

# **Plug Power Inc. (PLUG) Q2 2024 Earnings Call Transcript**

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**Body**

Plug Power Inc. (PLUG)

Q2 2024 Earnings Conference Call

August 8, 2024 08:30 AM ET

Company Participants

Meryl Fritz - Manager, Marketing and Communications

Andrew Marsh - President and Chief Executive Officer

Paul Middleton - Chief Financial Officer

Sanjay Shrestha - General Manager, Energy Solutions and Chief Strategy Officer

Dean Fullerton - Chief Operating Officer

Conference Call Participants

James West - Evercore ISI

Colin Rusch - Oppenheimer

Craig Irwin - Roth Capital Partners

Manav Gupta - UBS

Bill Peterson - JPMorgan

Dushyant Ailani - Jefferies

Sherif Elmaghrabi - BTIG

Chris Senyek - Wolfe Research

Skye Landon - Redburn Atlantic

Presentation

Operator

Hello and welcome to the Plug Power Second Quarter 2024 Earnings Call and Webcast. At this time, all participants are in listen-only mode. [Operator Instructions] A question-and-answer session will follow the formal presentation. [Operator Instructions] As a reminder, this conference is being recorded.

It's now my pleasure to turn the call over to Meryl Fritz, Marketing and Communications Manager. Please go ahead, Meryl.

Meryl Fritz

Thank you. Welcome to the Plug Power Q2 earnings call. This call will include forward-looking statements. These forward-looking statements include among others, statements of expectations, beliefs, future plans and strategies, anticipated results from operations and developments and other matters that are not historical facts. We intend these forward-looking statements to be covered by the safe harbor provisions for forward-looking statements contained in Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934.

We believe that it is important to communicate our future expectations to investors. However, investors are cautioned to not unduly rely on forward-looking statements and such statements should not be read or understood as a guarantee of future performance or results.

Such statements are based upon the current expectations, estimates, forecasts and projections as well as the current beliefs and assumptions of management and are subject to significant risks and uncertainties that could cause actual results or performance to differ materially from those discussed as a result of various factors, including, but not limited to, the risks and uncertainties discussed under Item 1A Risk Factors in our Annual Report on Form 10-K for the fiscal year ending December 31, 2023, subsequent quarterly reports on Form 10-Q and other reports we file from time to time with the Securities and Exchange Commission.

These forward-looking statements speak only of day in which the statements are made and we do not undertake or intend to update any forward-looking statements after this call or as a result of new information.

At this point, I would like to turn the call over to Plug Power's CEO, Andy Marsh.

Andrew Marsh

Thank you, Meryl, and good morning everyone, and thank you for joining us today. I'm here to share the progress and strategic developments Plug has achieved in the second quarter of 2024. This quarter marks a crucial phase in Plug Power's journey, as we continue to build our leadership position in the hydrogen economy for the long-term, while remaining focused on operational improvements in the short-term.

I think this one's important. In the second quarter, we successfully reached the final commissioning stage of 55 megawatts of electrolyzers, representing an expected $70 million in revenue. We weren't able to recognize much of that revenue, but much of that revenue's already been -- much of that future revenue, we've already received the cash for. We're on track to deploy an additional 100 megawatts of electrolyzers by the end of the year. Reinforcing our leadership position in the hydrogen industry and supporting the global shift towards renewable energy power sources. This deployment reflects the growing customer's demand and our ability to deliver cutting edge solutions.

Our partnership with Olin Corporation is progressing well, with our new hydrogen plan in Louisiana, expected to begin producing liquid hydrogen in the fourth quarter. Now, this project really exemplifies our capacity to enhance hydrogen production capabilities and accelerate the adoption of clean energy solutions across various sectors.

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And from a future point of view, we've also secured 7.5 gigawatts in basic design and engineering package contracts, and specifically 3 great gigawatts with green ammonia in Australia. This collaboration underscores our technology prowess and ability to support sustainable projects worldwide. Our electrolyzer technology is among the best performing products we've developed, offering really the company a competitive advantage.

Now, look, the hydrogen fuel cell market really has not progresses rapidly as we expected. The Plug remains committed to strengthening our leadership position and focusing on operational improvements. Market development, it's been slow by government policy ambiguity impacting the timing of customer decision making processes. Despite these challenges, we are confident that our strategic initiatives will ensure profitable growth as the market develops. Look, we see it happening now. The government policies are mature and will support increase adoption and market penetration of hydrogen.

Now, for example, the electrolyzer market in Europe is -- you see the demand starting and the final investment decisions are coming along. So when you're working on these final investment decisions for projects that are over billions of dollars, you have to do significant due diligence in engineering. And really, it's part of what our customers are doing today, and we're deeply involved with our basic design and engineering packages, which is a key component of their efforts. We're actively engaging with partner to navigate these complexity and ensure the successful deployment of our solutions.

Now, if you really look at that 7.5 gigawatts, even if only one quarter of the activity leads to revenue, that could exceed $1.5 billion of revenue over the time, highlighting the substantial potential of this market. Look, I think this is no news to anyone financially, we're committed to strengthening our cash management practices and ensure profitable growth. We have when we look at our expectations in raising prices, we've really exceeded our expectations and I think it's due to our strong relationships and seamless integration to many of our customers operations have proven to be beneficial, which makes them willing to accept the price increase. So we are laser focused on cash management. We're focused on profitable sales, operational efficiency and reducing operational expense.

Now, when I take a look back at those statements, it's one of the main reasons I've asked Dean to join us. I really want to highlight the appointment of Dean Fullerton as our COO. Look, he brings an exceptional track record from Amazon. I've known Dean for almost a decade. He successfully led global engineering services and spearheaded hydrogen economy initiatives at Amazon. His extensive expertise and leadership will be instrumental in advancing our operational efficiency, driving profitability and executing our strategic goals. I'm confident that Dean's vision experience will greatly benefit Plug as we continue innovate and lead in the hydrogen economy.

With that I would like to give Dean a few minutes to share a few words and give a high level view his goals and plans for driving our success forward.

Dean Fullerton

Thank you, Andy. Thank you everybody for joining the call. You know this is my week two, but I came into this position eyes wide open and know the challenges that we're facing and the areas that I want to focus on. Mostly all focus around cost efficiency and cost out. And several of the areas I plan to focus on are getting my arms around the cost by function. I want to identify the opportunities to reduce costs and ring costs out. I want to assign owners to each of those initiatives and drive those to completion. My focus is going to be on building the green hydrogen plants, do it safely on time, under budget, with a high level of quality. Another area of focus is going to be producing green hydrogen again on time and cost effectively -- profitably, implementing systems at our customer sites. First of all, with a high level of safety and then a focus on time and making sure that we're doing that cost effectively and profitably with a high level of quality.

And then the last one area that I want to focus on is reducing our inventory. Our inventory level, as everyone knows, is too high and we need to focus on getting that cost down as well. All of these with a focus on reaching profitability, that's really my immediate focus in join and Plug. And I believe that we will achieve that. Paul?

Paul Middleton

Thanks, Andy. A few comments from the finance team here. The first half at Plug reflects a critical inflection point in the ongoing transformation of the company. As we've discussed, we've embarked on a journey a few years ago to significantly broaden our solutions in the hydrogen economy and vertically integrate on our hydrogen supply with the added ambition of doing it based on green hydrogen. Given multiple market dynamics, which have tempered growth in 2024, we have continued to nurture these offerings, while doubling down on optimizing the operations and cash management.

In the first half of 2024, we scaled up numerous product offerings that have culminated into meaningful deployment in sales into the market and set the stage for continued sales expansion in the back half of '24 and '25 onwards, including a broad range of electrolyzer products, hydrogen storage and distribution solutions and high-powered stationary systems to name a few.

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We commissioned and have scaled up the first green hydrogen plant, which combined with the Tennessee facility we recommissioned provides us 25 tons per day of capacity and close to half of our current annual hydrogen needs, which we have -- and we have made great progress on our third facility in Louisiana that will provide us an additional 15 tons per day by year-end. We focused heavily on optimizing the workforce for the company.

Given the rapid growth over the recent years, we have added a lot of resources. And this year, we have worked at optimizing that resource pool to maximize leverage. Since January 1, we've reduced the global workforce by over 15% through the Q1 restructuring and ongoing attrition where we've not backfilled. We've adjusted pricing across many equipment, fuel and service platforms which the impact can be seen in our Q2 results, particularly for fuel and service, and these pricing impacts will be even greater as the year progresses, as we get full periods under these structures and launch additional pricing measures.

We've completed many rooftop consolidations and have additional warehouses and facilities we are in the process of consolidating to our two main manufacturing sites in Albany and Rochester, New York. We've increased focus on asset leverage, particularly inventory. We've made a lot of investment over the last two years to enable the successful launch of many new product offerings. And this year, the focus is on optimizing these resources and we expect meaningful reduction in the second half as sales continue to ramp, which will provide a meaningful source of liquidity.

Another significant accomplishment in the first half is the remediation of the material weakness, which will be reflected in our second quarter 10-Q filing. Being a growing nascent new enterprise has made it challenging for the company to be sure we have the right processes and controls as we scale, and we have made significant investments in resources and systems to improve our controls and accounting processes, and this has enabled us to address the residual issues to resolve that material weakness.

Looking at Q2, more specifically, we have made progress on our sales, cost down and cash management initiatives. And I would highlight as an example, the level of electrolyzers deployed, which represents a clear inflection point on this ramping activity. But these new nascent offerings with nuanced commercial contracts and products being used in much larger customer project deployments makes it challenging on the timing on revenue recognition.

On a positive, as Andy mentioned, for the majority of the programs deployed where the revenue will be recognized in the second half, we've already delivered. We've transferred the title and collected most of the cash via milestones. So this is truly a factor of timing. In addition, this large quantity of programs provides a substantial base of experience and insight to accelerate deployments based on learnings and the ability to constructively improve commercial terms to benefit the company financially and to enhance the accounting of these activities.

Net cash used in operations, combined with CapEx is down year-over-year 30% from lower CapEx and inventory reductions. We expect the cash burn rate to improve even further over the second half as we continue to curtail CapEx and leverage working capital further with sales and margin growth.

Turning to the second half, we are laser focused on growing sales and margins and improving cash management. Our strategy includes many initiatives such as expanding our hydrogen network with Louisiana and leveraging Georgia and Tennessee, while taking advantage of the PTC, driving more equipment sales given our expanded manufacturing capacity, which does not require more investment and provides the opportunity to readily source 3x to 4x our current volumes, continue driving down cost downs with further workforce optimization, completing targeted rooftop consolidations, driving additional leverage on our material vendors and driving enhanced fuel network efficiency and service cost profiles and leveraging recent price increases and yielding full annual benefits as these continue to expand.

In terms of liquidity, I would share that we have a strong, effectively unlevered balance sheet that we can lean on for liquidity and provide opportunities from a number of different sources. Our plan is to lean on the balance sheet for incremental capital needs in the near-term. First, we have a substantial pool of restricted cash backing past project financings that releases quarterly at $200 million per year.

We've discussed at length the opportunity to leverage inventory reductions, and we're targeting an additional reduction of $200 million to $250 million by year-end. Sales growth, price increases, improved mix and continued cost downs will continue to improve operating cash flows. Based on the new transfer rules, we are about two weeks away from closing our first significant ITC transfer, with a well-known significant market participant. This will yield around $31 million for the ITC associated with the liquefier at the Georgia plant. And we've been pursuing very debt facilities and are working with a party interested in equipment financing that we think can close in the next four weeks and is targeting a large facility platform with a meaningful first draw.

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And lastly, we're working closely with the DOE to finalize the $1.7 billion loan facility. We've made tremendous progress. We meet with them regularly and are meeting again in two weeks to continue their final due diligence and move the process along. We're extremely clear on the actions and the processes to successfully close this facility. And equally important, the DOE are clear in their interest and support to get this closed quickly. This facility is anticipated to provide immediate liquidity and enable us to accelerate the Texas green hydrogen facility build out.

I'll now turn it back to Andy.

Andrew Marsh

Great. Thank you, Paul. Thank you, Dean. And Kevin, we're ready for questions.

Question-and-Answer Session

Operator

[Operator Instructions] Our first question is coming from James West from Evercore ISI.

James West

So if I'm reading the financials correctly and your commentary correctly, it looks like there were some $50-ish million of electrolyzers sales were not recognized in revenue during the quarter despite being delivered. And so I wanted to just -- one, just kind of confirm that, that was the case because if that is the case, then you would be handling our expectations on revenue.

And then two, on the hydrogen fuel sales, the margin had a very significant improvement. And of course, that's -- I think a lot of that's driven by the startup of your two and soon three facilities here producing green hydrogen for your own internal -- or your customer supply. And what -- how should we think about those margins for hydrogen fuel as we kind of get into the second half of this year? So two kind of questions or I guess, kind of around the quarter a bit towards the back half of this year, but I think they make up a pretty important inflection point or improvement here that we're going to see here in the second half.

Andrew Marsh

So James, I'll let Paul take the first one, and I'll talk a little bit about the second one. I'm sure Paul chime in there, too.

Paul Middleton

Yes. And your math is right. It's just over $50 million. It's a meaningful number that reflects such a step function change in the deployment of electrolyzers and how big that activity is to launch that. And yes, that will be -- that would have been part of the Q2 numbers and will be recognized in the second half.

Andrew Marsh

I think one of the important items there, Paul, is these systems are producing hydrogen, right? It's really -- we're really kind of wanted back end of documentation and training process. And because of the big accounting rule not to get too technical, is it 605?

Paul Middleton

606, yes.

Andrew Marsh

606. That from a contractual point of view, that's just a final step, but the level of activity and work that's required is pretty minimal. So it's a big deal. And James, you're right about the hydrogen, but it's only really the start. We're beginning to see the impact of the price increases. And some of the impact of Georgia and Tennessee.

Since July here, Tennessee and Georgia has been operating 93% of the time, which will have a significant -- and that's a really good number. You have -- for example, the storm came through yesterday -- the other day, we turned the plant off for 24 hours to make sure employees were safe. But I think you're going to see continuous improvement in margins driven by the price increases and there's still a little bit more that you're going to see coupled with the fact that you're going to have increased output out of Tennessee and Georgia. And then when St. Gabriels come online, we're in a much, much better position.

Operator

Next question today is coming from Colin Rusch from Oppenheimer.

Colin Rusch

As you have seen the time line adjust for some of the industry growth, can you talk a little bit about what's happening with your suppliers and the supply chain and whether any of those folks are backing away from some of the commitments that they've made to you?

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Andrew Marsh

Yes. It's good. It's -- and Colin, I especially see the challenges more on the fuel cell side of the market. I think on the -- and it's not really with the suppliers backing away yet. But look, this has been challenging for all suppliers. I spent some time in Europe about two weeks ago and had some discussions with other people in this industry. But on the electrolyzer side, it's clear this market is growing, expanding. And it's really geared towards more industrial applications. You've heard me mention green ammonia, concrete, steel.

I think on the fuel cell side, I think people believe it's coming. But just like we're managing, for example, our stationary product to make sure the investments we're making, where we ultimately believe that's our dominant product in time that we're just managing the speed of that activity, as far as investments go, because we believe in the 2030s, that's the revenue driver for Plug both for fuel cells and hydrogen.

So I haven't seen anyone say we're not going to do it. We're not engaged. I mean, three months ago, I was at a conference -- hydrogen conference in Rotterdam, which had 6,000 folks and every supplier wanted to talk to me. I think everybody is a -- we're hoping that this would accelerate faster. That being said, you look at that 7.5 gigawatts basic design engineering work we're doing. You look at -- I didn't mention much the fuel cell business, but we can see, for example, our material handling business getting stronger in the second half of the year.

So it's painful Colin, it's discussions you have to have. But we have not -- I haven't had anybody come to me and say, we're going to increase prices. We don't want to do business with you. That really hasn't been the tenor.

Colin Rusch

And then just on the demand side for hydrogen. Can you talk a little bit about the diversity of customers you're working with in the trend lines in terms of off-take sizes? It seems to me that there's some incremental diversity of industries that are taking the hydrogen and maybe starting with smaller deals and growing into larger deals. And that's it for me.

Andrew Marsh

Colin, I'm going to turn that to Sanjay.

Sanjay Shrestha

So again, on this question, right, as we've talked about in the past, our primary objective have been how do we drive the cost of hydrogen down for our existing customers, right, with the plants that are coming online, Georgia, Tennessee, Louisiana, but once we get to that 40 tons of production, the way you should think about the cadence of how things will unfold is we will likely also work with some of the industrial gas customers from a swap perspective, those discussions are going on. As you said, they will start with a small volume, but could grow into bigger.

Second piece of the opportunity we're seeing with some of the mobility applications, different folks talking about that, the numbers could actually grow and grow pretty substantially when you look a few years out. And that's really one of the things we're also trying to do, right, is how do you make sure the off-take agreements are going to get a lot more bankable so that you can also start to think about capital sourcing of financing the build of the new plants going forward.

So again, lots of discussion going on, lots of conversation happening from a prioritization standpoint, get cost down do what we need to do for our existing customer and do spot agreements with some that are in the need of hydrogen on a short-term on an immediate basis and really start to structure a contract in a way where this becomes a lot more bankable deals, and we're going to start to think about a lot of different sources of capital.

Operator

Next question is coming from Craig Irwin from Roth Capital Partners.

Craig Irwin

So I should start off by saying congrats on the PTC for Georgia. It's a nice milestone to see the company collecting that very important subsidy. So can you maybe talk about the -- or get precise about the level of PTC you're able to collect, there has been uncertainty in the language. And then, can you talk about other plants that are eligible for this or that you think should be eligible for this that are in construction on the drawing board? How should this take shape?

Andrew Marsh

And let me -- I'm going to -- I'm probably going to say a little too much here, but let me kind of step back and say that for Georgia, we worked diligently to think through how one can leverage renewable energy credits, how we measure the electricity, how we measure the hydrogen coming out. And we worked with consultants and lawyers and others to make sure with the present policy guidelines, which are more strict than anything -- anyone expects to come that we would be able to receive the PTC. And Paul, I think it amounts to about $2.60 a kilogram once you think about the cost and Sanjay and Paul are both shaking their heading in agreements, Craig. So that's how we were able to do it.

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And look, for the second part of your question, I think it's really clear that the regulations on the three pillars are going to become much looser. We won't be surprised if there's some announcement after the Democratic Convention and a further announcement after the election. But you see people who were strong supporters of the three pillars like Heinrich in New Mexico, who's backed off significantly, and there's a lot of engagement between the Senate who really wrote the bill and the executive branch to make sure that congressional intention is met in the regulations.

And certainly, Chevron has helped in that evolution. We're working really closely and making sure we understand in a very systematic fashion, how -- and we're not -- I'm not going to say you were definitely sure, but how we bring Texas and New York in, for example, to make sure both of those facilities would be eligible for the PTC. I'm optimistic, but it is certainly evolving.

Luckily, we've been able to engage with folks who are on the legal side, on the technology side that gives us a great deal of comfort that we'll figure it out. But the looser regulations, I'm going to use the word looser, what I'm really saying is regulations that match the law will certainly help grow this economy, even hydrogen economy much quicker. And that message is really coming strongly from senators to the executive branch today.

Craig Irwin

So my second question is about the balance sheet, right? So I know every day you think about how -- what can we do different? What can we do to lower costs? But I know you also think about cash every day, right? Cash has been something important for you to manage over the last couple of years, and you're doing a really good job at this point. The $950 million in restricted cash in the balance sheet, that is coming off, as you said, this year. Can you maybe talk about whether or not there might be a way to bring this off faster? Is this something that we're stuck waiting for the turnover of these PPAs that are underlying the commitment to keep this as restricted? Or do you have maybe a little more flexibility in there, hopefully, than what was originally calculated.

Paul Middleton

And yes, it's something I think about 24 hours a day. I spend a lot of time thinking about liquidity and how we can best source liquidity for the company. And that certainly is a meaningful pool. I mean, effectively, it's like a deferred receivable, right? And so we have leveraged that in the past. As you probably remember, would generate capital as we factor -- effectively factored that receivable in the past. So that could be a solution as an example, as a potential opportunity as well as I always say success begets success. And so, as we continue to grow and scale and we show improvement, certainly, one of the things that we'll do and probably won't be in the next quarter or maybe not before year-end, but could be early next year as we show progress to start approaching the institutions that hold that and say, do you really need that kind of coverage on your outstanding exposure.

So there's a lot of ways we can approach that, but it is an incredibly meaningful asset that we continue to think about how to best leverage and how can we access liquidity off of that asset base.

Craig Irwin

Well, congrats on the operating progress.

Operator

Your next question today is coming from Manav Gupta from UBS.

Manav Gupta

I just wanted to focus on the -- so the revenue guidance, $825 million to $925 million, trying to understand what could drive you towards the top end of that range in a good environment, what drives towards the top end of that range?

Andrew Marsh

I'm going to take a quick overview of this, and then I will let Paul add on. I think that if you look at our business, I would say there's three items. One is the electrolyzer business and making sure we commission and get the fulfillment of every item in the contract on time, with some of the challenges we had here in the second quarter with the final [I's and T's] that we need to make sure that -- and Sanjay I know, is a laser focus on making it happen.

The orders are there. The products are being built. We feel very comfortable about that, but it's the recognition of revenue, which has been a -- we wanted to be cautious on because of what we experienced this quarter. I think the second item, there's a one in zero world with our liquefiers. Sanjay has been -- I'm going to let him kind of add on to this after I get done. But in that one in zero world, that can swing things $50 million with one order. That's -- there's some real good projects he's working on, but he sits back and wonders, is it third quarter? Is it fourth quarter? Is it first quarter?

And the third item is that the demand of the material handling industry is stronger than reflected. But we've changed the business model on our customers by moving away from using the PPA and setting them up with leasing partners. We've made some really good progress there, and we have customers who now are using their own third-party leasing partners. It's an industry where leasing is common.

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So I can tell you there's one customer where it's 300 units, 400 units in the auto industry, which is now using a third party to help finance the project. How that evolves over the second half of the year, I'm looking at material handling, I think it's, call it, 165 to 175, and it could be over 200 if we're successful with that activity. So Sanjay, would you like to add to that?

Sanjay Shrestha

I think, Andy, you summed it up very well. But just Manav, on the liquefier side, right, our industry position, we feel pretty good about based on all the customer feedback as Andy said, right, what's really happening here is these are big-ticket items. And we're very active in a lot of different areas. Our 15 ton liquefiers to our 30 ton liquefiers. We believe we have one of the best energy efficiency in the market. Our pricing seems pretty attractive. We also are actually deploying this liquefier even in our Texas plant. So the learnings and the value, everything we can bring to the customer is bar none. Having said that, as Andy said, right, do they get to FID in Q3? Does it end up becoming an opportunity in Q4?

And there are some -- we've seen some of those FID get pushed to the right by a quarter or two, right? We do believe some could come home here in Q4. But if it doesn't, then it ends up becoming really a 2025 opportunity rather than 2024 opportunity.

Andrew Marsh

And when you think about liquefier Sanjay, it's really a North American event.

Sanjay Shrestha

So far.

Andrew Marsh

And so far. And clarity in the regulations. People don't want to do the projects, but they also don't want to leave money on the table. And that is -- so this final clarification of the regulations, I think is really important to accelerating the market 100%.

Operator

Your next question today is coming from Bill Peterson from JPMorgan.

Will Peterson

So first question, I'd like to ask is about the sort of your core materials handling business. We've seen revenues kind of come in light, if we think about like a first half '24 versus first half '23 or even the prior year. I know you talked about ASP uplift, maybe some recent management shifting on that. But our customers has been to deploy more equipment now doing because of this price increase. Or is there concerns about the company given the going gets served from earlier in the year? Or is it really more of a matter of the market just limited warehouse activity and things like that. So -- and then just tied in, like do we still see the seasonal uplift in the back half of the year? What contribution do you see in the back half? And how should we think about growth in '25?

Andrew Marsh

So Bill, look, I'm not going to kid you that the price increases and the activities associated with the going concern certainly represented a shot to the system. I have -- as many of you know, I am at hard believer in you deal with the cards you have and think how you can get better. But in many ways, it actually opens up the engagement with customers, and it allowed us to start having the serious discussions about how to change the business model.

And we have moved away from PPAs which is good, which has impacted the initial growth of those customers because as I mentioned in the previous question, we've had to move to third-party providers of leasing for the customers, almost like dealerships in cars, but we've had to work through that with third-party providers who also had tax appetite. We've made great progress there. We expect the second half the material handling to be at least in the range of 1.75x to 2x higher than the first half of the year. We spent a lot of time looking at those numbers and customers.

Over the past two, three weeks, Sanjay, I think we've had two to three new customers, some of them with rather large deployments. We think the growth rate for material handling in 2025 comes back to normal. So it's been a challenging exercise, but it actually has taught us in many ways, the meeting of our value proposition.

I've had one of our larger customers tell us the value proposition breaks down at $11 a kilogram for hydrogen. That's a real great data point because when you think about that $11, we're out there about $8.50 today. And that shows that there's value being created and customers recognize it. But look, there's a lot of discussions when you have those two big issues you mentioned. But I feel that we've really been able to overcome those challenges.

Operator

Our next question today is coming from Dushyant Ailani from Jefferies.

Dushyant Ailani

Dean, congrats on the new role. Maybe this is for you. I know you've been there for two weeks now, and you have kind of talked about some of the areas of cost efficiency and cost outs. Maybe could you talk a little bit about what some of the low-hanging fruits are where we could see that come from? And then secondly, how do you guys think about the margin cadence for the second half of in '24.

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Andrew Marsh

So I'll let, Dushyant, I'll let -- you say -- Andy. I'll let Paul take the second part of that, I'll let Dean take the first part.

Dean Fullerton

Yes. I think it's a little too early to provide any details on this call. But I've talked with Andy and many people a couple of months before joining, I've been aware of where the challenges are. And my first two weeks, I've been digging into that. And as I mentioned, a lot of it is around manufacturing. It's reducing our inventory. It's getting cost effective when it comes to producing green hydrogen and implementing our fuel cells and our systems in the field.

And that's really where my focus is going to be, is diving deep into those cost structures identifying where we can bring those costs out and lower those costs and get to the point where we'll be profitable in each of these lines of businesses. And a lot of it is going to be around identifying those opportunities and the rigor and the discipline with managing through each of those projects and tracking those to the point of profitability.

This isn't going to happen immediately. But to your point, there's definitely low-hanging fruit in the short-term things we're going to focus on. And then there's obviously bigger monsters that are going to take a longer-term view of.

Paul Middleton

Yes. And I would just -- I guess, on the margin progression, as you guys have seen, historically, we've always had this phenomenon of the 2/3, 1/3 where there's 2/3 in the half of the sales in the second half. That's certainly what we're seeing this year. That implies doubling the sales in the second half and Plug has tremendous volume leverage opportunity. So that has a big impact for us in addition to the -- getting full quarter benefits of all of these cost downs and price increases that we've been rolling out.

And on the fuel side, Andy talked about Georgia and Tennessee being up and getting a full quarter impact of those as well as we've made real good strides on fuel efficiency measures and that's really going to be impactful as well as we move through the balance of the year. So you will see continued -- you'll see certainly positive and continued progress in Q3 and even more progress in Q4 as we move through the balance of the year.

Operator

[Operator Instructions] Our next question is coming from Sherif Elmaghrabi from BTIG.

Sherif Elmaghrabi

So I've got a couple on Louisiana. First off, can you tell us how hydrogen production is going to be divvied up there? Is it a straight 50-50 split between yourselves and Olin?

Andrew Marsh

Yes. So I'm going to let Sanjay take this. Sanjay sits on the Board of the joint venture, so I'm going to let him handle that question.

Sanjay Shrestha

So Sherif, on that, so obviously, it's a 50-50 JV from an ownership standpoint, but Plug is responsible for marketing all that hydrogen, right? So that's what would happen. We would actually consolidate as Plug #1. Number 2, we'll be responsible marketing, pricing strategy and everything else. So the access of that hydrogen between the partners, Plug will take a leading role in terms of how it gets priced, how it gets marketed and who it goes to.

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Sherif Elmaghrabi

And then for my follow-up, do you need to further refine the output of the chlor-alkali process at Louisiana to produce 15 tons of liquid? And if so, is the margin benefit there -- what is the margin benefit there relative to your other projects?

Sanjay Shrestha

Yes, sure. Keep in mind, right, we've already done something like this before with Oland, right? We have an existing plant in Tennessee so we know what exactly has to happen.

Andrew Marsh

Even though we own 100%.

Sanjay Shrestha

We own 100% of Tennessee. So there is a purifier, yes, you have to purify then you also have to increase the pressure based on what the pressure that hydrogen comes out from the Olin side, almost think of this like a pipeline coming into our liquefier, not a whole lot different than the PEM electrolyzer. It's a slightly different kind of electrolyzer process, right? So yes, you have to purify that. You have to increase the pressure as it goes into the liquefier.

Look, the reason we're doing this partnership is because we both believe that economic value of them just selling the gaseous hydrogen versus Olin also getting into the liquid hydrogen market is a win-win situation for them. We see this being a low-cost opportunity for us. So it's a win-win situation for us as well. And look, I'd rather not get into the specific of exactly what that cost looks like and everything else as we're continuing to also do the pricing negotiation but similar to Tennessee.

And frankly, if anything, maybe even marginally better than the cost profile in Tennessee, we feel pretty good about what this is going to bring to the table for us from cost reduction as well as expanding the market opportunity for that hydrogen.

Anything you want to add, Andy?

Andrew Marsh

Yes, I would just -- so just a picture in your page, Sherif, the hydrogen coming out as Sanjay mentioned, purified before it goes into liquefier, but that -- we stream hydrogen and purification system essentially replaces the electrolyzer and rectifier and substations. And the rest of Louisiana is exactly a duplicate of Georgia. And so it's a very straightforward. It's just essentially doing that one block differently. And I use the word differently, as Sanjay said, exactly how we do in Tennessee.

Operator

Next question is coming from Chris Senyek from Wolfe Research.

Chris Senyek

I'll start with -- I saw at least one competitor announced capacity reservations agreements with electrolyzers -- developers developing hydrogen hubs. Is that something you're also pursuing? And maybe any updates on your participation in the three hubs that have officially launched?

Andrew Marsh

I'll let you take the feedstock, and then I'll talk about the hub.

Sanjay Shrestha

So again, I think as a part of this 7 gigawatt of basic engineering design packet, right, we are starting to have conversations with the customer some of those opportunity or multi-gigawatt opportunity, right? So it's a mega project for them. Obviously, it's a mega project for us. As Andy talked about it, even if we actually do one quarter or that is a substantial revenue opportunity but we're going to need to make sure that we're planning the capacity the right way, right? What does that reservation look like, what the cadence of staff production needs to look like?

And that's one area that as Dean talked about, him and I are going to be working very closely together to make sure that it's plan property, we're thinking to the reservation right, how do we manage that? It's a win-win for both parties. Now there is some discussion going on that we're having with other customers not a part of this 7.5 gigawatt of basic engineering design packet where they're talking about potentially doing a reservation as they were looking at mega opportunity in the European market.

So some of those discussions are happening as well. But one another thing, we also try to be very, very careful about in this market is their projects and their projects, right? We're really trying to make sure we're aligning with customer in terms of helping them with what we bring to the table, but also making sure that the projects are in fact going to eventually get to that final investment decision criteria. But there's a lot of things that has to happen. Funding has to come in place.

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So we do have some of those opportunities growing as well, could be pretty meaningful and substantial and that is not a part of the 7.5 gigawatt of basic engineering design packet that we're talking about right now, it will be incremental to that.

Andrew Marsh

Yes. On the hubs, first, I don't want to get ahead of hubs announcements as far as what they want to say about the details. But as we've talked about before, every hub in the U.S. Plug is participating in, including the announcement of West Virginia, where they had details. So we're pleased that they're moving ahead. I think over the next year, there's -- even with the hubs, which have come to an agreement, there's still a great deal of planning and work to continue.

And I can tell you there is a team at Plug -- on the business side, that as well as the technical side that's working with the key decision-makers at all the hubs to make sure that they evolve and that look, we're at the table. And that's a key item. I think people have to realize, and I've said this before. The PTC and the DOE loans are really the short-term vehicles for the U.S. government to drive hydrogen production.

Long-term, the hydrogen hubs across the United States are really important for building this industry. And look, that's still lots of work to go on to really capture that vision. On top of that, there is a technology investment, where Plug was a leading company in receiving grants from the DOE. We're about 20%, 25% of that revenue or activity investment Plug is involved with a lot of it associated with our plant in Rochester, where there's technology improvements for both electrolyzers and fuel cells built in. So those two won't be overnight, but they're really important for the U.S. having from a national security point of view, from a jobs point of view as well as for a clean climate point of view.

Chris Senyek

And just for a follow-up, I think Dean touched on this and the high inventory levels as one of his priorities. But are you able to provide some context on what's in inventory broken out by product line?

Andrew Marsh

I think that, Paul, I don't think we make that -- do we make that public?

Paul Middleton

No.

Andrew Marsh

Yes. And I think that probably -- I would just say probably a lot -- there's probably a lot to support our energy build-out this year. And we do have goals that we can reduce that inventory down to about $700 million by year-end, supporting all the product lines.

Operator

Next question is coming from Skye Landon from Redburn Atlantic.

Skye Landon

You mentioned that you're potentially expecting some news on the 45 rules after the democratic convention and that you'd expect a further announcement after the election. I mean I appreciate timing to perhaps an uncertain on this, but perhaps you could talk us through your current thinking on how quickly this could come through and if you still think it's a 2024 event?

And then related to this, from your conversations with industry and customers, how quickly after the clarification on the rules do you expect to start seeing green hydrogen FID start flowing? And the second question -- sorry, on the second question on OpEx costs, perhaps -- expectations will slightly be again in 2Q after they also be in 1Q. Maybe you could run through the work that's been done here and talk about if there's any more cost to come out going forward?

Andrew Marsh

I'll let Paul handle the second part of that question, Scott. I think where you will see potential changes after the convention probably has to do with the three pillars, and I know you're well versed in the three pillars, Scott. I think you'll see relaxation associated with additionality. And I think that nuclear power as well as hydropower and maybe states with renewable energy programs getting -- receiving relaxation on additionality. I think when you look at post the election, you may see that the regulation associated with time matching will start looking more like Europe. And I think the regionality issues will be slightly less restricted.

And I think that's probably what will happen. And when you look at it, obviously, I think we may have talked before the Chevron announcement, and I told you Chevron was going to have a dramatic impact, especially on those two other items. And I think you'll start seeing that.

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I think from a decision-making for FID I think many of these programs, it takes probably 18 months to get to FID. I think in many of the U.S. programs, the companies I know some significant programs where work is being done. But I think it's a year for the big projects, I mean, the gigawatt scale project after the announcement to get to where you're actually issuing POs.

So I think that's probably the time frame once -- and this is especially with the electrolyzers, I think there may be smaller deployments which will happen more rapidly than that. But when you're talking about investing $2 billion to $3 billion, it's going to take time. Paul?

Paul Middleton

Yes. And on the OpEx side, as you've made reference, I mean, we've been able to demonstrate that we've -- the benefits of our actions of curtailing and optimizing the workforce some of the rooftop consolidations, obviously, are some of the -- most of the impact is in operations, but there's certainly a piece of that, that benefits the OpEx as well. And I would tell you, as we move forward to the balance of the year, we're going to maintain our discipline and focus on making sure that we're -- where we can continue to optimize that we're doing that and that we're not investing in incremental costs in the near-term on things that aren't benefit in the short-term. So we're really being scrutinous in the things we're doing and trying to keep that curtailed and down, and we expect that to continue.

Operator

Our final question today is coming from Jordan Levy from Truth Securities.

Unidentified Analyst

It's Henry on for Jordan here. You touched briefly on this, Andy before. I just want to get anything more you have on how production has gone at Jordan Tennessee over the last quarter. So any kind of big operational items or learnings that have come up that you plan to take away for future plans?

Andrew Marsh

Yes. I think, Jordan, one of the big learnings and this is really important and it has dramatically improved the efficiency that plan. It's really -- it's really controlling -- you have to remember, this is the first plan in the world that this has happened, is controlling the interaction between the output of the electrolyzers with the liquefier. And we have seen from the month of May -- from the month of May to today, just a dramatic improvement that in our control loop, and it's been great work by one of our engineers about making sure the output of the electrolyzers always or in sync would be production out of the liquefiers.

And if you put too much hydrogen in, you're going to be wasting hydrogen. And that has been a learning that I think is uniquely position Plug as we fine tune that controller. We've had some -- there's been -- the plant itself, I think, in was in May or June was -- I think June was up 93% of the time. So we feel really good about that plan.

And I think a lot of it has to do, as I mentioned, the hurricane came through, where the really rain came through that facility. We had to shut everything down for a day, and that's just kind of -- and that's going to happen. But I think we're probably -- the fellow built the plant, who came from one of the leading oil companies told me, it takes six months to burn in a plant, right? And I think we're about at the stage where that plant is burnt in right.

Unidentified Analyst

And then just a quick one on the balance sheet follow-up. Can you just remind us again on the cadence for that restricted cash flow release that kind of $200 million annual. Is there any seasonality that we should be aware of for that?

Paul Middleton

There's some fluctuations, but I think using $50 million as a proxy is a pretty good estimate per quarter.

Operator

We've reached the end of our question-and-answer session. I'd like to turn the floor back over to Andy for any further closing comments.

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Andrew Marsh

Thank you, Kevin. And I'd like to remind people the short-term and the long-term, and the short term is really driving this company to be operational efficient and profitable. But the long-term is critical. And you look at the activities going on with the basic design engineering work, you look at the activities in the deployments with electrolyzers, nobody is doing what we're doing with PEM electrolyzers anywhere in the world. You look, and I haven't spoken much about our stationary products, one of the leading data center operators came to me and said, we have visited 14 people who have talked about building stationary products.

They tell us we're far ahead in the race. And Plug's goal is not only to be operational efficient and profitable, but continue to grow at a rapid pace. And I believe between our electrolyzers, I believe, between our ability to build hydrogen plants. And on top of that, our fuel cells, we continue to strive to make improvements and develop products which are unique and will be valuable for the development of hydrogen economy. I look forward to talking to many of you at investor conferences as well as at the next earnings call. So thank you, everyone.

Operator

Thank you. That does conclude today's teleconference and webcast. You may disconnect your line at this time, and have a wonderful day. We thank you for your participation today.

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