2040 ENERGY

Zero-emissions heat for homes with radiators

2040energy.com Bloomington, MN Technology Hardware Energy Sustainability Clean Tech

Highlights

1. Developing a high-temperature heat pump optimized for 6 million US homes with radiators
2. Estimated savings for customers of $500-$1,500/yr (for ~1.8 million homes on oil/propane)
3. $480k in homeowner pre-orders (w/ paid deposits)

4 Working demonstration prototype

5 $4B market for our first product

6 Potential to expand to adjacent markets totaling >$100B

Our Founder

Joseph Strommen CEO

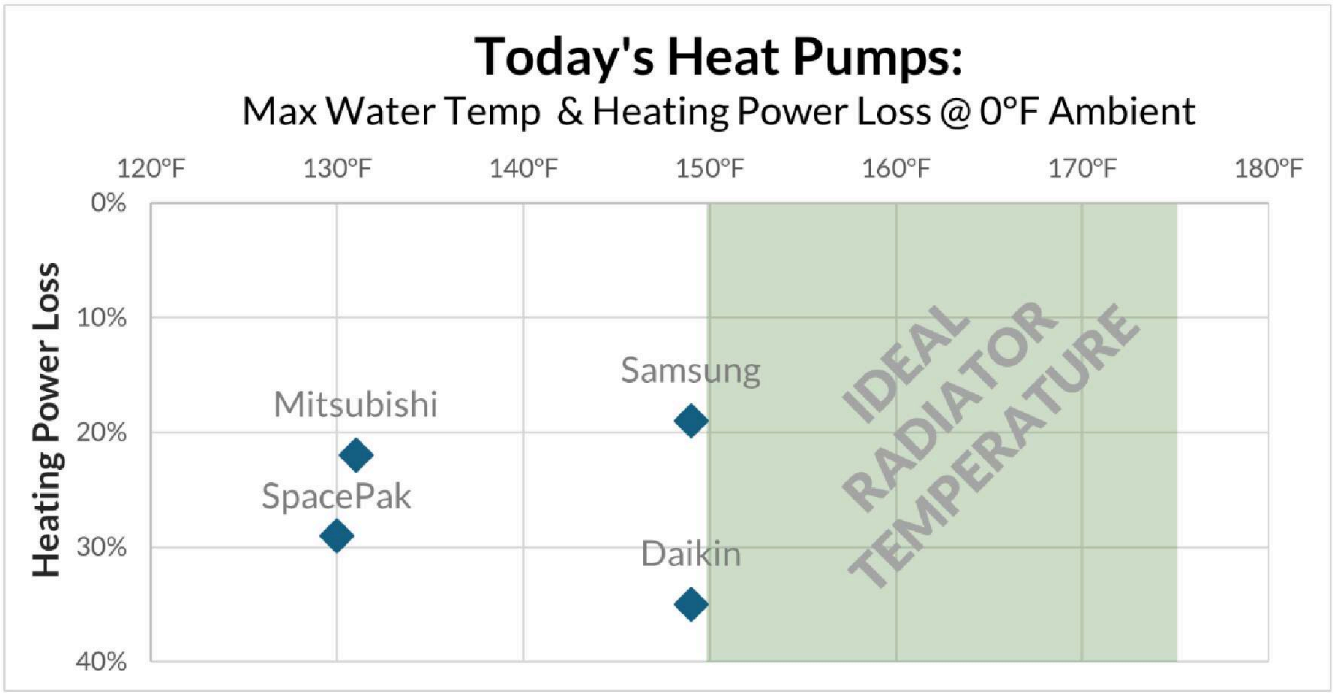
Gritty and determined founder of 2040 Energy. Self-trained mechanical engineer and experienced software developer. Designed and hand-built the first two generations of RenewaBoiler prototypes.

2040 Energy - Heat Pumps for Radiators

Heat pumps are the low-carbon, energy-efficient future of building heat. They run on clean electricity rather than fossil fuels and can save homeowners lots of money on energy costs. The federal government and multiple states understand their benefits, and promote them with very large rebates.

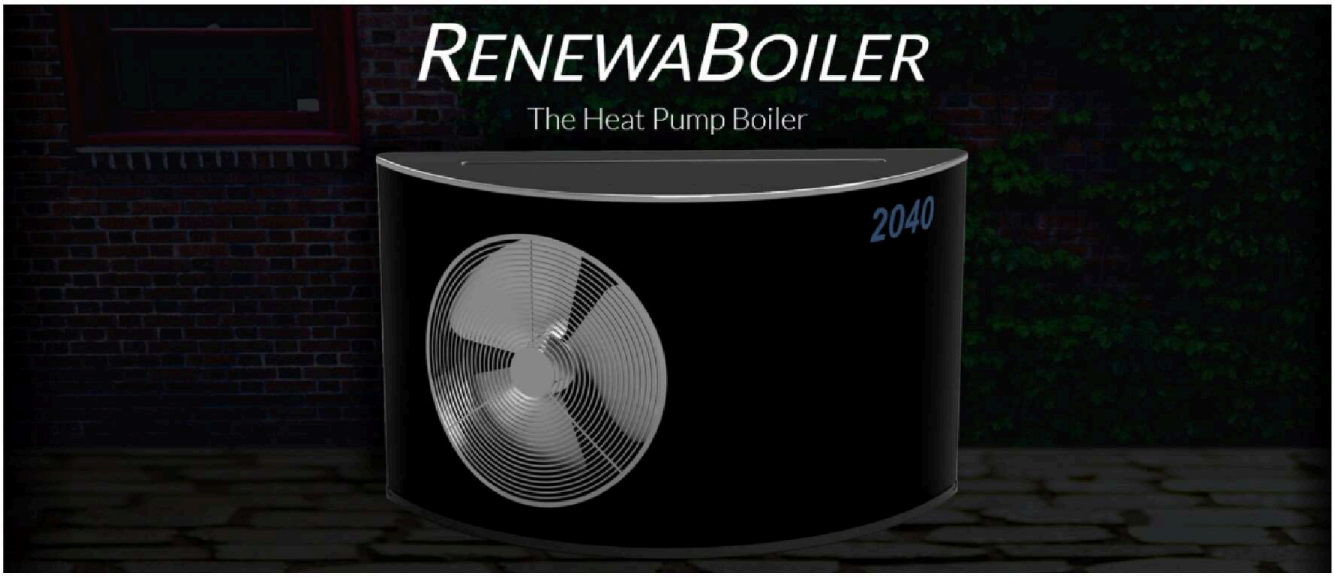
But today's heat pumps have a hidden weakness: the heat they generate **isn't very hot**. And for the 6 million homes in the US heated by hot water radiators (rather than forced-air), this weakness is actually a big problem...

Cast-iron and baseboard radiators need very hot water (typically **150°F-175°F**) to heat effectively on the coldest days. Today's heat pumps just can't do it – and even when they get close, their heating power drops off rapidly.

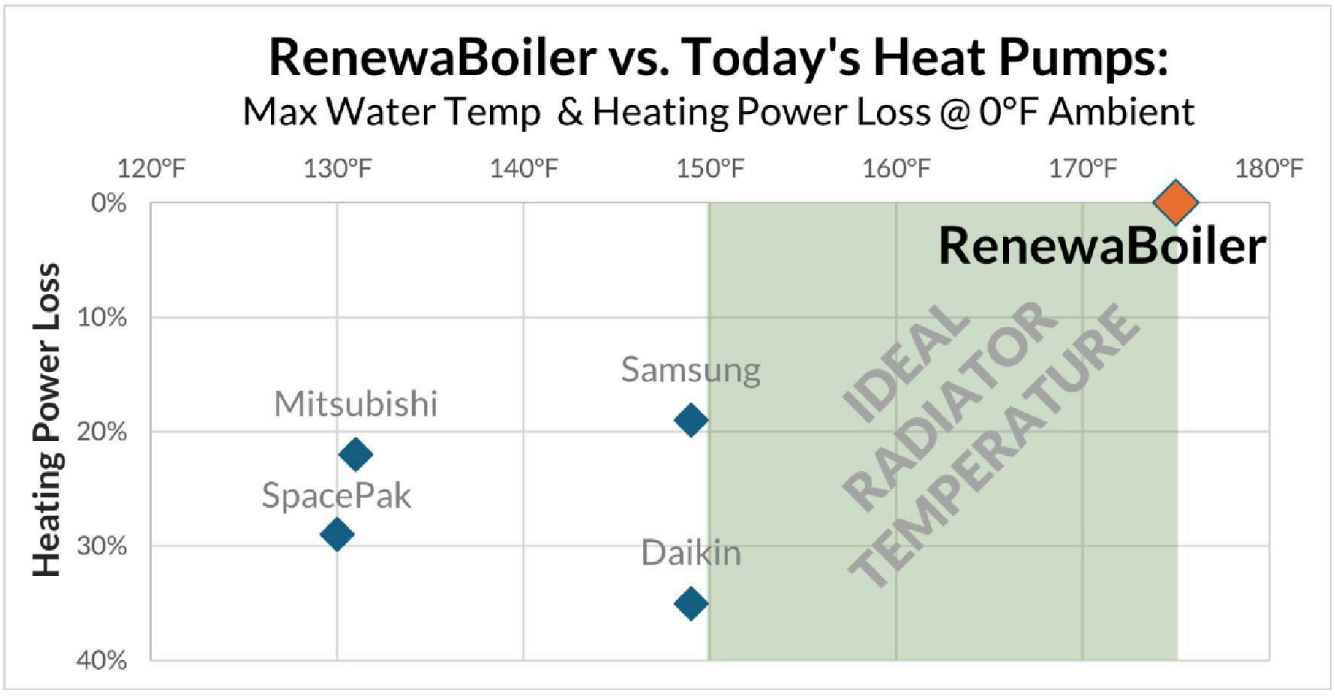


This means homeowners can't simply replace their boiler with a heat pump – they must either undertake a major renovation to forced-air heating, or install a fleet of ductless heat pumps throughout their house.

We are working to solve this problem.



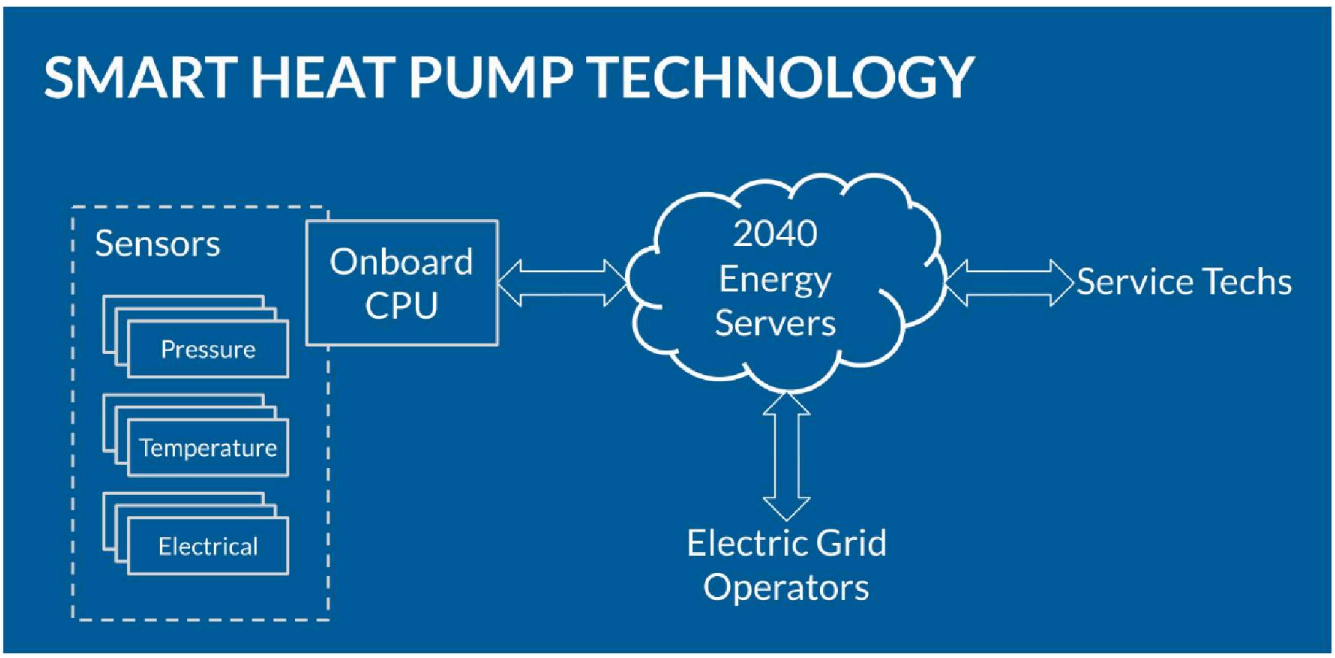
***RenewaBoiler** – The Heat Pump Boiler* is designed to meet the high temperature needs of hot water radiators – up to 175°F in outdoor temperatures well below 0°F, with no loss in heating power.



To make this work, RenewaBoiler uses two major technology improvements vs. the competition: **carbon dioxide refrigerant** and **ejector energy recovery**. This tech is used today in high-end supermarket refrigeration systems, but has been considered too complex and expensive for residential heat pumps.

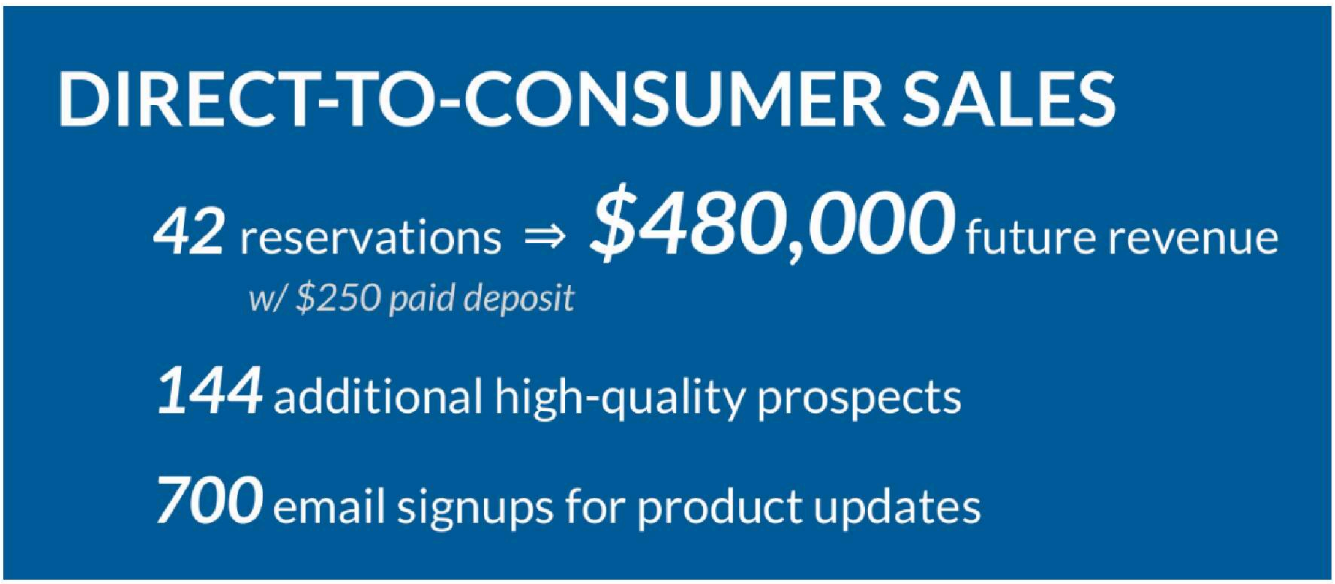
Our unique design, which includes several innovations we intend to patent, has the potential to enable us to produce and sell RenewaBoiler at a competitive price point. We currently have a demonstration prototype installed at the home of our founder/CEO. Check it out in the video below:

RenewaBoiler will not only be great at heating – we intend for it to also be the industry's **smartest** heat pump, with embedded sensors and a cellular data connection:



This Internet-of-Things-style design will allow us to monitor performance in real time – so if a problem occurs, we can immediately alert a service technician to minimize downtime. It will also allow many homeowners to earn money from their electric utility by participating in Demand Response programs.

We anticipate that remote monitoring and demand response will create additional value for our customers and an ongoing revenue stream for 2040 Energy. (But they will **never** be required in order for RenewaBoiler to keep the house warm!)



Forward-looking projections are not guaranteed.

We intend to launch RenewaBoiler with direct-to-homeowner sales, and are already seeing strong interest from prospective customers:

> ***I'm looking forward to the product since I've been waiting for something like this for years. -- Elizabeth Dahl, homeowner in Parkville, MD***

> ***I have been hoping for years that someone would make this product before my gas boiler dies. Very excited about your solution! -- Jim Johnson, homeowner in Arlington, MA***

We anticipate our customer acquisition will be inexpensive and

scalable. Our website ranks highly in Google search for key terms like "***heat pump for radiators***" and "***heat pump boiler***", and our cost-per-click for relevant search terms is extremely low.

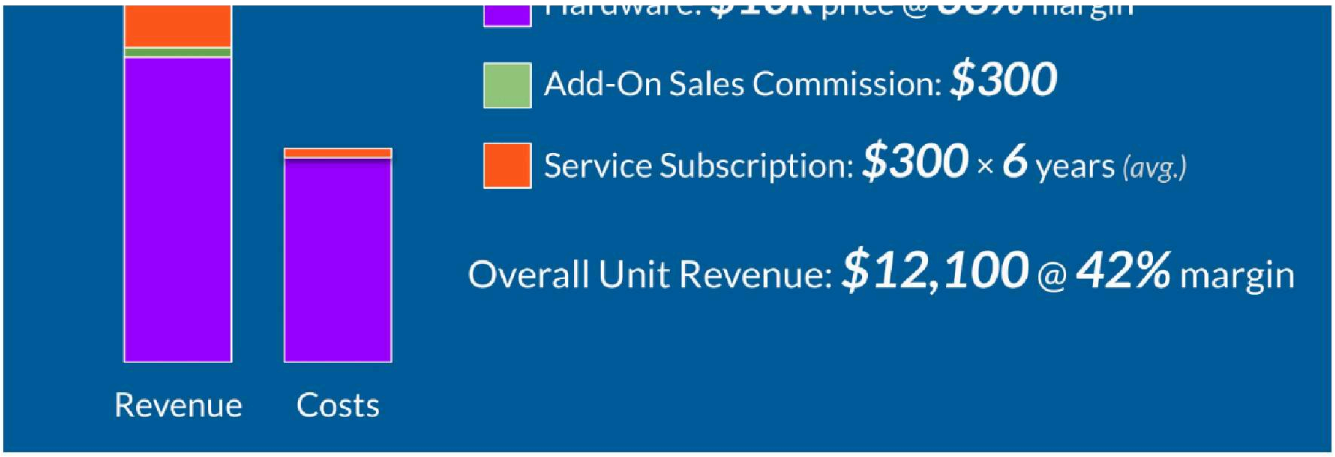
RenewaBoiler will generally require professional installation (though it will be possible for an ambitious homeowner to DIY it).

When a homeowner begins the purchase process, we will identify an installer in their area and arrange for the installation. If the installer meets our standards (and we meet theirs!), we will seek to partner with them – offering local exclusivity and high-quality leads in exchange for hitting sales targets.

Thus far, we have spoken with contractors in 10 different locations who are interested in installing our product.

> ***We are certainly interested in being your preferred installers for RenewaBoiler in the Hudson Valley. I really look forward to working with you and this technology in the future. -- Matt LeFevre, Owner/President, Hot Water Solutions, Kingston NY***

We intend for these installer partnerships to be an additional moat against our competition. Developing them is a key to the long-term success of our company.

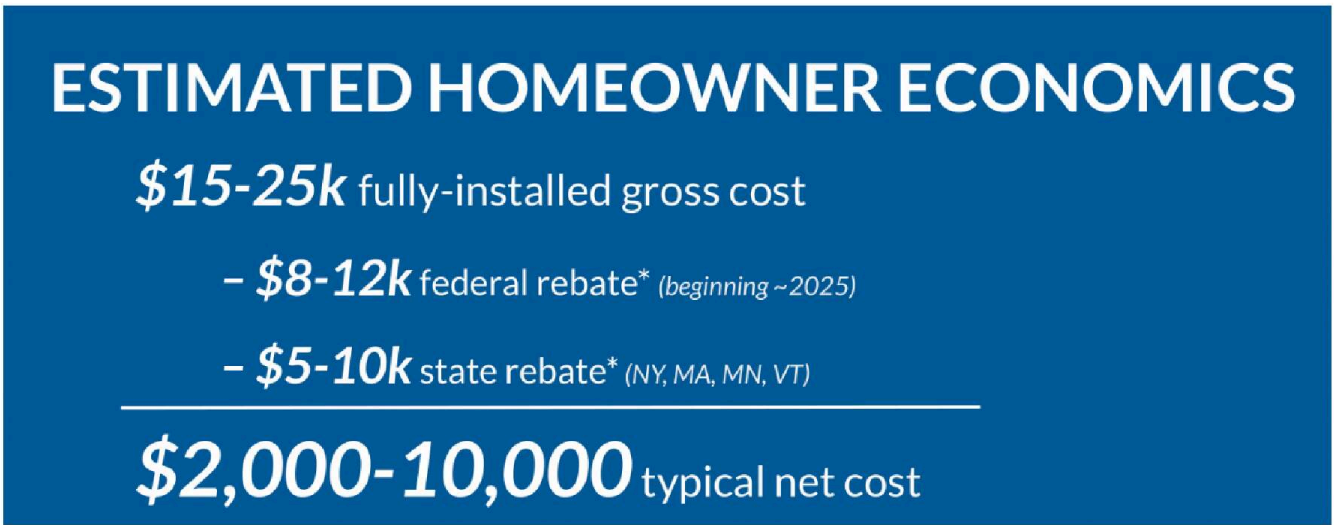


Most of our revenue will come from hardware sales. We anticipate also making money from:

1. "Add-on" sales commissions from our installer partners when RenewaBoiler customers purchase additional products/services (electrical upgrades, water heaters, etc).
2. Subscriptions from homeowners to our monitoring service. We expect to have a very high retention rate, as demand response incentives will make this program cash-positive (or close to it) for most of our customers.

Typical gross margins in our industry are around 30%. If we are able to execute on earning these additional high-margin revenue streams, we will have an opportunity to be much more profitable.

Forward-looking projections are not guaranteed.



vs. fully-installed boiler cost: ***$6-10k***

Annual fuel savings vs. oil/propane: ***$500-1,500***

* when available; not all customers will qualify

Many of our homeowner customers will qualify for state or federal subsidies, which can make RenewaBoiler cheaper up-front than a traditional boiler. And even without subsidies, the cost savings vs. oil and propane will create a favorable payback period in many cases.

MARKET SIZE

6 Million install base of hot water boilers in USA

340,000 today's annual volume × *$12,000*/unit = ***$4B*** SAM

30% of install base will save ***$500-$1,500***/yr *(vs. oil & propane)*

***market projections not guaranteed

Our addressable market for RenewaBoiler is in the billions of dollars per year.

*Sources: Install base from **U.S. Census Bureau, American Housing Survey** ("Steam or hot water system", 1-4 unit structures); Market volume from **EIA Technology Forecast Updates** (p19 + p22); Oil/propane share estimated from **U.S. Census Bureau, American Housing Survey** (based on census division breakdown).*

FUTURE MARKETS

30 Million install base of forced-air heating/cooling in cold-climate USA

Requires straightforward enhancements to our technology

150 Million install base of hot water boilers in Europe

$100B+ combined market size

*Sources: Cold-climate USA install base from **U.S. Census Bureau, American Housing Survey** (including New England, Middle Atlantic, East & West North Central census divisions); Europe install base from **Nesta** (129M in EU + 23M in UK); Market size projection based on SAM vs. install base in US boiler market.*

Once we have some scale and experience, we will be in a good position to expand into larger markets:

- For forced-air systems, RenewaBoiler's high-temperature output can eliminate the requirement for ductwork upgrades – a common problem with today's heat pumps that kills heat pump economics for many homes.
- In Europe, the boiler market is much larger, and is already transitioning to heat pumps.

After all, our company mission is to **eliminate fossil fuel building heat worldwide** by the year 2040. This is an ambitious goal that spans across every building type and the entire world.

Let's get started.

OUR CAPITAL RAISE

$500,000 target for Beta installations in Q4 2024

3 engineers + founder | 6 months runway | 7 test units

$1.235M maximum to reach UL listing

4 engineers + founder | 12 months runway | 15 test units

$50,000 minimum for 3rd-gen prototype + mobile demo

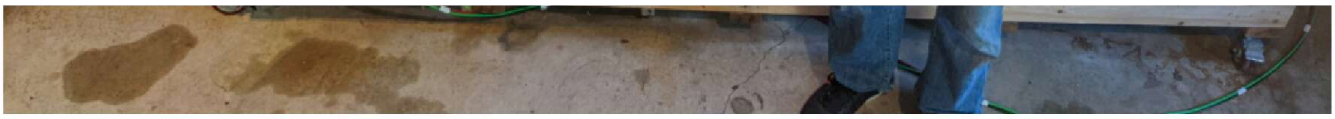
Materials | Fabrication | Mobile Test Chamber | Roadshow

Our goal for this capital raise is **$500,000**. We will use this to build out the engineering team and purchase materials, with a goal of completing 6 Beta (meaning production-like quality) installations for testing this winter.

If we make it to **$1.235 million** (the max allowed for equity crowdfunding without a full financial audit), this will extend our capabilities and runway -- allowing us to target a fully-complete product with UL listing.

Our minimum target for this crowdfund is **$50,000**. With this level of funding, we can build the next generation of prototype, build a mobile testing chamber for it, and take it on the road for sales and investor demos. This next generation of prototype will improve efficiency and reliability over the current generation, and use a production-like enclosure design.

And most importantly, this low minimum allows us to make the most of your investment by starting work right away, while continuing to work towards our full fundraising target.



If you've made it this far, I expect you're at least somewhat interested in investing. So I'll close with this:

I've dedicated the last 3 years of my career to 2040 Energy because I see a huge potential for success. The market need is obvious, the core technology works, and I believe I'm the right person to bring it all together. But I can't do it alone.

So, I am inviting you to join me on this journey by investing in 2040 Energy.

I can't promise that everything will always go perfectly along the way. But I **can** promise you that I will stay completely dedicated to making this business a success and operating it with integrity.

Thanks for reading,

-- Joe