

Customer First

As CEO at energy technology company Enphase, Badri Kothandaraman is striving to make the world's best home energy management systems. The technology is delivering Enphase's vision of better economics, clean energy, and energy independence.

Badri Kothandaraman, CEO, Enphase

Tell us about your career leading up to Enphase. How did you first become interested in sustainability?

I was born and raised in India in a middle-class family. My parents placed enormous emphasis on education. I attended the best schools in India and completed my bachelor's degree in technology at the Indian Institute of Technology, Madras. After that, I came to UC Berkeley in 1993 for my master's degree in materials science. I subsequently joined Cypress Semiconductor in 1995 and for the next 21 years of my career, I worked on semiconductor process technology, chip design, and eventually moved into managing businesses within the company. The chip industry is a fascinating one and I learnt tremendously during my career at Cypress Semiconductor. However, I always felt that I was one step removed from the end application.

During the early 2000s, SunPower Corporation was a subsidiary, operating as part of Cypress Semiconductor. SunPower's solar technology was wonderful and far ahead of most in the industry. Although I did not appreciate the intricacies of the business, I found its growth to be astronomical and impressive. Much of the valuation of Cypress came from SunPower. In 2008, Cypress spun off SunPower as a separate company. I continued watching SunPower over the next few years and started understanding its technology. Meanwhile, I felt the overarching urge to create products that directly touched the end consumer versus making chips which would go into someone else's product, so I left Cypress in September 2016.

After I left Cypress, I dabbled in a startup creating consumer accessories with USB-C technology. I didn't seriously contemplate going into the solar industry until early 2017, when I had the chance to meet with Enphase. I still remember it vividly. I came to talk to Enphase and the first thing that struck me was the company's beautiful and sleek IQ 6 microinverter – a product which could last for 25 years, had 300 internal components, and cost around \$50. IQ 6 microinverters were able to generate clean energy and save money for the homeowner, but Enphase was struggling with operational issues.



Badri Kothandaraman



Image credit: Enphase

At that time, Enphase had just started working on the development of battery storage. It was clear to me that batteries added an important dimension to the solution. I thought it would be a massive opportunity if Enphase could provide homeowners with clean energy that would give them energy independence, and so I decided to join the company. I thought it would be interesting if I could get involved in making high quality, innovative products with a focus on operational excellence, delighting customers, producing clean energy with independence, and helping to save money. I jumped in and it has been a great ride. For the first couple of years from 2017 to 2019, my focus was on operational excellence, but now we are spending the right amount of time with equal priority on both top line growth and operational excellence.

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We get even more excited every day about what we are doing. We just introduced our battery storage system for North America in July 2020. We are now making products that are fully delivering on our vision of better economics, clean energy, and energy independence for the homeowner. We are doing well financially because our products are differentiated, high quality, and most importantly, because we care deeply about customer

experience. In addition, it is important that we make money in this process because it helps us further our purpose of “Advancing a sustainable future for all.”

You’re increasingly moving to be a consumer-facing brand. How important is sustainability to the average consumer making the decision to buy your product, and how do you think that will change over time?

Sustainability awareness is becoming more prevalent. Millennials are incredibly conscious of the environment and that is a great trend. However, there is still a gap between sustainability and cost savings. If we want consumers to change their thinking about energy, we need to give them a solution that both saves money and is good for the planet. Consumers need to see clear financial benefits before they take the leap. Today a solar system costs around \$20,000, which is a lot of money. A storage system will add on another \$15,000. I can’t blame consumers for looking at savings before sustainability.

We have seen the situations with the California blackouts and the recent Texas power shutdowns. It all comes back to one thing – we have freedom of choice in most of the things we do. However, when it comes to the energy that we consume, we still have our limitations and there is more work to done, particularly with the regulators. We don’t even know what freedom looks like in this respect. The concept of an energy system that allows homeowners to produce their own energy, store their energy,

and consume energy whenever they want is very appealing. However, the penetration of solar in the U.S. is only 3% and this needs to change rapidly with help from technology providers such as Enphase, policy makers and the utilities.



Image credit: Enphase

Let's look at Australia where one in every three homes is solar-powered. The cost of solar in Australia is almost a third of the United States. Australia, and Europe have embraced solar in a big way and the U.S. needs to catch up. There needs to be both a financial component and a sustainability component. Anything that the policy makers can do, like tax credits, is critical. The government has to do its part. Technology providers like Enphase have to innovate and reduce costs. Installers have to do their part by streamlining installations, finding better ways to do things, and spending less on customer acquisition costs. The local authorities under jurisdiction (AHJ) also have to do their part by streamlining permitting paperwork for such installations. Once these efforts happen, sustainability will dominate in the U.S.

What do you see as Enphase's role in the sustainable economy in 10 years? In 25 years?

Enphase is a global energy management technology company, and we want to make the world's best home energy management systems. When people think about their energy needs, we want them to think about Enphase. We want to be their trusted energy partner. Our goal is to provide a seamless experience for homeowners, which starts with building great products.

We are also working on a digital platform for installers and homeowners which will keep Enphase, homeowners, and installers continuously connected. The focus is on reducing friction for the installers by providing them a one-stop-shop for all the services they need to run their business and serve customers. In addition, we want to take care of the homeowners all the way, from cradle to grave.

We want to make the world's best home energy management systems.

What do you see as the biggest obstacles to having a hundred percent renewable energy economy in the U.S. economy?

We talked about this earlier. The customers have to see clear savings before they commit large amounts of money. Everything in the chain has to become more economical and that's possible through innovation – product and panel innovation, battery innovation, financing, and simplified permitting through digital means.

Technology companies need to innovate, policy makers need to keep the tax credits going, and programs like net-metering must not go away.

What are some of the most important lessons that you would share with entrepreneurs trying to build zero carbon energy systems that are young and coming into the sector wanting to make a difference?

The advice I always give is to focus on the long term, understand the customer experience well, and ensure that your actions are going to significantly make their lives better. Put customers at the center and make decisions from their point of view versus your own. Don't be afraid to go back to the drawing board and make things right because it is far worse to go to market with a product that provides a poor customer



Image credit: Enphase

experience. Putting yourself in your customer's shoes is very hard to do in practice, but we get paid to do hard things, right?

Next, every decision you make in R&D has to also be viewed from a quality perspective. What kind of components are used in the design? What kind of margin do I leave in the design? How do I design my power electronics? How is the homeowner going to use it? How should I take care of thermal performance? We need to ask these questions and it requires enormous empathy for the customer. Power electronics on the roof and on the side of a home are susceptible to failures. The companies that win in this industry are the companies that focus on the long-term with a maniacal focus on customer experience and quality. They are

the companies who will be successful.

Who is your sustainable hero and why?

There are many people who are my sustainable heroes. They are the people who pioneered the industry a long time before I came. They include all of the solar installers worldwide who decided to get into the business as they saw a mission to making the world a better place, in addition to making money. Next, many of our employees are heroes as they came to Enphase to achieve a purpose and not just do a job. And of course the homeowners who see a possibility, take a leap of faith, and drive change. They are my sustainable heroes!