|  |  |
| --- | --- |
|  |  |

USER INTERFACE APPLICATION SPECIFICATIONS:

SCREENS:

* Home Screen

1. Present Time of Use Billing information in a Graphic and intuitive way
2. Method to access menu of connected appliances and loads (Thermostat and EV)
3. Time/Date and other relevant information

* Menu Screen:

1. Methods to access the control screens and information for the thermostat and EV
2. Method to return to home screen

* Thermostat Screen:

1. Methods to control the temperature level
2. Methods to switch between Heating and/or Cooling Modes
3. Method to collect user scheduling input
4. Method to Display historical energy consumption
5. Method to return to previous screen

* EV Screen:

1. Method for Switching the load remotely
2. Method for collecting user scheduling input
3. Method to Display historical energy consumption
4. Method to return to previous screen

* Scheduling Screen:

1. Method to specify deadline for appliance
2. Method to specify appliance runtime
3. Method to specify appliance start times
4. Method to cancel schedule
5. Method to return to previous screen

* Energy consumption Screen:

1. Present Appliance Energy Consumption Data in a Graphical and intuitive way
2. Method to return to previous screen

CENTRAL CONTROL UNIT GRAPHIC USER INTERFACE APPLICATION DESIGN:

OVERVIEW:

1. HOME SCREEN

|  |  |
| --- | --- |
|  | |
| Purpose: |  |
| Navigation and User Interaction: |  |

1. MENU SCREEN:

|  |  |
| --- | --- |
|  | |
| Purpose: |  |
| Navigation and User Interaction: |  |

1. THERMOSTAT SCREEN:

|  |  |
| --- | --- |
|  | |
| Purpose: |  |
| Navigation and User Interaction: |  |

1. EV SCREEN:

|  |  |
| --- | --- |
|  | |
| Purpose: |  |
| Navigation and User Interaction: |  |

1. THERMOSTAT SCHEDULING SCREEN:

|  |  |
| --- | --- |
|  | |
| Purpose: |  |
| Navigation and User Interaction: |  |

1. EV SCHEDULING SCREEN:

|  |  |
| --- | --- |
|  | |
| Purpose: |  |
| Navigation and User Interaction: |  |

1. ENERGY CONSUMPTION SCREEN:

|  |  |
| --- | --- |
|  | |
| Purpose: |  |
| Navigation and User Interaction: |  |

UML CLASS DIAGRAM:

**\*\***

CENTRAL CONTROL UNIT GRAPHIC USER INTERFACE APPLICATION TESTING:

STAND-ALONE TESTING:

The following tests will be performed on the central control unit application to evaluate the design against the design specifications listed above:

1. Log into the utility portal and enter new Time of Use (ToU) pricing information
2. Run the CCUGUI.py program.
3. Confirm that the ToU information displayed on the Home Screen is correct
4. Confirm the current data and time displayed on the home screen
5. Evaluate the home screen based on the following interface specification:

HOME SCREEN:

|  |  |
| --- | --- |
| **Specification** | **Y/N** |
| Retrieve and Present Time of Use Billing information in a Graphic and intuitive way |  |
| Method to access menu of connected appliances and loads (Thermostat and EV) |  |
| Time/Date and other relevant information |  |

1. Click on the menu button on the home screen
2. Evaluate the menu screen based on the following specifications:

MENU SCREEN:

|  |  |
| --- | --- |
| **Specification** | **Y/N** |
| Methods to access the control screens and information for the thermostat and EV |  |
| Method to return to Home Screen |  |

1. Click on the thermostat icon
2. Attempt to increase or decrease temperature setting
3. Change from heating to cooling mode
4. Evaluate the screen based on the following specifications:

Thermostat Screen:

|  |  |
| --- | --- |
| **Specification** | **Y/N** |
| Methods to control the temperature level |  |
| Methods to switch between Heating and/or Cooling Modes |  |
| Method to collect user scheduling input |  |
| Method to Display historical energy consumption |  |
| Method to return to previous screen |  |

1. Return to the menu screen
2. Select the EV icon
3. Evaluate the screen based on the following specifications:

EV Screen:

|  |  |
| --- | --- |
| **Specification** | **Y/N** |
| Method for Switching the load remotely |  |
| Method for collecting user scheduling input |  |
| Method to Display historical energy consumption |  |
| Method to return to previous screen |  |

1. Select the scheduling option
2. Input a test schedule for EV charging at future time
3. Delete Schedule
4. Evaluate the screen based on the following specifications:

SCHEDULING SCREEN:

|  |  |
| --- | --- |
| **Specification** | **Y/N** |
| Method to specify deadline for appliance |  |
| Method to specify appliance runtime |  |
| Method to specify appliance start times |  |
| Method to cancel schedule |  |
| Method to return to previous screen |  |

1. Return to EV screen
2. Select the usage option
3. Evaluate the screen based on the following specifications:

ENERGY CONSUMPTION SCREEN:

|  |  |
| --- | --- |
| **Specification** | **Y/N** |
| Present Appliance Energy Consumption Data in a Graphical and intuitive way |  |
| Method to return to previous screen |  |