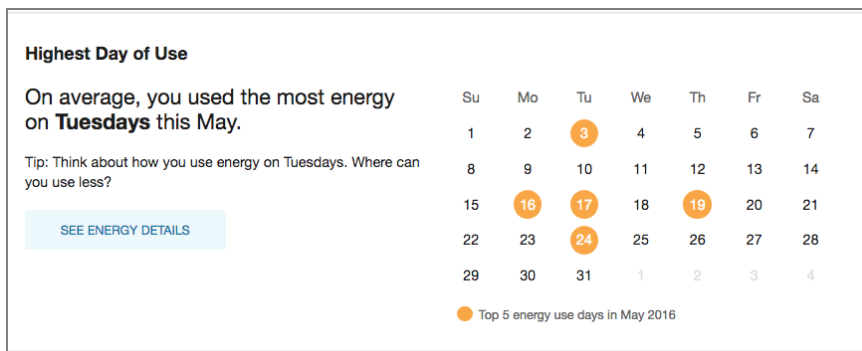
distract the user.

- Since this widget focuses on inviting guest users to view energy usage information, consider placing its page in the same navigation area where other energy usage widgets are listed, such as the [Data Browser](#), [Bill Comparison](#), or [Bill Forecast](#). [Your Delivery Team](#) will work with you to determine the ideal placement in the navigation.

For more information about Guest User Access, including details about its requirements and the overall user experience, see the [Guest User Access](#) description in the relevant product overview.

## 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.



## Embedding Guidelines

**Widget Name:** widget-highest-day-of-use

- This widget is well-suited for a primary location on the utility website, such as the initial landing page after the customer has been authenticated. User research and customer interviews have shown that utility customers prefer personal comparison information available with this widget.
- You can also consider embedding this widget on the same page as the [Energy Use Overview](#). When viewed together, these widgets make it easy for customers to see current use, explore details over time, and recognize use trends and patterns.

For more information about Highest Energy Use Day, including details about its data requirements and the overall user experience, see the [Highest Energy Use Days](#) description in the product overview.

## 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.

There are two versions of the Home Energy Analysis. The way that the widgets are embedded varies slightly depending on which version is used. 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

The Home Energy Analysis v1 is a visual, interactive tool that prompts customers to answer simple questions about their home attributes and energy habits, and generates a breakdown of energy use in specific categories. The Home Energy Analysis consists of multiple widgets that must be embedded separately.

#### Pre-Survey

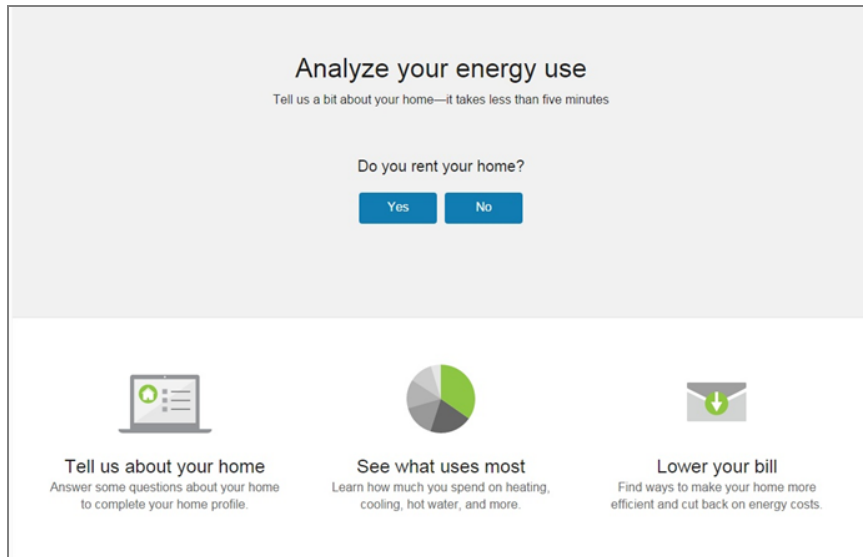
For customers who have not yet started the survey, the Home Energy Analysis displays information about the survey and provides the first question to begin the analysis. This messaging can include information on the estimated time it would take to complete the survey, as well as the benefits of completing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

This experience is provided as part of the `widget-survey` widget. It must be placed alongside the post-survey experience (`widget-disaggregation`) to provide a single, authenticated location for customers to interact with the Home Energy Analysis. This pre-survey content is fully hidden for customers after they complete the survey.

To support this behavior, the widget must define an `opower-instance` attribute as part of the embedded tag. The full embedded tag definition is as follows:

```
<opower-widget-survey opower-instance="widget-survey-splash"></opower-  
widget-survey>
```

**Note:** If a customer starts but does not complete the survey, progress information and a link to complete the survey is displayed. This experience is provided through the embeddable widget and redirects customers to the survey, which must also be embedded on a separate page.



## Survey

The survey 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. It is required to embed the survey, provided with the `widget-survey` widget (the same widget used for the pre-survey experience), on a separate webpage devoted to hosting the survey questions. This webpage must not include a footer, as well as exclude navigation panels on the sides of the webpage to provide an optimal user experience when completing the survey.

To support this behavior, the widget must define an `opower-instance` attribute as part of the embedded tag. The full embedded tag definition is as follows:

```
<opower-widget-survey opower-instance="widget-survey-full"></opower-  
widget-survey>
```

## Disaggregation

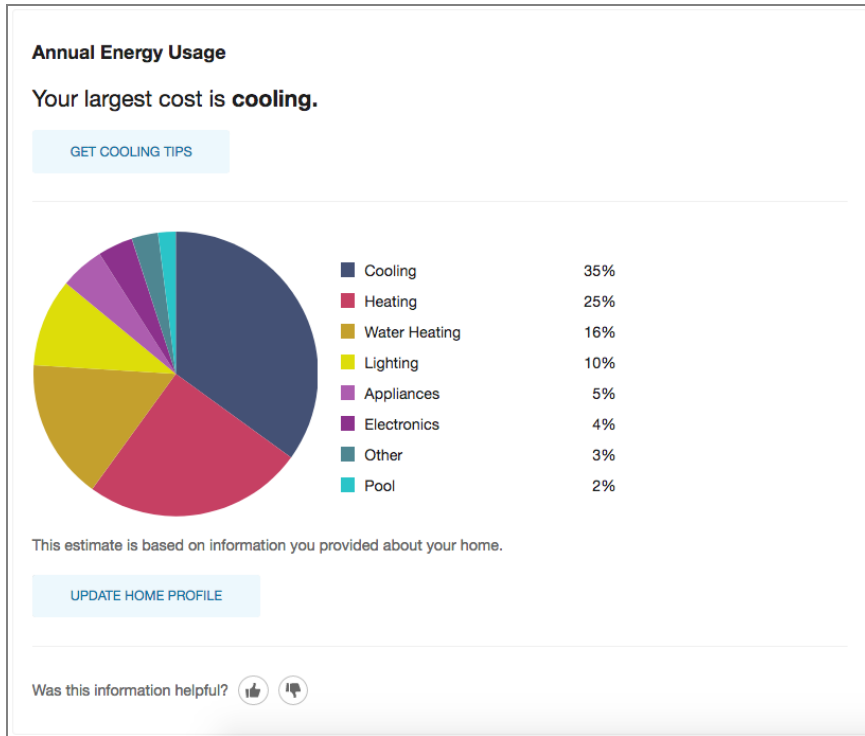
After the customer answers the last question and finishes the survey, the Home Energy Analysis displays their energy use breakdown based on their responses. Customers can select each individual energy use category to see what percentage of their home's energy use it comprises, category-specific tips, and a list of what contributes to energy use for the category.

This experience is provided as part of the `widget-disaggregation` widget. It must be placed alongside the pre-survey experience to provide a single location for customers to interact with the Home Energy Analysis. This content is fully hidden for customers until they complete the survey. To support this behavior, the widget must define an `opower-`

`instance` attribute as part of the embedded tag. The full embedded tag definition is as follows:

```
<opower-widget-disaggregation opower-instance="widget-disaggregation"></opower-widget-disaggregation>
```

Embed this widget in proximity to billing information to provide further context and insights into a customer's energy costs.



### Pre-Authenticated - EasyOpen Workflow

In addition to the standard authenticated workflow for the Home Energy Analysis, you can allow customers to access the survey without logging in to their utility account. For example, customers of Email Home Energy Reports can follow a link from within their 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 the email link in their email, they are prompted to provide their billing account number and their full name as it appears on their bill.

To support the embedding of the EasyOpen workflow, you must duplicate the same embedding strategy described above, but embed the widgets on pre-authenticated pages. This includes one pre-authenticated page for the pre-survey and post-survey disaggregation experiences, and one pre-authenticated page for the full survey questions. All other requirements listed above apply for the pre-authenticated versions of the

widgets. To use the pre-authenticated experience, the widgets must define an `opower-instance` attribute as part of the embedded tag. The full embedded tags are listed below:

- Pre survey:

```
<opower-widget-survey opower-instance="widget-survey-easyopen-splash"></opower-widget-survey>
```

- Post-survey disaggregation:

```
<opower-widget-disaggregation opower-instance="widget-disaggregation-easyopen"></opower-widget-disaggregation>
```

- Full survey questions:

```
<opower-widget-survey opower-instance="widget-survey-easyopen-full"></opower-widget-survey>
```

## Home Energy AnalysisOracle v2

The Home Energy Analysis v2 is a visual, interactive tool that prompts customers to answer simple questions about their home attributes and energy habits, and generates a breakdown of their top energy use in specific categories. The Home Energy Analysis consists of multiple widgets that must be embedded separately. Your Delivery Team will work with you to identify the optimal placement.

### Pre-Survey

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.

This experience is provided as part of the `widget-survey` widget. It must be placed alongside the disaggregation experience (`widget-usage-categories`) to provide a single, authenticated location for customers to interact with the Home Energy Analysis. This pre-survey content is fully hidden for customers after they complete the survey.

To support this behavior, the widget must define an `opower-instance` attribute as part of the embedded tag. The full embedded tag definition is as follows:

```
<opower-widget-survey opower-instance="widget-survey-splash"></opower-  
widget-survey>
```

**Note:** If a customer starts but does not complete the survey, progress information and a link to complete the survey is displayed. This experience is provided through the embeddable widget and redirects customers to the survey, which must also be embedded on a separate page.

See your energy use breakdown

Tell us a bit about your home—it takes just a few minutes

How many people live in your home?

Select one...

**Tell us about your home**  
Answer some questions about your home to receive personalized usage breakdowns.

**See what uses most**  
Learn how much you spend on heating, cooling, laundry, and more.

**Lower your bill**  
Find ways to make your home more efficient and cut back on energy costs.

## Survey

The survey 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. It is required to embed the survey, provided with the `widget-survey` widget (the same widget used for the pre-survey experience), on a separate webpage devoted to hosting the survey questions. This webpage must not include a footer, as well as exclude navigation panels on the sides of the webpage to provide an optimal user experience when completing the survey.

To support this behavior, the widget must define an `opower-instance` attribute as part of the embedded tag. The full embedded tag definition is as follows:

```
<opower-widget-survey opower-instance="widget-survey-full"></opower-  
widget-survey>
```

## 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 view individual energy use categories to see what percentage of their home's energy use it comprises, find tips for their top three energy use categories, and access more ways to save.

This experience is provided as part of the `widget-usage-categories` widget. It must be placed alongside the pre-survey experience to provide a single location for customers to interact with the Home Energy Analysis. This content is fully hidden for customers until they complete the survey. To support this behavior, the widget must define an `opower-instance` attribute as part of the embedded tag. The full embedded tag definition is as follows:

```
<opower-widget-usage-categories opower-instance="widget-usage-  
categories"></opower-widget-usage-categories>
```

Embed this widget in proximity to billing information to provide further context and insights into a customer's energy costs.

**Your Energy Use Breakdown** This Bill ▾

Your top energy costs came from heating, electric vehicle, and appliances.  
 JAN 21 - FEB 18

Top energy costs \$32 of \$44

<p>Heating</p> <p><b>\$18</b></p>	<p>Electric Vehicle</p> <p><b>\$10</b></p>	<p><b>i</b> Appliances</p> <p><b>\$4</b></p>
-----------------------------------	--	--

Tips for reducing energy use ▾

More energy costs (4)

**\$12** of \$44

Select a category to see relevant tips.

<b>🔌 Water Heating</b>	<b>\$4</b>
<b>🔌 Electronics</b>	<b>\$3</b>
<b>💡 Lighting</b>	<b>\$1</b>
<b>🔌 All Other</b>	<b>\$4</b>

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.

[UPDATE MY HOME PROFILE](#)

Was this information helpful? 👍 👎

### Pre-Authenticated - EasyOpen Workflow

In addition to the standard authenticated workflow for the Home Energy Analysis, you can allow customers to access the survey without logging in to their utility account.



For example, customers of [Email Home Energy Reports](#) can follow a link from within their 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 the link in their email, they are prompted to provide their billing account number and their full name as it appears on their bill.

To support the embedding of the pre-authenticated workflow, you must duplicate the same embedding strategy described above, but embed the widgets on pre-authenticated pages. This includes one pre-authenticated page for the pre-survey and post-survey disaggregation experiences, and one pre-authenticated page for the full survey questions. All other requirements listed above apply for the pre-authenticated versions of the widgets. To use the pre-authenticated experience, the widgets must define an `opower-instance` attribute as part of the embedded tag. The full embedded tags are listed below:

- Pre-survey:

```
<opower-widget-survey opower-instance="widget-survey-easyopen-splash"></opower-widget-survey>
```

- Post-survey disaggregation:

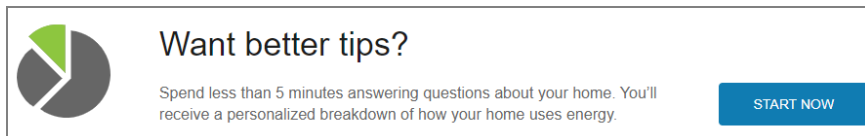
```
<opower-widget-usage-categories opower-instance="widget-usage-categories-easyopen"></opower-widget-usage-categories>
```

- Full survey questions:

```
<opower-widget-survey opower-instance="widget-survey-easyopen-full"></opower-widget-survey>
```

## Home Energy Analysis Call-to-Action

The Home Energy Analysis Call-to-Action widget encourages customers to complete the [Home Energy Analysis](#) in order to receive better tips.



## Embedding Guidelines

**Widget Name:** `widget-hea-cta`

- It is recommend that you embed this widget at the top of the [Ways to Save](#) page so that customers see a natural connection between the tips and the Home Energy Analysis. You can also embed it near other widgets that display tips, such as [Tips Light](#) and [Tips List](#).
- Be aware that this widget is hidden for customers who have completed the Home Energy Analysis survey, so it must be embedded in a way that accounts for this behavior.
- You can also consider embedding this widget on an account overview dashboard to use minimal screen space while also directing customers to complete the survey.

## Home Energy Analysis Light

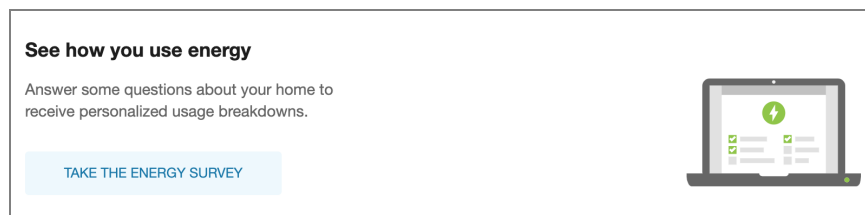
The Home Energy Analysis (HEA) Light widget encourages customers to complete the HEA survey if they have not taken it already, and displays an energy use disaggregation for customers who have completed the survey. The widget is designed to be included in the [Smart Dashboard](#) or embedded on other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

**Note:** There are two versions of Home Energy Analysis Light—version 1 and version 2—and there are significant differences in the user experience between them. The guidance on this page applies only to version 2 since only version 2 can be embedded. [Contact your Delivery Team](#) if you have questions about which version of the widget you have, and to discuss options for upgrading if necessary.

### Survey Prompt

The HEA Light survey prompt is shown if a customer has not started or not completed the survey. The appearance of the prompt varies depending on the survey status. If the customer has not started the survey, the widget displays a prompt to start it. If the customer has started but not completed the survey, the widget shows a progress bar and prompts the customer to complete it.


#### Example: Survey Not Started



#### Example: Survey Started, Not Completed

**Did you forget something?**

Finish answering questions about your home so we can show you a detailed breakdown of your energy use.



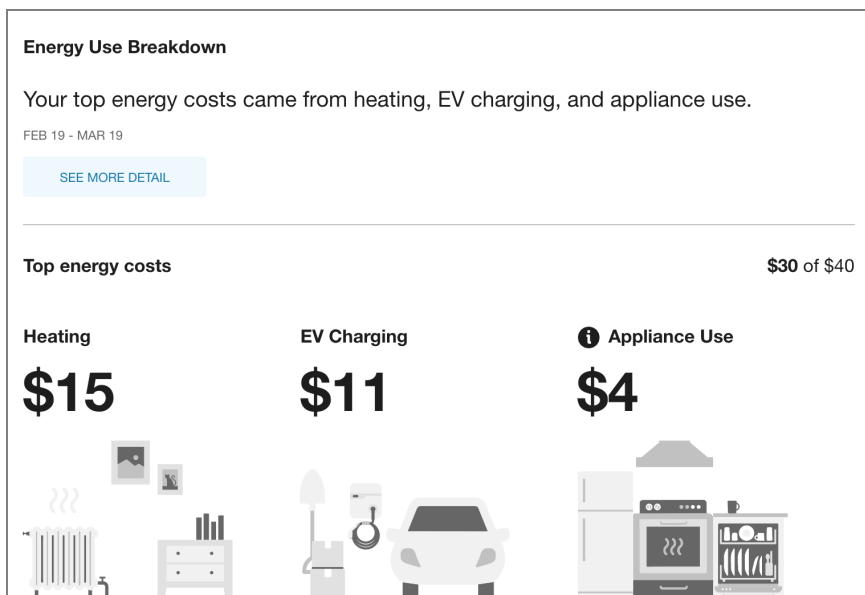
50% complete

[COMPLETE YOUR HOME ENERGY SURVEY](#)

## Disaggregation

The HEA Light disaggregation displays a breakdown of the customer's top three categories of energy use. There are two pathways to displaying the disaggregation in the HEA Light widget:

- After the survey is completed, the HEA Light widget is updated to display the disaggregation.
- Before the survey is completed, the HEA Light widget shows a disaggregation so that customers have quicker access to the results. In this case, the [survey prompt](#) described above is hidden, and customers can still take the survey to update their answers.



## Embedding Guidelines

**Widget Name:** widget-usage-categories-overview

- The HEA Light widget is designed for display on a landing page or dashboard. It can be displayed as part of the [Smart Dashboard](#) or embedded on a separate utility-

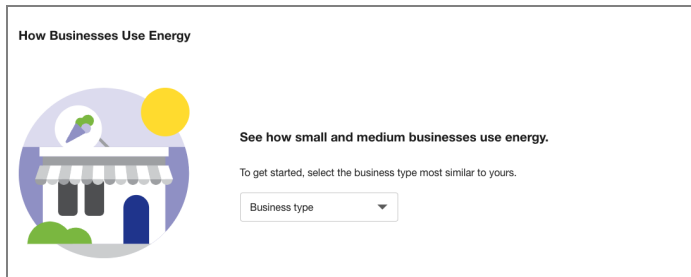
hosted webpage that contains dashboard-like widgets such as [Energy Use Overview](#) or [Highest Energy Use Day](#).

- The HEA Light widget is also ideal for placement near billing information (such as the [Bill Comparison](#)) since it can provide a summary of the customer's top three energy uses in the most recent bill period.
- The HEA Light widget has a flexible width, which means it can be embedded beside another widget or it can use the full width of the page. See [Embedded Widgets Example](#) for a visual idea of how HEA Light could look when placed beside the [Bill Comparison](#).

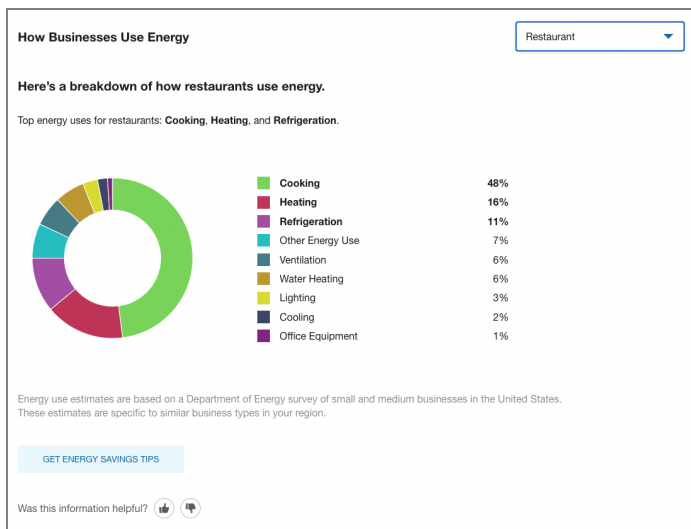
## How Businesses Use Energy

The How Businesses Use Energy feature allows business customers to see an estimated annual breakdown of energy use categories (such as heating, cooling, lighting, refrigeration, and so on) based on primary business type or activity (such as education, healthcare, retail, or restaurant).

### Example of Business Type Selector



### Example of Energy Breakdown



## Embedding Guidelines

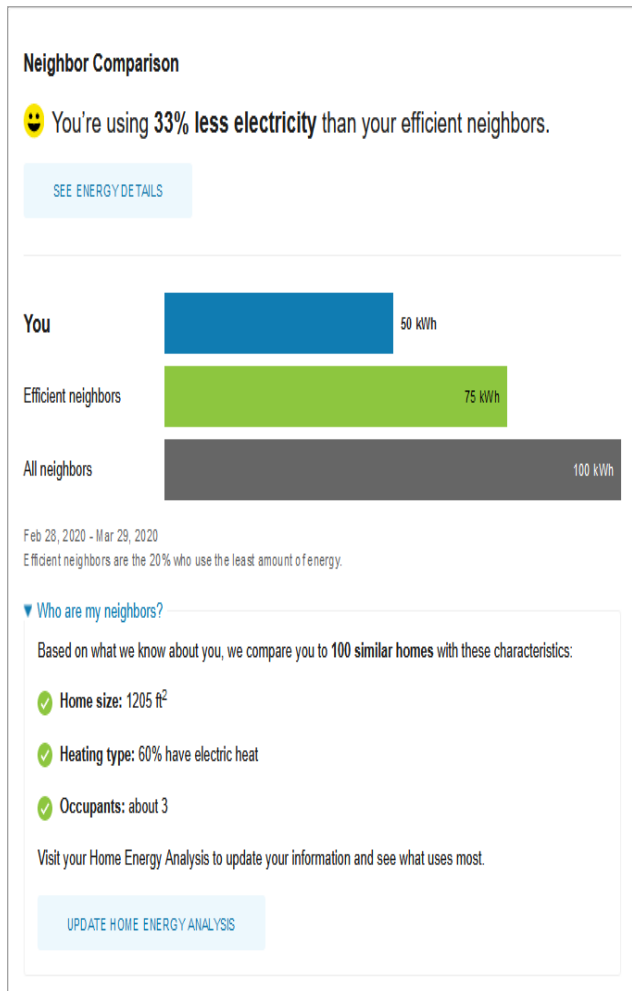
**Widget Name:** widget-business-disaggregation

- This widget is well-suited for embedding in sections that use the full width of the page. Consider the use of tabs, accordions, or other elements that can show or hide content when embedding this widget on a webpage along with other widgets and content.
- This widget encourages customers to review tips on how to improve their energy efficiency, so consider placing the widget near to the [Ways to Save](#) widget.

For more information about this widget, including details about its data requirements and the overall user experience, see the [How Businesses Use Energy](#) description in the relevant product overview.

## 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.



## Embedding Guidelines

**Widget Name:** `widget-neighbor-comparison`

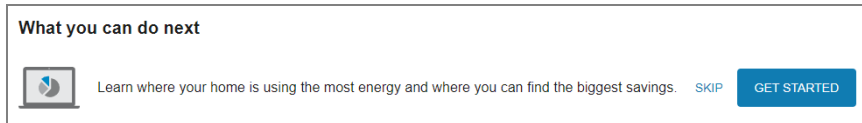
- The Neighbor Comparison is ideally suited for presenting personalized energy information to highly-visited areas of the utility website, such as an account overview dashboard. Alternatively, it can provide customers further context about their energy use when it is included on pages related to billing information.

- Including the widget on highly-visited areas of the utility website is also beneficial since the Neighbor Comparison encourages customers to explore other insights. For example, customers interested in exploring historical trends in their energy use may be directed to Energy Use Details (also called the [Data Browser](#)) or [Ways to Save](#). For customers exploring the "Who are my neighbors?" section, the widget motivates customers to complete the [Home Energy Analysis](#) survey.

For more information about Neighbor Comparison, including details about its data requirements and the overall user experience, see the [Neighbor Comparison](#) description in the product overview.

## Next Best Action

Next Best Action provides dynamic and actionable web banners that can be shared with all customers, or targeted to specific customer groups. The web banners guide customers to the most valuable opportunities or solutions available and helpful tools to help them manage energy use and cost. Customer attributes and segmentation can be employed to determine the best banners to deliver timely announcements, notifications, and actions to each customer.



## Embedding Guidelines

**Widget Name:** `widget-next-best-action`

- The widget can be embedded anywhere on the page that can fit the responsive content. Banners are typically placed at the top or the bottom of a page
- Next Best Action can be embedded on multiple pages. The embedding process described in this document must be completed for each applicable page. See [Embedding a Widget](#) for details.
- Next Best Action banners are targeted to specific customers. If a customer is not in an applicable group the banner is hidden from view. This dynamic display must be considered when embedding Next Best Action.

For more information about Next Best Action, including details about its data requirements and the overall user experience, see the resources below.

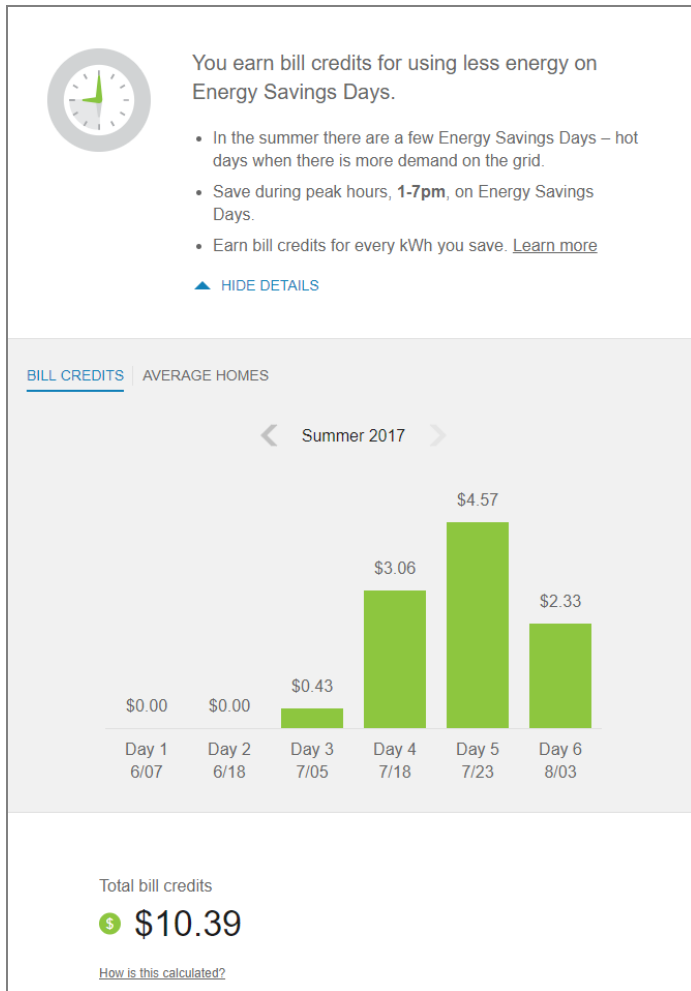
- [Next Best Action](#) for residential customers
- [Next Best Action](#) for business customers

## Peak Time Rebates

Peak Time Rebates is an energy-savings initiative aimed at encouraging people to reduce energy during peak event days in the summer or winter seasons, thereby lowering energy demands on a large scale. This is accomplished by offering 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.





## Embedding Guidelines

**Widget Name:** widget-peak-time-rebate

The Peak Time Rebates widget is intended for customers interested in exploring their energy use patterns. Consider embedding it in a location near the Data Browser or near another area where customers can see their energy use trends or information about any peak time credits they may have earned. Your [Delivery Team](#) will work with you to determine the ideal placement.

For more information about the Peak Time Rebates web widget, including details about its data requirements and the overall user experience, see the [Peak Time Rebates](#) description in the product overview.

# Portfolio View

The Portfolio View allows business customers to see aggregated energy use and cost information across multiple premises. Business customers can use this information to quickly determine if any of their premises need attention.

**Overview**

[ENERGY COSTS](#) | [ENERGY USE](#)

Total # of premises: **12**

Total cost of last bill period: **\$65,369**

Change from last year: **+\$6,478** ↑ +11%

Search... Download

12 premises (showing 1-10)

<input type="checkbox"/> Premise	Last bill	Change from last year	Cost per sq. ft.	View details
<input type="checkbox"/> 13423 Apple Avenue Coronado, CA 91932 12993955	<b>\$7,389</b> 7/7-8/7	<b>-\$444</b> ↓	<b>\$1.50</b> 145,023 sq. ft.	
<input type="checkbox"/> 54533 Elderberry Street Imperial Beach, CA 92933 12255667	<b>\$6,500</b> 7/1-8/1	<b>+\$2,009</b> ↑	Add square footage in business profile	
<input type="checkbox"/> 123 George Washington Avenue #100 North Martian, CA 92000 12893428	<b>\$6,103</b> 7/1-8/1	<b>+\$2,009</b> ↑	<b>\$1.50</b> 134,222 sq. ft.	
<input type="checkbox"/> 8587 Fig Way #105 National City, CA 91951 12892200	<b>\$5,988</b> 7/7-8/7	<b>+\$209</b> ↑	Add square footage in business profile	
<input type="checkbox"/> 888 Date Drive #10 Encinitas, CA 92024 12146856	<b>\$5,389</b> 7/1-8/1	<b>-\$3,929</b> ↓	<b>\$1.33</b> 104,199 sq. ft.	
<input type="checkbox"/> 83489 Boysenberry Lane, Unit #3 Chula Vista, CA 91950 12345663	<b>\$5,111</b> 7/1-8/1	<b>+\$2,009</b> ↑	<b>\$1.45</b> 98,023 sq. ft.	
<input type="checkbox"/> 98 Cherimoya Crossing Valley Center, CA 92082 12223456	<b>\$4,993</b> 7/7-8/7	<b>+\$2,009</b> ↑	<b>\$1.34</b> 87,300 sq. ft.	
<input type="checkbox"/> 8587 Fig Way #106 National City, CA 91951 12892201	<b>\$4,566</b> 7/1-8/1	<b>+\$1,464</b> ↑	<b>\$1.68</b> 77,023 sq. ft.	
<input type="checkbox"/> 8587 Fig Way #107 National City, CA 91951 12892202	<b>\$4,500</b> 7/1-8/1	<b>+\$2,009</b> ↑	<b>\$1.50</b> 81,939 sq. ft.	
<input type="checkbox"/> 8587 Fig Way #108 National City, CA 91951 12892203	<b>\$4,333</b> 7/7-8/7	<b>+\$1,403</b> ↑	<b>\$1.10</b> 70,999 sq. ft.	

|< < Page 1 of 2 > >|

## Embedding Guidelines

**Widget Name:** `widget-portfolio-view`

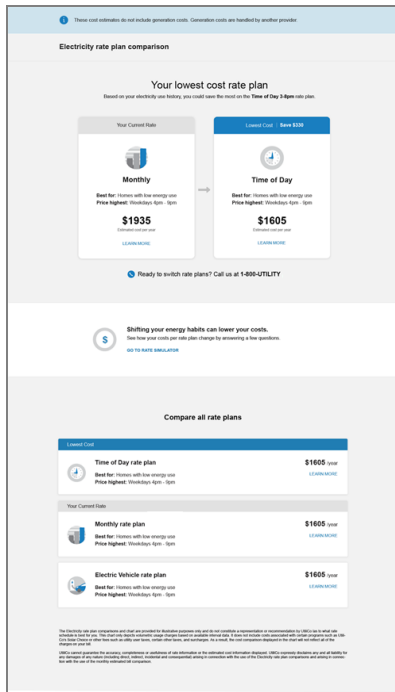
- This widget is well-suited for embedding in sections that use the full width of the page. Consider the use of tabs, accordions, or other elements that can show or hide content when embedding this widget on a webpage along with other widgets and content.
- This widget presents a dashboard of billing and premise information for business customers, along with links to more detailed energy usage information in other widgets. With this in mind, consider embedding this widget in an introductory or top-

level section of your website, since it is meant to be an overview which then leads to more in-depth resources.

For more information about the Portfolio View, including details about its data requirements and the overall user experience, see the [Portfolio View](#) description in the relevant product overview.

# Rate Comparison

The Rate Comparison allows customers to see an overview of rate plans they are eligible for, estimated cost information, and details about each rate plan option. Customers can compare rate plans in terms of estimated annual costs and quickly identify their cheapest rate. Further rate analysis is available through additional rate details and the ability to perform what-if scenarios representing energy use choices the customer can make.



## Embedding Guidelines

**Widget Name:** `widget-rates`

The Rate Comparison widget consists of three components: Rate Comparison, Rate Details, and an optional Rate Simulator. The `widget-rates` widget must be embedded on a separate webpage devoted to hosting the widget's components. Users can interact with links within their Rate Comparison which redirect the users to review Rate Details or complete the Rate Simulator survey.

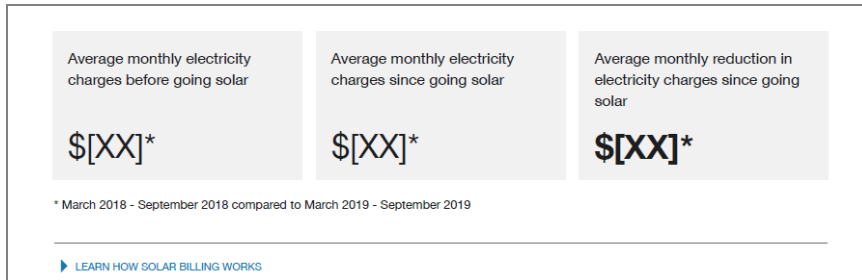
**Notes:**

- If other areas of a utility's site include direct links to the Rate Details component, the webpage that hosts this widget must be enabled to allow the `rate-id` query parameter to be passed in, so that the correct rate can be displayed.

- If you have an existing embedded configuration of Rate Comparison that uses multiple widgets, you must update your configuration to utilize the single widget-rates widget which supports all components of the Rate Comparison. [You Delivery Team](#) can assist you in this process.

## Solar Savings Insight

The Solar Savings Insight is designed to provide a simplified view of how much money a customer has saved on their electricity bill since becoming a solar customer. It is displayed beneath the Data Browser for solar customers who have already seen the [Solar Welcome Experience](#).



## Embedding Guidelines

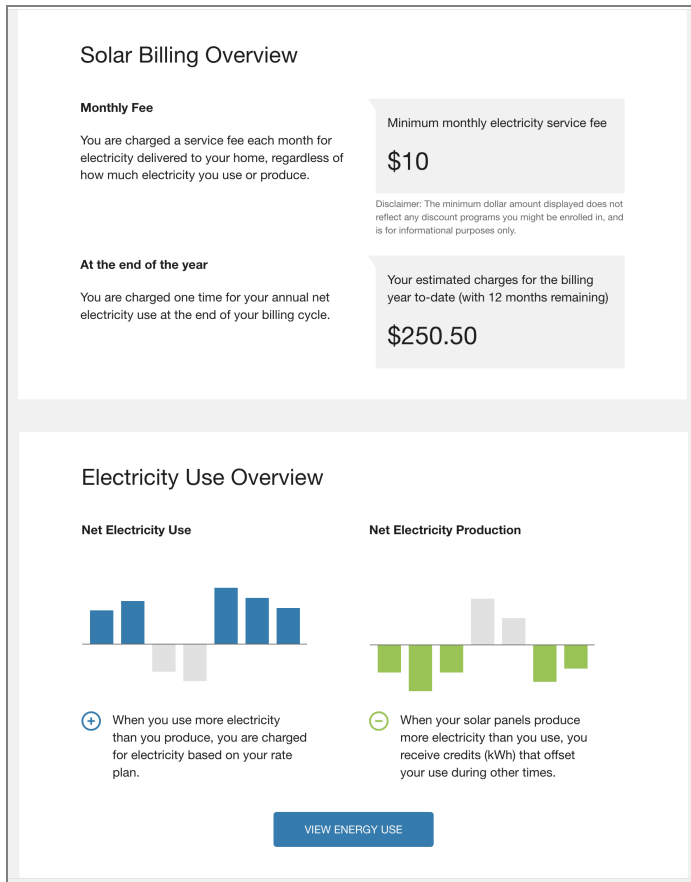
**Widget Name:** `widget-solar-savings`

- The Solar Savings widget is designed to be embedded beneath the [Data Browser](#). It takes up the same width as the Data Browser and will push down any content that is located beneath it.
- It is recommended that you pair the Solar Savings widget with the version of the [Solar Welcome Experience - How Solar Works](#) widget that appears beneath the Data Browser. If you do this, make sure that Solar Savings appears above Solar Welcome Experience - How Solar Works, since it is a natural transition for customers to view their solar savings insights followed by an explanation of those insights.
- The Solar Savings widget is often paired with the [Green Button](#) widget below the Data Browser. It is recommended that you embed the Solar Savings widget to appear above the Green Button widget.

For more information about the Solar Savings Insight, including details about its data requirements and the overall user experience, see the [Solar Savings Insight](#) description in the *Distributed Energy Resources Customer Engagement Cloud Service Overview*.

# Solar Welcome Experience - How Solar Works

The Solar Welcome Experience - How Solar Works widget presents a collection of insights and graphics to help customers understand their positive and negative energy use, and interpret their solar bills. It is displayed for customers who navigate to the **Electricity** view in the [Data Browser](#) for the first time after starting a solar program.



On subsequent visits, the full-page experience is hidden, and customers can find the widget by clicking the **Learn How Solar Billing Works** menu beneath the Data Browser.



## Embedding Guidelines

**Widget Name:** widget-how-solar-billing-works

- The Solar Welcome Experience - How Solar Billing Works widget is designed to be embedded on the same page as the [Data Browser](#). Keep in mind that it appears as a full-page experience the first time a customer browses to the **Electricity** view of the Data Browser after starting a solar program. On subsequent visits, the widget appears beneath the Data Browser within a collapsible menu. When the menu is expanded, the widget takes up the same width as the Data Browser and pushes down any content that is located beneath it.
- Consider pairing the Solar Welcome Experience - How Solar Works widget with the [Solar Savings Insight](#). If you do this, make sure that Solar Savings appears above Solar Welcome Experience - How Solar Works, since it is a natural transition for customers to see their solar savings insights followed by an explanation of those insights.
- The How Solar Works widget is often paired with the [Green Button](#) widget so that both appear below the Data Browser. It is recommended that you embed How Solar Works to appear inline with Green Button.



For more information about Solar Welcome - How Solar Works, including details about its data requirements and the overall user experience, see the [Solar Welcome Experience](#) description in the *Distributed Energy Resources Customer Engagement Cloud Service Overview*.

## 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.

### Recommended summer tips for you

Save when working from home  
6 tips

How to make your home more comfortable  
13 tips

Smart upgrades for your home  
34 tips

SEE MORE TIPS

## Embedding Guidelines

**Widget Name:** `widget-tips-light`





This widget acts as a summary of practical steps for customers to take after seeing a summary of their energy use. It is well-suited for a location near other summary widgets such as [Energy Use Overview](#) or [Highest Energy Use Days](#). When viewed together, these widgets make it easy for customers to see current use and take action. Your [Delivery Team](#) will work with you to determine the ideal placement.

For more information about the Tips Light, including details about its data requirements and the overall user experience, see the [Tips Light](#) description in the product overview.

## 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 purpose is to promote customer interest in tips and guide them to more energy efficient behavior.

Personalized based on information from your Home Energy Analysis. [See all your top tips.](#)

-  **Upgrade to ENERGY STAR® appliances**  
26 neighbors do this
-  **Upgrade to energy-efficient windows**  
18 neighbors do this [Added here](#)
-  **Clean or replace air filters**  
24 neighbors do this
-  **Replace your inefficient light bulbs**  
Save up to \$140 over bulb life  
31 neighbors do this



## Embedding Guidelines

**Widget Name:** `widget-ways-to-save`

The Tips List widget is typically paired with the [Home Energy Analysis](#) or the [Bill Comparison](#). Your [Delivery Team](#) will work with you to determine the ideal placement.

**Note:** This widget is part of the Ways to Save widget described in [Ways to Save](#). This widget can be configured to display the Tips List user experience by default rather than the Ways to Save experience.

For more information about the Tips List, including details about its data requirements and the overall user experience, see the [Tips List](#) description in the product overview.

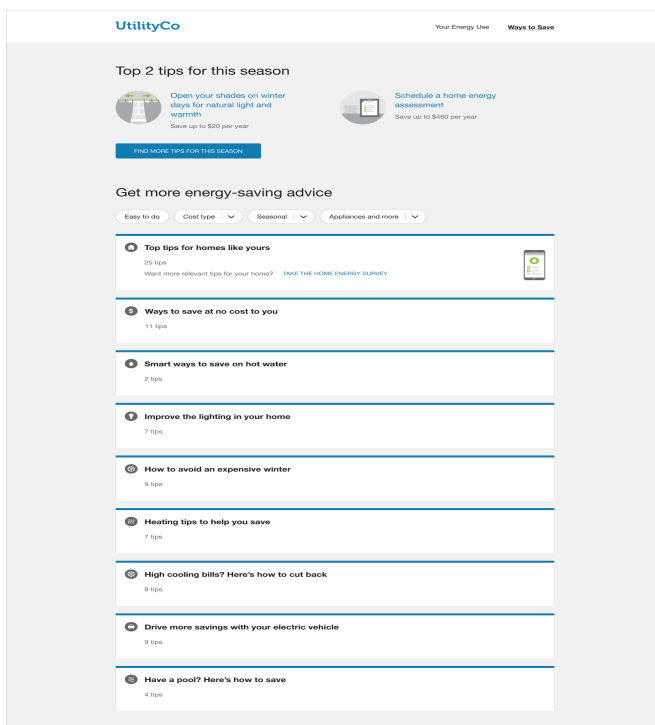
# Ways to Save

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.

When embedding the Ways to Save widget, a single widget includes all components in an experience that is hosted on a single webpage. A query parameter `ou-wts-state` is automatically passed to direct users to the correct component. The host webpage allows this query parameter to be passed. The parameter lets customers browse tip guides, browse the list of tips in those guides, and review details of a particular tip. An example of this browsing workflow is described below.

## Tip Guides

Ways to Save displays a collection of tip guides to customers. Tips are organized into behavior-oriented, seasonal, and end-use guides that provide customers with relevant cost-savings recommendations.



## Tips List

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.

### Get more energy-saving advice






Easy to do Cost type Seasonal Appliances and more

Clear Filters

These tips and savings estimates are personalized based on what you told us about your home and your energy use patterns.

#### Easy to do tips

15 tips

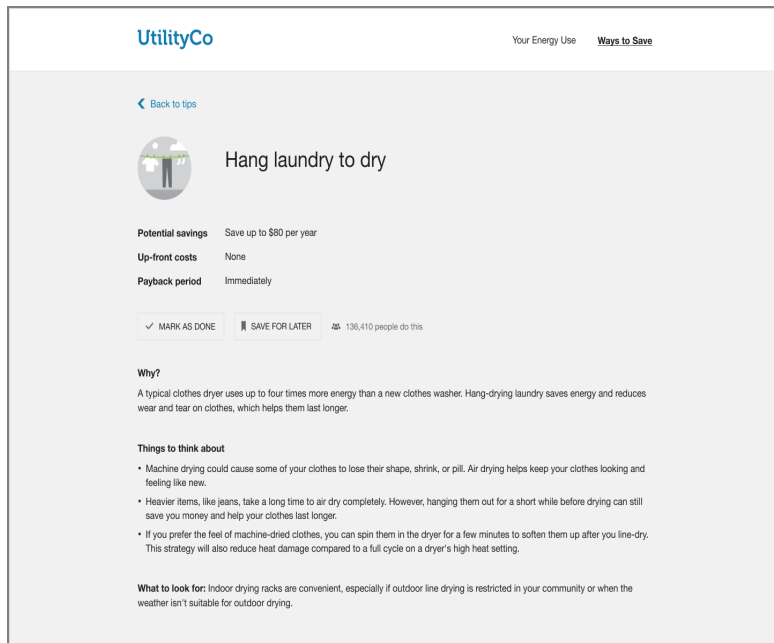
-  **Hang laundry to dry**  
Save up to \$80 per year  
136,410 people do this
-  **Open your shades on winter days for natural light and warmth**  
Save up to \$20 per year  
41,441 people do this
-  **Use LED holiday lights**  
Save up to \$15 per 100 bulbs per season  
33,309 people do this
-  **Insulate outlets and light switches**  
Save up to \$10 per year  
18,480 people do this
-  **Install a programmable thermostat**  
136,410 people do this

SHOW MORE TIPS

## 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.

A breadcrumb link is included to allow customers to return to the list of tips.



The screenshot shows the UtilityCo website interface for a tip titled "Hang laundry to dry". At the top, there is a breadcrumb link "Back to tips". The tip title is accompanied by a circular icon showing a clothesline. Below the title, the following information is displayed:

- Potential savings:** Save up to \$80 per year
- Up-front costs:** None
- Payback period:** Immediately

Below this information are three buttons: "MARK AS DONE" (checked), "SAVE FOR LATER", and "136,410 people do this".

**Why?**  
A typical clothes dryer uses up to four times more energy than a new clothes washer. Hang-drying laundry saves energy and reduces wear and tear on clothes, which helps them last longer.

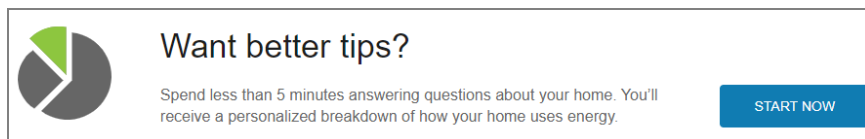
**Things to think about**

- Machine drying could cause some of your clothes to lose their shape, shrink, or pill. Air drying helps keep your clothes looking and feeling like new.
- Heavier items, like jeans, take a long time to air dry completely. However, hanging them out for a short while before drying can still save you money and help your clothes last longer.
- If you prefer the feel of machine-dried clothes, you can spin them in the dryer for a few minutes to soften them up after you line-dry. This strategy will also reduce heat damage compared to a full cycle on a dryer's high heat setting.

**What to look for:** Indoor drying racks are convenient, especially if outdoor line drying is restricted in your community or when the weather isn't suitable for outdoor drying.

## Home Energy Analysis Call-to-Action

At the top of the Ways to Save page, you can embed a call-to-action widget that encourages customers to complete the [Home Energy Analysis](#) in order to receive better tips. See [Home Energy Analysis Call-to-Action](#) for more information.



The widget features a circular icon with a green and grey pie chart on the left. To the right of the icon, the text reads:

**Want better tips?**  
Spend less than 5 minutes answering questions about your home. You'll receive a personalized breakdown of how your home uses energy.

A blue button labeled "START NOW" is positioned to the right of the text.

## Embeddable Guidelines

**Widget Name:** `widget-ways-to-save`

- This widget is well-suited for embedding in sections that use the full width of the page. Consider the use of tabs, accordions, or other elements that can show or hide content when embedding this widget on a webpage along with other widgets and content.
- Ways to Save can support authenticated and pre-authenticated experiences. To support both, the widget must be embedded twice, once on an authenticated webpage, and once on a pre-authenticated webpage.

- Ways to Save is intended for customers who have analyzed their energy use and are ready to take action. Other products and widgets (such as [High Bill Alerts AMI](#), [Weekly Energy Updates](#), and the [Home Energy Analysis](#)) can send customers directly to Ways to Save to learn about practical next steps. Since many customers are redirected to this widget, prominent utility site location is not as important a factor to drive user interaction with this widget.

For more information about Ways to Save, including details about its data requirements and the overall user experience, see the resources below.

- [Ways to Save](#) for residential customers
- [Ways to Save](#) for business customers

## Determining a Widget's Applicability

Not all widgets are applicable to all customers, and so you may need to determine whether or not a widget should be displayed on a webpage under certain conditions.

For example, some widgets are available for residential customers but not non-residential customers. Other widgets can only show data for electricity use and so should not be displayed for gas-only customers.

Use the steps below to help you determine what widgets are applicable to different types of customers. With this information, you can better understand what widgets to display for which customers, and consider if and how to implement conditional logic in your webpages to control the display of the widgets.

### Determine a Widget's Supported Customer Types

Determine whether the widget you want to display is available for residential or non-residential customers. To do this, open the appropriate cloud service overview guide:

- For residential customers: [Digital Self Service - Energy Management Overview Guide](#)
- For non-residential customers: [Business Customer Engagement Digital Self Service - Energy Management Overview Guide](#)

Once you are in either of these guides, go to the **Customer Experience** section and see if your widget is listed there. If it is not, then it is not supported for that customer type.

### Determine a Widget's Supported Fuels

Determine whether your widget can display electricity and gas data. Most widgets can display both gas and electricity data, but some can only show one or the other.

1. Open the appropriate cloud service overview guide which contains a description of the widget you are interested in.
  - For residential customers: [Digital Self Service - Energy Management Overview Guide](#)
  - For non-residential customers: [Business Customer Engagement Digital Self Service - Energy Management Overview Guide](#)
2. Go to the **Customer Experience** section of the guide and navigate to the appropriate widget description.
3. Once you are in the relevant description, go to **Customer Requirements** and look for the **Supported Fuels** row. This will explain what fuels the widget supports.

## Determine a Widget's Required Data

Determine the type of data your widgets require and whether they will be relevant to customers who have that type of data. Most widgets work using billing data, but some widgets require smart meter (AMI) data to work.

1. Follow the steps in [Determine a Widget's Supported Fuels](#) above to navigate to a description of the widget in the relevant cloud service overview guide.
2. In the **Customer Requirements** subsection of the description, review the rows related to data requirements. This information will explain whether the widget requires smart meter data (AMI data), billing data, or some other type of customer data.

## Example of Widget Applicability

The table below gives an example of how you might create a list based on your research in the steps above. Your list can identify which embeddable widgets to show or hide based on different customer attributes. [Work with your Delivery Team](#) to create a more comprehensive list tailored to your situation.

Widget	Customer Type	Fuel Type	Data Type	Show / Hide
<a href="#">Bill Forecast</a>	Residential	Electricity	AMI	Show
	Residential	Electricity	Billing	Hide Widget requires AMI data and will not work for customers with

Widget	Customer Type	Fuel Type	Data Type	Show / Hide
				billing data only.
	Non-Residential	Electricity	AMI	Show
<a href="#">Data Browser</a>	Residential	Electricity	AMI	Show
	Residential	Electricity	Billing	Show
	Residential	Gas	AMI	Show
	Non-Residential	Gas	Billing	Show
<a href="#">Highest Energy Use Days</a>	Residential	Electricity	AMI	Show
	Residential	Electricity	Billing	Hide Widget requires AMI data and will not work for customers with billing data only.
	Residential	Gas	Billing	Hide Widget requires AMI data and will not work for customers with billing data only.
	Non-Residential	Electricity	Billing	Hide

Widget	Customer Type	Fuel Type	Data Type	Show / Hide
				Widget is currently only available for residential customers.

## Embedding a Widget Using Web Components

Embedding widgets using web components requires basic integration that includes the widget in the HTML head and body of a webpage, as well as additional configuration for performance, styling, custom events, and so on.

Prior to performing the steps below, review the [Guidelines for Embedding Widgets](#) for the widgets you intend to embed. Repeat these steps for each webpage that includes embedded widgets.

## Widget Names

When embedding widgets, use the following widget names:

Feature	Widget Names
<a href="#">Account Center</a>	widget-communication-preferences
<a href="#">Affordability Savings Hub</a>	widget-lmi-survey-programs
<a href="#">Bill Comparison</a>	widget-bill-compare-enhanced
<a href="#">Bill or Usage Forecast</a>	widget-bill-forecast
<a href="#">Bill Guide</a>	widget-bill-guide



Feature	Widget Names
<a href="#">Business Profile</a>	widget-business-profile
<a href="#">Confirmation Message</a>	widget-bite-sized
<a href="#">Data Browser</a>	widget-data-browser
<a href="#">Demand Heatmap</a>	widget-demand-heatmap
<a href="#">Energy Use Overview</a>	widget-usage-overview
<a href="#">Green Button</a>	widget-usage-export
<a href="#">Guest User Access</a>	widget-guest-user-access
<a href="#">Highest Energy Use Days</a>	widget-highest-day-of-use
"Home Energy Analysis v1" on page 22 - Authenticated Workflow	<p>For the survey questions, you must use <code>widget-survey</code>, and define the <code>opower-instance</code> to embed the survey questions on a separate webpage. This webpage must exclude footers and side navigation panels. The full embedded tag is:</p> <div data-bbox="483 1486 1312 1633" style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <pre>&lt;opower-widget-survey opower-instance="widget-survey-full"&gt;&lt;/opower-widget-survey&gt;</pre> </div> <p>For the pre- and post-survey experience, you must embed both <code>widget-survey</code> and <code>widget-disaggregation</code> together on the same webpage, and define the <code>opower-instance</code> attribute as part of the embedded tag. Only one experience is displayed to customers at a time. The full embedded tags are:</p>

Feature	Widget Names
	<pre data-bbox="483 310 1312 464">&lt;opower-widget-survey opower-instance="widget-survey-splash"&gt;&lt;/opower-widget-survey&gt;</pre> <pre data-bbox="483 520 1312 709">&lt;opower-widget-disaggregation opower-instance="widget-disaggregation"&gt;&lt;/opower-widget-disaggregation&gt;</pre>
<p data-bbox="212 758 396 947"><a href="#">Home Energy Analysis v1 - Pre-Authenticated Workflow</a></p>	<p data-bbox="480 758 1300 831">You can allow customers to access the survey without logging in to their utility account.</p> <p data-bbox="480 856 1287 1010">For the survey questions, you must use <code>widget-survey</code> to embed the survey questions on a separate webpage. This webpage must exclude footers and side navigation panels. The full embedded tag is:</p> <pre data-bbox="483 1031 1312 1178">&lt;opower-widget-survey opower-instance="widget-survey-easyopen-full"&gt;&lt;/opower-widget-survey&gt;</pre> <p data-bbox="480 1188 1292 1341">For the pre and post survey experience you must embed both <code>widget-survey</code> and <code>widget-disaggregation</code> together on the same webpage. Only one experience is displayed to customers at a time. The full embedded tags are:</p> <pre data-bbox="483 1362 1312 1509">&lt;opower-widget-survey opower-instance="widget-survey-easyopen-splash"&gt;&lt;/opower-widget-survey&gt;</pre> <pre data-bbox="483 1566 1312 1755">&lt;opower-widget-disaggregation opower-instance="widget-dissaggregation-easyopen"&gt;&lt;/opower-widget-disaggregation&gt;</pre>
<p data-bbox="212 1801 396 1833"><a href="#">Home Energy</a></p>	<p data-bbox="480 1801 1281 1833">For the survey questions, you must use <code>widget-survey</code>, and</p>

Feature	Widget Names
<p><a href="#">Analysis v2</a> - Authenticated Workflow</p>	<p>define the <code>opower-instance</code>, to embed the survey questions on a separate webpage. This webpage must exclude footers and side navigation panels. The full embedded tag is:</p> <pre data-bbox="483 453 1312 600">&lt;opower-widget-survey opower-instance="widget-survey-full"&gt;&lt;/opower-widget-survey&gt;</pre> <p>For the pre and post survey experience you must embed both <code>widget-survey</code> and <code>widget-usage-categories</code> together on the same webpage, and define the <code>opower-instance</code> attribute as part of the embedded tag. Only one experience is displayed to customers at a time. The full embedded tags are:</p> <pre data-bbox="483 823 1312 970">&lt;opower-widget-survey opower-instance="widget-survey-splash"&gt;&lt;/opower-widget-survey&gt;</pre> <pre data-bbox="483 1033 1312 1213">&lt;opower-widget-usage-categories opower-instance="widget-usage-categories"&gt;&lt;/opower-widget-usage-categories&gt;</pre>
<p><a href="#">Home Energy Analysis v2</a> - Pre-Authenticated Workflow</p>	<p>You can allow customers to access the survey without logging in to their utility account.</p> <p>For the survey questions, you must use <code>widget-survey</code> to embed the survey questions on a separate webpage. This webpage must exclude footers and side navigation panels. The full embedded tag is:</p> <pre data-bbox="483 1541 1312 1688">&lt;opower-widget-survey opower-instance="widget-survey-easyopen-full"&gt;&lt;/opower-widget-survey&gt;</pre> <p>For the pre and post survey experience you must embed both <code>widget-survey</code> and <code>widget-usage-categories</code> together on the same webpage. Only one experience is displayed to customers at a time. The full embedded tags are:</p>

Feature	Widget Names
	<pre data-bbox="483 310 1312 464">&lt;opower-widget-survey opower-instance="widget-survey-easyopen-splash"&gt;&lt;/opower-widget-survey&gt;</pre> <pre data-bbox="483 520 1312 709">&lt;opower-widget-usage-categories opower-instance="widget-usage-categories-easyopen"&gt;&lt;/opower-widget-usage-categories&gt;</pre>
<a href="#">Home Energy Analysis Call-to-Action</a>	widget-hea-cta
<a href="#">Home Energy Analysis Light</a>	widget-usage-categories-overview
<a href="#">Neighbor Comparison</a>	widget-neighbor-comparison
<a href="#">Next Best Action</a>	widget-next-best-action
"Peak Time Rebates" on page 36	widget-peak-time-rebate
<a href="#">Portfolio View</a>	widget-portfolio-view
<a href="#">Rate Comparison</a>	widget-rates
<a href="#">Solar Savings Insight</a>	widget-solar-savings

Feature	Widget Names
<a href="#">Solar Welcome Experience - How Solar Works</a>	widget-how-solar-billing-works
<a href="#">Tips Light</a>	widget-tips-light
"Tips List" on page 44	widget-ways-to-save  This widget is part of the Ways to Save widget described in <a href="#">Ways to Save</a> . This widget can be configured to display the Tips List user experience by default rather than the Ways to Save experience.
<a href="#">Ways to Save</a>	widget-ways-to-save

## Embedding a Widget

Widgets are embedded by adding scripts and tags directly in the source code of your webpages. The following code is an example of the basic integration of widgets on a webpage for OpenID Connect-based SSO implementations, with emphasis applied to the main integration points.

```

<!DOCTYPE html>
<html>
<head>
<meta charset="utf-8" />
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<title>Page Title</title>
<meta name="viewport" content="width=device-width, initial-scale=1">
<script src="https://ei-util-stage.opower.com/ei/x/embedded-api/core.js?auth-mode=oauth"></script>
</head>
<body>
<div>
  <opower-widget-neighbor-comparison></opower-widget-neighbor-comparison>
</div>
<div>
  <opower-widget-data-browser></opower-widget-data-browser>
</div>
</body>
</html>

```

The instructions below guide you through each step of the process and provide more background information about each the scripts and tags that are required.

**Prerequisite:** If you are using [Oracle Infinity](#) to track engagement analytics for your website, then you must load your Oracle Analytics Infinity CX Tag on your webpage before completing the steps below. Otherwise, analytics tracking for your widgets will not work. See [Tracking User Interaction Analytics](#) for instructions. You can ignore this step if you are not using Oracle Analytics Infinity.

**To prepare a webpage for embedding and embedding widgets on the webpage for OpenID Connect implementations:**

1. Include the main script tag for the core library within the HTML head of the webpage. A single script tag is required regardless of the number of widgets embedded in the body of the page. The script tag uses the following syntax:

```
<script src="https://[HostName]/ei/x/embedded-api/core.js"></script>
```

Where `HostName` is the applicable host information. When embedding on the stage environment, the format is `ei-[ClientCode]-stage.opower.com`, where `ClientCode` is the client code assigned for the utility. Contact your [Oracle Utilities Delivery Team](#) to confirm your client code. When embedding on the production environment, the format is `[ClientCode].opower.com`.

2. Append `auth-mode=oauth` as a query parameter and value to the `src` attribute in the script tag.
3. Append `locale` as a query parameter to the `src` attribute in the `<script>` tag. This is an optional parameter that allows embedded widgets to reflect a locale preference change by the customer that occurs after the customer has signed in to the Energy Management Web Portal. This parameter does not affect the outbound communication locale preference for a customer. The value for the `locale` parameter must be defined as the locale for the page where the widget is embedded. The example below for the production tier uses a static definition of US English:

```
<script src="https://util.opower.com/ei/x/embedded-api/core.js?auth-mode=oauth&locale=en_US"></script>
```

4. Include the required HTML in the location on the page where the widget is to appear. This HTML includes a call to the relevant widget, which uses the following format:

```
<opower-[WidgetName]></opower-[WidgetName]>
```

Where `WidgetName` is the name of the applicable widget. If you are embedding the [Home Energy Analysis](#), you must also define the `opower-instance` attribute. The full list of widget names is provided [above](#). An example of embedding the [Bill Comparison](#) widget is shown below:

```
<div>  
<opower-widget-bill-compare-enhanced></opower-widget-bill-compare-  
enhanced>  
</div>
```

5. Repeat the previous step for each widget you are including on the webpage. If you embed multiple widgets on a single webpage, consider a strategy to improve the load performance of the widgets that link to other widgets on the same page, which is described in "Avoiding Webpage Refreshes" on page 65.
6. Include listeners on the webpages, where a widget displays the authenticated experience, to provide required entity IDs and access tokens. These techniques are described at "Providing Access Tokens and Authenticating Customers in Support of OpenID Connect" on page 63.
7. Send your Delivery Team a listing of all your webpage URLs that contain the embedded widgets, along with the widget names included on each webpage. Any updates to the locations where the widget is embedded must be communicated to Delivery Team in advance of deploying the widget to the new location. This information can be provided along with other configuration inputs, as instructed in the [Oracle Utilities Opower Digital Self Service - Energy Management Configuration Guide](#).
8. If your website uses a [Content Security Policy](#), configure it to allow Oracle Utilities Opower resources. [Contact your Delivery Team](#) to obtain the domains and resources that should be allowed.

This process completes the minimum required steps to embed widgets on a webpage. You can employ additional techniques to improve the performance, user interaction, and overall look-and-feel of the widgets within the website.

## Improving User Experience Scenarios with Custom Events

When using web components, a number of events occur at certain points of user interaction. These events allow utilities to develop strategies to react to these events that improves the user experience of embedded widgets.

For example, users selecting a link commonly causes a full webpage refresh when using a deep link. The utility can override this behavior by listening for link events, and then directing the user to the content without requiring a webpage refresh. You can employ this strategy along with delaying widget loading on a page to embed multiple widgets on a single page while also improving performance and customer engagement.

## Linking to Widget Content

Widgets support an `opower:link` event which can be used to configure the link behavior. By default, links can cause full webpage refreshes. However, if the widget being linked to is on the same webpage, this behavior can be modified to redirect to the widget content on the page without requiring a refresh. This improves performance and the overall user experience when embedding multiple widgets on a single webpage. This example, along with other performance-related configurations, is covered in [Improving Widget Load Performance](#).

**Note:** The `opower:link` event supports widget-to-widget linking behavior. For information on design considerations related to supporting external links to embedded widgets, see "External Links to Widgets" on page 4.

## Widget Links

The following table summarizes the link events that can be triggered by embedded widgets. This includes the experience name that is part of the `opower:link` event that is triggered when a customer interaction triggers a link. You can use the techniques described in "Avoiding Webpage Refreshes" on page 65 to listen for these events and direct the customer to the applicable webpage, or location on the current webpage such as opening a tab. If instead you choose to rely on the default link behavior, customers are directed to the content listed for the link events below, but this could cause unnecessary webpage refreshes.

**Note:** The [Next Best Action](#) widget consists of banners that link to other web content, including embedded widgets, to give customers more detailed, actionable information. The links in the banners are dependent on which banners and actions you choose to configure for your customers. [Work with your Delivery Team](#) to review which widgets your banners link to.



Value for experienceName	Content Linked to by the Link Event	Widgets That Can Trigger the Link Event
energyUseDetails	Data Browser	<ul style="list-style-type: none"> <li>▪ Bill Comparison</li> <li>▪ Bill Forecast</li> <li>▪ Energy Use Overview</li> <li>▪ Highest Energy Use Days</li> <li>▪ Neighbor Comparison</li> <li>▪ widget-disaggregation as part of the Home Energy Analysis</li> </ul>
guideList	List of tip guides as part of Ways to Save	<ul style="list-style-type: none"> <li>▪ Bill Forecast</li> <li>▪ Neighbor Comparison</li> <li>▪ Tips Light</li> </ul>
guideDetails	Details for a particular tip guide as part of Ways to Save	<ul style="list-style-type: none"> <li>▪ widget-disaggregation as part of the Home Energy Analysis</li> <li>▪ Tip List</li> </ul>
dashboard	Bill Forecast	Data Browser
homeEnergyAnalysis	Home Energy Analysis survey link or post-survey results, depending on whether the customer has completed the survey	<ul style="list-style-type: none"> <li>▪ Data Browser</li> <li>▪ Energy Use Overview</li> <li>▪ Neighbor Comparison</li> </ul>

Value for experienceName	Content Linked to by the Link Event	Widgets That Can Trigger the Link Event
homeEnergySurvey	Home Energy Analysis survey questions	<ul style="list-style-type: none"> <li>▪ widget-survey as part of the Home Energy Analysis</li> <li>▪ widget-hea-cta as part of the Home Energy Analysis</li> <li>▪ widget-disaggregation as part of the Home Energy Analysis</li> <li>▪ Ways to Save</li> </ul>
homeEnergyDisaggregation	Home Energy Analysis post-survey results	<ul style="list-style-type: none"> <li>▪ widget-survey as part of the Home Energy Analysis</li> <li>▪ Ways to Save</li> </ul>
tipDetails	Details for a particular tip as part of Ways to Save	<ul style="list-style-type: none"> <li>▪ Tips List</li> </ul>
topTipsGuide	The "Top Tips" guide for a customer's home as part of Ways to Save	<ul style="list-style-type: none"> <li>▪ Tips List</li> </ul>

### Event Detail

When a user clicks a link for a widget, the `opower:link` event is triggered. Details on the intended navigation action, as well as widget name containing link, are included in the example below.

### Example

```

{
// Widget that includes the triggered link
widgetName: 'widget-data-browser',
experienceName: 'energyUseDetails',
url: {
  protocol: 'https:',
  slashes: true,
  auth: null,
  host: 'util.opower.com',
  port: null,
  hostname: 'util.opower.com',
  hash: null,
  search: '?fixtures=true',
  pathname: '/ei/x/energy-use-details',
  path: '/ei/x/energy-use-details?fixtures=true',
  href: 'https://util.opower.com/ei/x/energy-use-details?fixtures=true'},
  target: '_self'
}

```

## Providing Access Tokens and Authenticating Customers in Support of OpenID Connect

When authenticating using OpenID Connect, an access token must be provided by the utility. The access token is used by Oracle Utilities to issue a `GET` request to the [UserInfo endpoint](#) to retrieve the user's account details.

**Note:** The event listeners described below can be excluded if a widget is embedded in support of a pre-authenticated experience. No authentication is required to display the pre-authenticated experience to customers.

### Providing Access Tokens

Embedded widgets require access tokens when they are initially loaded on the page, as well as if the widget requires the access token again but the access token has expired. You can provide access tokens by listening for and handling the `opower:unauthorized` event.

The code example below shows a simple synchronous handler.

```

// synchronous handler example
window.addEventListener('opower:unauthorized', function(event) {

```

```

var authorize = event.detail.authorize;
var authorization = {
  accessToken: 'ABC123XYZ' // The access token string as issued by the
authorization server
}
authorize(null, authorization); // Do not call if user is logged out
}

```

If additional logic is required to retrieve the access token, an asynchronous handler must be used. When using this method the `event.preventDefault()` function must be called to prevent synchronous execution from occurring. The code example below shows an asynchronous handler.

```

// asynchronous handler example
window.addEventListener('opower:unauthorized', function(event) {
  var authorize = event.detail.authorize;
  event.preventDefault(); // to instruct Opower authorization logic to
wait for async callback
  fetchOpowerAuthorization(function(error, authorization) { //
fetchOpowerAuthorization is an example utility defined function
  authorize(error, authorization);
  }
}
}

```

### Providing Customer IDs to Support Multiple Premise Customers

You can provide the customer ID to further identify the customer interacting with an embedded widget. This task is accomplished by listening for and handling the `opower:start` event. Providing the customer ID ensures that customers with multiple premises are presented the correct experience when viewing the widget.

**Note:** Customer IDs passed into the `opowerApi.setEntityId` function must exist in the response from the Userinfo endpoint. For information on determining the customer ID for OpenID Connect implementations, refer to the [Oracle Utilities Opower SSO Configuration Guide](#) which describes [creating a Userinfo endpoint](#).

An Opower API object is included in the event detail, and contains methods that can be called by the utility's web portal. The `setEntityIds` method of the Opower API must be called in order to provide the customer ID, which sets the current customer context. The `setEntityIds` method accepts an array of exactly one value. Once context has been

set, the `start` method must be called. The code example below shows a simple synchronous handler.

```
// synchronous handler example
window.addEventListener('opower:start', function(event) {
    window.opowerApi = event.detail;
    window.opowerApi.setEntityIds(['ABC-123']);
    window.opowerApi.start();
});
```

If additional logic is required to determine the customer state, an asynchronous handler must be used. When using this method the `event.preventDefault()` function must be called to prevent synchronous execution from occurring. The code example below shows an asynchronous handler.

```
// asynchronous handler example
window.addEventListener('opower:start', function(event) {
    window.opowerApi = event.detail;
    event.preventDefault(); // to prevent synchronous start of
    widget
    fetchOpowerConfiguration(function(error, configuration){ //
    fetchOpowerConfiguration is an example utility defined function
        if (error) {
            // handle own error. Widget content has not loaded.
        } else {
            window.opowerApi.setEntityIds(configuration.entityIds);
            window.opowerApi.start();
        }
    });
});
```

## Improving Widget Load Performance

It is important to consider techniques to improve the load performance when embedding widgets. The following techniques can avoid unnecessary webpage refreshes and improve load performance for customers.

### Avoiding Webpage Refreshes

For webpages that include multiple widgets, you can avoid unnecessary page refreshes when one widget links to another widget. Rather than a full refresh, you can redirect the user directly to the other widget on the page, including switching tabs or opening accordions that include the widgets.

**Note:** Refer to See "Widget Links" on page 60. for a listing of link events that can be triggered by widgets.

Webpages can include multiple embedded widgets, and each widget can include links to other widgets. When a user interacts with these links, the focus of the webpage can be directed to the correct embedded widget within the same page. This includes switching tabs or opening accordions that include the widgets being linked to.

The code example below listens for a user selecting a link to a given widget. It prevents a full webpage refresh and instead redirects to the linked widget.

```
window.addEventListener('opower:link', function(event) {
  if (event.detail.experienceName === 'energyUseDetails') {
    event.preventDefault();
    $.hide(event.target);
    $.show('#energyUseDetails');
  }
});
```

**Note:** Include logic in the link redirects to animate and scroll to the widget gradually rather than redirecting the user immediately to the widget. This best practice avoids disorienting the customer during the redirect.

### Delaying Widget Loading

By default, the embedded widget content immediately starts to download to the user's browser and begins executing. If the widgets are not the primary or initial focus of the webpage it can be beneficial to delay widget execution. From the user's perspective, this provides faster load performance for the webpage.

JavaScript can be used to load the embedded web components when they are needed, such as when a user expands an accordion or selects a tab that includes the widget. The following example adds the Data Browser widget to a tab when the user clicks on the tab, which allows the webpage to load faster due to delaying the widget loading. While this example demonstrates a tabbed implementation, similar code can be used for utility site techniques such as accordions.

The `addInitializeTabListener` function is a sample function that uses an HTML tab ID, tab content ID, and a string of HTML to include in the applicable tab. During a webpage load this function can be declared and called with the applicable parameters for each tab that includes embeddable widgets. When the applicable tab is clicked, the function

initializes the tab content with the string of HTML. The `once` attribute ensures that the event is only triggered on the first click of the tab. Example HTML for the applicable tab is also included to show where the string of HTML is inserted in this scenario.

**Note:** The example call of the `addInitializeTabListener` function uses an optional heading element to display above the Data Browser widget. See "Embedding a Widget Using Web Components" on page 52 for the widget name information, which is the required content to include an embedded widget.

## Example

```
function addInitializeTabListener(tabId, tabContentId, html) {
  var tab = document.getElementById(tabId);
  var tabContent = document.getElementById(tabContentId);
  tab.addEventListener('click',
    function() {
      tabContent.innerHTML = html
    },
    { once: true }
  )
}

addInitializeTabListener('widget-data-browser-tab', 'widget-data-browser-
content', '<h3>Data Browser</h3><opower-widget-data-browser></opower-
widget-data-browser>')

<div id="widget-data-browser-tab">
  <div id="widget-data-browser-content">
    <!-- On click of the tab, the Data Browser widget is inserted here -->
  </div>
</div>
```

To extend this example, consider the scenario where the Neighbor Comparison widget is included in a separate tab on the same page. The function can be called to delay and insert the widget in this tab as well, as shown in the following example code. This example includes no heading element.

```
addInitializeTabListener('widget-neighbor-comparison-tab', 'widget-
neighbor-comparison-content', '<opower-widget-neighbor-
comparison></opower-widget-neighbor-comparison>')
```

## Tracking User Interaction Analytics

With widgets placed directly into a webpage, utilities can self-serve analytics tracking such as whether or not a user views a widget. This can be accomplished using any analytics platform you prefer.

Oracle Utilities Opower also uses the [Oracle Infinity](#) analytics platform to collect user interaction metrics. If you are already using Oracle Infinity to track engagement analytics for your website, then you must load your Oracle Infinity CX Tag in your webpage before adding any Opower-specific widget code snippets. The Oracle Infinity CX Tag is a snippet of JavaScript code that collects data from the webpages that users visit.

**Note:** The steps below assume you have already generated an Oracle Infinity CX Tag based on the instructions in [CX Tag Quick Start > Standard](#).

### To load your Oracle Infinity CX Tag:

1. Open the source file of the webpage where you intend to embed an Oracle Utilities Opower widget.
2. Add your Oracle Infinity CX Tag to the section of your webpage that is optimal for your website implementation. For example, in a static webpage design, you could add it to the `<head>` tag. For a more dynamic implementation (such as a single-page application), you may add it elsewhere. In the case of a static webpage, the simplest way to ensure the CX Tag is loaded and executed in the proper order is to use the `defer` script tag attribute. See the [HTML5 specification](#) for more information about the `defer` attribute. An example of how the attribute could look in your CX Tag is as follows:

```
<script src="https://c.oracleinfinity.io/acs/account/{Account GUID}/js/{Tag ID}/odc.js" defer></script>
```

In this example, `{Account GUID}` and `{Tag ID}` are variables which are generated during the process of creating your Oracle Infinity CX Tag.

3. Ensure that the script for loading the core widget library comes after the CX Tag. Otherwise, the script for the core widget library will initialize its own Infinity Analytics handler, and will not allow another Infinity Analytics handler to be used. The example below shows that the script for the CX Tag comes first and is followed by the script for the core widget library, which also has its own `defer` attribute.

```
<script src="https://c.oracleinfinity.io/acs/account/{Account
```



```
GUID}/js/{Tag ID}/odc.js" defer></script>
```

```
<script src="https://util.opower.com/ei/x/embedded-api/core.js"
defer></script>
```

4. Follow the rest of the standard steps to embed a widget as described in [Embedding a Widget](#).

**Note:** The steps above are meant as an example only. Depending on your implementation, there may be other options to ensure the scripts are loaded and executed in the required order. [Contact your Delivery Team](#) if you need additional guidance.

## Testing an Embedded Widget

The utility can view the embedded widgets with fixture data by appending `fixtures=true` as a query parameter definition in the `<script>` tag for any webpage that includes embedded widgets. Enabling fixtures removes the authentication process and displays the widget content with example data and configuration. This configuration applies to an entire page and thus applies to all widgets embedded on the page. This type of testing is helpful for viewing a widget in a web environment ahead of full widget configuration and authentication setup. Examples are shown below.

**Warning:** Fixture-based testing is not a replacement for more comprehensive testing procedures. It is recommended to test with a test user account available in the Oracle Utilities Opower data set, or once single sign-on setup is completed.

## Stage Environment Example

```
<!DOCTYPE html><html>
<head>
<meta charset="utf-8" />
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<title>Page Title</title>
<meta name="viewport" content="width=device-width, initial-scale=1">
<script src="https://ei-util-stage.opower.com/ei/x/embedded-
api/core.js?fixtures=true"></script>
```

```
</head>
<body>
  <div>
    <opower-widget-neighbor-comparison></opower-widget-neighbor-comparison>
  </div>
  <div>
    <opower-widget-data-browser></opower-widget-data-browser>
  </div>
</body>
</html>
```

## Production Environment Example

```
<!DOCTYPE html><html>
<head>
<meta charset="utf-8" />
<meta http-equiv="X-UA-Compatible" content="IE=edge">
  <title>Page Title</title>
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <script src="https://util.opower.com/ei/x/embedded-
api/core.js?fixtures=true"></script>
</head>
<body>
  <div>
    <opower-widget-neighbor-comparison></opower-widget-neighbor-comparison>
  </div>
  <div>
    <opower-widget-data-browser></opower-widget-data-browser>
  </div>
</body>
</html>
```

## Contacting 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](#).