

Development Documentation

Versions

Version 1 was the backend being started, with no frontend to show. It included all the database models,

```
import datetime
from flask import Flask
from flask_sqlalchemy import SQLAlchemy

app = Flask(__name__)
app.config['SQLALCHEMY_DATABASE_URI'] = 'sqlite:///mydatabase.db' # Example URI, change for your DB
db = SQLAlchemy(app)

class User(db.Model):
    user_id = db.Column(db.Integer, primary_key=True)
    first_name = db.Column(db.String(80), nullable=False)
    last_name = db.Column(db.String(80), nullable=False)
    email = db.Column(db.String(80), unique=True, nullable=False)
    phone_number = db.Column(db.String(80), unique=True, nullable=False)
    password = db.Column(db.String(80), nullable=False)
    signup_date = db.Column(db.DateTime, default=datetime.datetime.now(datetime.timezone.utc), nullable=False)
    user_role = db.Column(db.Enum('admin', 'user', name='user_role_enum'), nullable=False)
    owned_products = db.Column(db.JSON, nullable=True)

class Consultation(db.Model):
    consultation_id = db.Column(db.Integer, primary_key=True)
    user_id = db.Column(db.Integer, db.ForeignKey('user.user_id'), nullable=False)
    consultation_type = db.Column(db.Enum('Solar Panels', 'HEMS', 'EV Charging', name='consultation_type_enum'), nullable=False)
    booking_date = db.Column(db.DateTime, default=datetime.datetime.now(datetime.timezone.utc), nullable=False)
    status = db.Column(db.Enum('Scheduled', 'Completed', 'Pending', name='consultation_status_enum'), nullable=False)

class EnergyUsage(db.Model):
    usage_id = db.Column(db.Integer, primary_key=True, autoincrement=True)
    user_id = db.Column(db.Integer, db.ForeignKey('user.user_id'), nullable=False)
    solar_panel_energy = db.Column(db.Numeric(10, 2), nullable=True)
    ev_charging_energy = db.Column(db.Numeric(10, 2), nullable=True)
    hems_efficiency = db.Column(db.Numeric(5, 2), nullable=True)
    recorded_date = db.Column(db.DateTime, default=datetime.datetime.now(datetime.timezone.utc), nullable=False)

class CarbonFootprint(db.Model):
    carbon_id = db.Column(db.Integer, primary_key=True, autoincrement=True)
    user_id = db.Column(db.Integer, db.ForeignKey('user.user_id'), nullable=False)
    emission_type = db.Column(db.Enum('Home', 'Transportation', 'Lifestyle', name='emission_type_enum'), nullable=False)
    emission_amount = db.Column(db.Numeric(10, 2), nullable=False) # CO2 emission amount in kg
    calculation_date = db.Column(db.DateTime, default=datetime.datetime.now(datetime.timezone.utc), nullable=False)

class UserHub(db.Model):
    hub_id = db.Column(db.Integer, primary_key=True, autoincrement=True)
    user_id = db.Column(db.Integer, db.ForeignKey('user.user_id'), nullable=False)
    last_login = db.Column(db.DateTime, default=datetime.datetime.now(datetime.timezone.utc), nullable=False)
    consultation_id = db.Column(db.Integer, db.ForeignKey('consultation.consultation_id'), nullable=True)
    energy_usage_id = db.Column(db.Integer, db.ForeignKey('energy_usage.usage_id'), nullable=True)

# Create the tables in the database (only once on initial setup)
with app.app_context():
    db.create_all()
```

Version 2 started on the routes. Implementing the signup, login and carbon calculator.

Rolsa Technologies Home Green Energy Carbon Calculator Products Login / Signup
Welcome to the home page

Rolsa Technologies



Carbon Footprint Calculator

Answer the following questions to estimate your monthly carbon footprint:

How much electricity do you use per month? (kWh)

How many miles do you drive per month?

How many new products do you buy per month?

Calculate

This is the carbon calculator which takes information and uses a formula to present the users carbon footprint per month.

Rolsa Technologies

First Name

Last Name

Email Address

Phone Number

Password

Sign Up

Already have an account? [Log in](#)

This is the signup page.

Rolsa Technologies

Log In

Email or Phone Number

admin@example.com

Password

.....

Log In

Don't have an account? [Sign Up](#)

This is the login page which allows you to log in with either your email or phone number.

Version 3 added full dashboard functionality

Welcome, {{ user.first_name }} {{ user.last_name }}

Email: {{ user.email }}

Phone Number: {{ user.phone_number }}

Logout

Owned Products:

- {% for product in user.owned_products or [] %}
- {{ product.product_type }} - Purchased on {{ product.purchase_date }}
- {% endfor %}

Add Owned Products

Product Type

Solar Panels

Date of Purchase

dd/mm/yyyy

Add Product

Energy Data Visualization

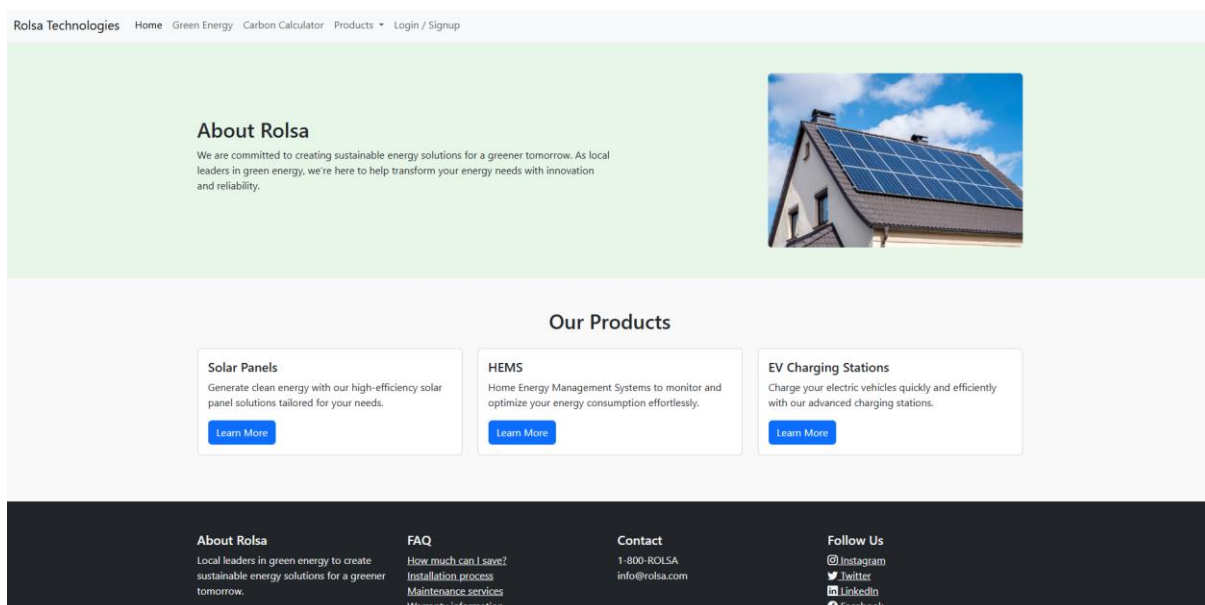
Select Time Period:

Day

View

The dashboard presented owned products, some user information, and a section to add your owned products and a part to view your energy usage


Version 4 added the rest of the pages. Fixed the graphs, added consultations and completed all the user functions. It also heavily worked on the UI



This is the home page

How to save money on your energy?

Heating your home has only gotten more expensive with time, but don't let that keep you down, there are plenty of ways to keep the cost to a minimum.

 Your Image

Our favourite methods

Window sealing

You might think it's simple but actually it's estimated 40% of homes have improperly or worn out window seals which lead to heating loss!

[Learn More](#)

Smart meters

Smart meters are growing rapidly, and for good reason too. Many homes use smart homes because they can get further control on their energy usage and are able to top up an amount they feel comfortable with

[Learn More](#)

LED bulbs

If you're still using filament bulbs it's time to move on! LED bulbs are proven to have around 43% higher efficiency, whilst having just as much lighting power.

[Learn More](#)

About Rolsa

Local leaders in green energy to create sustainable energy solutions for a greener tomorrow.

FAQ

[How much can I save?](#)
[Installation process](#)
[Maintenance services](#)
[Warranty information](#)

Contact

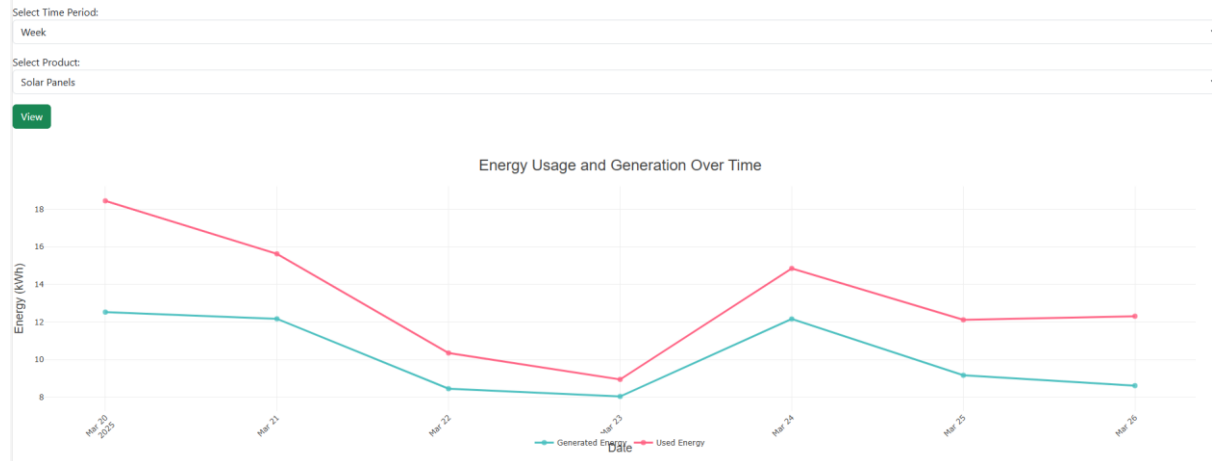
1-800-ROLSA
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This is the green energy blog page

Energy Data Visualization



This is the chart on the dashboard which shows users their generated energy versus used energy on a weeks basis for their solar panels.

And finally, Version 5 worked on finishing all the pages, the admin dashboard and cleaning up content.

About Rolsa

We are committed to creating sustainable energy solutions for a greener tomorrow. As local leaders in green energy, we're here to help transform your energy needs with innovation and reliability.



Solar Panels

Generate clean energy with our high-efficiency solar panel solutions tailored for your needs.

[View details >](#)



Home Energy Management

Home Energy Management Systems to monitor and optimize your energy consumption effortlessly.

[View details >](#)



EV Charging Stations

Charge your electric vehicles quickly and efficiently with our advanced charging stations.

[View details >](#)

Professional Installation, So smooth you wont finish your tea in time.

Here at rolsa we have some of the industries most experienced professionals for installation and configuration of your energy saving tools. And rest assured, with a 5 year warranty and lifetime call line for any issues.

We understand that time is precious—our installation process is so seamless and efficient, you'll be up and running in no time. Our team handles everything, from site assessments to final configurations, ensuring maximum performance from day one. Whether it's solar panels or EV chargers, every detail is meticulously cared for. Trust Rolsa to deliver an effortless transition to smarter, greener energy solutions.



Charging speeds like never before, Next generation power delivery at the grasp of your home.

Our improved power delivery and management system means you can be ready for any journey with 300 mile radius in just 30 minutes.



Charging speeds like never before, Next generation power delivery at the grasp of your home.

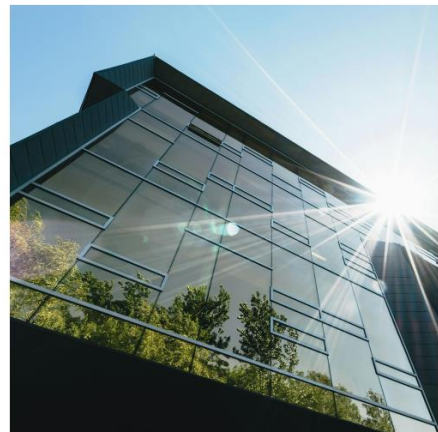
Our improved power delivery and management system means you can be ready for any journey with 300 mile radius in just 30 minutes.

Our advanced EV charging technology, you'll never experience downtime between destinations. Our power delivery system guarantees ultra-fast charging at home, allowing you to hit the road with confidence. Designed for energy efficiency, these chargers optimize power usage, helping you save more while enjoying unbeatable convenience. The future of EV charging starts here—efficient, reliable, and tailored for your needs.

More efficient then ever, Never let your electricity go to waste again.

Our services are proven to make a 3 bedrooms household energy usage 30% more efficient overall just by being more concious and using our services.

These solutions don't just reduce energy waste—they redefine how you manage power in your home. By integrating smart technologies with tailored advice, we ensure you're always in control of your energy consumption. Say goodbye to unnecessary costs and hello to optimized performance, as we turn your household into a hub of energy efficiency. Start saving today, and be part of a smarter, sustainable future.



This is the full home page, with information about the company such as their energy efficiency and some marketing information it has direct links to the pages for their products with pictures to fill space and give colour and accent.

All about saving your energy - March 2025

Green energy is transforming the way we power our homes and businesses in the UK. With rising energy costs and growing environmental concerns, adopting renewable energy solutions is not just a choice—it's a necessity. This post explores practical ways to save money while contributing to a sustainable future.

[Continue reading...](#)

United Kingdom

Featured post

Nov 12

The UK is leading the charge in renewable energy adoption, with wind and solar power now accounting for over 40% of the electricity mix. By switching to green energy providers, households can reduce their carbon footprint and save money on bills.



Design

Energy Saving Designs

Nov 11

Energy-efficient home designs are becoming increasingly popular in the UK. Features like triple-glazed windows, smart thermostats, and LED lighting can significantly reduce energy consumption. A typical household can save up to £356 annually.



From the Firehose

Green energy

About

Green energy is more than a trend—it's a movement. This blog is dedicated to exploring the latest innovations in renewable energy and providing practical tips for saving money while

This is the green energy blog page,

Green energy

January 1, 2025 by [Mark](#)

Green energy is the future, and the UK is at the forefront of this revolution. From wind farms off the coast of Scotland to solar arrays in the South, renewable energy is reshaping the landscape.

By adopting energy-saving habits—like turning off appliances on standby and using washing machines at 30°C—households can save hundreds of pounds annually.

Forewords

A quote from secretary of energy:

"Switching to renewable energy is not just an environmental choice—it's an economic one. The savings are real, and the impact is profound."

Stacy Miller, Secretary of energy has been the head of the green energy revolution in the uk for the past 3 years, helping bring this country to a cleaner standard.

What are some quick solutions?

Heres a list of a few of our favourite methods of saving energy while still not breaking the bank and can be done easily at home.

- Use smart meters to monitor and optimize energy usage.
- Install LED bulbs as a replacement to any filament bulbs
- Refresh window sealment

And here are some more methods, which cost more to do but yield greater results.

1. Replace old appliances with energy-efficient models.
2. Installing an air based heat pump.
3. Install solar panels to generate clean energy and save money.

UK Government clean power 2030.

December 23, 2024 by [Jacob](#)

The UK government's Clean Power 2030 Action Plan aims to deliver 100% zero-carbon electricity by 2035. This ambitious goal is supported by investments in wind, solar, and bioenergy projects. Homeowners can contribute by adopting renewable energy solutions and reducing energy waste.

Some forewords from the secretary of state:

We will **usher** in a new era of clean electricity for our country, with our plan to deliver the most ambitious reforms to our energy system ingenerations.

by sprinting to clean, homegrown energy, we can take back control from the dictators and the petrostates. That is why the Prime Minister has put delivering clean power by 2030 at the heart of 1 of his 5 missions and Plan for Change.

The age of clean electricity is about harnessing the power of Britain's natural resources so we can protect working people from the ravages of global energy markets. This plan will provide the foundation for the UK to build an energy system that can bring down bills for households and businesses for good. And it is also about creating the sort of country that we know people want to see - reindustrialising our heartlands with good jobs and tackling the climate crisis.

About

Green energy is more than a trend—it's a movement. This blog is dedicated to exploring the latest innovations in renewable energy and providing practical tips for saving money while protecting the planet.

Recent posts



Learn how solar panels can save you money and reduce your carbon footprint.

January 15, 2025



Discover the benefits of energy-efficient home designs.

January 14, 2025



Explore the UK's journey toward a net-zero future.

January 13, 2025

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Explore the UK's journey toward a net-zero future.

Government Grants

December 14, 2024 by [Chris](#)

Heat pumps are gaining popularity in the UK as an efficient way to heat homes. They use renewable energy to provide warmth, reducing reliance on gas boilers. Combined with smart thermostats, heat pumps can cut heating costs by up to 25%.

Heat pumps are 3 times more energy efficient than traditional gas boilers, meaning they will substantially reduce the carbon footprint of your home. Because they run on electricity, there's also potential to make significant bill savings by using smart tariffs with cheaper off-peak rates.

The government offers a £7,500 grant towards installing a heat pump across England and Wales through the Boiler Upgrade Scheme. Make your home smarter, greener, and more energy efficient.



Explore the UK's journey toward a net-zero future.
January 13, 2025

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info@rolsa.com

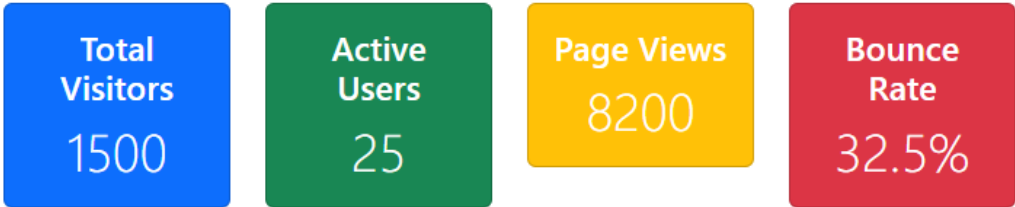
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This blog gives the readers information about current trends and ways to save money on their energy with green solutions, it is designed to be like a news source on other websites and has links to actual sources so that users can find where the information is from.

Admin Dashboard

Website Analytics Overview



Top Pages

Page	Views
Home	2500
EV Charging	1200
Solar Panels	800
HEMS	700
Carbon Calculator	500

This is the admin dashboard which gives information about some site analytics on a basic view.

Solar Panels

Harness the power of the sun and save on energy bills with our high-efficiency solar panel solutions.



Clean Energy

Reduce your carbon footprint and contribute to a cleaner environment by generating renewable energy.



Save Money

Cut your electricity bills by up to 50-70% annually and protect yourself from rising energy costs.



Long-Term Value

Enjoy a lifespan of 25+ years with minimal maintenance and increased property value.

Our Solar Panel Options

We offer a range of solar panel systems designed to meet different energy needs and budgets:

- **Standard Panels:** £3,000 - Affordable and efficient for smaller households.
- **High-Efficiency Panels:** £6,000 - Ideal for medium to large households with higher energy needs.
- **Premium Panels with Battery Storage:** £12,000 - Store surplus energy for use anytime.



This is the solar panels page with some information for users

Grants & Incentives

Take advantage of government incentives such as the UK's Smart Export Guarantee (SEG), which pays you for exporting surplus energy back to the grid. Learn more on the [Ofgem website](#).

Why Choose Rolsa Technologies?

Rolsa Technologies is a trusted leader in renewable energy. With expert installations, long-lasting products, and excellent customer service, we ensure you get the most out of your solar investment.

[Book Your Free Consultation](#)

Why Choose a Home EV Charging Station?



Faster Charging

Charge your electric vehicle from 0% to 100% in as little as 6 hours, compared to over 24 hours with standard plug sockets.



Cost-Effective

Save money with overnight charging at lower electricity rates, reducing your annual EV energy costs to as little as £200-£300.



Convenient & Smart

Enjoy advanced features like remote control via apps, scheduled charging, and real-time usage stats.

Available Models

Our EV charging stations are designed to meet your needs. Choose from a range of reliable and efficient products:

- **Basic Home Charger:** £700 - Simple, reliable, and easy to install.
- **Smart Charger:** £1,200 - Includes app control and energy monitoring.
- **Premium Rapid Charger:** £2,000 - Ultra-fast charging speeds with added smart features.



this is the same page but for ev charging with some information.

Grants & Incentives

Take advantage of the UK's [EV Homecharge Scheme](#) (EVHS) to reduce installation costs by up to £350.

Why Choose Rolsa Technologies?

With a reputation for excellence and years of expertise, Rolsa Technologies ensures seamless installations, durable products, and outstanding customer service.

[Book a Free Consultation](#)

Home Energy Management Systems (HEMS)

Take control of your energy usage and optimize your home's efficiency with our cutting-edge solutions.



Optimized Energy Use

Monitor and control your energy consumption in real-time. Reduce wastage and enjoy lower electricity bills.



Smarter Homes

Integrate with smart devices and automate everyday routines for greater convenience and comfort.



Cost Savings

Save up to 20-25% annually on energy bills by managing peak usage and optimizing your home's energy flow.

Available Options

We offer tailored Home Energy Management Systems to meet your unique needs:

- **Basic HEMS:** £500 - Perfect for energy monitoring and basic home control.
- **Smart HEMS:** £1,000 - Includes integration with smart thermostats, lighting, and appliances.
- **Advanced HEMS:** £1,500 - Includes AI-powered optimization for maximum efficiency.



Grants & Incentives

Leverage government schemes and subsidies to make your transition to a smarter, energy-efficient home even more affordable. Visit the [UK energy savings portal](#) for details.

Grants & Incentives

Leverage government schemes and subsidies to make your transition to a smarter, energy-efficient home even more affordable. Visit the [UK energy savings portal](#) for details.

Why Choose Rolsa Technologies?

As innovators in energy solutions, Rolsa Technologies ensures easy installations, robust products, and exceptional customer support. Upgrade your home today!

[Book a Free Consultation](#)

And then this is the page with information on HEM's

Book a Consultation

Consultation Type

Solar Panels

Choose a Date

dd/mm/yyyy

Confirm Booking

the consultation leads to a page where users can chose a consultation type and a date which sends them to their dashboard where they can view their current scheduled appointments and their status. While also being able to cancel them.

Lastly, I added a FAQ with a variety of questions I thought would be common for the user to read up on,

Frequently Asked Questions

How much can I save?	^
The amount you can save depends on several factors such as your energy usage, local energy prices, and how much sunlight your location receives. On average, you can save between 20% to 50% on your electricity bill by installing solar panels. When using the HEMS we recorded over 10% more efficiency in your energy usage.	
What is the installation process like?	∨
How does the maintenance service work?	∨
What kind of warranty do I get?	∨
Is my data safe?	∨
What is the return on investment (ROI) for solar panels?	∨
Will solar panels make me energy independent?	∨
How long will the charger take to charge my vehicle?	∨

Each question has dropdowns which let the user read the answer to hopefully

All the pages unfeatured in version 5 were unchanged, for example sign up, login and the user dashboard.