

# Eco- Dize *your*

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**Abstract:**

Approximately 31% of the US energy consumption is from the residential sector. One of the most straightforward methods to reduce the residential sector's environmental impact is through improved energy efficiency. However, only a fraction of home improvement spending goes towards efficiency measures and current home energy upgrade (HEU) companies have dismal market penetration rates. Therefore, this project's goal is to produce a sustainable business plan for an HEU company that uses novel techniques to reach customers and deliver solutions. A life cycle framework analyzing emissions is used to ensure the sustainability of the business plan for people, the planet, and profitability.

## Executive Summary

Individuals make decisions every day that affect their energy use in the home and workplace. Despite the vast amount of information available online about saving energy, many people find themselves either overwhelmed with the plethora of information, or simply too busy or unmotivated to do the necessary research to make a substantial change. To meet these needs, a home energy upgrade (HEU) market exists, but none of the companies in this space are succeeding; market penetration is dismally low and there are surprisingly few customers in the middle-income bracket. Our goal is to design a business plan for a fictional startup HEU company to achieve high market penetration in Michigan.

The project requirements are first and foremost to save money for our customers within a reasonable payback period and to have our service be convenient and “hassle-free”. Our business plan will also have to satisfy our other stakeholders, so our partnerships with other entities (such as product manufacturers and service providers) must be mutually beneficial; our results must be strong enough that they strive towards reducing the state’s overall energy consumption (necessary to get support from the state government and utility companies); and with our success, we will hopefully be able to create best practice standards to help achieve market transformation.

A myriad of concepts that could accomplish these goals were generated through functional decomposition and brainstorming. We did so by examining how to reach the customer, how to deliver our service, and how to generate revenue as independent categories. In generating the ideas, we followed a general set of rules to keep our minds open to all possible options: 1) outlandish ideas were welcomed; 2) the more ideas, the better; 3) criticism was not allowed; and 4) building on and improving ideas was encouraged.

To narrow down the generated ideas to a manageable set, we further organized the concept categories by type of partnership, type of assessment or audit, method of delivering the actual energy upgrades, and the length of interaction with the customer. We then qualitatively rated each set with pros and cons. Based on our research, we selected the combination of approaches for our startup company that would best meet our design specifications.

The alpha design business model was to provide our energy assessment and recommendation service entirely through an online platform and to partner with small and medium-sized companies. A customer would sign up for a free online account and complete a questionnaire about their home. Afterwards, our service would recommend personalized and customizable packages for the customer to purchase and install themselves, or refer them to professional audit and home improvement companies. Revenue would primarily come from markup on products sold and referral fees. This design was then improved after receiving positive feedback on the alpha design through surveys.

If successful, this project would make a positive impact on the environment. Residential energy consumption makes up a large portion of the total energy consumption in the US. The overall target reduction in electricity, natural gas, and water use combined with waste generation is 15%. By meeting this target, our project will reduce the associated emissions that contribute to acidification, eutrophication, and greenhouse gases.