

in areas with greater population and less moderate climate, which leads to more energy consumption for heating and cooling.

EnergyRubix aims to penetrate several markets across California, making us the “go-to” service for homeowners and contractors.

RAPID EXPANSION

EnergyRubix will follow a rapid expansion nexus-and-node model to streamline operations and minimize costs. The nexus office will serve as the operational headquarters, housing the chief operating team, while nodes will focus solely on completing project and will be strategically placed throughout Central and Southern California.

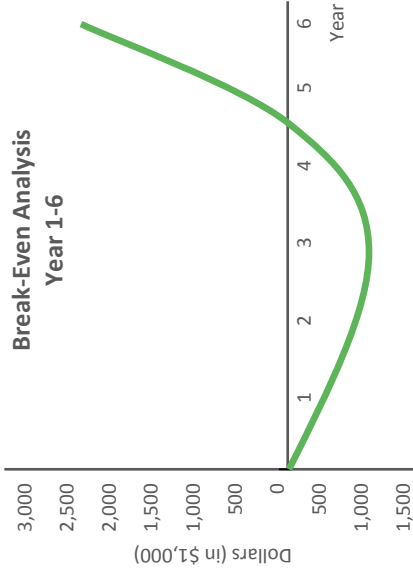
The EnergyRubix start up office will be located in Santa Barbara County. During the second year of operation, the nexus will be transferred to Los Angeles and the Santa Barbara office will then serve as the first node. Placing the nexus in Los Angeles will help ensure success and customer service in a much greater market and competitive environment.

FINANCIAL PROJECTION

EnergyRubix is expected to be profitable during the first year of operations and we project our profits to increase substantially each year. Our financial projections are based on multiple factors, including successfully completing an achievable number of projects annually. As we expand, it is critical that our marketing strategy effectively educates potential clients on the importance of energy efficiency and the benefits of working with EnergyRubix. This growth will allow us to break even rapidly and pay back investors with a generous return on their investment.

BREAK-EVEN POINT

EnergyRubix projects the break-even point to be during the fifth year of operations.



OUR SUCCESS

EnergyRubix is a timely venture that was developed closely with feedback from homeowners, building professionals, and policymakers. Our model is attractive because it eliminates transaction costs for homeowners and provides contractors with an interface to find projects. Through rapid expansion EnergyRubix will become the first “go-to” service for residential energy efficiency improvements throughout California.

Join Us Online

Visit our website to learn more about projects, services, policies, and financial incentives.
<http://fiesta.bren.ucsb.edu/~energyrubix/>

Special thanks to our project advisor, James Frew.



BREN SCHOOL OF ENVIRONMENTAL SCIENCE & MANAGEMENT
UNIVERSITY OF CALIFORNIA SANTA BARBARA

ENERGYRUBIX: STREAMLINING ENERGY EFFICIENCY

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JOIN US ONLINE AT [HTTP://FIESTA.BREN.UCSB.EDU/~ENERGYRUBIX/](http://fiesta.bren.ucsb.edu/~ENERGYRUBIX/)

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ENERGY USE AND CLIMATE CHANGE

The residential building sector accounts for over 20% of statewide energy use in California.ⁱ The need for energy efficiency improvements in buildings is becoming more evident as State legislation mandates greenhouse gas (GHG) emissions reductions across multiple sectors.

Reducing the energy demand of buildings through energy efficiency improvements is regarded as one of the most cost effective opportunities for reducing greenhouse gas emissions.ⁱⁱ

Yet, numerous barriers prevent homeowners from completing retrofits, such as upfront costs, transaction costs, uncertain paybacks, the complicated retrofit process, and the lack of incentives and national policy.

Homeowners must meander through the process of undergoing an energy assessment, comprehending results, selecting contractors, and applying for incentives. Knowledge gaps and communication barriers can often be overwhelming.

Realizing these problems, EnergyRubix was created to provide a viable market solution to help simplify the energy efficiency retrofit process for homeowners.

Barriers to Residential Energy Efficiency Retrofits:

- High upfront costs
- High transaction costs
- Lack of incentives
- Complicated retrofit process

THE ENERGYRUBIX VISION

EnergyRubix is a comprehensive business solution that bridges communication barriers and knowledge

gaps between homeowners and contractors to provide the residential sector with an accessible, efficient, and simplified approach to completing energy efficiency retrofits.

By simplifying this process, EnergyRubix can make home performance upgrades a reality for many homes across California.

EnergyRubix provides a three-part service that streamlines the home performance improvement process for homeowners, while at the same time provides job opportunities for contractors:

Part I

Home Performance Assessment (HPA) and Home Assessment Report (HAR), to diagnose the home's energy problems

Part II

EnergyRubix Online, to select member contractors through an online bidding process

Part III

Home Upgrade Plan (HUP), to present the final project concept along with costs, rebates, and incentives information

THE ENERGYRUBIX SERVICE

EnergyRubix absorbs the complexity of completing energy efficiency retrofits for homeowners. The key to our streamlined approach is within the internal processes that occur at the junction of homeowner

ⁱ(CEC) Community Environmental Council. (2009 November 16) CCEIP & Home Performance Workshop.

ⁱⁱ NRDC. (2009) Cap 2.0 Policy Brief: Kick-Starting Building Efficiency.

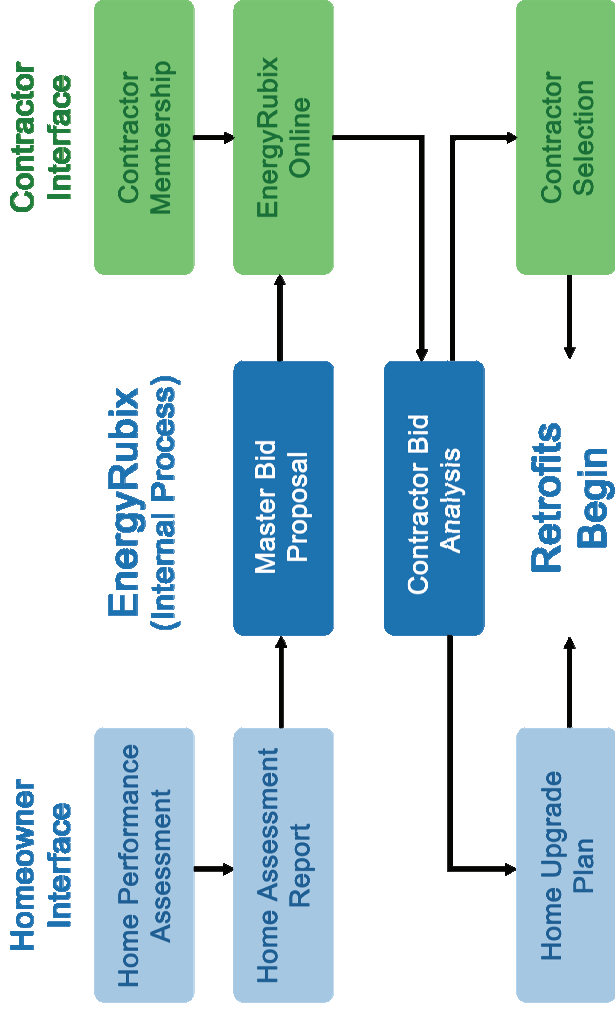


Figure 1. EnergyRubix Business Model

and contractor interfaces.

Home Assessment Report (HAR)

After completing a thorough Home Performance Assessment (HAR), EnergyRubix staff will prepare a Home Assessment Report with findings and recommended solutions to guide homeowners through complex issues associated with home energy performance. Our Assessments will focus on four cost-effective components of energy efficiency:

- (1) Building Envelope
- (2) Insulation
- (3) HVAC (Heating, Ventilating, and Air Conditioning)
- (4) Lighting and Appliances

The HAR will include estimated costs, return on investments, and potential energy and greenhouse gas reductions associated with recommended retrofits.

EnergyRubix Online and Master Bid Proposal (MBP)

Member contractors can get access to existing projects through *EnergyRubix Online*. A Master Bid Proposal (MBP) includes all the information a contractor may need to make a preliminary bid, including the energy efficiency retrofits desired by

the customer, pertinent structural information, and photographs. The MBP allows EnergyRubix to quickly compare bids and select the best contractor for the project based on the scope of work, costs, and thoroughness.

Home Upgrade Plan (HUP)

Upon contractor selection, EnergyRubix will compose a Home Upgrade Plan with proposed detailed work plan, along with costs and information on available rebates and incentives.

Financial Guidance and Applications

EnergyRubix staff will provide clients with financial guidance, providing them with information about available incentives and financing tools. After determining the best options for homeowners, EnergyRubix will complete the application procedure, eliminating yet another step in the cumbersome process.

Goal

To simplify the energy efficiency retrofit process for homeowners while serving as a clearinghouse for contractors to create a scalable energy efficiency industry in Southern California.

PRODUCT DEVELOPMENT

The EnergyRubix team completed three pilot projects in Contra Costa, Santa Barbara, and Los Angeles Counties to gain insight on home upgrade processes and industry shortcomings. Our pilot projects led to the development of our streamlined service and business model.

EnergyRubix completed an energy assessment for each pilot project and developed a personalized HAR for each of the homeowners.

EnergyRubix worked closely with a homeowner in San Ramon, Contra Costa County. In August 2009, a professional from the California Building Performance Contractors Association (CBPCA) assisted EnergyRubix in completing a certified Building Performance Institute (BPI) energy assessment.

We developed the HAR based on the BPI test results and recommendations included: weather-stripping, sealing air leaks, improving attic insulation, resizing the furnace, and replacing incandescent lights with compact fluorescent bulbs.

EnergyRubix placed the homeowner in contact with several contractors, from which they received project bids. We learned the difficulty in comparing contractor bids for cost-effectiveness, which led to the development of the online MBP.

The homeowners used our feedback regarding bids to select the most appropriate contractor for their home. Energy retrofits began in February and are scheduled to be completed in April 2010 with estimated energy savings of 40%.

FEASIBILITY STUDY

EnergyRubix analyzed the political, economic, social, and technical environment to determine business feasibility. California fosters strong energy efficiency and climate change policies. Recently, various funding mechanisms, including AB 811, utility incentives, and federal tax credits and rebates are beginning to provide incentives to homeowners for energy efficiency projects.

Proposed national legislation for the HOME STAR program will cover up to 50% of energy efficiency project costs, depending on the home energy savings achieved.

The Home Energy Rating System (HERS), one of the most prominent energy assessment tools, has recently been updated (HERS II) to produce a scorecard of building energy use. This will provide homeowners a tangible and meaningful tool to assess energy consumption level.

California Policy Highlight: AB 811

AB 811 allows jurisdictions to create special financing districts to provide homeowners with loans for energy efficiency, solar, or water conservation projects. Loans are paid back through property taxes over time.

MARKET ANALYSIS

Great market potential exists throughout Central and Southern California, as indicated by our market analysis. There are four essential characteristics of our target market:

- **Homeownership**—more likely to make permanent, long-term improvements
- **Home age**—greater energy savings will be realized in homes built prior to the 1990 Title 24 energy standards
- **Home size**—larger houses generally use more energy
- **Housing type**—single family detached housing units ensure autonomous control over the property

Based on these criteria, a conservative market analysis indicates at least 18% of the housing stock in Santa Barbara County fits into our target market, with a total market potential of 25,400 households. During our rapid expansion phase, business nodes will be established throughout selected Southern California counties. The density of our node placement will depend upon the calculated market potential for each county. Market potential tends to increase