

Software Proposal for Rolsa Technologies

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Background Information and Product Outline

Background Information

Rolsa Technologies is a local green technology company specializing in solar panel installation and maintenance, EV charging infrastructure, and smart home energy management. They have approached us to develop a comprehensive digital solution that will enable customers to monitor and compare green energy products, calculate and reduce their carbon footprint, and schedule consultations and installations of Rolsa Technology products. Our analysis confirms there is currently no existing digital solution addressing these needs.

Product Outline

Based on extensive market research conducted by Rolsa Technologies with their existing customer base, the following key requirements have been identified:

Account Registration System: Allowing customers to create secure accounts to manage their consultations, installation appointments, and personal energy usage data

Accessibility Compliance: Full implementation of WCAG and W3C standards to ensure the platform is accessible to all potential users regardless of ability

Energy Monitoring Tools: Development of interactive calculators and tracking systems to help users understand and reduce their carbon footprint

Consultation Scheduling: An intuitive booking system for arranging product demonstrations and installation services

The absence of a current digital system presents a significant opportunity for Rolsa Technologies to increase operational efficiency and market reach. Their proactive approach to gathering customer requirements demonstrates a strong commitment to developing a solution that addresses genuine market needs. Our team will collaborate closely with Rolsa to create a system that fully aligns with their business objectives while providing an exceptional user experience for their customers.

Functional & Non-Functional Requirements

Definition of a Functional Requirement

A functional requirement (FR) is something that the software solution must actively do. Examples of this could be a registration system as referenced above but anything done to achieve function from registration to account deletion is seen as a functional requirement and they will be outlined as such.

Functional Requirements

1. Account Systems

- a. Account Registration to allow the end user to receive a personalised dashboard containing appointment data and usage metrics.
- b. Account Login System to allow the user to access the account they have just registered
- c. Password updating system so that the end user can always change the password if in fear of compromise or has forgotten it.
- d. Account Deletion/Termination allowing the user to delete their account and the associated metrics and appointments should they wish to exit the Rosla Technologies market.

2. Metric Gathering

- a. Have the Metrics of a household / specific item be available to the user at any time over any period not exceeding the period the user has been with the company to avoid misconception of “blank” data.

- b. Be able to set usage limits on certain items of tech such as an EV charger or smart thermostat / heating solution to limit cost and consumption
- c. Email / smart contacting solution to the user if the item with a limit on it is close to the limit and provide them with options to increase OR remove the limit they have set.

3. Ability to book Appointments

- a. To be able to book appointments directly through the app for a variety of tasks
- b. To be able to set notes at point of booking detailing your issue from the end user Point of View (POV)
- c. Cancellation and rescheduling of appointments up to the date of the current appointment.

4. Admin Panel

- a. Be able to see overall usage metrics in a geographical area
- b. Be able to see usage metrics for one household or business facility
- c. Be able to procure contact details for a client to contact them if necessary

Non-Functional Requirements

Definition of a Non-Functional Requirements

A Non-Functional Requirement (NFR) is something the software solution should be / how it should perform in terms of speed & efficiency. Examples can include each part of a solution loading between 2-5 seconds and using strong encryption systems for passwords.

Non-Functional Requirements

1. Performance and Speed

- a. What are the loading times of the solution, are they within expected values defined as between 2 and 5 seconds in line with the average for the software space this will operate in
- b. Efficiency of pulling through user data when they arrive at the dashboard. Again, asking are they waiting just those 2-5 seconds for the Database query or is the data being tied up for far too long.

2. Security and Protection of Sensitive Data

- a. Usage of SHA-3 encryption system defined by NIST as: the most up to date and secure hashing algorithm working alongside and in place of the SHA-2 based as and when systems are upgraded or replaced. This SHA-3 system will be used for all password and sensitive data storage.
- b. Storing only data that is needed in the database and only the necessary data as to avoid potential data breaches being worse than they need to be should they occur.

3. Usability

- a. Is the system comprehensive and easy to understand. i.e. can any user pick up the website and understand its overall flow
- b. Is the website compliant to WCAG and W3C in terms of being accessible to all user groups regardless of impairments to a certain point

User Groups

1. Home Client (End User)

- a. Average client for the business, generally a person with EV chargers, solar panels or smart heating / cooling technology in place at their home.
- b. Wants to know their usage metrics regarding each item and overall, for their household.
- c. Ability to rate limit each item or the entire household for a set amount of time determined by the end user.

2. Business Client (End user)

- a. Another average client for the business, generally with EV chargers, solar panels or smart heating / cooling technology in place at their base of operations.
- b. Wants the usage metrics for each item and overall, possibly across multiple locations or sites.
- c. Able to check metrics for specific times of day / week to analyse hot spots if they run an EV charge farm for example.

3. Rolsa Technologies Usage Analyst

- a. Monitor overall metric usage to identify hotspots where the company may need to correspond with local power grid to “dump” power at peak usage times
- b. Identify Businesses with high usage to potentially contact them regarding a business rate on future purchase and consultancy

4. Rolsa Technologies Support Staff

- a. Be the first line of support from the contact form built into the system
- b. Be able to see any user’s metrics from an “admin Dashboard” for first line support

User Stories

Please be aware that where “End User” is referenced it is regarding both personal and business clients are referenced as they are both wanting the same thing. Clarification will be made when their needs differ.

Role	I want	So That	Acceptance Criteria
End User	To register an account	I can see all my metrics and appointments from the solution	The system should have a clear registration button (FR 1.A)
End User	To Login to my registered account	I can view the metrics tied to my account after logging in	The system should have a clear login button that lands the user at a dashboard after successful login (FR 1.B)
End User	Be able to change my password	I can secure my account if I am concerned about security compromise	The user dashboard should contain a change password function (FR 1.C)
End user	Delete my account	I can change providers if I see fit	The user dashboard should contain a delete account button for the user (FR 1.D)
End user	To see my metrics	I can adjust my usage if I am spending more than I expected	The user’s data should be in a readable format on the dashboard for them to analyse (FR 2.A)

Home Client	To book a consultation	I can have my home assessed for implementing Rolsa products	The user can book a home consultation directly via the software solution (FR 3.A)
Business Client	To book a consultation	To have a consultation around installing Rolsa products on mass to my base of operations or other location (EV charge farm). This differs from home client as for a mass installation local power grid may need consulting regarding level of usage	The Business Client can book a consultation call through the system but cannot directly book an appointment because there are more metrics and issues to consider regarding a business client due to scale. (FR 3.A)
End User	To attach a note to my booking	Any information not requested by default can be conveyed to the company	There will be a “notes” section on the booking form (FR3.B)
End User	To rearrange or cancel a booking	The booking can be remade for a time better suited to the end user	The system should include a system to reschedule or cancel a booking (FR3.C)
Rolsa Technologies Usage Analyst	To monitor overall usage of products	The company can identify high usage points	The system should have an admin panel with Metrics searching and sorting (FR4.A)
Rolsa Technologies Usage Analyst	To monitor usage for one client (more focused on business)	Rolsa can identify points of high usage on the network to provide an enterprise offer	The system will let an admin see the usage of a particular client (FR4.B & FR4.C)
Rolsa Technologies Support Staff	To Access User Accounts	To provide support where needed	The system will allow administrators to access user data (FR4.C)

Empathy Map

End User

Says	Thinks	Does	Feels
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<ul style="list-style-type: none"> • "I want to know my overall energy usage." • "I could reach out to get my usage weekly." • "How can I reduce my carbon footprint?" • "I need to schedule a consultation." • "How much energy am I actually saving?" 	<ul style="list-style-type: none"> • "I wish there was a centralized dashboard where I could see my usage in a filterable way." • "This is inconvenient as I cannot properly visualize the breakdown and it's a lot of time to wait on hold." • "Is it worth investing in green technology solutions?" • "I hope this process isn't complicated." • "I want to see actual data, not just estimates." 	<ul style="list-style-type: none"> • Complains that one does not exist and research provider of these features that offers the solution they want. • Starts to think of how good a system would be where they could check their total usages in less than five minutes. • Searches online for information about green energy options. • Tries to find contact information and available times. • Tries to compare bills before and after green technology adoption. 	<ul style="list-style-type: none"> • Disappointed, Stressed, Overwhelmed, Under-Valued • Unheard, Disappointed, stressed as they cannot properly fit a 15-minute phone call into their schedule • Confused about technical terms, Relieved to learn tracking is included at no extra cost • Anxious about finding a convenient time slot • Sceptical without clear metrics, Hopeful about potential savings
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Home Client

Says	Thinks	Does	Feels
<ul style="list-style-type: none"> • "Is solar power really worth it for my home?" 	<ul style="list-style-type: none"> • "The upfront cost for installation 	<ul style="list-style-type: none"> • Evaluates the overall 	<ul style="list-style-type: none"> • Appreciative of bundled services,

<ul style="list-style-type: none">• “Can I monitor my home's energy usage on my phone?"• "Will these smart home devices work with my existing setup?"• "How much maintenance will solar panels require?"• "Can my kids also learn about our energy usage?"	<p>seems high, but the included tracking service adds value."</p> <ul style="list-style-type: none">• "I want something simple that doesn't require technical knowledge."• "I don't want to replace everything I already have."• "I don't want another home responsibility."• "This could be educational for the whole family."	<p>package offering.</p> <ul style="list-style-type: none">• Looks for user-friendly apps and interfaces.• Checks compatibility with current home systems.• Research maintenance requirements and warranties.• Involves family members in energy decisions.	<p>Excited about potential savings</p> <ul style="list-style-type: none">• Overwhelmed by technical options, Eager for easy solutions• Concerned about integration, Frustrated by potential complications• Worried about ongoing costs, Reluctant about additional responsibilities• Hopeful about creating positive habits, Proud of teaching sustainability
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Business Client

Says	Thinks	Does	Feels
<ul style="list-style-type: none">• "How will this affect our operational costs?"• "Can we track usage across multiple locations?"• "Will this help us meet our sustainability targets?"	<ul style="list-style-type: none">• "This needs to provide ROI to justify the installation expenditure."• "We need a centralized system for all our facilities."• "We have corporate commitments	<ul style="list-style-type: none">• Analyses financial projections including the value of bundled tracking services.• Evaluates scalability of proposed solutions.• Reviews compliance with	<ul style="list-style-type: none">• Pleased about included services, Responsible for company resources• Concerned about consistent implementation, Strategic about company-wide solutions• Accountable to stakeholders, Proud of

<ul style="list-style-type: none">• "How will this implementation disrupt our operations?"• "Can we customize reports for different departments?"	<p>to reduce our carbon footprint."</p> <ul style="list-style-type: none">• "Downtime could cost us significantly."• "Different teams need different insights from the data."	<p>environmental standards.</p> <ul style="list-style-type: none">• Plans for phased implementation with minimal disruption.• Identifies reporting needs across the organization.	<p>contributing to sustainability goals</p> <ul style="list-style-type: none">• Anxious about operational continuity, Practical about implementation timeline• Forward-thinking about organizational needs, Detail-oriented about data requirements
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Risks

Risk Assessment Matrix

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 16	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

Data and System Security

Point

As part of the Data and system security point of view regarding the database we must be mindful of SQL injection attacks into the database. These are commonly attempted on thousands of software solutions daily. While these attacks cannot be deterred by laws and legislation, as a product we can ensure Rolsa, and its entities are not subject to successful SQL Injection attacks. This can be done by ensuring sanitisation of every user input on every part of the solution. Sanitising inputs is built into a lot of language

stacks and often searches for keywords from the Sequel (SQL) language such as “drop”, “insert” and “update”.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Point

Another Issue of Data and System Security is Cross-Site Request Forgery or CSRF/XSRF. CSRF is an issue the system could have because of the client visiting other malicious websites either by accident or for a different purpose. Regardless of this it does mean that a script executed from said malicious websites (I.e. thepiratebay) could cross site attack and submit forms on a different site (such as the product proposal here) and potentially change passwords or book visits that the user does not want. While no monetary loss can occur to a customer or the business because of a CSRF attack it is still something that should be accounted for at development.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Point

A third issue of Data and system security would be disgruntled or otherwise less bright colleagues accidentally updating, leaking or deleting confidential or “mission critical” information. While updating and deleting are a lesser issue they are still a very inconvenient thing. Unfortunately, a data leak is worst case scenario. In line with UK Data Protection Act regulations the company would be required to submit a report of a data breach leading to lots of paperwork and inevitable financial loss.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 5 (Catastrophic), Risk Level: **Extreme (15)**

Mitigation Strategy: Implement role-based access control with principle of least privilege. Create detailed audit logging for all data access and modifications. Require two-factor authentication for accessing sensitive data. Implement regular training programs for staff on data handling procedures. Create automatic backup systems with point-in-time recovery.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 5 (Catastrophic), Risk Level: High (10)

Justification: Internal threats pose significant risks as employees already have legitimate access to systems. Data breaches resulting from internal actions can lead to severe regulatory penalties, reputation damage, and financial losses. While comprehensive access controls and audit logging reduce the likelihood of successful mishandling, the consequence remains catastrophic due to potential DPA violations and mandatory breach reporting.

Point

The final issue I have identified is data encryption. Data must be encrypted both at rest and in transit. It is vital that the data is always encrypted to prevent data breach protocols from being triggered. When sensitive data is stored or transmitted without proper encryption, it remains vulnerable to unauthorized access. Unencrypted data can be easily intercepted during transmission between systems or directly accessed from storage media if physical security is compromised.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 4 (Major), Risk Level: **Extreme** (16)

Mitigation Strategy: Implement TLS/SSL for all data in transit. Use industry-standard encryption algorithms (AES-256) for data at rest. Implement proper key management practices, including key rotation and secure storage of encryption keys. Conduct regular encryption audits. Encrypt sensitive data at the application level in addition to database-level encryption.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 4 (Major), Risk Level: High (8)

Justification: Unencrypted data is highly vulnerable to interception during transit and unauthorized access at rest. Without encryption, data breaches become significantly more likely and damaging. Implementing strong encryption protocols for both data in transit and at rest substantially reduces the risk of unauthorized access. While the consequence of a breach remains major, the likelihood is reduced as attackers would need to overcome multiple encryption layers.

Compatibility

Point 1: Our product might have problems working on old computers, outdated operating systems, and different web browsers. We need to make sure our website works on Chrome, Firefox, Edge, and maybe even older browsers that some schools or businesses still use. Different browsers show websites differently and support different features. Also, older computers might struggle with the more advanced parts of our website, which could stop some users from using all the features.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 3 (Moderate), Risk Level: High (12)

Mitigation Strategy: To fix browser and device compatibility issues, we need to test our website on all the common browsers and operating systems. We'll build the website so the basic features work on all browsers, then add the fancy stuff for modern browsers. This is called "progressive enhancement" and it's a good approach for making sure everyone can use at least the core features.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 2 (Minor), Risk Level: Moderate (4)

Justification: Without testing, many users might not be able to use our website at all if they have older devices or browsers. By testing thoroughly and building the site to work on many different systems, most people should be able to use it without problems. The risk drops from High to Moderate because our testing and development approach will catch most compatibility issues before users ever see them.

Point 2: Version Compatibility Considerations We need to figure out if users will have to update to the newest version of our software right away when we release updates, or if they can keep using older versions for a while. This matters because some schools or businesses have strict rules about when they can update software, and they might not want any downtime. If we force everyone to update immediately, it could mess up their daily work. We also need to think about how database changes between versions might affect users who haven't updated yet.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 4 (Major), Risk Level: High (12)

Mitigation Strategy: Instead of making everyone update right away, we should roll out updates gradually. We'll make sure that at least one older version still works after we

release an update. We'll create good documentation about how to update and make tools that automatically update data and settings when users do decide to update. For bigger organizations, we could provide security updates for older versions for a while, giving them time to schedule updates when it works for them.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 3 (Moderate), Risk Level: Moderate (6)

Justification: Forcing everyone to update right away can cause big problems, especially for organizations with strict IT rules. This could lead to system downtime or people refusing to use our system at all. By letting people update when they're ready and keeping older versions working, these problems are much less likely to happen. The risk goes down because the system would still work during update periods, though some newer features might not be available to everyone right away.

Point 3: Database Connection Issues Across Different Environments We need to make sure our database connections work on different types of hardware and network setups. The database connection is how our website talks to the database where all the information is stored. Different places (like development, testing, and production environments) might have different network setups, security rules, and available connection methods. This could cause situations where our website works perfectly when we're developing it but fails to connect to databases when it's deployed in the real world, especially in places with strict firewall rules or old equipment.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 4 (Major), Risk Level: Extreme (16)

Mitigation Strategy: To fix database connection problems, we'll use connection methods that work almost. We'll create code that can handle different connection requirements automatically. We'll write clear instructions for IT staff about how to set up the network for our system. We'll also make testing tools that can check if the required connections are possible before trying to install the full system.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 3 (Moderate), Risk Level: Moderate (6)

Justification: Special database connection methods often cause problems, especially in places with strict security or older equipment. Without planning for this, our system might not work at all in some places. By using standard connection methods and providing good setup instructions, these problems are much less likely. The risk drops from Extreme to Moderate because connection problems would be found early during setup rather than causing the system to crash when it's already being used.

Point 4: Mobile Responsiveness Challenges We need to figure out how our website will work on phones and tablets. Will we make a special mobile version or just make our regular website adjust to different screen sizes? Mobile users interact with websites differently than desktop users, and small screens make it hard to show complex interfaces. Also, mobile internet connections might be slower or less reliable, affecting how well our website performs. If we don't address these challenges, many users might not be able to use our website properly as more and more people access the web from mobile devices.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 5 (Almost certain), Consequence: 3 (Moderate), Risk Level: Extreme (15)

Mitigation Strategy: We need to decide early on whether we'll make a separate mobile app or just make our website responsive.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 3 (Moderate), Risk Level: Moderate (6)

Justification: Without planning for mobile users, they'll almost definitely have problems using our website. This could prevent a lot of people from using our system, especially as more people use phones for everything. By having a clear mobile strategy from the beginning, these problems are much less likely. The risk drops because our planning would make sure the important features work on all devices, even if they look a bit different.

Speed of Development

Point 1: Project Timeline Constraints One of the major speed of development concerns is whether we can deliver the full project within the timescale given by the client. The Rolsa Technologies project involves multiple complex components including user account systems, carbon footprint calculators, consultation scheduling, and product information databases.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 4 (Major), Risk Level: Extreme (16)

Mitigation Strategy: To handle timeline constraints, we should implement an agile development approach with clearly defined sprints and milestones. We should prioritize core features first (like the account system and basic information pages) and plan for phased delivery with the most complex features (like the carbon footprint calculator) in later phases if needed. We should also consider using existing

frameworks and libraries for common functionality to speed up development rather than building everything from scratch.

Post-mitigation Risk: Likelihood: 3 (Possible), Consequence: 3 (Moderate), Risk Level: High (9)

Justification: Without proper planning, it's very likely we'll miss deadlines and must cut features or deliver a rushed product. This could damage our relationship with Rolsa and potentially lose business. By using agile methods and prioritizing features, we can better manage the timeline, though there's still a moderate risk of delays with complex features. The risk level is reduced from Extreme to High because we'll have a clearer view of progress and can adjust plans if needed.

Point 2: Technical Debt Considerations During development, we might take shortcuts to meet deadlines that could cause problems later in the development process. This technical debt might include things like hardcoded values instead of proper configuration systems, lack of proper input validation, or insufficient testing. In the context of this project, rushing the database design for storing user energy usage data could make it difficult to implement more advanced features later.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 3 (Moderate), Risk Level: High (12)

Mitigation Strategy: We should establish coding standards and do regular code reviews to maintain quality. We need to document any shortcuts taken with clear "TODO" comments and add them to a technical debt backlog. We should schedule regular "refactoring sprints" to address technical debt before it accumulates too much. We should also create automated tests for all critical features to make sure changes don't break existing functionality.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 2 (Minor), Risk Level: Moderate (4)

Justification: Without proper management, technical debt is likely to accumulate and eventually slow down development or cause bugs. By tracking technical debt and addressing it regularly, we can prevent it from becoming a major issue. The risk level is reduced to Moderate because our strategies would catch most significant issues before they impact the project timeline or quality.

Point 3: Development Environment Setup Time Setting up proper development environments for testing can take significant time, especially when we need to create virtual examples for testing different scenarios. For the Rolsa project, we'd need environments that can simulate user interactions with the carbon footprint calculator,

consultation scheduling system, and account management features. Setting these up properly can take days or even weeks away from actual development time.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 3 (Moderate), Risk Level: High (9)

Mitigation Strategy: We should create a standardized development environment that all team members can use, possibly using containerization tools like Docker. We should also prepare sample data sets for testing different user scenarios. We could implement continuous integration (CI) to automatically test code in standardized environments when changes are made. For the carbon calculator specifically, we should create test data that covers different user profiles and energy usage patterns.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 2 (Minor), Risk Level: Moderate (4) Justification: Without standardized environments, developers might waste time fixing environment-specific bugs or waiting for test environments to be set up. By using containers and automation, we can dramatically reduce this wasted time. The risk level drops to Moderate because even with good automation, there might still be some environment setup challenges, but they would have a minor impact on the overall timeline.

User Engagement

Point 1: Interface Design Risks A key user engagement risk concerns how the interface design will affect user attraction and retention. A poorly designed interface could push users away rather than draw them in, causing them to abandon the Rolsa Technologies platform. Additionally, the interface needs to be inclusive and accessible to all users, including those with disabilities. This means ensuring WCAG compliance for screen readers, providing dyslexia-friendly text options, and designing with other accessibility considerations in mind.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 4 (Major), Risk Level: Extreme (16)

Mitigation Strategy: To mitigate interface design risks, we should adopt a user-centred design approach from the start. This means creating wireframes and prototypes that can be tested early with actual users. We should implement accessibility standards like WCAG 2.1 AA compliance throughout development. Colour schemes should be tested for colourblind users, and text should use dyslexia-friendly fonts and formatting. We should also conduct regular accessibility audits during development.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 3 (Moderate), Risk Level: Moderate (6)

Justification: Without proper planning for design and accessibility, it's likely that many users would struggle to use the platform or abandon it completely. This could severely limit the reach and effectiveness of the solution. By implementing user-centered design principles and accessibility standards from the beginning, we significantly reduce this risk. The impact remains moderate because even with good design, some users may still find aspects of the interface challenging.

Point 2: User Testing Feedback Loops Without regular user testing, we risk developing features that don't meet actual user needs or that have usability issues. The carbon footprint calculator, scheduling system, and information resources all need to be intuitive and aligned with how users actually want to interact with these tools. Lack of feedback loops could result in wasted development effort and features that users don't engage with.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 3 (Moderate), Risk Level: High (12)

Mitigation Strategy: We should implement a comprehensive user testing strategy that includes testing at multiple development stages. This should include early concept testing with paper prototypes, usability testing with interactive wireframes, and beta testing with actual working features. We should create a diverse user testing group that represents different demographics and technical skill levels. Feedback should be documented, prioritized, and incorporated into the development process in a structured way.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 2 (Minor), Risk Level: Moderate (4)

Justification: Without regular testing, we're likely to develop features that don't meet user expectations, resulting in poor engagement. By implementing regular testing cycles and incorporating feedback, we can catch issues early and adjust before full development. The risk level is reduced because we'll have a clearer understanding of what users want and need.

Point 3: Feature Adoption Concerns There's a risk that users may be dismissive of new features or the product, especially if they don't see immediate value or if the features seem complicated. For example, users might not engage with the carbon footprint calculator if it requires too much data input or if they don't understand how it benefits them.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

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Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 4 (Major), Risk Level: High (12)

Mitigation Strategy: To encourage feature adoption, we should focus on communicating clear value propositions for each feature. We should implement progressive disclosure techniques where complex features are introduced gradually. We could use gamification elements to make features like the carbon footprint calculator more engaging. We should also create quick-start guides and tooltips to help users understand how to use new features without feeling overwhelmed.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 3 (Moderate), Risk Level: Moderate (6)

Justification: Without specific strategies to encourage adoption, users might ignore new features, especially if they seem complex or time-consuming. By focusing on clear value communication and ease of use, we can significantly increase the likelihood of adoption. The risk level is reduced because our strategies would make features more approachable and clearly beneficial to users.

Product Reach

Point 1: Target Audience Considerations A major consideration for product reach is making sure we target the correct audience for Rolsa Technologies' digital solution. The green energy market includes diverse groups from eco-conservatives and environmentally conscious homeowners to businesses looking to reduce their carbon footprint. Each group has different motivations and needs when it comes to green technology. If we create a solution that only appeals to hardcore environmentalists but ignores practical homeowners interested in cost savings, we'll miss a huge portion of potential customers.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 4 (Major), Risk Level: Extreme (16)

Mitigation Strategy: We should conduct proper market research to identify different user segments and their specific needs. The digital solution should have customizable messaging that can emphasize environmental benefits for eco-conscious users and cost-savings/ROI for more financially motivated users. We should create user personas that represent different segments of Rolsa's target audience and use these to guide design decisions. The interface should be flexible enough to highlight different benefits based on user preferences.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 3 (Moderate), Risk Level: Moderate (6)

Justification: Without targeting the right audience, the solution is likely to have low adoption rates and fail to support Rolsa's business goals. By researching and understanding the diverse audience, we can create a solution that appeals to multiple user groups. The risk level is reduced because our research and flexible approach would help ensure the product reaches and appeals to the right people.

Point 2: Platform Limitations The digital solution will have certain platform limitations that could restrict what features we can include and how users can interact with the system. For example, complex energy usage calculations might be limited by web browser capabilities, or integration with smart home devices might be restricted by available APIs. These limitations could affect how well the solution serves its intended purpose and reaches its target audience.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 3 (Moderate), Risk Level: High (9)

Mitigation Strategy: We should conduct a thorough technical assessment early in the project to identify potential platform limitations. Where possible, we should design the solution to be progressive, with core functionality working on all platforms and enhanced features on more capable platforms. We should consider creating a roadmap for dealing with limitations, such as implementing server-side calculations for browsers with limited JavaScript capabilities. We should also clearly communicate any limitations to users so they have appropriate expectations.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 2 (Minor), Risk Level: Moderate (4)

Justification: Without proper planning, platform limitations could significantly restrict functionality or prevent certain user groups from using the solution effectively. By identifying limitations early and designing around them, we can ensure the core functionality works for all users. The risk level is reduced because our mitigation strategies would help ensure that platform limitations don't severely impact the solution's reach.

Point 3: Marketing Challenges How the product will be marketed is a significant consideration for its reach. Since the solution appears to be tied to Rolsa's hardware products (solar panels, EV charging stations, and smart home systems), there's a question of whether marketing will be entirely internal or if there will be broader promotion. Marketing challenges could limit awareness and adoption of the digital solution.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 4 (Major), Risk Level: High (12)

Mitigation Strategy: We should develop a clear marketing strategy in collaboration with Rolsa's marketing team. This should include determining if the digital solution will be marketed as a standalone product or as an enhancement to existing hardware products. We should create marketing materials that clearly explain the benefits of the digital solution. We could also implement features that encourage word-of-mouth marketing, such as the ability to share carbon footprint results on social media or refer friends for consultations.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 3 (Moderate), Risk Level: Moderate (6)

Justification: Without a solid marketing strategy, even the best digital solution might not reach its intended audience. By developing a clear strategy and creating supporting materials, we can significantly increase awareness and adoption. The risk level is reduced because our approach would ensure that potential users are aware of the solution and its benefits.

Point 4: Deployment Issues The method of deploying the digital solution will impact how quickly and widely it reaches users. If deployment is handled poorly, it could result in a staggered rollout, technical issues that frustrate early users, or security vulnerabilities. We need to determine whether the solution will be deployed as a software patch to existing systems or as a live push to all users simultaneously.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 3 (Moderate), Risk Level: High (12)

Mitigation Strategy: We should develop a comprehensive deployment plan that includes staging environments for testing before live deployment. We should consider a phased rollout approach, starting with a small group of beta users before expanding to the full user base. We should also create rollback procedures in case significant issues are discovered after deployment. Automated deployment tools should be used to reduce the risk of human error during the process.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 2 (Minor), Risk Level: Moderate (4)

Justification: Without proper deployment planning, there's a high likelihood of issues that could damage user trust and limit adoption. By implementing a structured deployment approach with thorough testing, we can significantly reduce these risks. The risk level is reduced because our deployment strategy would include safeguards to prevent major issues from affecting all users simultaneously.

Contingency Planning

Point 1: Backup and Recovery Processes A critical aspect of contingency planning is establishing robust backup and recovery processes for the Rolsa Technologies digital solution. The system will store valuable customer data including account information, consultation history, and energy usage statistics. If this data is lost due to hardware failure, system crashes, or cyberattacks, it could severely impact both customers and the business.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 5 (Catastrophic), Risk Level: Extreme (15)

Mitigation Strategy: We should implement a 4-3-2-1 backup strategy. This means keeping 4 copies of data, on 3 different media types, with 2 copies stored offsite, and 1 copy on an air-gapped system that's completely isolated from the network. The air-gapped backup should only be updated when developers are positive the data is uncorrupted and not compromised. All backups must be encrypted and follow a strict chain of custody where they can be always accounted for. We need to establish a formal recovery process with defined roles and responsibilities and regularly test both backup and recovery procedures to ensure they work.

Post-mitigation Risk: Likelihood: 1 (Rare), Consequence: 4 (Major), Risk Level: Moderate (4)

Justification: Without proper backup procedures, data loss could be permanent and devastating to the business. Implementing the 4-3-2-1 strategy with an air-gapped backup significantly reduces the likelihood of unrecoverable data loss, even in the case of ransomware or other sophisticated attacks. The consequence remains major because any data loss would still cause disruption, but the risk level is reduced from Extreme to Moderate because we'd be able to recover most or all data within an acceptable timeframe.

Point 2: Business Continuity Planning Beyond just IT systems, we need to consider how the business would continue operations in the event of a disaster. This includes maintaining customer service, consultation scheduling, and other business functions even if the digital solution is temporarily unavailable.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 4 (Major), Risk Level: High (12)

Mitigation Strategy: We should develop a comprehensive Business Continuity Plan (BCP) that identifies critical business functions and alternative ways to perform them

during system outages. This should include manual processes for scheduling consultations and recording customer information, as well as clear communication protocols for notifying customers about service disruptions. Staff should be trained on these alternative processes, and the plan should be tested regularly through simulated disaster scenarios. We should also identify maximum acceptable downtimes for different system components based on business impact.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 3 (Moderate), Risk Level: Moderate (6)

Justification: Without business continuity planning, even a minor disaster could halt operations completely. With proper planning and alternative processes in place, the business could continue essential functions even during system outages. The risk level is reduced from High to Moderate because staff would be prepared to implement alternative processes quickly, minimizing disruption to core business activities.

Point 3: Disaster Recovery Planning Disaster recovery focuses specifically on restoring IT systems after a disaster, whether natural (like floods or power outages) or induced (like cyberattacks). For the Rolsa solution, we need clear plans for how to maintain or quickly restore system functionality with minimal data loss.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 5 (Catastrophic), Risk Level: Extreme (15)

Mitigation Strategy: We should create a detailed Disaster Recovery Plan that includes step-by-step procedures for different disaster scenarios. This should include setting up redundant servers in different geographical locations that can take over if the primary system fails. We should implement automated failover systems where possible and establish clear metrics for Recovery Time Objective (RTO) and Recovery Point Objective (RPO). Regular disaster recovery drills should be conducted to ensure the team can execute the plan effectively, and documentation should be kept updated as the system evolves.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 3 (Moderate), Risk Level: Moderate (6) Justification: Without disaster recovery planning, a major incident could lead to extended downtime and significant data loss. With comprehensive planning and redundant systems, most disasters would have limited impact on system availability. The risk level is reduced from Extreme to Moderate because we would be able to restore critical systems quickly while maintaining most or all data integrity.

Point 4: Version Control and Rollback Capabilities for the Rolsa digital solution, we need the ability to quickly roll back to previous versions if a deployed update causes unexpected issues. This is especially important given that the system may interface with

physical hardware like solar panels and EV charging stations, where software bugs could potentially cause damage or safety issues.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 4 (Major), Risk Level: Extreme (16)

Mitigation Strategy: We should implement a robust version control system that tracks all code changes with detailed documentation. We need to create automated deployment pipelines that include the ability to quickly roll back to previous versions. Before each update is pushed to production, it should be scanned for malware and thoroughly tested in staging environments that mirror production. We should keep at least three previous stable versions available for immediate rollback and implement feature flags that allow problematic features to be disabled without rolling back the entire system.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 2 (Minor), Risk Level: Moderate (4) Justification: Without proper version control and rollback capabilities, faulty updates could cause extended downtime or even damage to connected hardware. With automated rollback procedures and thorough pre-deployment testing, the impact of problematic updates would be minimized. The risk level is reduced from Extreme to Moderate because we would be able to quickly revert to a stable version before significant harm occurs.

Ongoing Monitoring

Point 1: Error Logging Strategies Error logging is crucial for identifying and resolving issues in the Rolsa Technologies digital solution. Without proper error logging, bugs and system problems could go undetected, leading to poor user experience and potential system failures. We need to implement a comprehensive approach that balances user-friendly error messages with detailed technical information for developers.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 3 (Moderate), Risk Level: High (12)

Mitigation Strategy: We should implement a dual error logging system that uses both 3-character error codes for users and in-depth error messages for developers. The error codes should be linked to a knowledge base with user-friendly explanations and potential solutions. For developers, detailed logs should include error stack traces, user actions that led to the error, and system state information. All errors should be automatically categorized by severity and type, with critical errors triggering immediate alerts to the development team.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 2 (Minor), Risk Level: Moderate (4)

Justification: Without a proper error logging strategy, many issues would likely go unnoticed until they cause significant problems. With comprehensive logging and monitoring, we can catch and fix issues before they seriously impact users. The risk level is reduced from High to Moderate because most errors would be identified and resolved quickly before affecting many users.

Point 2: Performance Monitoring The digital solution needs to perform well across various devices and hardware configurations, from older legacy systems to the latest flagship devices. Poor performance on certain hardware could exclude potential users and damage the reputation of the solution.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 4 (Likely), Consequence: 3 (Moderate), Risk Level: High (12)

Mitigation Strategy: We should implement constant performance testing on a variety of hardware configurations, both legacy and flagship. This should include automated performance benchmarks that run daily on different devices and browsers. We should establish performance baselines and set alerts for when performance drops below acceptable thresholds. A dedicated performance testing environment should be maintained with a library of different device profiles.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 2 (Minor), Risk Level: Moderate (4)

Justification: Without regular performance monitoring, the solution would likely develop performance issues on certain hardware over time. With comprehensive testing across different configurations, we can identify and address performance problems before they affect many users. The risk level is reduced because most performance issues would be caught and fixed during testing.

Point 3: User Feedback Collection Collecting and acting on user feedback is essential for ongoing improvement of the solution. Without a structured approach to feedback collection, we may miss valuable insights and opportunities to enhance the user experience.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 3 (Moderate), Risk Level: High (9)

Mitigation Strategy: We should implement a systematic user feedback collection process, sending out feedback forms to users the week after every major patch at the

very minimum. To encourage participation, we should reward feedback with discounts on Rolsa products or other incentives. The feedback forms should be designed to gather both quantitative data (ratings) and qualitative feedback (comments). We should establish a process for analysing feedback and prioritizing improvements based on user input. A dedicated team member should be responsible for summarizing feedback and presenting it to the development team.

Post-mitigation Risk: Likelihood: 2 (Unlikely), Consequence: 2 (Minor), Risk Level: Moderate (4)

Justification: Without structured feedback collection, we would likely miss important user insights and frustrations. By implementing regular surveys with incentives, we can ensure a steady stream of user input to guide improvements. The risk level is reduced because we would have a clearer understanding of user needs and pain points.

Point 4: Maintenance Schedule System maintenance is necessary for updates and improvements, but poorly timed maintenance can disrupt users and business operations. We need a clear strategy for when and how maintenance activities are performed.

Mitigation, Identification of Risk Level both Pre and Post Mitigation and Justification

Pre-mitigation Risk: Likelihood: 3 (Possible), Consequence: 3 (Moderate), Risk Level: High (9)

Mitigation Strategy: We should schedule regular maintenance during periods of record low usage, typically between 2-4 AM local time. Only critical patches addressing imminent security compromises or dangerous conditions should be deployed during daytime hours. For any planned maintenance, users should be notified in advance through the application and email. We should implement a maintenance window system that automatically notifies users of upcoming maintenance and provides estimated completion times. For global systems, we should consider region-specific maintenance windows to minimize disruption.

Post-mitigation Risk: Likelihood: 1 (Rare), Consequence: 2 (Minor), Risk Level: Low (2)

Justification: Without a well-planned maintenance schedule, updates could disrupt business operations and frustrate users. By scheduling maintenance during low-usage periods and having clear policies for emergency updates, we minimize disruption. The risk level is reduced to Low because maintenance would rarely affect regular users, and when it does, they would be properly informed in advance.

Laws, Legislation & Guidelines

1. Laws

Data Protection Act 2018 (DPA 2018)

- **Overview:** Governs the processing of personal data in the UK and implements the **General Data Protection Regulation (GDPR)** into UK law.
- **Key Provisions:**
 - **Lawful Basis for Processing:** Data must be processed lawfully and transparently.
 - **Data Subject Rights:** Individuals have rights to access, correct, and request deletion of their data.
 - **Data Protection by Design and Default:** Privacy must be integrated into the design of the project.

Equality Act 2010

- **Overview:** Aims to prevent discrimination based on protected characteristics (e.g., disability, race, gender), including in digital platforms.
- **Key Provisions:**
 - **Disability Discrimination:** Requires reasonable adjustments for people with disabilities.
 - **Digital Accessibility:** Websites and platforms must be accessible to individuals with disabilities (e.g., through screen readers, alternative text).

2. Legislation

Legislation refers to legal frameworks or specific regulatory acts that complement or enforce broader laws. These regulations ensure compliance with specific industry requirements, especially regarding cybersecurity and data protection.

Network and Information Systems Regulations 2018 (NIS Regulations)

- **Overview:** Aims to improve the cybersecurity resilience of organizations providing essential services (e.g., education, healthcare).
- **Key Provisions:**
 - **Security Requirements:** Ensures organizations take steps to secure their information systems.
 - **Incident Notification:** Organizations must notify authorities in case of a major disruption.

- **Risk Management:** Requires adoption of risk management practices to secure critical infrastructure.

Telecommunications (Data Protection and Privacy) Regulations 2000

- **Overview:** These regulations relate to privacy and data protection in telecommunications and internet services.
- **Key Provisions:**
 - **Privacy of Communications:** Ensures privacy of user data and communications.
 - **Security:** Mandates appropriate security measures for networks handling personal data.

3. Standards

These are detailed, internationally recognized frameworks that help organizations implement best practices in data protection and cybersecurity.

ISO/IEC 27001:2013 (Information Security Management System - ISMS)

- **Overview:** ISO 27001 provides a systematic approach to managing sensitive company information and ensuring its security.
- **Key Provisions:**
 - **Risk Assessment and Management:** Identifies and addresses information security risks.
 - **Security Controls:** Implements policies for access control, encryption, and incident response.
 - **Audit and Review:** Organizations must perform regular audits to assess the effectiveness of their information security systems.

Cyber Essentials

- **Overview:** A UK government-backed cybersecurity certification scheme that sets out basic security controls to protect against common cyber threats.
- **Key Provisions:**
 - **Security Controls:** Ensures the implementation of essential security measures such as secure configurations and malware protection.
 - **Certification Levels:** Includes basic **Cyber Essentials** and more rigorous **Cyber Essentials Plus**.

- **Incident Management:** Requires a clear response plan for cybersecurity incidents.

4. Guidelines

These are advisory documents from regulatory bodies that provide detailed recommendations for organizations to ensure compliance with laws and standards.

ICO Guidelines on Data Protection

- **Overview:** The Information Commissioner's Office (ICO) provides detailed guidance on how organizations should process personal data in compliance with the DPA 2018 and GDPR.
- **Key Provisions:**
 - **Transparency:** Requires clear communication about data collection, usage, and storage practices.
 - **Data Security:** Encourages strong data protection practices, including encryption and secure storage.
 - **Rights of Individuals:** Specifies how organizations should manage data access and correction requests from individuals.

Web Content Accessibility Guidelines (WCAG)

- **Overview:** These guidelines ensure that digital platforms are accessible to users with disabilities.
- **Key Provisions:**
 - **Text Alternatives:** Ensures that all images and non-text content have descriptive text equivalents.
 - **Keyboard Accessibility:** Ensures users can navigate content using a keyboard alone.
 - **Colour Contrast:** Provides requirements for readable colour contrasts for users with visual impairments.

Alternative Systems

Octopus Energy

Able to get an immediate quote based on postcode, service needed and energy usage for which they have pre-defined "scales" of energy usage such as low, medium and high each of which has its own criteria that you can check if you meet or exceed.

Alternatively, they also have the option to provide your actual usage figures for the last year. This is a good feature because a business will in every context know its exact usage and many homeowners may also know this information leading to a higher customer satisfaction rate. The interface employs a logical step-by-step progression that minimizes user input requirements, eliminating the frustration of extensive form-filling that typically characterizes quote retrieval processes. Address details automatically populate after postcode entry, while energy type selection utilizes simple toggle buttons for quick decision-making. The consumption classification system with its clear criteria (like "Have around 3 bedrooms" for medium usage) helps users without technical knowledge make appropriate selections, while the dual approach to consumption data caters to both casual users and those with precise usage information. This streamlined design, combined with immediate quote generation upon form completion, creates an efficient experience that respects users' time and reduces abandonment rates during the quoting process.

Where do you live?

Postcode

BD4 0EA


Select address


11, Dane Hill Drive, Bradford

▼

[Can't find your address?](#)

What energy do you need?

 Gas & Electricity

 Electricity

How much energy do you use?

Low

Medium

High

Actual usage

Typically, medium consumption homes:

- Have around 3 bedrooms
- Have 3-5 occupants
- May have people home during the day

Approximate usage for a medium household:

- 2700 kWh of electricity [edit](#)
- 11500 kWh of gas [edit](#)

Good to know

These figures are based on national averages. For a more accurate quote, use your real usage from any bill.

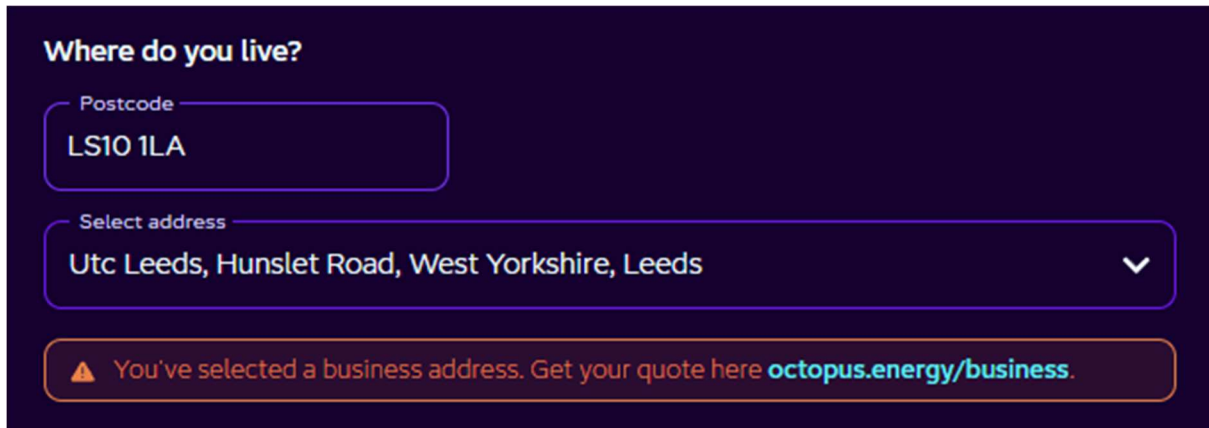
If you don't have one to hand, that's ok - our Octobot will review your estimate after a few weeks to ensure you're paying a sensible amount

Quote me!

Another feature I noticed is that when you add a business address to the quote you are sent to the business site. Keeping the Business client quoting separate from the home quoting is an effective choice as businesses may need further conversation before getting a quote. This separation acknowledges the fundamental differences in energy requirements between residential and commercial clients, with businesses typically having more complex energy profiles involving operational hours, equipment loads, and multiple rate structures. The automatic redirection upon business address detection saves users from navigating irrelevant options while ensuring each customer segment receives appropriately tailored information. By maintaining distinct quoting pathways,

Jack Witney LL-000018212

the system prevents overwhelming home users with commercial options while connecting business clients with specialized account managers who can address industry-specific concerns and negotiate terms that wouldn't apply in the standardized residential quoting process.



The screenshot shows a dark-themed web form titled "Where do you live?". It contains two input fields: "Postcode" with the value "LS10 1LA" and "Select address" with the value "Utc Leeds, Hunslet Road, West Yorkshire, Leeds". Below these fields is a red warning box with a triangle icon, stating: "You've selected a business address. Get your quote here octopus.energy/business."

Genous

Genous offers a carbon footprint calculator that gives you information about your household's environmental impact and potential savings. However, the system has several major flaws. First, it's excessively long, forcing users to answer ELEVEN different invasive questions across multiple screens before providing any value. This creates a tedious experience that many users would abandon before completion. The technical performance is poor, with some pages failing to load within the expected 2-5 second threshold. This adds further frustration to an already cumbersome process.

The address verification process is particularly frustrating. Users must enter their postcode, confirm their full address, AND drop a pin on their exact house location on a map. This triple verification is completely unnecessary – once a user has provided their full address, the additional map pin step adds no value while creating more work.

First, we need to know your address so we can gather data on your home – especially from your energy performance certificate (EPC) if you have one.

What is your postcode?



bd40ea

FIND

ENTER ADDRESS MANUALLY

First, we need to know your address so we can gather data on your home – especially from your energy performance certificate (EPC) if you have one.

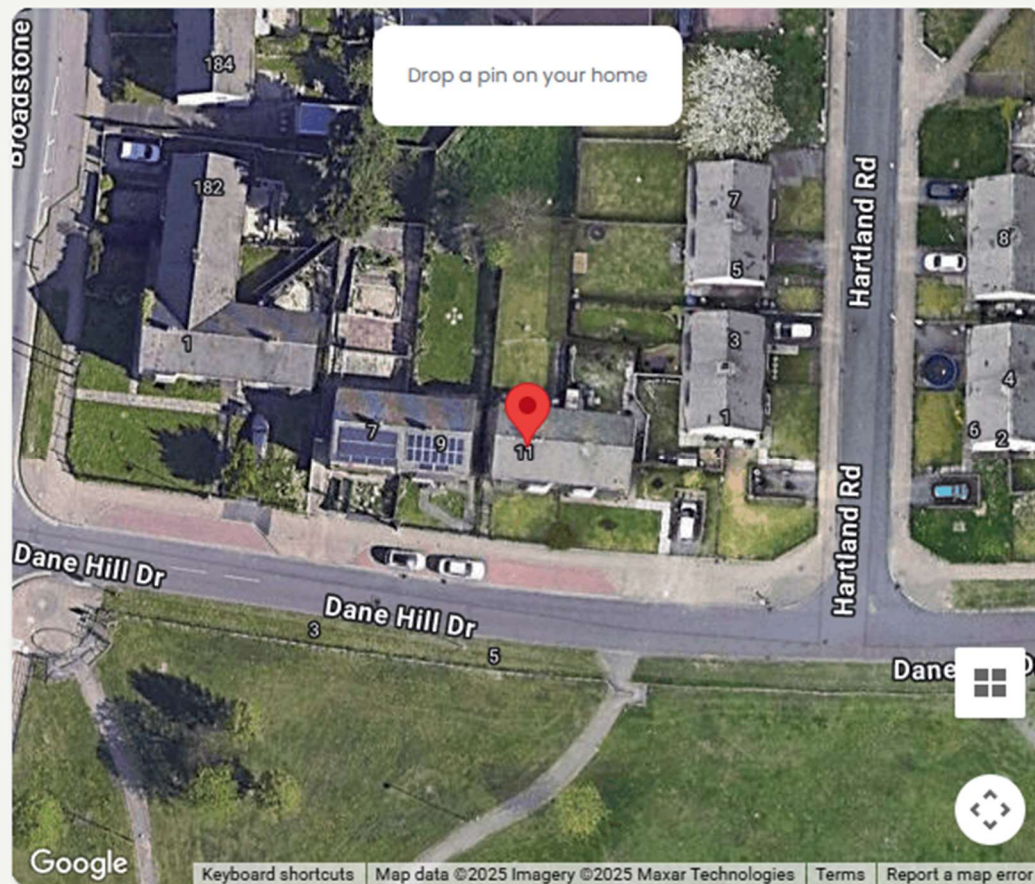
← **BACK TO POSTCODE**

11 Dane Hill Drive, Bradford, Bradford, West Yorkshire, England



NEXT

Knowing your exact property makes it easier for us to give you accurate, tailored advice. Please drop a pin on top of your property (or best estimate if not clear).



Tips:

Use + and - to zoom in and out. Try to zoom in until the + gets greyed out. Drag - or click and drag - to move the map until your home is in view and then tap to drop the pin.

Many questions require specialized knowledge that average users simply don't have. If someone has recently moved into a property, they likely don't know details about insulation types, when solar panels were installed, or specific EPC certificate information. This creates barriers that prevent people from completing the form accurately.



[← BACK](#)

Okay, now we need to confirm some details about your home construction, as this will impact its heat loss and what you can do to reduce it.

What type of property do you live in?



Pre-selected based on your EPC

House



How many walls do you share with other properties?



Semi-detached/End-terrace



When was your property built?



1950-1966



[← BACK](#)

Have you installed any of the following since your selected Energy Performance Certificate was carried out (if in doubt, leave unticked)? If we couldn't find an Energy Performance Certificate for your property, then tick if installed after the property was built

☐ Loft insulation



☐ Cavity wall insulation



☐ Floor insulation



☐ Heating controls (timing and zones)



☐ Solar panels (electric - not hot water)



The type of heating you have determines both its efficiency and carbon intensity so it's important we know what you use.

What type of home heating system do you have?



 Pre-selected based on your EPC

MAINS GAS OR LPG

☒ Mains gas or LPG; boiler under 10 yrs old



☐ Mains gas or LPG; boiler over 10 yrs old

HEATING OIL

☐ Heating oil; boiler under 10 yrs old

☐ Heating oil; boiler over 10 yrs old

HEAT PUMP

☐ Heat pump (air-source)

☐ Heat pump (ground-source)

OTHER

☐ Electric heating (not heat pump)

☐ Biomass boiler

☐ District/ communal heating

How many cars of each of the following types does your household have access to (ignore any purely used for business purposes).

Electric vehicles

Fuel efficient small car

Mid-sized, average fuel consumption car (or hybrid)

Large family car/ SUV/ MPV

Performance car (less than 3 litre engine)

Performance car (3 litre engine or bigger)

NEXT

Nearly there! Some emissions are shared across all occupants of your household whereas others are individual, so the number of people you live with matters.

How many people live in your home (including you)?

 - +

NEXT

Already completed the Home Check?

[Retrieve your results](#)

Even though most electricity suppliers offer 'green' tariffs, most of them aren't really renewable in our view. We can tell you which are.

Who is your electricity supplier?



* Select an option



NEXT

Already completed the Home Check?

[Retrieve your results](#)

Whether you own or rent will influence some of the changes you are able to make, so we want to understand your home tenure.

Do you own your home (whether freehold or leasehold) or do you rent?



- ☐ Freehold/share of freehold
- ☐ Leasehold
- ☐ Rent (private)
- ☐ Rent (social landlord - council or housing association)

NEXT

Whether you own or rent will influence some of the changes you are able to make, so we want to understand your home tenure.

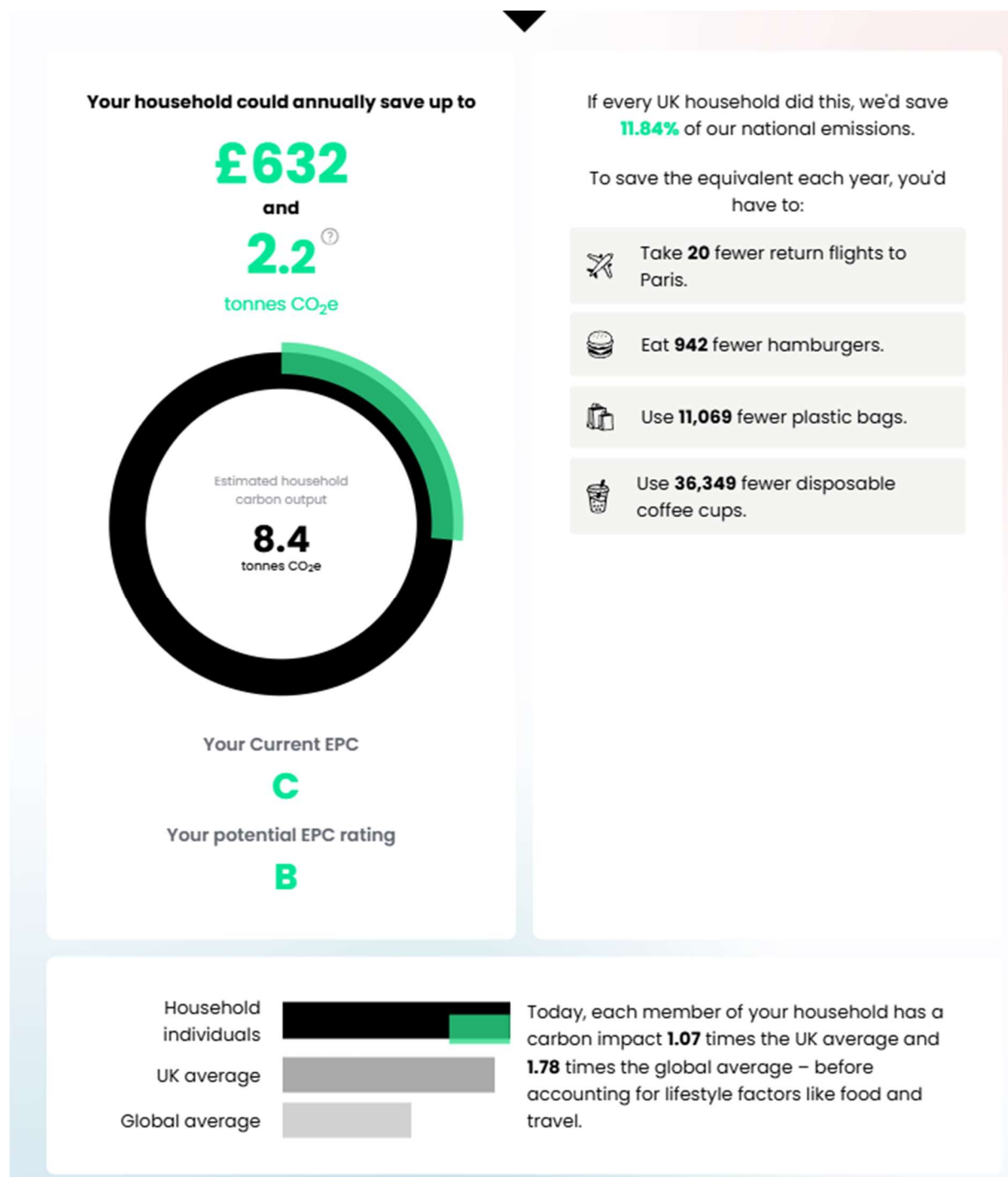
Do you own your home (whether freehold or leasehold) or do you rent?



- ☐ Freehold/share of freehold
- ☐ Leasehold
- ☐ Rent (private)
- ☐ Rent (social landlord - council or housing association)

NEXT

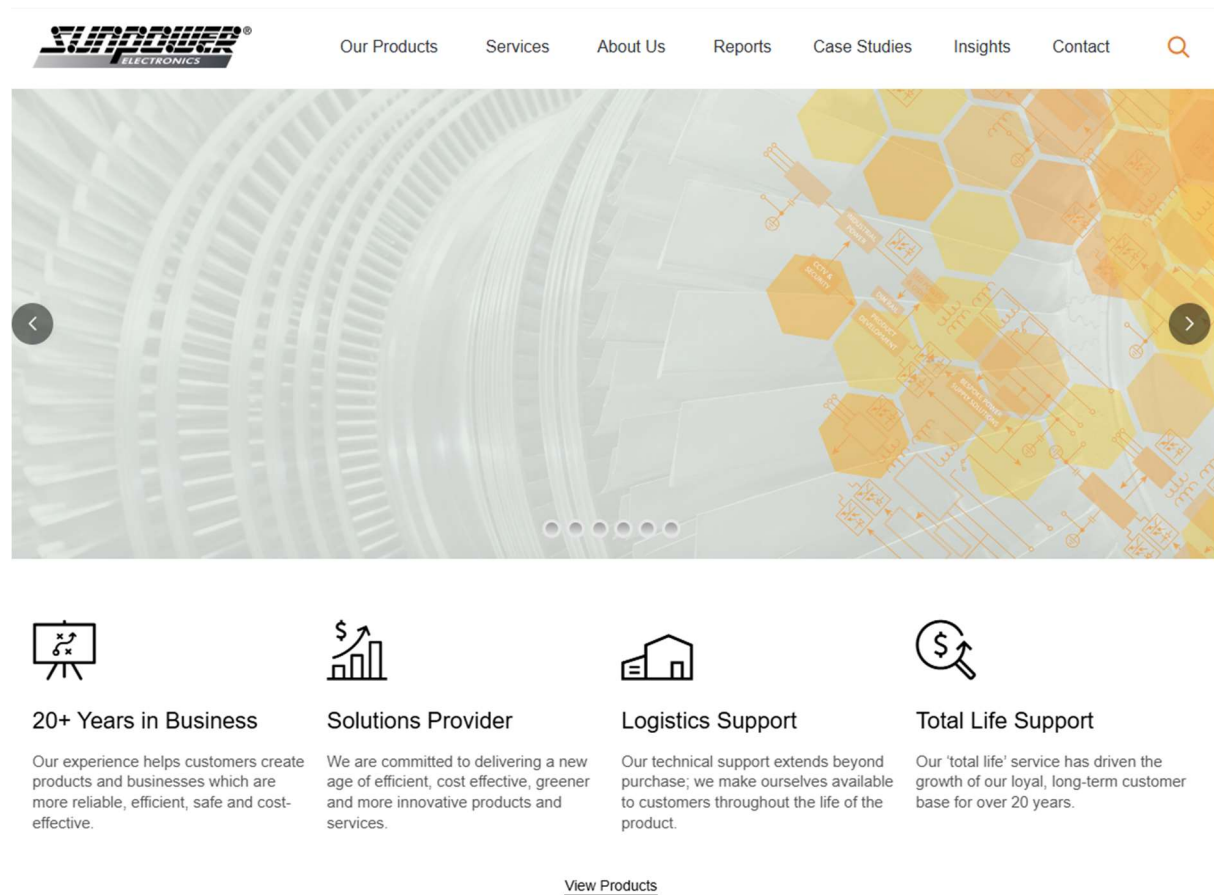
Already completed the Home Check?



While the final output does provide useful information about potential savings (£632) and carbon reduction (2.2 tonnes CO₂), the overly complicated journey to get there undermines the entire user experience. A more streamlined, conversational approach would be much more effective and user-friendly – something to avoid when designing Rolsa's software solution.

SunPower-UK

As soon as the SunPower website has loaded you are met with a quite simplistic but professional website that contains some immediately available and important information about the companies' time in business (builds trust) as well as what they do i.e. what solutions they provide.



SunPower's callback system approach demonstrates a good balance between personalization and simplicity that avoids the pitfalls of Genous's overly complex system.

The key advantages of SunPower's callback system include:

- Personalization through a brief description field where users can explain their specific situation
- Non-invasive form that doesn't demand excessive verification or redundant information
- No repetitive address confirmation (unlike Genous requiring it three times)
- Scheduling flexibility where users can indicate availability
- Direct access to specialists rather than pre-programmed database responses

This represents a more human-centred approach that acknowledges complex questions often require human expertise rather than automated systems. While Octopus Energy offers immediate quotes through their automated system, SunPower's callback system ensures users get answers tailored to their specific circumstances - particularly valuable for situations that don't fit neatly into predefined categories.

This approach could be a good model for Rolsa's software solution, striking a balance between gathering necessary information without creating an overwhelming user experience.

Trellis

Trellis is a digital new outlet that covers all things green tech, decarbonisation, Legislations and net zero emissions. They provide all the information you could ever need in the green energy world.

Carbon Credits >	Executive Moves >	Policy >
Careers >	Featured Reports >	Sponsored >
Case Studies >	Finance & Investing >	Startups >
Circular Economy >	Food & Agriculture >	Strategy >
Climate Pioneers >	Guides >	Supply Chain >
Communications >	Innovation >	Technology >
Decarbonization >	Leadership >	Year In Review/Year Ahead >
Energy >	Nature >	

While Trellis effectively provides comprehensive coverage of green technology, decarbonization, legislation, and net zero emissions, their open publishing model for independent journalists creates potential issues. The lack of consistent editorial oversight could lead to:

- Increased political bias in articles
- Inconsistent quality standards
- Potential misinformation on technical topics
- Reader confusion about what represents the platform's vetted perspective

For Rolsa Tech's system, where users would rely on the platform as their primary source of green news and technology updates, internally written and vetted content makes good sense. This would create a more controlled information environment that:

- Ensures consistent quality standards
- Reduces potential political bias
- Provides a unified voice and perspective
- Builds greater trust with users

While open publishing models like Trellis's can increase content volume and diversity of viewpoints, they require robust editorial oversight systems to maintain quality. For a specialized platform like Rolsa Tech, the internally vetted approach would likely create a more reliable user experience, especially since it would serve as the primary information source for its users.

This quality control consideration is an important factor beyond just the technical functionality of the system.

Key Performance Indicators (KPIs)

1. Bookings

Definition: Measure the number, type, and value of consultations, installations, and maintenance appointments booked through the system.

Metrics:

Booking Conversion Rate: Percentage of website visitors who complete a booking (Target: >5%)

Booking Value: Average monetary value per booking type (Targets: Consultations £100, Installations £3,000, Maintenance £250)

Booking Efficiency: Time between booking request and confirmation (Target: <2 hours)

Appointment Density: Number of appointments per staff member per week (Target: 80% capacity utilization)

Booking Distribution: Pattern analysis of peak booking times/days to optimize staffing

Business Impact:

Enables data-driven staffing decisions based on booking patterns

Identifies high-value service opportunities for marketing focus

Creates measurable financial tracking for appointment-based revenue

Reduces scheduling inefficiencies and staff downtime

2. Client Uptake

Definition: Measure the acquisition and retention of customers using the Rolsa Technologies digital solution.

Metrics:

New Client Acquisition Rate: Number of new client registrations per month (Target: 15% growth month-over-month)

Client Retention Rate: Percentage of clients who return for additional services within 12 months (Target: >70%)

Client Lifetime Value (CLV): Average revenue generated per client over their relationship with Rolsa (Target: £10,000+)

Acquisition Cost: Marketing expense divided by number of new clients (Target: <£200 per new client)

Product Penetration: Average number of different Rolsa products per client (Target: 2.5)

Business Impact:

Provides clear ROI measurement for marketing initiatives

Helps identify most valuable client segments

Supports business growth projections and resource planning

Enables calculation of marketing budget efficiency

3. Client Reviews

Definition: Measure client satisfaction and feedback quality through structured review collection.

Metrics:

Net Promoter Score (NPS): Client likelihood to recommend Rolsa (Target: >50)

Overall Satisfaction Rating: Average review score across platforms (Target: 4.5/5 stars)

Review Volume: Number of reviews submitted per 100 completed services (Target: >40)

Review Response Rate: Percentage of reviews that receive company response (Target: 100%)

Sentiment Analysis: Percentage of positive vs. negative keywords in review content

Business Impact:

Creates direct correlation to new client acquisition (studies show 72% of consumers trust businesses with positive reviews)

Provides early warning system for service quality issues

Generates authentic testimonial content for marketing materials

Builds credibility and trust for prospects researching green energy solutions

4. Web Traffic

Definition: Measure the quantity, quality, and engagement of visitors to the Rolsa Technologies digital platform.

Metrics:

Monthly Unique Visitors: Total individual users accessing the platform (Target: 15% growth month-over-month)

Session Duration: Average time users spend on the platform per visit (Target: >3 minutes)

Bounce Rate: Percentage of visitors who leave after viewing only one page (Target: <40%)

Search Engine Ranking: Position for key green energy terms (Target: Top 5 for local searches)

Page Depth: Average number of pages viewed per session (Target: >3 pages)

Traffic Sources: Distribution across organic search, direct, referral, and paid channels

Business Impact:

Indicates market penetration and brand awareness

Helps optimize marketing channel investment

Provides insights on content effectiveness

Creates benchmark for SEO and content strategy performance

5. CO2 Tracking

Definition: Measure the environmental impact of Rolsa Technologies products and services through client usage data.

Metrics:

Total Carbon Reduction: Aggregate CO2 emissions avoided through all Rolsa installations (Target: 10,000 tonnes annually)

Average Household Reduction: Typical carbon reduction per residential installation (Target: 2.5 tonnes annually)

Business Client Impact: Average carbon reduction for commercial clients (Target: 50 tonnes annually)

Carbon Reduction Efficiency: CO2 reduction per £1,000 invested in Rolsa solutions (Target: 1 tonne per £1,000)

Sustainability Reporting Compliance: Percentage of installations with complete carbon tracking data (Target: >95%)

Description of Proposed Solution

A description of proposed solution

In the above paragraphs I was decomposing, analysing, and setting the requirements for the system. In this section I will be summing up the proposal and its main benefits to the client – Rolsa Technologies.

The final proposal is an interactive website built on HTML, CSS, PHP and MYSQL.

- **Comprehensive Account System**

The system will provide secure registration and login functionality using SHA-3 encryption for user data protection. Users can manage their profiles, update passwords, and delete accounts if needed. This ensures Rolsa can maintain ongoing relationships with customers while respecting data protection requirements.

- **Energy Monitoring Dashboard**

A personalized dashboard allowing customers to view their energy usage metrics across different time periods. Users can set usage limits on specific devices or their entire household, with automated notifications when approaching thresholds. This gives customers greater control over their energy consumption and costs.

- **Streamlined Appointment Booking**

One of the most important features is the ability to schedule consultations and installations directly through the platform. This reduces phone call volume for Rolsa staff while giving customers the confidence that their appointment is confirmed, with options to add notes about specific requirements or reschedule if needed.

- **Carbon Footprint Calculator**

An intuitive tool requiring minimal technical knowledge that helps users assess their environmental impact and receive personalized recommendations for reduction. Unlike competitor solutions, our calculator avoids excessive complexity while still providing valuable insights that encourage green technology adoption.

- **Information Resources**

Will provide customers with comprehensive information about green energy products, carbon reduction strategies, and Rolsa's service offerings. Educational content will be tailored to different user types (residential vs. business) to maximize relevance.

- **Admin Management Portal**

For Rolsa staff, the system includes a secure administrative interface to analyse usage patterns, identify high-consumption clients for targeted outreach, and access customer information for support purposes. This enables data-driven business decisions and improved customer service.

The solution fully complies with accessibility standards (WCAG 2.1 AA) and data protection regulations (GDPR/DPA 2018), ensuring all customers can use the platform regardless of abilities while maintaining proper handling of sensitive information. The responsive design works across all device types without JavaScript dependencies, maximizing compatibility while meeting Rolsa's technical requirements.