

Project Part 2

<https://github.com/NeuralFlux/energy-management-portal>

Design Choices

I use a Flask backend with JavaScript and jQuery frontend for a simple yet robust setup. Flask connects to MySQL using PyMySQL and autoccommit is set to false by default to enhance concurrency. Each insert, update, delete statement is committed.

I use session variables to store the state of user login for convenience. Users' passwords are securely stored as SHA 256 hashes.

User Guide

Route	Usage
/	Dashboard of a user
/register	Register a new account
/login	Login to use the portal, sets session variables
/logout	Logout from the portal, unsets session variables
/locations	Add, delete, and view your service locations
/devices	Add, delete, and view your registered devices
/location_consumption/<int:lid>	Track monthly energy usage for service location `lid`
/device_consumption/<int:dev_id>	Track monthly energy usage for the device `dev_id`
/price_history/<int:zcode>	Track monthly energy price for area bearing `zcode`
/energy_consumption	Track total energy consumption for a user based on all the types of devices they own

Interface

Registration

Register



Username
Email
Password
Repeat Password

[Login](#)[Register](#)

Login

Login



test1

[Forgot Password?](#)[Register](#)[Submit](#)

Dashboard

[SHEMS](#) [My Service Locations](#) [My Devices](#) [My Energy Breakdown](#)[Logout](#)

Hello there, test1

This is your Smart Home Energy Management Portal. Feel free to check your existing service locations and devices or modifying them.

You may also look at interesting visualizations derived from your usage.

Service Locations

Service Locations

Unit

Address

Zip code

Square Footage

Number of Bedrooms

Number of Bathrooms

Add Location

Location: Unit A, 101 Green Street Billed since: 2022-01-01 <div><div>View usage</div><div>Location Price History</div><div>Delete</div></div>
Location: Unit B, 102 Blue Avenue Billed since: 2022-01-15 <div><div>View usage</div><div>Location Price History</div><div>Delete</div></div>
Location: Unit C, 103 Yellow Road Billed since: 2022-02-01 <div><div>View usage</div><div>Location Price History</div><div>Delete</div></div>

Location Deletion

SHEMS

My Service Locations

My Devices

My Energy Breakdown

Logout

Successfully deleted service location

Service Locations

Unit	Address
<input type="text"/>	<input type="text"/>
Zip code	Square Footage
<input type="text"/>	<input type="text"/>
Number of Bedrooms	Number of Bathrooms
<input type="text"/>	<input type="text"/>
<div>Add Location</div>	

Location: Unit A, 101 Green Street

Billed since: 2022-01-01

View usage

Location Price History

Delete

Location: Unit C, 103 Yellow Road

Billed since: 2022-02-01

View usage

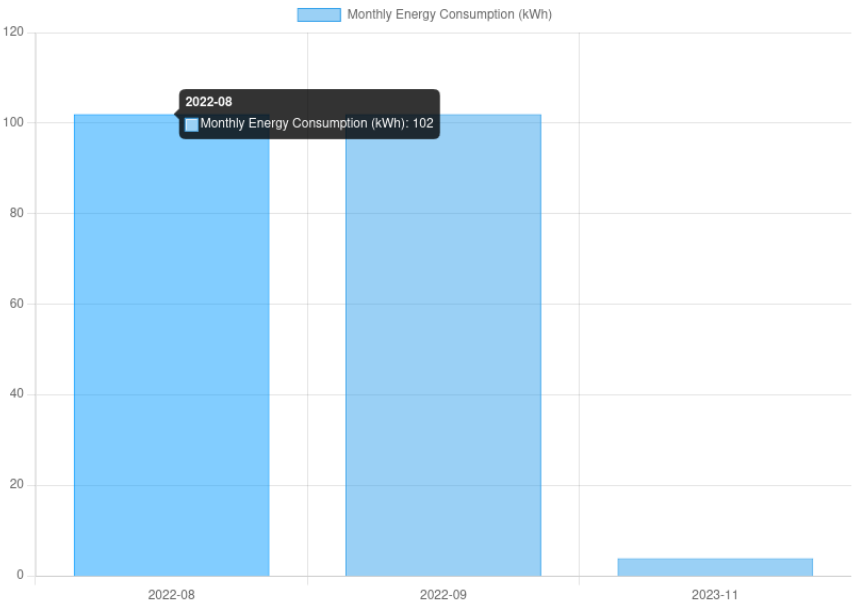
Location Price History

Delete

Location: 3A, Test location

Monthly usage for service location

Monthly Consumption for Location 3



Devices list

Devices

Name

Model

Refrigerator RF123

▼

Location

Unit A 101 Green Street

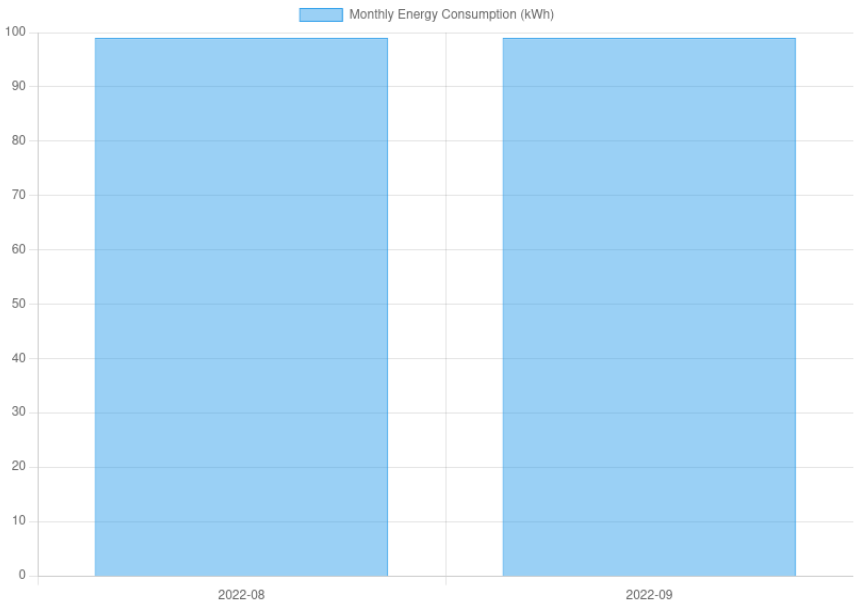
▼

Add Device

<div><div>Name: Ref1</div><div>Model: Refrigerator RF123</div><div>Location: Unit C, 103 Yellow Road, 10003</div><div><div>View usage</div><div>Delete</div></div></div>
<div><div>Name: AC1</div><div>Model: Air Conditioner AC456</div><div>Location: Unit C, 103 Yellow Road, 10003</div><div><div>View usage</div><div>Delete</div></div></div>
<div><div>Name: Heat1</div><div>Model: Heater HT789</div><div>Location: Unit A, 101 Green Street, 10001</div><div><div></div><div></div></div></div>

Monthly usage for devices

Monthly Consumption for Device 8



Deletion of devices

SHEMS

My Service Locations

My Devices

My Energy Breakdown

Logout

Successfully deleted device

Devices

Name

Model

Refrigerator RF123

Location

Unit A 101 Green Street

Add Device

Name: AC1

Model: Air Conditioner AC456

Location: Unit C, 103 Yellow Road, 10003

View usage

Delete

Name: Heat1

Model: Heater HT789

Location: Unit A, 101 Green Street, 10001

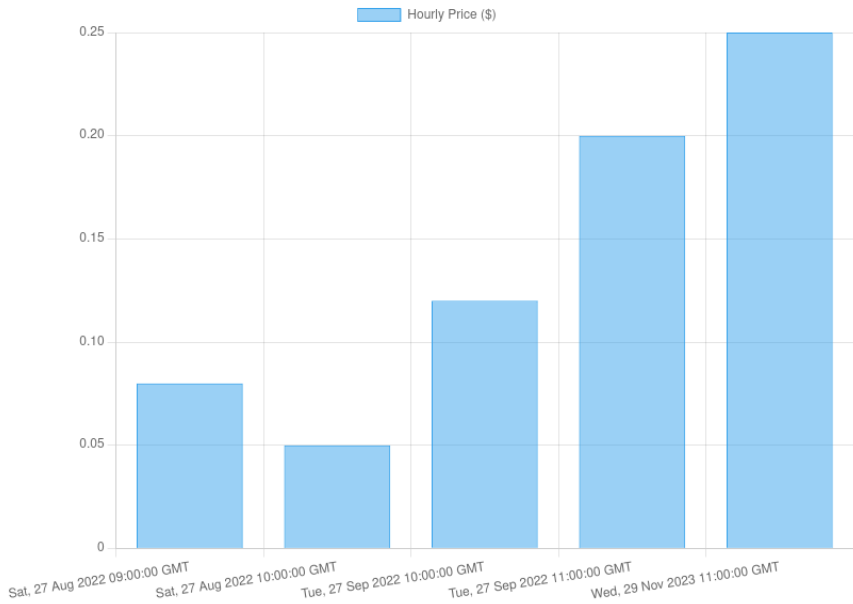
View usage

Delete

Name: Heat1

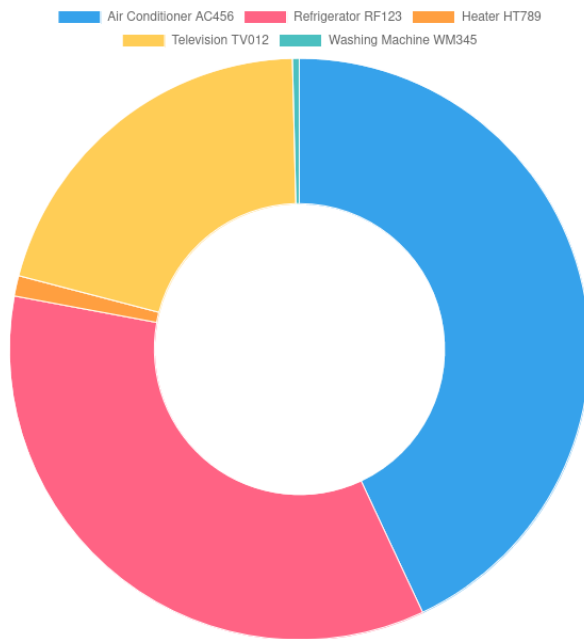
Price History for a zip code

Energy Prices for Area 10003



Nature of total energy consumption categorized by type of device

Energy Consumption Breakdown by Appliance Type



Acknowledgement

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