# ISSS608

## Shiny App User Guide

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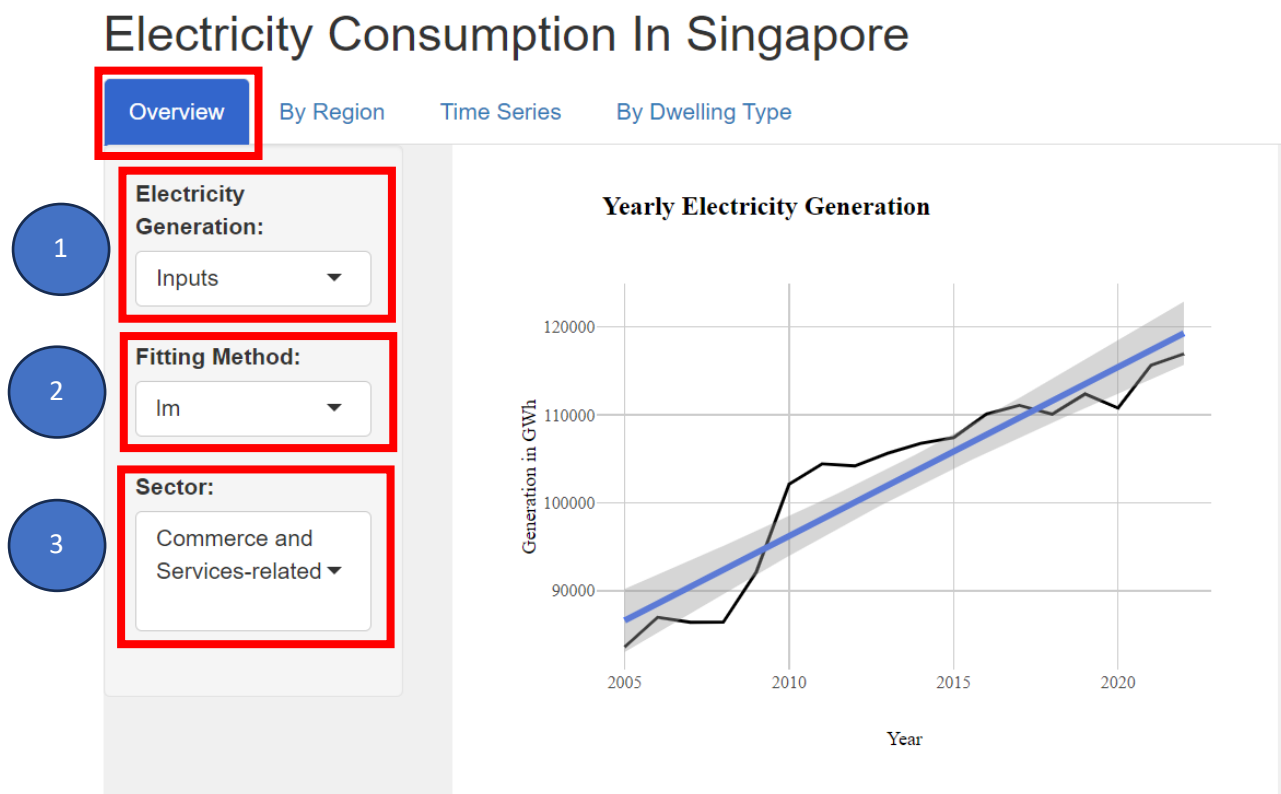
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# Contents

## 1. Aim

This user guide aims to guide new users on how to navigate the Shiny App located: here

The following sections below highlights the different tabs in the Shiny App and how to navigate them.

## 2. Overview

In the overview page, user can select the electricity generation, fitting method and sector:



[1] Select the Electricity Generation (Options are **Inputs/Outputs/Conversion Rate**)

Might need to explain what inputs/outputs and conversion rate are

[2] Select the fitting method (Options are **lm, glm, loess, gam and rlm**)

[3] Select the sector (Options are **Commerce and Services-related, Households, Industrial-related, Transport-Related and Others**)

[4] Line graph and boxplot auto refreshed auto upon new selection from [1] to [3]

## 3. By Region

In the "By Region" tab, user is able to choose the dwelling type, year, month and the classification model and colours they would prefer for the map.
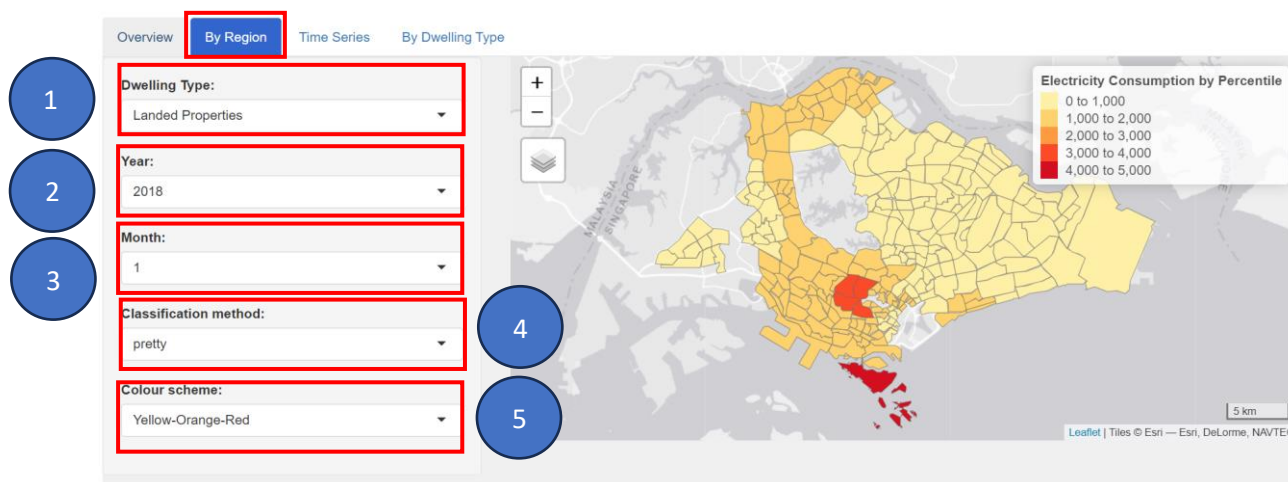


[1] Step 1: Selecting Dwelling Type

- Click on the "Dwelling Type" dropdown menu.
- Choose from the following options to focus your analysis (Options are **Overall, Land Properties, Private Apartments and Condominiums, Private Housing, 1-room/2-room, 3-room, 4-room, 5-room and Executive and Public Housing)**

[2] Step 2: Choosing the Year for Analysis

- Access the "Year" dropdown menu.
- Select the year you wish to analyze. Available options are from 2018 to 2022.

Note: Data is limited to the last five years due to the constraints in the Shiny application.

[3] Step 3: Picking the Month

- Find the "Month" dropdown menu.
- Select the month for which you would like to see the data.

Note: Months are numbered 1 through 12, where 1 corresponds to January, 2 to February, and so on.

[4] Step 4: Selecting the Classification Method

- Click on the "Classification Method" dropdown.
- Choose one of the following methods for data classification (Options are **sd, equal, pretty, quantile, kmeans, hclust, bclust, fisher and jenks**)

[5] Step 5: Choosing the Colour Scheme

- Navigate to the "Colour Scheme" dropdown menu.

- Select your preferred colour scheme to represent the data visually. (Options are **blues, reds, greens, Yellow-Orange-Red, Yellow-Orange-Brown, Yellow-Green and Orange-Red**)

[6] Step 6: Viewing the Choropleth Map

- The Choropleth Map will automatically update upon new selections from steps 1 to 5.

Note: This map is divided into five quartiles for easier interpretation of data distribution.

Tips for Navigation

- You can interact with the map to get more detailed information about specific regions.
- If you want to analyze different patterns, you can easily change any selection, and the map will refresh to reflect the new data

## 4. Time series

In the "Time series" tab, user is able to choose the dwelling type, the months to forecast, and the forecast model they would prefer.

Monthly consumption, decomposition, forecast table, forecast graph, and MAPE will be shown:



[1] Step 1: Selecting Dwelling Type

- Navigate to the "Dwelling Type" dropdown menu at the top of the dashboard.
- Click on the dropdown to view all the available options.
- Choose your desired Dwelling Type (Options are **Overall, Land Properties, Private Apartments and Condominiums, Private Housing, 1-room/2-room, 3-room, 4-room, 5-room and Executive and Public Housing)**

Upon selection, the dashboard will automatically update the following two sections: Monthly Consumption & Decomposition

[2] Step 2: Viewing the Monthly Electricity Consumption Plot

- After selecting Dwelling Type, the Monthly Electricity Consumption Plot (as time series) will appear.
- This plot visualizes the electricity usage each month.
- Observe the trends and patterns for the selected dwelling type over the displayed time period.

[3] Step 3: Examining the Decomposition Time Series Graph

- Navigate to the next tab to find the Decomposition Time Series Graph.
- This comprehensive graph shows the observed, trend, seasonal, and residual components of electricity consumption data.
- Use this graph to understand the intricate details of consumption patterns, which can help in identifying seasonal effects and anomalies.
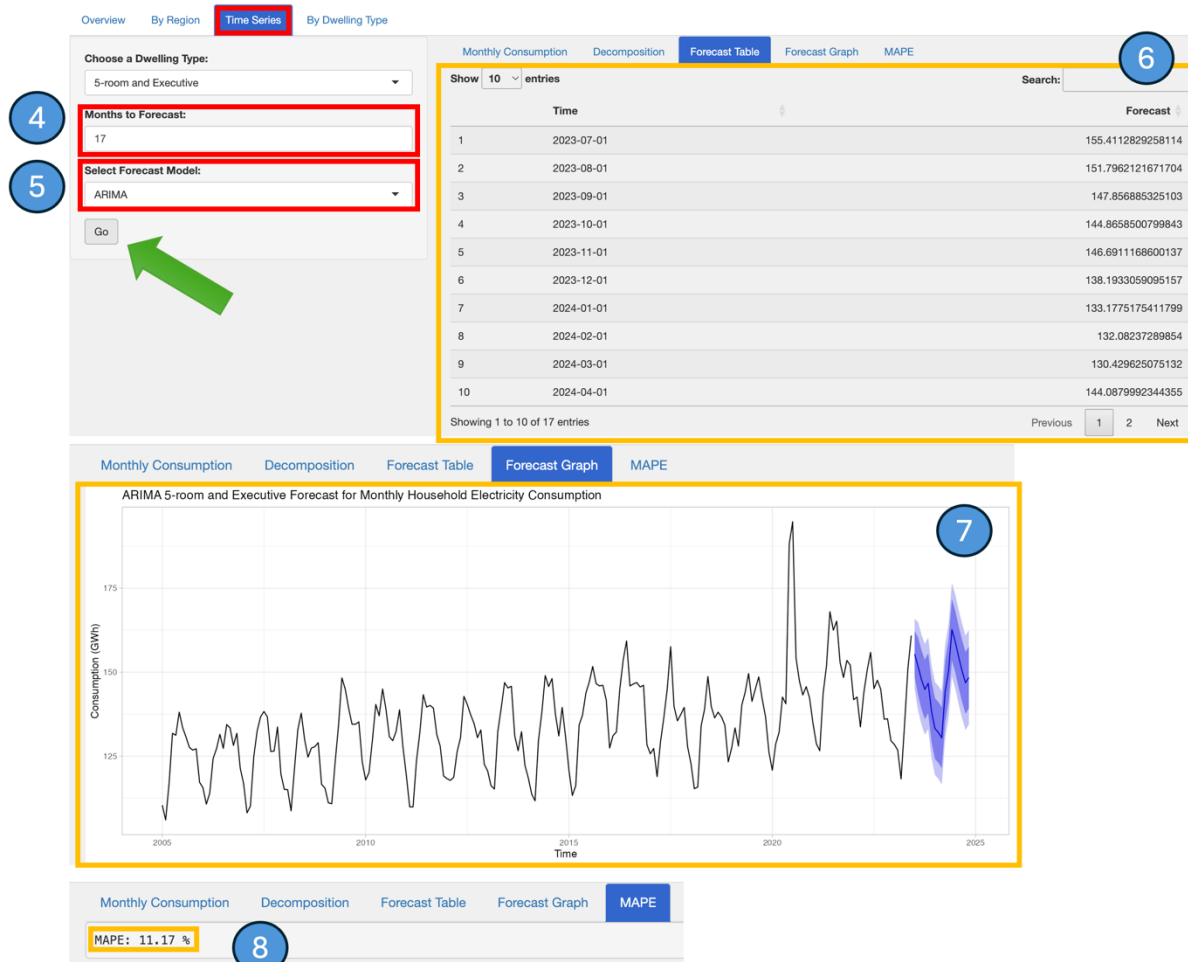


[4] Step 4: Inputting the Forecast Horizon

- Locate the "Number of Months" field on the dashboard.
- Enter the number of months you wish to forecast into this field.

[5] Step 5: Selecting the Forecasting Model and Executing the Forecast

- Click on the "Forecasting Model" dropdown menu to see all available forecasting methods.
- Select the desired forecasting model from the following (Options are **Naive Model, Seasonal Naive Model, Simple Exponential Smoothing Model, State Space Model, Holt Winters' Additive Seasonality Model, Holt Winters' Multiplicative Model and ARIMA - AutoRegressive Integrated Moving Average)**.
- After selecting your model, click the 'Go' button.

The system will process your input and generate the forecast, displaying the following items:
Forecast Table, Forecast Graph & MAPE (Mean Absolute Percentage Error) value

[6] Step 6: Examining the Forecast Table

- Navigate to the "Forecast Table" section.
- This table will display the forecasted electricity consumption values for each month of your chosen forecast horizon.

[7] Step 7: Analyzing the Forecast Graph

- Look for the "Forecast Graph".
- The graph will illustrate the historical data along with the forecasted values, indicated by a different colour shading.
- Review the graph to understand the expected trends and fluctuations in electricity consumption.

[8] Step 8: Understanding the MAPE Value

- The MAPE (Mean Absolute Percentage Error) value can be found at the next tab.
- This metric helps gauge the accuracy of the forecast by showing the average discrepancy between the forecasted and actual values.
- A lower MAPE value indicates a more accurate forecast.

## 5. By Dwelling Type

In the "By Dwelling Type" tab, user can compare between two dwelling types and the year can be chosen from 2005 to 2023. A boxplot is also plotted for comparison.



[1] Step 1: Choosing the First Dwelling Type for Comparison

- Navigate to the "Dwelling Type 1" dropdown menu at the top of the dashboard.
- Click on the dropdown and select your first dwelling type from the following Options are **1-room / 2-room, 3-room, 4-room, 5-room and Executive, Private Apartments and Condominiums, Landed Properties and Others**).

[2] Step 2: Selecting the Second Dwelling Type for Comparison

- Proceed to the "Dwelling Type 2" dropdown menu to choose the second type of dwelling for your analysis.
- Click on the dropdown and select your second dwelling type. The options are the same as for the first dwelling type.

[3] Step 3: Picking the Year for Boxplot Analysis

- Scroll to the "Year" dropdown menu to select the year you are interested in.
- The options range from 2005 to 2023. Your selection will update the boxplot data accordingly.

[4] Step 4: Interacting with the Boxplots

- Find the boxplot graph in the dashboard.

- Hover over the boxplots to view statistical details such as the minimum value (min), first quartile (Q1), median, third quartile (Q3), and maximum value (max) for the selected dwelling types in the chosen year.

[5] Step 5: Viewing the Cycle Plot for Monthly Trends

- Next to the boxplot, locate the cycle plot section.
- This plot displays the monthly trends in the market values of the selected dwelling types over the years from 2005 to 2023.
- Note: The cycle plot visualizes data for all years and is not affected by the "Year" selection.

Tips for Effective Analysis

- Compare different combinations of dwelling types to get a broader understanding of the market trends.
- Utilize the hover feature to gain a deeper insight into the statistical distribution of market values for each dwelling type.
- For a comprehensive analysis, observe the cycle plot to discern long-term trends and monthly fluctuations.