

# **Bloom Energy Corporation (BE) Q4 2023 Earnings Call Transcript**

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**Body**

Bloom Energy Corporation (BE)

Q4 2023 Earnings Conference Call

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Company Participants

Ed Vallejo - Vice President, Investor Relations

KR Sridhar - Founder, Chairman & Chief Executive Officer

Aman Joshi - Chief Commercial Officer

Greg Cameron - President & Chief Financial Officer

Conference Call Participants

Andrew Percoco - Morgan Stanley

Manav Gupta - UBS

Dushyant Ailani - Jefferies

Pavel Molchanov - Raymond James

Ben Kallo - Baird

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Chris Dendrinos - RBC Capital Markets

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Noel Parks - Tuohy Brothers

Biju Perincheril - SFG

Sherif Elmaghrabi - BTIG

Jeff Osborne - TD Cowen

Kashy Harrison - Piper Sandler

Presentation

Operator

Ladies and gentlemen, thank you for standing by. I would like to welcome everyone to the Bloom Energy Q4 2023 Earnings Conference Call. At this time, all lines have been placed on mute to prevent any background noise. After the speakers' remarks, there will be a question-and-answer session. [Operator Instructions] Thank you.

I will now hand the call over to Ed Vallejo, Vice President of Investor Relations. You may begin your conference.

Ed Vallejo

Thank you, and good afternoon, everybody. Thank you for joining us for Bloom Energy's fourth quarter 2023 earnings conference call.

To supplement this conference call, we furnished our fourth quarter 2023 earnings press release with the SEC on Form 8-K and have posted it along with supplemental financial information that we will reference throughout this call to our Investor Relations website.

During this conference call, both in our prepared remarks and in answers to your questions, we may make forward-looking statements that represent our expectations regarding future events and our future financial performance. These include statements about the company's business results, products, new markets, strategy, financial position, liquidity and full year outlook for 2024. These statements are predictions based upon our expectations, estimates and assumptions. However, as these statements deal with future events, they are subject to numerous known and unknown risks and uncertainties as discussed in detail in our documents filed with the SEC, including our most recently filed Forms 10-K and 10-Q. We assume no obligation to revise any forward-looking statements made on today's call.

During this conference call and in our fourth quarter 2023 earnings press release, we refer to GAAP and non-GAAP financial measures. The non-GAAP financial measures are not prepared in accordance with U.S. Generally Accepted Accounting Principles, and are in addition to, and not a substitute for, or superior to, measures of financial performance prepared in accordance with GAAP. A reconciliation between the GAAP and non-GAAP financial measures is included in our fourth quarter 2023 earnings press release available on our Investor Relations website.

Joining me on the call today are KR Sridhar, Founder, Chairman and Chief Executive Officer; Greg Cameron, our President and Chief Financial Officer; and Aman Joshi, our Chief Commercial Officer. KR will begin with an overview of our business, then Greg will review the operating and financial highlights of the quarter as well as the outlook for 2024. And after our prepared remarks, we will have time to take your questions.

I will now turn the call over to KR.

KR Sridhar

Hello, everyone, and thanks for joining us today.

Let me start by thanking the Bloom Energy team for relentlessly working on our top objective of 2023, making the company profitable. Together, we achieved profitability by maintaining price discipline, reducing product costs, improving service margins, and reducing operating costs. What a huge milestone for our company. Now, our goal for 2024 is to increase the profitability on a year-over-year basis. In addition to record revenue, significantly improved margins and record annual operating income, we introduced innovative products and offerings, including one just this week. More on that later.

Now, let me address the macros in the energy market. Digital transformation, AI, electric vehicles, onshoring of manufacturing and electrification of everything are all increasing demand for electricity at a rate never ever seen before. All these factors can drive demand for electricity up to 10 times more than the 0.5% average demand growth rate the utility industry is accustomed to for the last four decades. Can a slow-moving industry and the failing grid meet this unprecedented demand challenge?

Let's start with electricity generation. Even breakneck speeds of renewable expansion can at best address a very small fraction of this demand growth. In the last 10 years, all the new renewable capacity installed in the U.S. produces less electrical energy than the deficit created by retired coal and nuclear power plants. New nuclear power will not be online during the next decade in a meaningful way. We have to rely on more natural gas to meet the electricity demand.

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Once power is generated in faraway locations, it has to be transported to the demand centers by high-voltage transmission lines. While the National Renewable Energy Laboratory estimates that 90,000 miles of high-voltage transmission lines are needed to meet this growth, 90,000 miles, we have built less than 700 miles in 2022. All this suggests that as a nation, we will imminently face severe and huge power shortage that will last a couple of decades. This situation will be the same in many of the population centers and economic hubs around the world.

In the past few months, as I speak to CEOs and business leaders, energy security and power availability are top-of-mind issues for them and their Boards. Most management teams today view the future supply and availability of electricity as a key enterprise risk. Unlike even five years ago, when most of the conversations were around cost of power, today, it is about the opportunity cost and business risk of not having power. So, how have these macros played out for Bloom Energy on our commercial side?

Let me start with data centers, particularly AI data centers. For the last few months, my team and I have been engaged deeply with several leading companies in the AI space, from CEOs all the way to working level technical teams. The sales funnel for this sector alone is massive, not in the megawatts but in the gigawatts. The funnel is composed of several A-list companies with credible growth projections who are told by their utility companies to not rely on them for additional power.

They love Bloom's technology, our rapid deployment capability and the flexibility and optionality of our solution. They are actively working with us on design configurations and implementation scenarios. In these interactions, our prospective customers tell us that in the absence of reliable and timely power from the grid, the Bloom Energy solution would be their best alternative. Unlike our sales funnels in other sectors in the past that had mostly single-digit megawatt opportunities, this sector offer tens and hundreds of megawatts per opportunity.

Most of the opportunities we are pursuing today are for greenfield data centers, in contrast to the past where we offered a cleaner and more reliable power upgrade to an existing data center facility. Greenfield opportunities inherently have elongated sales and implementation cycles. The market in this sector is rapidly evolving, and we will have better visibility on timing as the year progresses.

Over the coming years, I'm very excited about the Bloom solution for data center power and particularly AI data centers, as I see it as the single biggest segment for our growth in the next decade. This opportunity, I highlighted for data centers, carries over to other energy-intensive industries and service operations that require reliable power, such as semiconductor manufacturing, electric charging of bus, van and car fleets, and environmentally-controlled warehouses. We are in various stages of commercial engagement with prospective customers, and I see great potential to convert some of this interest to bookings this coming year.

Let me now comment on our innovative product offerings. In the second half of last year, we announced our combined heat and power CHP offering. This product offering can provide net-zero steam to process industries that are looking to lower their carbon intensity. Alternatively, using this team to create net-zero cooling will be a huge economic and environmental benefit to data centers. We are also seeing a strong interest for our CHP offering in Europe.

Earlier this week, we announced the Be Flexible offering. This offering has taken our base load solution offering and transformed it to meet a customer's varying load. For utilities that need reserve power or for data centers whose power usage varies, the Be Flexible offering provides up to 50% cost savings, 50% carbon reduction at reduced load, and more than 5 times faster power ramp than legacy solutions such as diesel generators and gas turbines. My team is working with several power companies to use the Be Flexible solution in front of the meter.

On the international side, let me take a moment to talk about Korea. Five years ago, we started in Korea with our partners SK ecoplant and SK D&D. We had a shared sense of purpose and goals. We knew that together, we could grow and build a great business in Korea. In the last five years, Bloom has sold over $4 billion of product and service to the Korean market and established Bloom SK as the market leader in fuel cell power generation. We are positioning ourselves to sell over $4 billion of product and service in the coming four years. We are engaged as partners in the demonstration and deployment of hydrogen-based energy servers and hydrogen electrolyzers in Korea. They are also partnering with us to open up new markets in other countries.

In 2023, we had to hit a pause in the deployments to adapt to the new policy and procurement rules that the Korean government enforced in the middle of the year. While that created a lowering of our sales to Korea in second half of 2023 and a slow start in first half of 2024, they are back on track, and we expect a strong business in Korea in the second half of 2024 and in the future. For us, Korea is a model and global leader of energy policy progress and commercial adoption. We are bullish about our future in the Korea market. We hope to replicate it in other markets around the world.

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Outside of Korea, under Tim Schweikert's leadership, we have opened five international markets and have our pilot programs going. He and his team are building a strong pipeline in those countries and confident of opening at least two new global markets. Based on the quality and quantity of the pipeline, we expect our international market to have a strong bookings growth in 2024.

At the core of everything we do is our people. We are constantly working to both develop our existing talent and upgrade by adding new talent. Just last week, our CTO, Dr. Ravi Prasher, was elected to the prestigious National Academy of Engineering. It's a huge honor and well-deserved recognition. Congratulations, Ravi. In January, we were thrilled to welcome Aman Joshi as part of our Bloom leadership team. He joined as our Chief Commercial Officer after a long career in power generation sales. Aman will be responsible to grow our robust sales pipeline with a special focus on converting the opportunities to orders with urgency.

Aman, welcome, and over to you for a few remarks.

Aman Joshi

Thank you, KR. It's great to be speaking with you all today. I just want to say a few words.

First, I could not be more excited to join Bloom and be part of all the amazing things happening in this company. The pace of innovation and the confidence in our company's future is palpable among the employees as I walk the floors.

In my prior role, I spent over 20 years at General Electric, most recently focusing on gas turbines and power generation. In the past two years, I sold more than 5 gigawatts of generation capacity. At GE, our focus was doing large-scale projects that were complex and incredibly important. As we advance along the energy transition, it started becoming clear that natural gas and hydrogen are going to play a big role in helping decarbonize the world, both in energy and industrial sectors in the coming decade.

Gas turbines and reciprocating engines are far less efficient when burning 100% hydrogen. In addition, when they combust hydrogen, there are challenges around NOx emissions. Bloom's solid oxide fuel cell can solve the hydrogen challenge today and generate zero carbon, zero SOx and zero NOx. This is a game changer. I decided to come to Bloom after seeing the product and realizing that it had arrived at an inflection in its ability to function at scale and be a solution for large, complicated, important and timely projects. Bloom is no longer just about potential, but it's real now and at scale.

Bloom's energy servers can address the most pressing needs of customers across industries, including data centers, utilities and industrial processes. I'm excited about the pace of innovation here and the flexibility of the product suite.

Bloom is a kind of company that can move quickly to develop an application and deliver it to the market. Think about what KR said on CHP and the Be Flexible load-following product. The speed from idea to concept to product at Bloom is remarkable. Its product lead the industry. Just look at the Bloom electrolyzer, which tests have proven is the best and the most efficient in the market. Bloom can solve the big problems that I know exist in the market, and I'm very pleased to now have an opportunity to sell these solutions to the customers that need them.

I look forward to speaking with you all further in the Q&A. For now, I'll turn it over to our CFO, Greg Cameron.

Greg Cameron

Thanks, KR, and welcome, Aman.

Let me begin with a few highlights about our strong execution in 2023. In the fourth quarter, we achieved revenue of $357 million, non-GAAP gross margins of 27.4%, non-GAAP operating income of $27.4 million and positive CFOA of $122 million.

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These quarterly results accumulated into strong performance for the full year 2023. We had record revenue of just over $1.33 billion, up 11% versus last year. Our non-GAAP gross margins were roughly 26%, up 280 basis points versus 2022. We delivered on our milestone of positive non-GAAP operating income of $19 million, up nearly $53 million from the prior year. Our backlog for product and service is now over $12 billion, up 21% versus year-end 2022. We entered 2024 with over $745 million in total cash.

With those as highlights, let me provide some additional context for our performance. In the fourth quarter, we signed a 500-megawatt volume agreement with SK ecoplant. This is a recommitment of 250 megawatts under our 2021 agreement and a commitment for an incremental 250 megawatts. Under the new agreement, the 500 megawatts will be accepted through 2027, providing visibility for nearly $1.5 billion in product revenue over the next four years and $3 billion in service revenue over the next 20 years. The prior agreement was amended to reflect the implementation of the clean hydrogen portfolio standards in Korea. The new agreement adjusted the timing of deliveries, which reduced 2023 revenue by roughly $160 million versus the prior agreement's 2023 volume commitment. These deliveries and revenue are incorporated into the $1.5 billion that is expected to be recognized through 2027.

As KR shared, global power demand is being driven by electrification, EVs and AI data centers. The world's current generation, transmission and distribution capacity will be incapable of meeting the additional electricity needs. Our fuel-flexible energy server with enhanced capability of combined heat and power, carbon capture and load following is uniquely positioned to meet the needs today while providing optionality through the energy transition. Clearly, the macro trends are in Bloom's favor.

I'm very encouraged by Aman's addition to the team. He brings a wealth of experience in the distributed power generation market and rigorous commercial process mindset. Even after just a few weeks in the role, he's already making significant impacts. Bloom remains committed to the 2025 targets for product margin, service margin and profitability, as well as our long-term revenue growth rate. As we move through the decade, most of the long-term growth will be driven by our power generation solutions. Our electrolyzer and marine products will contribute as those markets evolve.

Our 2023 non-GAAP gross margins of 25.8% improved 280 basis points versus 2022. The margin improvement was driven by a 13% reduction in our unit product costs, offsetting a small reduction from pricing mix, resulting in over a 10% increase in our unit product profit. Clearly, our efforts to lower material costs, coupled with automation and increased power output are driving down product costs. In every quarter in 2023, we have achieved double-digit cost reductions versus prior year, and we exceeded our 2023 product cost down target. As we move into 2024, we expect to maintain our double-digit cost reductions.

As expected, our fourth quarter results in service improved versus prior quarters as revenues grew, performance payments declined and replacement power module costs reduced. We remain committed to our service business achieving 20% non-GAAP gross margins by 2025. We expect our service non-GAAP gross margins to continue to improve and will be a key driver to increasing our overall non-GAAP gross margins in 2024 and beyond.

In the fourth quarter, we had positive CFOA of roughly $122 million, building our total cash balance to over $745 million. In 2023, we made investments in increasing inventory that I would not expect to repeat in 2024. Additionally, I would expect our accounts receivable aging to reduce as we collect from a partner on a large project that has experienced delays.

In the fourth quarter, we completed our targeted proactive restructurings. These were focused on managing costs, driving efficiencies and optimizing our performance to ensure that as we grow revenue, our margins can improve and we can generate free cash flow and profitability. As we move into 2024, we've consolidated our California stack manufacturing and reduced our operating expenses 19% versus the first half of 2023. A restructuring charge of roughly $7 million was recorded in the fourth quarter that has a pro forma adjustment to our non-GAAP reporting.

As we look forward to 2024, we expect to continue to grow our revenues and expand our margins. Based upon our backlog and pipeline, we are targeting revenue of $1.4 billion to $1.6 billion. We expect additional 200 basis points improvement in our non-GAAP gross margins to about 28%. Based on these targeted revenue and margin performance, I would expect our non-GAAP operating profit to be between $75 million to $100 million.

Consistent with prior years, second-half revenue should be greater than first half, driven by timing of Korea shipments and some large acceptances. For the first half, I would expect revenue to be up mid-single digits, with improving profitability versus last year. For the first quarter, the range is a bit broad as we have projects that could be accepted in either the first or second quarter. First quarter revenue could be flat to down 20% on a tough comparison as the first quarter 2023 was up nearly 40%.

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Finally, let me spend a few minutes on my departure from Bloom Energy. The last four years has been an amazing professional journey. I want to thank KR, the Board and the entire Bloom family for their support in allowing me to contribute to Bloom's success. I'm proud of how we've worked together to position Bloom for the future. We've doubled revenues, improved margins, strengthened our balance sheet, doubled manufacturing capacity and assembled a strong operating team. The world needs Bloom's solutions, and I'm confident the Bloom team is poised to continue to deliver.

This has been a very hard decision for me, but I look forward to enjoying more time closer to my family. So, while there's rarely a perfect time for a transition, waiting for one often comes with a personal cost. In the near term, I'll be focused on ensuring a smooth CFO transition. I am confident in KR and the Board to find the right person to enable Bloom's continued success. I remain very excited for Bloom's future.

With that, operator, please open the line for questions.

Question-and-Answer Session

Operator

Thank you. [Operator Instructions] Our first question comes from the line of Andrew Percoco of Morgan Stanley. Please go ahead.

Andrew Percoco

Hi. Thanks so much for taking the question. Greg, first off, best of luck in your next endeavor, and thank you for your partnership over the last few years. It's been great.

And I guess maybe just to start out, on the AI data center theme, I think the idea around power shortages and bottlenecks is definitely gaining some momentum, and you guys have talked about your technology as a key solution for that end market. KR, it sounds like you're having a lot of conversations with these tech companies that are pursuing AI. But I guess just given some of these power constraints, I would have thought that there would be a faster pace of development on some of these agreements. So, can you maybe just give me a sense for -- or give us a sense for where in the process you are in these conversations and maybe some of the remaining items that need to be negotiated or work through to get these across the finish line?

And then, maybe as a separate follow-up, you did allude to some delays in the South Korea market as a driver to downside in your 2023 revenue target. Can you just give us a sense for what's included in 2024 as it relates to South Korea and how you get comfortable with some of those regulatory changes? Thank you.

KR Sridhar

Andrew, thank you so much. I will speak to the AI data centers, and I'll have Greg talk to the Korea markets, too, so -- and we can both add color to that. So look, if I were to just tell you my last three days, having two days of Board meetings and today of earnings call, in addition to that, if I just look at four meetings I've had with large data center players, and this is leadership, C-suite CEO levels. And at Bloom, these meetings are about greenfield data centers. And collectively, these four opportunities that I met would add up in terms of a pipeline interest to more than 0.5 gigawatt. So that's what we are looking at in terms of what we are being told by these customers.

And if you just look at chips, whether it is the big chip companies and what their projections are, if you look at TSMC and the fabs and what their projections are and then multiply that by the amount of power they need, these numbers are very real numbers. But unlike what we talked about earlier, these are greenfield data centers. So, as we are speaking to these customers, they're securing the land, they're securing their financing, they're securing their offtakes, they're trying to get their permits. So, it is taking -- it's an elongated cycle.

We expect the second half to be a lot more robust than the first half based on everything we're seeing. And we could have continued to focus at a huge opportunity cost on the other traditional sectors through which we build our pipeline and gotten to a good first half. But we are fiscally disciplined. We are very deliberate on choosing our opportunities, and we see this as an extremely real opportunity with a great focus. And therefore, we are honed in on it, and very optimistic about where our future is going to be in this area.

Greg, do you want to talk about Korea?

Greg Cameron

Yeah, sure. And Andrew, thank you for your kind words. I've enjoyed the partnership as well. So, on Korea, as the change came in with the clean hydrogen portfolio standard, it was known all the way back to 2021 that this change was coming, and we didn't know exactly how it was going to impact the market. But at the time, as partners said, if this does impact timing, then we're going to have to come back to the table, which we did.

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I think going forward, looking at where the market is and looking at the bidding process that is there, as we go into this year being '24 and into next year, I think our partners there have a pretty good understanding of how the market is going to play out. And one of the changes that we made to the agreement that we didn't have before is we now have quarterly minimums in place. Before, we had annual minimums and it left us with some uncertainty as we went through the year. We now have quarterly minimums where we can look at to make sure we're on track for the year. So I think that was a good change.

If I look forward in the market out two, three, four, five, six years, that market is going to continue to expand, and the technologies are actually going to come together. So, you won't have separate swim lanes for fuel cells versus combustion versus other things. That market is going to continue to grow, both for natural gas as it transitions to hydrogen. And I feel very good about Bloom's products, both on the fuel cell side as well as the electrolyzer to do really well in Korea. So, I'm really encouraged with that market. I've enjoyed my partnership with both ecoplant and D&D very much, and have had the pleasure of spending some time with them over the last few years, and they've just been nothing but a great partner. So, we're really excited about our partnerships there, and we're excited about the market.

Operator

Thank you. Our next question comes from the line of Manav Gupta of UBS. Please go ahead.

Manav Gupta

Good morning, guys. My quick question here is the 2024 is a range. Help us understand what could push you towards the top end of the range of $1.6 billion in revenue?

And also just a quick clarification. You are very capital disciplined. So, with $75 million to $100 million in operating profit, would that imply a minimum cash burn and very small needs, if any, for any external financing, if you could address those issues? Thank you.

Greg Cameron

Yeah. Sure, Manav. It's Greg. So, listen, when we pulled the plan together for this year, and we looked at it, and this is why a little bit in my script, I talked about being up kind of mid-single digits is where I think the company will be at the midpoint in the year, and that gives us kind of the way we've looked at it before, which is the 35% to 40% of our revenue is going to be earned in the first half versus the second half.

What's going to drive us from the lower end of the guide to the higher end of the guide is really on a list of projects that we see both in the U.S., broadly international and in Korea. And my expectation is as we go through the year, we're going to get more and more clarity around the timing of those projects. I'm very bullish that we're going to win our fair share of those projects, and they're either going to fall in late 2024 or early '25. So, my expectation as we go through the year, it's not so much will we have the projects, it will be the timing of those projects. But our full expectation, my full expectation for Bloom is that it will leave 2024 with a bunch of commercial momentum, both in winning deals as well as delivering on systems, and that would drive us to the higher end of the range, I'm hopeful.

On the question around cash burn, listen, the metric that I look at, right, is the EBITDA metric. And that says, is the company burning cash on running itself? And we've been positive on EBITDA over the last couple of years. So, our CFOA usage has been more around investing in inventories and other things preparing for the growth in those systems. And I don't expect to change the view on the inventory levels year-over-year, where we grew them significantly from '22 to '23. I would not expect a similar level of growth next year. It was really a way to make sure that we had the business position going forward. If that was the case, that would say you have more opportunity to generate cash in that CFOA bucket than not because you're not investing in the working capital.

As I think about the capital needs for the company, one thing that's going to be out there that we're going to need to think about is the 2025 $220 million convert will come current in August. It's not coming due until August of 2025. But that will be something that the company can be opportunistic around when it chooses to address that. And with our cash balances and that value of $220 million, we could easily pay that off if we chose. So, I think the company has a lot of options on when and how it addresses those capital needs.

Operator

Thank you. Our next question comes from the line of Dushyant Ailani of Jefferies. Please go ahead.

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Dushyant Ailani

Thank you for taking my questions. I wanted to quickly just talk about thoughts on electrolyzer sales going into 2025. I know that you guys mentioned you're optimistic on that. But I think just given some delays in FIDs in LSB, I just wanted to get your thoughts there.

KR Sridhar

So, this is KR, and I'll have Greg add some additional comments to that. Look, we have shown '26 and beyond as there's going to be meaningful electrolyzer revenue. We think that's still a possibility. Let me walk you through the few things that we're looking at right now.

As we have told you, we have publicly mentioned in four of the seven hubs, we're working with some other hubs too, but let's just talk about the four hubs. These projects are in the pre-FEED engineering right now as we speak, and Bloom is supporting those projects as an OEM. But as you very well know, winning the money for the hub on an 80-20 rule is the 20 side. The 80% of whether these go to FEED and beyond is going to depend on the regulations that come on the production tax credit from the DOE. That's what's going to drive it. So, as we sit here, we are supporting those. But the delays in the PTC is going to delay those implementations as we see it. But we are ready, able and willing to support those things, number one.

If you look outside of the U.S. right now, we are in pre-FEED studies in multiple geographies, including Europe, Middle East and Australia, and we are like working on those. And if you look at our project of demonstrating with a nuclear power plant with Xcel Prairie Island, we have already shipped our unit. Now, it's with the customer who is going to integrate it and start running it. If you look at our INL project with Idaho National Lab, they can't stop saying enough good things about us. That unit we shipped out there is working extremely well, not just performing but exceeding expectations. So that's a summary of our electrolyzer program.

Greg Cameron

Yeah. I think here's what I'd add is, in addition to that, right, our technology is the most efficient on the market today, and we have over 2 gigawatts of capacity. What you get with Bloom is optionality. So, we see in the near term, and we've always talked about this with our long-term growth rates, the majority of the short-term growth is going to be driven by our core power generation projects -- product. Now, what's great about that is we are building out all of the manufacturing capacity, the supply chain, the automation, driving down the cost around our stacks and columns, and it's the same product, whether we put it in as a fuel cell or as an electrolyzer.

So, we are learning every day on how to drive that cost curve down, and we're not waiting for that. As well as every day, we get 1 billion data points coming in and how those stacks and columns are performing in the field. So, while we wait for the market to evolve, and it will evolve, and when it does, we think we have a great product that's going to have really high efficiencies, and we will be ready to manufacture it for our customers. But in the meantime, with Bloom, what you get, it's amazing optionality because we're not waiting on that market to develop. We still have a company last year that generated $1.33 billion in revenue as it built out the business.

Operator

Thank you. Our next question comes from the line of Pavel Molchanov of Raymond James. Please go ahead.

Pavel Molchanov

Thanks for taking the question. I guess it was about a year ago, you entered the European market for the first time, and it is Europe where some of the green hydrogen projects are moving forward. So, I know you've sold some fuel cells in the UK and elsewhere. Are you making any progress with the electrolyzer product in Europe?

KR Sridhar

So, we are in pre-FEED studies with a few potential customers in Europe as we speak. But let's dial in for a second on the green hydrogen story too, right? Andrew started off by talking about the power shortage and what we do. Power is electricity and it's that electricity that makes the molecule. So, the fact that there's a shortage of that electricity even when it's being made is going to stress making a molecule with that electricity. That's the macro that we need to understand, and then say, if you're going to make that molecule with that precious electricity, obviously, the technology that uses less of that electricity is what's going to win.

So, we're very confident in Europe to be able to get there. And we are talking to several customers right now. But it seems to us that the pace of implementation is going to be slower than what all of us want. However, as Greg correctly alluded, and I want to underline that, for us, that's an optionality and not being a pure play just on electrolyzers is an amazing competitive advantage for us, and I can't overemphasize that.

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Pavel Molchanov

Thank you very much.

Operator

Thank you. Our next question comes from the line of Ben Kallo of Baird. Please go ahead.

Ben Kallo

Hey. Thank you, guys. And, Greg, sorry to see you leave. Just thinking about this year, can we talk a little bit, KR, maybe about the Fremont factory ramps up? If we should see a margin impact in different times because of the ramp up? And then there's some confusion about the different servers that you sell. Could you update us on what servers you're selling now and how that impacts sales? And I'll follow-up.

Greg Cameron

Hey, Ben, it's Greg. I'll take the question on Fremont. So, at the end of last year, we had a major milestone in the company in that we exited our previous factory in Sunnyvale, and we've now consolidated all of our manufacturing capacity in Fremont there, all the tooling has moved over and we've kept it just shy of that 700 megawatts of capacity when you have all that tooling there. I think we can still at least double, if not more, based on the size commitments and our ability to drive more automation and density in that space.

From a cost standpoint, there's dollars that we're going to save between rent and utilities and indirect labor being over the both operating factories, that's going to have an improvement in our product cost year-over-year. I would also say that we're going to find -- by running two factories within driving distance of each other, we're going to find some hidden factories in that process that's going to continue to take cost out.

We set a target for the team of at least double digits, 10% down, but they know very well that their target is higher internally than the one I'm going to give externally, and I think that they've got ample room to continue to drive not only material cost down, but increased automation and to make sure that they are contributing to our margin improvement this year as they did last year. They overachieved by 100 basis points. We got 13% versus our target of 12%. So, full confidence that they'll overachieve again.

Operator

Thank you. Our next question comes from the line of Colin Rusch of Oppenheimer. Please go ahead.

Colin Rusch

Thanks so much. You gave us some color a little bit on some of the customers and the backlog for the year. But could you talk a little bit about the sales cycle and whether that's accelerating or decelerating at all with some of these bigger projects? And with the mix and the incremental backlog moving pretty aggressively into the service revenue, just understanding what the dynamic is there?

Greg Cameron

Sure. Let me start with the service, because mathematically, remember that each year in our backlog, we absorb into revenue out of the backlog, only one year of the service. And then you add to that all of the additional service revenue on the deals that you booked. And then, when you've got something like Korea that is a 20-year high-performance commitment, the service payments there are high, and that's what drove the differences on the volumes between if you looked at mid-single digits on product and over 20% on service, and that's how that mathematically ticks together.

As I think on the sales cycle, I'll start with it. I'm very encouraged with Aman coming in. I made it in my prepared comments. What I like about Aman coming in is a couple of things. One is he's sold in this space before. And although we didn't overlap directly, I was a GE Capital guy, he was an industrial guy, but we both have the same training with corporate audit staff and other places and bring an incredible hopeful mind -- bring that GE mindset around process. But as well as he knows the space very well. So, I think the combination of process as well as his commercial acumen is going to continue to make sure that we're accelerating some of these larger transactions in, because there's an overlap on how he saw the world before and how we see the world, and I think it's a really good fit.

KR Sridhar

Colin, I would add to that the following things, right. Number one, like I said, these are much bigger projects, which means you would expect a slightly more elongated cycle. There are more greenfield projects and not brownfield projects, you would expect an elongated cycle. Having said that, the macro of lack of power is going to make people take decisions faster because they don't have a choice. There's a forcing function not coming from us on the selling side, but from the customer needing that solution. We are a solution that the customer needs.

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Now, Aman coming and joining us like Greg correctly pointed out, have sold 5 gigawatts worth of power globally in the last two years. So, he knows a thing or two about taking complex deals and shrinking the cycle. That's what we expect him to do out here.

Operator

Thank you. Our next question comes from the line of Michael Blum of Wells Fargo. Please go ahead.

Michael Blum

Thanks. Greg, thanks for all your help through the years, and wish you the best of luck. I wanted to -- in your prepared remarks, you reiterated the long-term targets, driven mostly by the power -- the core power generation business. You've kind of addressed the electrolyzers to some degree, but you seemed at least to me a little less optimistic on the marine segment. So, just want to get a sense of maybe for both of those, but specifically the marine, any progress and what's your kind of latest outlook there?

Greg Cameron

Yeah, I'll start, because I'll just address it and then KR has been really close to that market as of late. So, listen, for me, as we built out our long-range targets over the decade, we always planned on marine really beginning to contribute in the back half of the decade. And I'd say that as we continue to look at our overall framework, we see that timing is probably still about where I'd expect it to be.

So, as I think about contributors to 2024, 2025 for the business, it's really focused on delivering our power generation equipment with all its enhancements, and I think that is a wise way in which we built our long-term framework was that we were building it based off the market we saw. And then, as other markets evolved, it would enhance and increase our growth rates. So that -- so everything is still there. It's still about where I thought it would be, and our full expectation that it will be an enhancement to our power generation business as we move out later in this decade.

KR, you've been close to this market.

KR Sridhar

Sure. So, let me take marine and expand that to shipping as a -- like as a whole, okay? So, the reason to do that is when we talked to you first, we talked about cargo ships, now -- like container ships. The opportunity with cruise ships and yachts is very interesting and we have several customers extremely interested in this. You heard about our MSC Europa and we are working with the likes of Royal Caribbean on this.

And so, what we are doing is we are forming a consortium of these people, the key players in this field, to give us a common set of requirements, so we can develop a product that spans across the entire industry. That's one.

But the second part where they are seeing their pain points is when they get to port, having enough power at the port. And this is our bread and butter business that we need to be able to customize using our Be Flexible platform to be able to provide port power.

So, this is again something we are working on. So, like Greg said, expect this to be the '26-plus revenue, but we think this is a very important area for us and we are continuing to work.

Operator

Thank you. Our next question comes from the line of Julien Dumoulin-Smith of Bank of America. Please go ahead.

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Cameron Lochridge

Hey, team. This is actually Cameron Lochridge on from BofA on Julien's team. I just wanted to come back and real quick ask about the backlog and just the composition there. If you can give a little bit more color around bifurcating between SK and what else is included there? Specifically, if there are any -- if there's any orders related to data centers or hydrogen? Just kind of if you could give a little more color on the composition of the backlog right now?

Greg Cameron

Yeah. Cameron, it's Greg. So, listen, on our backlog, I would tell you it still is -- the vast majority of it is around our natural gas fuel cell leases they start. Our customer obviously has optionality to move that to a hydrogen fuel cell in the future, but the primary product at which we're selling there is -- today they're -- as we move forward, I would expect that backlog to expand to electrolyzers and other things, and that's why we've killed the megawatt metric and just focused on dollars, because that's most important.

As you think about Korea, we talked about that in the call for both product and service and that's out there. And as you do the variances year-over-year, you can see that we've incorporated the entire Korea opportunity that we have with ecoplant in that backlog. So, it's pretty healthy at the size given the overall volume of it at $12 billion on a -- company is short -- just shy of $2 billion, and we're really excited about to continue to grow that and provide the revenue for the business going forward.

Operator

Thank you. Our next question comes from the line of Chris Dendrinos of RBC Capital Markets. Please go ahead.

Chris Dendrinos

Yeah, thank you. You all talked quite a bit about the large opportunities, the data centers, the Korea. Well, I wanted to hone in a bit more on the singles, the doubles or the bunts of the company. And what's the demand environment for that right now? How much is it being impacted by interest rates? And maybe just overall kind of perception of that market, how are things kind of looking right now? Thanks.

Greg Cameron

Yeah, let me start with the interest rates, and we talked about this 90 days ago on the last call. When you think about other companies that are in the space, right, and the impact of interest rates on their pricing as well as their competitiveness to the customer, the one thing that's different about the Bloom solution is if you break it down into how much is CapEx versus fuel versus service, roughly say it's a third, a third, a third. That's not perfect, but think about it that way.

So, the interest rates are a higher basis -- a benchmark rate that the deal is going to be priced on. It's really going to be only impactful on the CapEx portion, while the fuel would not and service would not. So, as a rule, we are probably impacted call it a third or 40% of what other companies are in the space, you think wind, think solar. So that's different from us.

The other thing that's been happening as we've gone through our PPA financing is just frankly the Bloom credit quality has gotten better as we strengthen the balance sheet here. So, the component around the Bloom-specific credit has gone down. So, while maybe over the last 12 months, we've seen some slight increase in the benchmark rates up in the IRRs that come out of our PPA, but for the most part, we've been able to offset that through the cycle by just our improving and finding more and more competitive bidding around the customers.

Operator

Thank you. Our next question comes from the line of Jordan Levy of Truist Securities. Please go ahead.

Jordan Levy

Thanks all for all the comments, and Greg, thank you for everything. I want to echo everyone else's sentiment. Not -- I don't want to belabor anything on ASPs, but I did notice a tick down in 4Q. I know that can bounce around from quarter to quarter. So, maybe if I can just get some color on that?

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Greg Cameron

Yeah, mostly -- it's simple, mostly mix. If you think about it, third quarter versus fourth quarter, we had the repowering in the third quarter as you move into the fourth quarter to there. And remember, we just take the ASP. I don't separate it out for mix around micro grids versus grid parallel or other things. So, it's more than outpaced our cost down, which is really where you want to see the difference on those numbers. They've got a 10-point expansion last year on ASP versus cost down.

KR Sridhar

And just based on where utility costs are going and given the shortage of power, we don't see a pricing pressure as we look forward.

Operator

Thank you. Our next question comes from the line of Noel Parks of Tuohy Brothers. Please go ahead.

Noel Parks

Hi, good afternoon. I just wanted to -- the data center example is such a compelling one as far as outlook for demand growth. I just wonder, could you maybe talk about what number two, number three, number four business lines or verticals that you see being most affected by grid insufficiency and as a result perhaps having the most motivated talks with you as far as becoming new or expanded customers?

KR Sridhar

That's a great question, Noel. So, let me try and answer that very quickly. The first one that I would think is continuous manufacturing. We are bringing a lot of manufacturing back into this country. These are fabs, semiconductor chips, things like that, large power-intensive companies that not only require large amounts of power, but also want it reliably and want it with a cleaner footprint. We are able to offer all those things.

The second place that I would immediately think would be huge would be EV charging, because as fleets need to get charged, whether it's delivery trucks for warehouses, whether it is buses for metros, or it is fleet cars, I think the ability for -- just if you believe in even half the projections of EV uptake in the next five years, the amount of power that's needed and where you're going to get that last-mile power, that becomes a very attractive option for us.

The third one, and with that I'll stop in the interest of time, would be in front of the meter for utilities that have a congested distribution spot and are not able to take care of their customers, and several utilities are talking to us. This is something new for us. We have not done this before, but that's a healthy part of our pipeline.

Operator

Thank you. Our next question comes from the line of Biju Perincheril of [FSG] (ph). Please go ahead.

Biju Perincheril

Yeah. Hi. Thanks for taking my question. Two questions on data centers. As we sort of think about how the data center operators are looking at fuel cells to power their -- are they looking at fuel cells to power their entire facility or smaller portions, some critical parts of those facilities? And then related to that, how challenging is getting natural gas to these facilities? And is that something that Bloom is going to be doing or are you partnering with someone to do that?

KR Sridhar

So, both questions. So, most data centers that are talking to us today are asking us to be the standalone solution, where we are able to provide the complete power for them. This is where it is. And the reason is not because they don't want the utility with them. The utility is saying they cannot provide them power. Unlike that, the gas pipeline and the medium pressure pipelines is very available and we don't have to do anything specific other than have our customer tap into those lines and work with the gas companies to get that. We don't take the fuel risk as you know, but we facilitate bringing the fuel to the customer.

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Operator

Thank you. Our next question comes from the line of Sherif Elmaghrabi of BTIG. Please go ahead.

Sherif Elmaghrabi

Hi. Thanks for taking my question. You mentioned the looming power shortage, which point to higher electricity prices over the medium term. Do you see -- because of that, do you see potential to push pricing this year to help reach the higher end of the guide, or is that really -- are we thinking it just comes from growing acceptances? And on a related note, what sort of uptake are you seeing for the Series 10 offering?

Greg Cameron

Listen, on the guide, it's volume driven, really, and the value that we sell to the customer will always make sure we're value pricing it against other alternatives, but if you're thinking short term, it's really going to be the volume metric which would drive us at different parts in the guide.

Operator

Thank you. Our next question comes from the line of Jeff Osborne of TD Cowen. Please go ahead.

Jeff Osborne

I think the prior person asked on Series 10, it would be great to get an answer on that one as well. But the two ones I had was on the backlog coverage. Can you talk about the visibility to the low end of the guide? Are you fully booked for that, or do you need the pipeline to convert? And I was curious, Greg, if you can discuss the carbon intensity score for the ITC in 2025? As that starts, do you anticipate a wave of bookings in '24 ahead of that, that then, I believe you have a year to complete the project?

Greg Cameron

Yeah. So, I'll let KR talk about the Series 10. Listen on the ITC, right, we're coming up at a period of time here where based on current legislation, what we've seen in the past is it has driven some commercial activity around that to make sure people are getting those orders in so they can safe harbor and they can continue to enjoy that to 2025. Based on everything that I'm hearing from our team in DC, I think they're making a tremendous amount of progress around making the case that the Bloom technology is required and should be part of the solution going forward and we should enjoy the benefits of the ITC being extended.

It's not new even though I've just been here four years, I think this is the third time that I've seen this process go through. So, it's just part of our usual business process to be aware of it. And if it drives some volume in the near term that's great. But obviously over the long term, I do not think that Bloom should be disadvantaged given its technologies and efficiencies versus others.

KR Sridhar

So, on like Series 10, if you just look at what I said about us going from the single megawatts to tens of megawatts and hundreds of megawatts, you can call it the Series 10 and the Series 100 is pretty much what we are dealing with in our entire pipeline. And that's the kind of stuff we're dealing with it. And the fact that we created that nicely packaged solution for somebody to understand and begin to work with us is going to help us with the commercial momentum. So that's a great step forward for us, and it is an integral part of what is in our pipeline and how we are prosecuting future orders.

Greg Cameron

Thanks, Jeff.

Operator

Thank you. Our next question comes from the line of Kashy Harrison of Piper Sandler. Please go ahead.

Kashy Harrison

Good afternoon, and thank you for taking the questions. Maybe just a follow-up to the last one. Can you give us a sense of how much of guidance is locked via the backlog, and then what needs to be booked and shipped during -- and what incremental might be needed to be booked and shipped during the year?

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And then just looking through the K, in the factors affecting your performance section, there was a comment about the Amazon deal. Presumably, it was the Amazon deal, suggesting the project was delayed. I think you said due to a permit. When do you expect to receive the permits? And how should we think about the risk of cancellations outlined within the K? Like, are these -- how high is the probability?

Greg Cameron

So, I'll let the K speak for itself on that project. I think we outlined it pretty well. We're ready to deliver on that project Amazon, and we're working with them on the next steps and the path forward as we go forward.

Listen, on the backlog, right, you see the product backlog is significantly bigger than where the guide would be for the year. Now some of that is more in the out years. As we look at it for the course of the year, we obviously have a series of transactions, some that aren't even in the backlog, right? If you think about it versus prior years, we had repowerings and other things that weren't part of that. So, there's a lot of optionality within Bloom as we go through the year and making sure that the things that we deliver on for the year, some of those are known, some of those aren't known.

So, we may have an example where a project is planned for, for the year, and during the course of the year, the customer has some issues or itself on an interconnection agreement or permitting and that leaves us to go pull a different one in for the year or to find an additional one, and that could either create movement within the guide or could create movement above the guide, which you saw, I think, in 2022 is where we happened late in the year and we overachieved given some of the opportunities that we found in the back half of the year that the customer needed the equipment sooner.

KR Sridhar

So, with that, I think we are running past time. I greatly appreciate the tremendous interest, great questions from all of you.

I want to take this opportunity to thank Greg for his partnership and his invaluable help in driving better financial and operating performance at the company. We will miss him here, and I wish him the best of luck going forward. He'll help us make an orderly transition to our next CFO.

I want to close now by saying we are in a great position to continue our growth and success. We are excited about the quality and quantity of our sales funnel. We are confident about our long-term growth rate and projected targets. We are focused on operating the business in a financially responsible way, being very diligent, managing costs and driving cash flow and profitability. We are confident about a bright future for us, and thank you all for being part of this journey.

Thank you.

Greg Cameron

Thank you. Thanks, KR.

Operator

Thank you. This concludes today's conference call. We thank you for participating, and you may now disconnect.

**Load-Date:** February 15, 2024

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