

Aspen Aerogels, Inc. NYSE:ASPN

FQ1 2024 Earnings Call Transcripts

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S&P Global Market Intelligence Estimates

	-FQ1 2024-			-FQ2 2024-	-FY 2024-	-FY 2025-	
	CONSENSUS	ACTUAL	SURPRISE	CONSENSUS	CONSENSUS	CONSENSUS	GUIDANCE
EPS Normalized	(0.09)	0.01	NM	-	-	0.59	-
Revenue (mm)	75.37	94.50	▲25.38	83.96	362.08	590.99	720.00

Currency: USD
Consensus as of May-02-2024 12:20 PM GMT

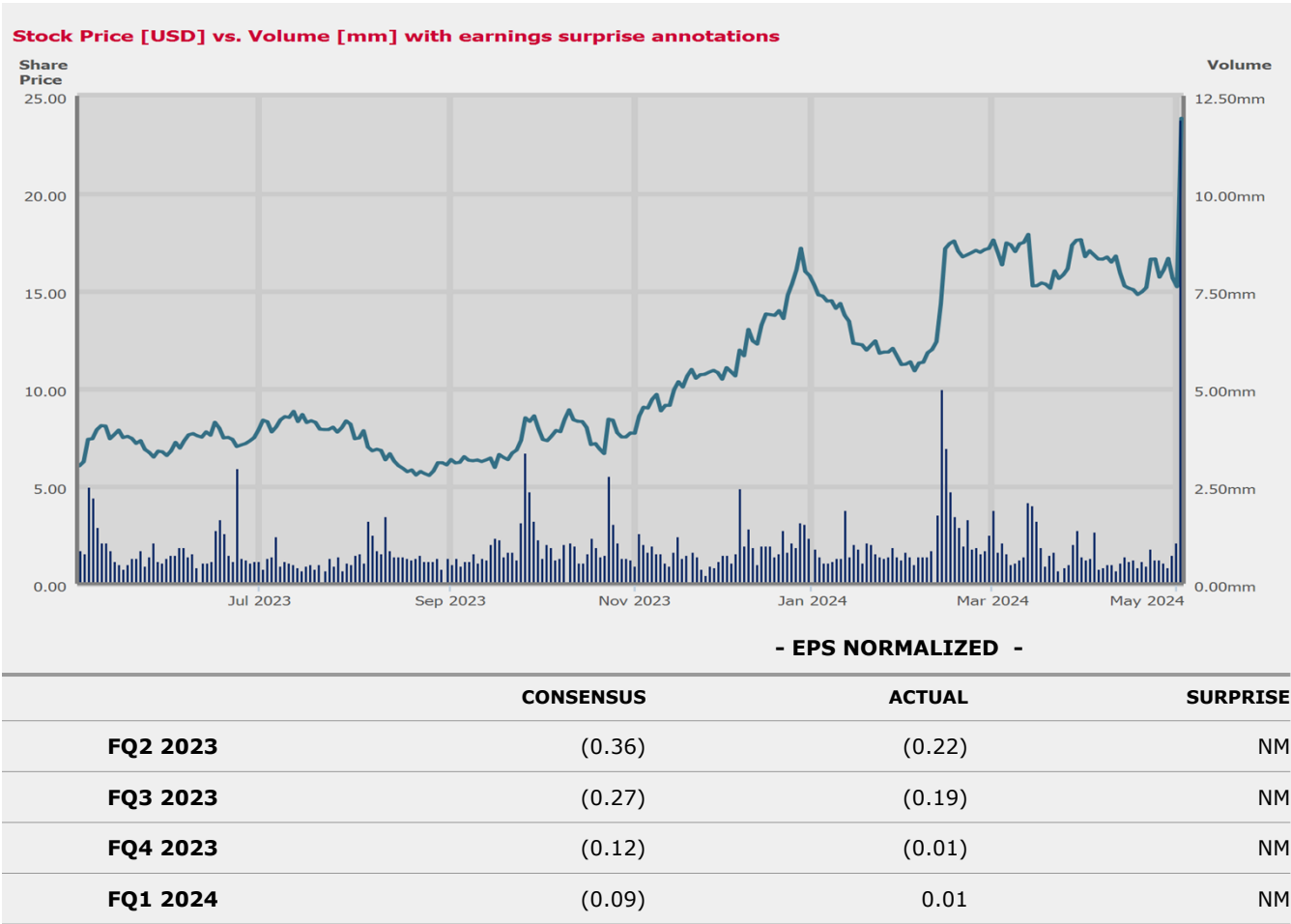


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Presentation

Operator

Good morning, and thank you for attending the Aspen Aerogels, Inc. Q1 2024 Financial Results Call.
[Operator Instructions]

I would now like to turn the conference over to your host, Neal Baranosky, Aspen's Senior Director, Head of Investor Relations and Corporate Strategy.

Thank you. You now may proceed, Mr. Baranosky.

Neal Baranosky

Senior Director of Corporate of Strategy & Finance

Thank you, Chad. Good morning and thank you for joining us for Aspen Aerogels' First Quarter 2024 Financial Results Conference Call. With us today are Don Young, President and CEO; and Ricardo Rodriguez, Chief Financial Officer and Treasurer.

There are a few housekeeping items that I would like to address before turning the call over to Don. The press release announcing Aspen's financial results and recent business developments as well as a reconciliation of management's use of non-GAAP financial measures compared to the most applicable U.S. Generally Accepted Accounting Principles, or GAAP measures, is available on the Investors Section of Aspen's website, www.aerogel.com.

In addition, I'd like to highlight that we've uploaded to our website a slide deck that will accompany our conversation today. You can find the deck in the Investors Section of our website.

On today's call, management will make forward-looking statements about our expectations. These statements are subject to risks and uncertainties that could cause our actual results to differ materially. These risks and uncertainties include the factors identified in our filings with the SEC. Please review the disclaimer statements on Pages 1 and 2 of the slide deck as the content of our call will be governed by this language.

During this call, we will refer to non-GAAP financial measures, including adjusted EBITDA. These financial measures are not prepared in accordance with GAAP. These non-GAAP financial measures are not intended to be considered in isolation or as a substitute for results prepared in accordance with GAAP. The definitions and reconciliations of these non-GAAP financial measures to the most directly comparable GAAP financial measures and a discussion of why we present these non-GAAP financial measures are included in yesterday's press release.

I'd also like to note that from time-to-time, in connection with the vesting or pending expiration of restricted stock units and/or stock options issued under our long-term equity incentive program, we expect that our Section 16 officers will file Forms 4 to report the sale and/or withholding of shares in order to cover the payment of taxes and/or the exercise price of options.

Please note that immediately after the filing of our Form 10-Q for the first quarter, we will also be filing a resale registration statement on Form S-3 to cover the Aspen securities held by Wood River Capital, LLC, an affiliate of Koch Industries, Inc. and our largest shareholder.

The purpose of this is to consolidate shares covered by prior resale registration statements filed for affiliates of Koch and other Aspen securities previously purchased by affiliates of Koch. It does not represent a change in the amount or form of the Koch affiliates current equity interest in Aspen. As is typical with any resale S-3, we do not know when, if or in what amounts Koch may offer securities for sale in the future.

Lastly, I want to call out a few near-term IR engagements. Next Thursday, May 9th, Don, Ricardo and I will be hosting one-on-one investor discussions at the Oppenheimer 9th Annual Emerging Growth Conference being held virtually.

Additionally, on May 21, Don, Ricardo and I will host one-on-one investor discussions at TD Cowen's Virtual Second Annual Sustainability Week. This event will also include a fireside chat with Don and Ricardo on May 21st from 9:45 to 10:15 a.m. EST.

On May 22d through May 23rd, Don, Ricardo and I will host one-on-one investor discussions in Los Angeles, California, at the B. Riley 24th Annual Institutional Investor Conference. And lastly, on June 25th through June 27th, Ricardo and Don will host one-on-one investor discussions in London at the 10th Annual ROTH London Conference.

I'll now turn the call over to Don. Don?

Donald R. Young
President, CEO & Director

Thanks, Neal. Good morning, everyone. Thank you for joining us for our Q1 2024 earnings call. My comments will focus on our Q1 performance, our 2024 full year outlook and provide the status and expected impact of several critical elements of our strategy. Ricardo will dig deeper into our financial performance and outlook and our business strategy. We will conclude with a Q&A session.

We operated very well in Q1. The strong execution leveraged and extended the momentum that we built throughout 2023. The performance is reflected in the Q1 financial results and in the raised 2024 revenue and adjusted EBITDA outlook.

In fact, we now anticipate net income will be positive for the year.

Overall, revenue grew from \$61 million in Q3 2023 to \$84 million in Q4 2023 and now to nearly \$95 million in Q1. EV PyroThin thermal barrier revenue grew from \$7 million in 2021 to \$56 million in 2022 to \$110 million in 2023. And we are now poised to more than double PyroThin thermal barrier revenue in 2024.

The year-along capacity constraint that hampered our Energy Industrial business is being successfully addressed through our supplemental supply. Our external manufacturing facility supplied 10% of our Energy Industrial revenue in Q4 2023 and 50% in Q1 2024. We anticipate that the percentage will grow to approximately 80% in Q2 and be near 100% for the second half of 2024. The transition to the external manufacturing facility supports strong gross margin expansion. We believe we have the demand and the supply to reach at least \$150 million of Energy Industrial revenue with gross margins exceeding our 35% target.

While we drove strong top line growth in Q1, we believe the profitability metrics for the company overall are even more impressive. The gross margin over the past 5 quarters has expanded from 11% to 17% to 23% to 35% and now to 37%. Comparing Q1 2024 to Q1 2023, revenue increased by approximately \$49 million and adjusted EBITDA improved by nearly \$27 million, dropping 55% of incremental revenue to the adjusted EBITDA line.

These results leveraged growth through efficient operations and OpEx cost controls and we believe, demonstrated the power of our business model. The results and momentum have also given us the confidence to boost our 2024 revenue outlook by \$30 million to at least \$380 million and our 2024 adjusted EBITDA outlook by \$25 million to at least \$55 million. These outlook numbers are baseline numbers. And we believe we have an opportunity to exceed them. Our strong start to 2024 bodes well for additional outstanding results, including for here in Q2.

We also believe that we are on a direct path to utilizing our current capacity and supply arrangements to realize our interim target of \$650 million in revenue, \$230 million in gross profit and \$160 million in adjusted EBITDA. We are executing 3 key elements of our strategy that are important to our top line and profitability goals.

First, the full conversion of Plant I in East Providence, Rhode Island to support the growth of the PyroThin thermal barrier business; second, the transition to our external manufacturing facility to support the growth of the Energy Industrial business; and third, the operating performance that reinforces the financial flexibility and strength necessary to achieve our interim and long-term targets.

The full conversion of Plant I to PyroThin thermal barrier production is proceeding well. Based on current productivity and yields from Plant I and from our Mexico-based assembly plants, we believe annual revenue capacity for PyroThin thermal barriers to be at least \$500 million. The commercial development activity for PyroThin thermal barriers remains robust.

During Q1, we invoiced specific prototype parts to nearly 20 different OEM programs, signaling deep engagement with these potential customers. We believe we will add additional design awards to our roster during 2024 as OEMs finalize their respective battery platforms.

As described earlier, we believe the external manufacturing facility will supply nearly 100% of our product for the Energy Industrial business for the second half of 2024. Energy Industrial activity remained strong across all regions and segments, including significant growth of Cryogel products serving the LNG industry. We believe our Energy Industrial team will drive steady, long term and highly profitable growth for the company.

Again, by utilizing existing assets and supply arrangements, we anticipate having an overall business that can achieve at least \$650 million in revenue, which we believe can generate 35% gross margins, 25% adjusted EBITDA margins or over \$160 million in adjusted EBITDA. Given that we have recorded gross margins at or above 35% in recent quarters, we believe this level of performance is well within reach.

In terms of financial strength and flexibility, we finished Q1 with over \$100 million in cash. And with the momentum from the recent operating performance, we now anticipate for the full year 2024 at least \$55 million of adjusted EBITDA and positive net income.

As we plan for revenue beyond \$650 million, we are focused on our second aerogel manufacturing facility in Georgia, which will add approximately \$1.2 billion of revenue capacity by 2027. Several months ago, we announced that the U.S. Department of Energy Loan Programs Office invited Aspen into the formal due diligence and term sheet negotiation stage of the process. This loan application is one of the key drivers for restarting the construction of Plant II.

While the DOE's invitation to the formal due diligence stage is not an assurance that the DOE will issue a conditional commitment, we remain deeply engaged with the LPO and its advisers and continue to believe that we are a strong candidate to partner in this program. We anticipate providing the next update on this subject no later than our Q2 2024 earnings call.

Ricardo, over to you.

Ricardo C. Rodriguez
CFO & Treasurer

Thank you, Don, and good morning, everyone. I'll start by covering our first quarter results before walking you through the rationale behind our updated outlook for the rest of 2024.

I'll begin on Slide 4 with our revenues. We delivered \$94.5 million of revenue in Q1, which translates into 107% growth year-over-year and 12% growth quarter-over-quarter. This was an all-time company quarterly record and reflects an annual run rate of \$378 million. This is already higher than our \$350 million revenue guidance of 2024 called for. And it was achieved by prioritizing aerogel production in Rhode Island for thermal barrier production and operating our part assembly plants in Mexico on a schedule that enabled higher productivity.

Our Energy Industrial revenue was \$29.1 million, a decrease of 14%, year-over-year and a 7% decrease quarter-over-quarter. \$14.6 million was delivered through our external manufacturing facility, which has ramped up meaningfully and is now qualified to produce 85% of our revenue mix. We are not concerned

by this temporary squeeze in supply and still expect to deliver over \$150 million of revenues in 2024 in this segment.

As we previously mentioned, our energy business is sold out. And even though the Q1 EV thermal barrier demand squeezed supply for this segment more than expected, our business is now geared in a way where revenue in either segment is just as accretive to gross profit.

EV thermal barrier revenue of \$65.4 million was up 459% year-over-year and 24% quarter-over-quarter, reflecting the consistent volumes for Toyota and accelerating volume in GM's production of Ultium platform-based electric vehicles, along with the launch of production parts for Scania.

Next, I'll provide a summary of our main expenses. Material expenses of \$28.1 million for the quarter made up 30 percentage points of sales, a 3 percentage point, improvement quarter-over-quarter. We continue to be pleasantly surprised here as our team continues managing these costs in an environment where, although the cost of some raw materials provides relief, the logistics of feeding our value chain continued getting more complicated.

We remain vigilant with the goal of ensuring that we can keep these below 40 percentage points of sales reliably and prefer to continue conservatively planning with this as our target or long-term North Star.

Conversion costs, which we describe as all production costs required to convert raw materials into finished goods, were of \$31.2 million or 33 percentage points of sales in Q1. These costs include all elements of direct labor, manufacturing overhead, factory supplies, rent, insurance, utilities, process logistics, quality and inspection. These results reflect a slight increase compared to conversion costs in Q4 of last year, which were 31 percentage points of sales. This is mostly due to product mix as the portion of these costs in EV thermal barriers is higher than it is in our Energy Industrial products.

As previously mentioned, our long-term target for these costs at a meaningfully higher revenue run rate is of 20 to 25 percentage points of sales. So we aren't done managing these. The continuation of our work increasing the uptime of our equipment in Mexico, introducing further automation at a faster pace, along with some recent upgrades in aerogel production is paying off. And we still got more opportunity for improvement. Our operations team is not done rightsizing our manufacturing fixed cost structure. So this is where we can continue scaling more efficiently.

In Q1, company-level gross profit margins were 37% and our gross profit of \$35.1 million is a \$30.1 million improvement over our gross profit of \$5.1 million during the same quarter of last year. Our Energy Industrial segment delivered \$11.6 million of gross profit or a 30% year-over-year increase on lower revenues. In EV thermal barriers, we delivered \$23.6 million of gross profit in Q1. If we compare this quarter with Q4 of last year, our EV thermal barrier gross profit improved by \$3.8 million on incremental revenue of \$12.8 million.

This incremental fall-through would have been better without a few onetime charges of obsolete inventory and equipment related to customer-driven engineering changes that we implemented in the quarter. The benefit of those changes and the anticipated reimbursement from customers on a significant portion of these charges will likely be reflected later in the year.

At this time last year, our EV thermal barrier segment still operated at a gross loss of \$3.8 million on \$11.7 million of revenue. Now that we ran it at a \$65.4 million quarterly revenue run rate, the comparison to \$23.6 million of gross profit in Q1 of 2024 doesn't even seem relevant.

The resulting gross profit margins during the quarter were 40% and 36% for our Energy Industrial and EV thermal barrier segments, respectively. Operating expenses, which are sized for our near-term projected annual revenue capacity of over \$650 million, were \$32.7 million in Q1. This would have actually been down quarter-over-quarter instead of up by about \$4.9 million without a couple of meaningful onetime items.

The first one is \$2.7 million, driven by our team developing the second generation of our automated encapsulation equipment for prismatic cells, faster than we could install and launch the first generation, leading to a write-down of the first-generation equipment.

The second one is the \$2.2 million cancellation of the management's restricted performance shares award on March 6th of this year. Without these 2 items, our OpEx would have been close to the \$110 million annual OpEx run rate level that we've been communicating as our North Star and guideline and the gearing of our company. And we'll continue managing around this level opportunistically increasing it as needed for performance pay, R&D opportunities and to drive incremental demand only.

Our team continues to revisiting every key company process and implementing new systems with the intent of bolstering our capabilities, reducing fixed costs and maintaining our OpEx at around this level in order to continue driving scale and efficiency.

Putting these elements together, our adjusted EBITDA was \$12.9 million in Q1 compared to negative \$13.9 million during the same period last year, resulting in a \$24.5 million year-over-year reduction in our EBITDA loss.

As a reminder, we define adjusted EBITDA as net income or loss before interest, taxes, depreciation, amortization, stock-based compensation expenses and other items that we do not believe are indicative of our core operating performance.

In Q1, these adjustments were limited to \$4.7 million of stock-based compensation, \$1.4 million of interest income and \$3.5 million of interest and financing-related expenses. Our net loss in Q1 decreased to \$1.8 million or \$0.02 per share versus a net loss of \$16.8 million or \$0.24 per share in the same quarter of 2023.

Next, I'll turn to cash flow and our balance sheet. Cash used in operations of \$17.7 million reflected our adjusted EBITDA of \$12.9 million, other noncash charges of \$5.2 million, interest income of \$1.4 million, offset by cash used for working capital of \$37.2 million. The key items that resulted in the usage of working capital were an increase in accounts receivable and inventory, offset by an increase in accounts payable, prepaid and accrued expenses.

Our capital expenditures during the quarter were of \$25.9 million. These put our operating cash needs for the quarter at \$43.6 million. As we work our way through Q2, we're focused on reducing our working capital needs and freeing up cash by reducing our raw material inventories in what is now a more stable procurement environment and staying on top of our accounts receivable.

We actually reduced our raw material inventories by \$5 million during the quarter. And there's an element of seasonality to working capital in our business as we prepaid for the year's insurance costs and pay down our accrued expenses related to performance pay for the previous year in Q1.

In Q1, we spent \$8.1 million slowly advancing progress to fully enclose all the main structures at Plant II and temperature control the main production area. To date, we have incurred \$287.9 million and cumulative capital expenses through the end of the first quarter towards Plant II in Georgia to position the project for a potential restart of construction in the fourth quarter of 2024 and only spent \$17.8 million on other CapEx that will enable the ramp here of the second half of 2024 and potentially 2025.

Our financing activities in the quarter included the \$5.3 million sale-leaseback of a range of assets in Rhode Island and our labs in the Boston area. We believe that there are opportunities to continue funding our CapEx in the U.S. in this way and are currently exploring options to fund our investments in Mexico in a similar fashion at a relatively attractive cost of capital.

We ended the quarter with \$101.5 million of cash and shareholders' equity of \$488.9 million. We continue meaningfully working our way through the due diligence and term sheet negotiation phase with the U.S. Department of Energy's Loan Programs Office as part of our application to fund the remaining construction costs of Plant II through a loan pursuant to the DOE's Advanced Technology Vehicle Manufacturing or ATVM loan program.

In the appendix, we have a graphic of the different phases of the DOE's application steps and details on the workstreams that make up the due diligence and term sheet negotiation phase. We believe that understanding the structure and terms of this financing enables us to continue working in parallel to

ensure that we're capitalized to fund a potentially faster than expected with very profitable near-term ramp in our business.

Our top-of-mind options include increasing our usage of capital leases, asset-backed loans, our revolving line of credit, akin to what we had in 2022 and other relatively inexpensive debt options that are now available to us given the recent and expected near-term performance.

Now, I'll turn over to Slide 5 and walk you through our thinking behind the updated outlook for the year. When we framed out our revenue outlook for 2024, we were running on limited information and the historical track record of our customers' ability to ramp up production in the prior year.

Now as we are seeing an initial ramp, we expect General Motors to produce at least 200,000 EVs in 2024 and enable our EV thermal barrier business to deliver over \$230 million of revenue in combination with Toyota, some initial Scania volumes and prototype sales.

This acceleration of GM's revenues is likely to continue into Q2 and Q3, but can very well settle in Q4 as the initial sell-through of Ultium-based vehicles informs GM's production schedules. We've seen some investors attempt to connect our customers' volume plans to our revenue expectations. And we strongly advise against this, as there's a significant delay of weeks or even months for a finished EV thermal barrier part that we invoice customers for to end up in a produced vehicle.

This delay is even longer for a sold vehicle. We've added Slide 11 in the appendix of this presentation to illustrate this. And we recommend that you study it and reach out to Neal if you have any questions.

There's plenty of evidence that General Motors established brands with long-running customer loyalty, combined with the size and scope of its distribution scale and the appeal of the recently launched nameplates can drive over 200,000 units of EV sales in 2024.

This is well below what we believe is GM's fair share of the EV market. But nonetheless, we'll be monitoring dealer inventory levels to better inform our next guidance update and further frame up our view of what Q3 and Q4 demand could look like.

For reference, in the center of Slide 5, we have a chart that shows IHS' expectations for what GM's Ultium production ramp looks like in 2024 to achieve an expected 279,000 units. While time will tell whether 279,000 units is the right production expectation for 2024, the distribution of volume across the 4 quarters of 2024 more closely matches our expectations.

Lastly, on the right side of Slide 5, one can see how we expect the transition of supply from our external manufacturing facility within the Energy Industrial segment to occur. In the second half of 2024, we expect our aerogel plant in Rhode Island to mainly be focused on aerogel for EV thermal barriers. And with our external manufacturing facility starting to deliver subsea products in Q2, we remain confident on our ability to deliver over \$150 million of revenues in this segment.

Turning over to Slide 6. Combining both segments results in a total revenue outlook of at least \$380 million, which again would be a 59% year-over-year increase from our revenues in 2023 and a 9% increase over our prior revenue baseline for 2024. In my mind, this translates into a 25% improvement of our year-over-year growth outlook.

With this revenue baseline, we believe that we can deliver over \$11 million of operating income in 2024, which assuming D&A of around \$30 million and stock-based compensation of \$14 million would translate into over \$55 million of adjusted EBITDA. This is an 83% improvement over our prior baseline EBITDA outlook, demonstrating our ability to scale profitably without relying on outsized revenue growth.

Our updated 2024 EBITDA outlook continues considering some potential headwinds to our near-term profitability, such as the cost of new launches, higher part/prototype sales, engineering changes that could lead to inventory obsolescence and expedited freight costs driven by the start-stop nature of some of the nameplates in our thermal barrier demand.

We could also opportunistically decide to add OpEx to continue advancing our R&D in key areas and accelerate the development of our technical sales capabilities and fund new program launches. As we

reintroduced the rest of our Energy Industrial products, a mix that includes these products will initially impact gross profit in this segment as well.

On the flip side, if additional demand is truly there, we expect a disproportionate amount of it to flow to our bottom line. And our team will continue reducing our fixed costs, increasing our production yields, our uptime and driving the right Energy Industrial pricing and mix.

Continuing with the rest of our 2024 outlook, \$55 million of positive EBITDA would translate into net income of over \$2 million or \$0.03 per share, assuming a share count of 76.5 million shares. Delivering positive net income is a meaningful milestone that motivates all of us at Aspen.

Our CapEx without including Plant II is expected to remain at \$50 million for the year. This is for equipment to fund additional productivity gains at our Aerogel plant in Rhode Island, along with equipping our operations in Mexico with the tooling to ramp up our park production capacity in 2025.

We are now planning to spend more than \$30 million advancing the construction of Plant II in Georgia during the first half of the year to ensure that the site is advanced enough to preserve all of our investments made to date and to enable the potential reacceleration of construction in the second half of the year. The team's ability to reduce the spend in Q1 reaffirms that the \$30 million spend target here is still appropriate.

On the right side of Slide 6, before I hand the call back to Don, I think that it's worth pausing and taking stock of the operational and financial journey that our team has been on over the past 15 months. Basic metrics of revenue growth, gross margins, EBITDA and operating income that has to be up and to the right are getting closer to where we need them to be. These results are driven by the consistent execution of a plan that was put in place at a fixed cost level in the fall of 2022 and at a capital investment level in the spring of last year.

Thanks to this. We are on a path where we can now scale revenues profitably and the near-term outlook for 2024 is bright. Nonetheless, we remain cautious about the broader long-term industry dynamics while continuing to manage our costs and selectively optimizing our balance sheet.

We remain highly motivated and energized by the idea of continuing to advance our level of sophistication as we make the most of the opportunity that we have in front of us. We will do this without forgetting the most important of all things, our cost of capital.

And with that, I'm happy to hand the call back to Don. Thank you, everyone.

Donald R. Young
President, CEO & Director

Thank you, Ricardo. Before we move to Q&A, I would like to boast with modesty about 2 awards our team won earlier this week. We represented the coveted Automotive News PACE prize for our cell-to-cell thermal barrier products dedicated to battery safety and performance. PyroThin is driving EV battery safety by combining thermal propagation protection and life cycle mechanical performance.

In addition, Aspen was honored with a PACE Innovation Partnership Award that recognizes our collaboration with General Motors in deploying our PyroThin cell-to-cell barriers as the thermal runaway solution for GM's Ultium battery platform. Automotive News' PACE program is recognized globally as the most prestigious innovation award for automotive suppliers. And we are deeply honored by this recognition.

These awards highlight Aspen's rich history of customer collaboration and game-changing aerogel technology. All employees at Aspen had a hand in these achievements and I want to salute the Aspen team here.

Chad, let's turn to Q&A.

Question and Answer

Operator

[Operator Instructions] So our first question today comes from George Gianarikas from Canaccord.

George Gianarikas

Canaccord Genuity Corp., Research Division

I'd like to ask about 2025. And when you expect to begin layering in new customers next year? What quarter? How should we expect that to kind of progress throughout the year? And also how those discussions have been going with your new wins?

Donald R. Young

President, CEO & Director

Well, George, as I said in my comments, we're actively engaged in Q1 alone, provided an invoiced prototype parts for nearly 20 different OEM programs. So we're really active in the market today. And I think the gating item is that is the development of these OEM's battery platforms themselves. And we're confident that we will continue to add to our roster of OEMs here through 2024.

With respect to 2025, I think what you will see is our focus will pay off on ramping these awards that we have in hand today, that we had in hand coming into 2024 and that you'll see those beginning to scale in 2025. I think you know anything that we are likely to win in 2024 additional awards, are more likely to begin scaling in the 2026 time frame.

So I think that sort of sequencing is a good way to think about how we continue to scale technology for multiple OEMs.

George Gianarikas

Canaccord Genuity Corp., Research Division

And maybe as a follow-up to focus on Energy Industrial. You've talked a lot about how you're sold out. You can accommodate \$150 million in revenue. Do you have levers to increase that capacity? I mean, it seems to be going well in China. You plan to increase the percentage of production there. Can you take that from \$150 million to \$200 million, for example, over the next several quarters?

Donald R. Young

President, CEO & Director

Thank you, George. I was just in China with our team there a couple of weeks ago. And I'm impressed by the speed in which our external manufacturing facility has ramped up. And I would say that we do have the capability of growing that business through that supply beyond the \$150 million that we talked about earlier. And there is space and capability within the facility there to continue to expand that and to reach that \$200 million run-rate level that you referenced out over the course of several quarters going forward. But we're sort of filling that supply chain now. And I can tell you, our Energy Industrial team is really happy to have products flowing both on our -- on the hot side of our business, the Pyrogel side, and now increasingly on the Cryogel side responding to significant demand from our LNG customers.

Ricardo C. Rodriguez

CFO & Treasurer

Yes. And maybe just to add, George, in connecting both of your questions. I mean, we're not providing 2025 guidance just yet, figuring out '24 is difficult enough. But it is worth emphasizing that if you look at the gross profit contribution of the energy segment. That really is our best hedge against any sort of grumblings of EV uncertainty in 2025 and 2026. And so, as Don mentioned, there's a very clear incentive for us to continue building up the energy business with the cost position that it has today.

Operator

The next question on the line is from Colin Rusch from Oppenheimer.

Colin William Rusch

Oppenheimer & Co. Inc., Research Division

I appreciate the incremental detail around some of the manufacturing changes. Can you talk a little bit about the cadence of how much process improvement you can see on that Rhode Island facility, ability to reduce any sort of waste to drive yields higher or incremental throughput on that facility?

Ricardo C. Rodriguez

CFO & Treasurer

Yes. I mean, I think the big step function there actually happened when we updated the latest capacity estimate, the \$500 million, Colin. So that was a lot of work that the team did throughout last year. And that was actually put in place in the second half of 2022 as the team got better at making PyroThin, which still had quite a bit of unknowns process-wise in terms of how we were going to get the productivity that we're experiencing today.

Now, it's harder to squeeze more juice out of the lemon here. But nonetheless, the team continues to work at it. And this is a smaller target of fixed cost that the team is continuing to pursue here this year that we're confident that we'll be able to go and get. But in terms of finding another large step function of productivity, we're pretty much landlocked in terms of footprint in -- at the plant in Rhode Island. And so, I think the latest capacity assessment of \$500 million really shows what the team can get to today.

Donald R. Young

President, CEO & Director

I think, Colin, I would just add that it's interesting that the area, the incremental area that we still have to improve on in both Rhode Island and in our parts assembly facilities in Mexico are just increasing yields. And we know and we can see it in the numbers. One, we have more room to improve incrementally. And the profitability of incremental yield improvement is pretty dramatic. I think you can see it in the fall through from increased revenue down to increased EBITDA. So we're very focused on those incremental improvements that just really add to our profitability.

Colin William Rusch

Oppenheimer & Co. Inc., Research Division

That's super helpful. And then, I guess, can you talk a little bit about the customer conversations and the kind of the nuance and quality of those conversations? Obviously, as we go from kind of Gen 2 to Gen 3 on vehicle design, all of these OEMs have gone through and scoured the world for solutions around any element of the vehicle and are now coming back to best-in-class and optimized cost structure. Can you talk a little bit about the dynamics with the customer conversations now that there's a full education within the industry on what's available and what's really going to drive cost reduction and performance?

Ricardo C. Rodriguez

CFO & Treasurer

Yes. I mean I think this is one that -- it's really interesting how the industry just works, right? You are not considered to be a technology that's really there on the shelf for an OEM to integrate until you're meaningfully producing for somebody else. And so, now that we are getting at that point, the initial discussions that our team is having with customers is truly as a -- or truly as an established solutions provider, right? The PACE Award that the team won this week is further validation of that. And so, yes, we're not proposing ideas anymore. We're selling a product that's there on the shelf, ready to be integrated. And that makes the depth of discussions a lot easier.

Now just trend-wise, if you look at what some of these new battery pack designs look like. As you alluded to for this next generation of EVs, the OEMs are trying to take as much weight in cost out. And one of the big trends that we're seeing is this whole notion of going straight from a cell-to-pack design without necessarily having modules that get stacked up and then a bunch of metal in between that's not really helping store energy.

And so in that transition of -- to a cell-to-pack design, we obviously play a critical part in that because if you take care of your thermal runaway and thermal propagation at the cell level, you're ultimately providing a safer design that could actually be lighter and more cost-effective. And so, that's a trend that I think is going to favor the selling for us here over the next couple of years.

Donald R. Young

President, CEO & Director

I think, Colin, also the difficulty of the problem that we're solving, I think, becomes clear and clearer as the OEMs come to understand their own battery platforms and the performance of those platforms. Both from a thermal propagation point of view, but also, as you know, from the mechanical aspects of the role that we play there, and the combination of those 2, value creators are, we believe we have a unique solution to accomplishing and solving that difficult problem.

Operator

The next question is from Eric Stine from Craig-Hallum.

Eric Stine

Craig-Hallum Capital Group LLC, Research Division

So maybe just starting on Energy Industrial. I know when you went down this path, the thought was, I mean, it's common to think that you'd be giving up some margin and that might be detrimental. But yet you're avoiding a lot of logistics costs.

So the thinking was that it would be accretive to margins. So I know it's early. Just curious, is that how you're seeing things play out? And do you expect that to continue as you ramp that to what, I guess, virtually 100% of production here in the second half?

Ricardo C. Rodriguez

CFO & Treasurer

Yes. I mean if you look at our old value chain on the energy side, right, especially at the revenue levels that we're running at, a lot of our raw materials will be coming from China. And so we would put that on a boat for 8 to 10 weeks, at least, pay a 30% tariff. And then in the case of our energy business, 2/3 of that would go back outside of the U.S. And so, there was some inherent slack in the chain for the taking care.

And as the team has worked to ramp up our external manufacturing facility, we are obviously able to just use the raws within China that has tightened up our value chain and delivered some incremental savings here. But frankly, I think we needed to get the performance of all these products financially to where we've known they can be for quite some time. And so -- but that's really the biggest contributor to gross margins here.

Eric Stine

Craig-Hallum Capital Group LLC, Research Division

And then maybe just turning to, well, I guess, the overall business, but PyroThin being the big driver. I know you mentioned kind of the expectation of IHS in terms of Q2, Q3 ramp step down potentially in Q4. Curious how you see that, not IHS, but how you see that? Was there any kind of inventory build in Q1 that might have skewed it? Just maybe how we should think about linearity of results here throughout '24?

Ricardo C. Rodriguez

CFO & Treasurer

Yes. I mean I think we're all seeing this from a very similar vantage point. There's an obvious commitment from our customers to ramp up production and go capture their fair share of the EV market, right? At the same time, even though the EV market continues to grow its penetration of the overall vehicle market, we are in a relatively uncertain environment, right?

And so for us, as we look at that volume level and also knowing that, I mean we're making these parts 2 months to 3 months before they're put in a car. I think it's very important for us to monitor the inventory

levels of our customers and the sell-through of this initial ramp in order to be able to develop a firmer view of what Q3 and Q4 will look like, particularly Q4. And really the 2025 ramp as well, which, I mean, I think IHS is still expecting a 27% ramp in GM's production in 2025 relative to 2024.

But all of these things, I think, really time will tell. And we just want to make sure that we have the right cost structure for any sort of, I wouldn't say a slowdown in the ramp, but really just, I think, a pause is a better term because there's no doubt here. And we relate this during the last quarterly call that the demand is going to continue increasing to the point that we will need Plant II in 2027.

And so whether the line looks straight up and to the right with a few pauses in between, I think that's something that we'll see here as the rest of the year materializes. But we're pretty vigilant on just what the sell-through of these initial models, are. And I truly met what I said in my remarks that our customers really are capturing their fair share of the market given the distribution scale that they have and the brands and the loyalty that's there for them as they launch these vehicles.

Eric Stine

Craig-Hallum Capital Group LLC, Research Division

And so it sounds like you don't really view Q1 as necessarily something out of the ordinary. It was kind of normal course of business, not an inventory build. This was a pretty standard quarter.

Donald R. Young

President, CEO & Director

Yes. And we also have visibility to our customers' inventory levels. And they're not necessarily building up inventories. They're really ramping up the manufacturing of these vehicles. And I think their remarks confirmed that for everybody as well.

Operator

The next question is from Chris Souther from B. Riley.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

Just to kind of follow-up on that. If we're looking at kind of the implied 2Q through 4Q run-rate, if we're doing \$150 million in PyroThin, that would be -- in energy infrastructure then look at \$230 million per thermal barrier, that would imply like the run rate for 2Q to 4Q is actually below what we saw in 1Q. So if it's not kind of inventory build, was there elevated prototyping parts that wouldn't be repeated throughout the rest of the year? I'm just scratching my head why we wouldn't at least see the \$65 million in 1Q as the run rate for thermal barrier beyond GM's ramp slowed materially.

Ricardo C. Rodriguez

CFO & Treasurer

Yes. No, that's a good question, Chris. And I mean, really, it's no secret that there's a ramp expected here for Q2 and potentially Q3. It's really the Q4 ramp that we need more confidence around before we raise the guidance further, right?

So I think we're more than ready to capture the additional upside. But I'd love to have more information to really make a call on what Q3 and Q4 look like. That would put us in an effective run rate that is higher than what we did here in Q1 for the remainder of the year.

So it's -- I think it could be lumpy initially here. But again, we'll come back to everybody here as we close out Q2 with a much better informed view of what the second half of the year will look like.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

Okay. That's fair. So we were to take kind of your 200,000 and HIS' 279,000 then almost all that discount is coming in the third and fourth quarter then?

Ricardo C. Rodriguez

CFO & Treasurer

Yes. Yes, I think that would be a fair way to look at it.

Christopher Curran Souther

B. Riley Securities, Inc., Research Division

Okay, great. And then maybe just on the overall gross margin trajectory. Last call, you seem to be describing a fair bit of stars aligning to hit 35% and now we've improved again. But you're keeping your gross margin target model at 35% when we're looking at \$650 million in revenue. Is there any reason why we wouldn't continue to have good incremental margins as utilization and revenue continue to grow and conversion costs decline here?

Ricardo C. Rodriguez

CFO & Treasurer

Yes. I mean I think this one goes back to my remarks, right? A lot of these launches that in our conservative estimates we had planned for 2025 could actually start picking up in terms of activity in 2024 without necessarily showing us much revenue for that.

And so the expenses of those plus, I mean, we are seeing some pressure on inbound freight that is worth putting into the guidance as well. And yes, I think this is an area where it's easy to connect the dots of 2 quarters and put yourself in a position where you're ahead of your skis. And so we'd rather be conservative here. And again, with better information on how we're performing on the timing of the impact of these launches and any engineering changes that the team is working on, I think we can have a much firmer view of this as we get through Q2.

Donald R. Young

President, CEO & Director

Chris, as your question sort of imply, I would say, I think we are being careful about our ramp for the rest of the year and with our increase to \$380 million and to \$55 million of adjusted EBITDA and being net income positive for the year, we feel very good about those numbers. And we have used baseline, we've used at least, we've used over to suggest that we do have an opportunity to do better. And I said that in my notes. And I think Ricardo was accurate in saying, "We'd love to just sort of see the second half of the year just a little more clearly, especially the fourth quarter before we do anything beyond that." But we feel very solid in the update or the increases that we did for our outlook.

Operator

The next question on the line is from Chip Moore from ROTH.

Alfred Shopland Moore

ROTH MKM Partners, LLC, Research Division

I wanted to ask about the pipeline supply and prototype parts, I think, for close to 20 programs you said in the quarter and also a strong likelihood of announcing some additional OEM wins this year. Can you give us a sense maybe how many programs are far enough along to be potential wins this year? And then I think in the past, you've talked about a customer that's been in the final stages of negotiations for a little while. Any updates there?

Ricardo C. Rodriguez

CFO & Treasurer

Yes. I mean, I think we're really trying to get away from this idea of having people with bingo board of 6 squares or 20 now to fill. And I think the Don's remark around the 20 programs is really just to give people a bit of confidence that the progress here continues to accelerate, right? And in fact, that the initial stages of selling are really no longer there. They pretty much take care of themselves as we established ourselves with other OEMs and announce some of the other awards.

I mean it's worth remembering we're not really selling timeshares or magazine subscriptions here and these processes take quite a bit of time. A lot of it is actually dependent on the customers' time line more than ours. And that is the case with the sixth OEM award that we have pending from last year's bingo board in a way. There's, actually the running prototypes of vehicles with our parts in them. We're confident that we'll be able to bring that to a close here as we finish negotiating 2 critical commercial terms with that customer.

And at the same time, I mean, with some of the European OEMs, I've been in situations before where you start shipping production parts to them, and you still don't have the contract. Basically, the POs are your contract. And as long as you're technically designed in and you have the right terms in those POs, that's not a problem.

And so, I wouldn't necessarily take the lack of an update here on that 6th OEM as a negative sign. There's still a lot of engagement. We continue to selling them more prototype parts. And we'll launch them here as soon as they're ready.

Alfred Shopland Moore

ROTH MKM Partners, LLC, Research Division

Got it. Yes. No, I think you've got a lot bingos left. Maybe my follow-up on Plant II, I thought, I heard you say potential restart by Q4. I don't know if we've heard that language before. Is that more of -- you've got a better handle on demand visibility or more DOE related or any more color there?

Ricardo C. Rodriguez

CFO & Treasurer

Yes. For that one, I was going back to my remarks from the previous quarter's call. Right now, if you go and ask the construction team in Georgia, everybody is geared up to come back on site in November. But, obviously, that is determined by us being able to pay for all of that and getting the financing lined up here in the first half with the -- hopefully, with the DOE support.

And yes, so November is when we are looking to restart it. And going back to my remarks from the previous quarter's call, if you look at -- I believe it was Slide 9 of the Q4 earnings deck, I mean, really no matter how we slice the demand and discount it, the plant is needed in 2027.

Donald R. Young

President, CEO & Director

So Chip, we'll definitely keep -- as I said in my comments, it's a sort of a multi-pronged decision process for us when we started. We've talked about the DOE. We've talked about demand. We've talked about the productivity of our existing assets. All of these things we're working hard on and keeping a careful eye on. And that will -- as those things kind of merge together, I think that the answer will become pretty obvious to us at the right time.

Operator

The next question on the line is from Tom Curran from Seaport Research Partners.

Thomas Patrick Curran

Seaport Research Partners

So under your design award from Toyota for the bZ4X, my understanding is that the contract scope extends to the Subaru Solterra and the Lexus RZ line-ups. Could you confirm or clarify which models the contract does extend to? And then for all of them combined, whichever are included, just give us some rough idea of the expected production volume under that Toyota design awards for this year, similar to what you've been able to do for us for GM?

Ricardo C. Rodriguez

CFO & Treasurer

Yes. No, that's a good question, Tom. So yes, I mean, our parts are in the Subaru and the Lexus variants of the bZ4X as well. We don't quite have the IHS numbers here near us. But we'll be sure to incorporate that here as we can in the next quarterly update.

Thomas Patrick Curran
Seaport Research Partners

That would be helpful. And then, a follow-up on the business development funnel. When it comes to the, call it, roughly 20 OEMs that you're in discussions with, do any of those conversations, are they touching on or are they explicitly focused on plug-in hybrid programs? And if not, just in general, could you give us an idea of where you think of PyroThin's role for plug-in hybrids might be?

Ricardo C. Rodriguez
CFO & Treasurer

Yes, so maybe just to clarify Don's remarks, so Don meant the 20 programs and that could be with 8 to 12 OEMs, not necessarily the -- it's not necessarily 20 different customers that those programs would be in. Some of those are actually for cell modules that are scope to be potentially in a plug-in hybrid vehicle.

For us, the plug-in hybrid vehicles, really, if you look at the content per vehicle opportunity is not the same as a full EV platform or vehicle. And so we obviously are a lot more focused on pure EVs. The plug-in hybrid volume blips that we've seen recently, we believe that they just enabled sustained ICE volumes and aren't necessarily taking volumes away from EVs in 2026, 2027 and 2028, which is when we would be launching these programs. So even though we're quoting them, they're not really the main priority for the team.

Operator

The next question on the line is from Jeff Osborne from TD Cowen.

Jeffrey David Osborne
TD Cowen, Research Division

Two quick ones. I think, Ricardo, you had mentioned in prior calls that it would take roughly a year and close to \$500 million to complete Plant II. Is that still the rough time line if you were to get started in November?

Ricardo C. Rodriguez
CFO & Treasurer

Yes, I don't think we have an update there. The year would be a stretch. But I think 12 to 18 months max, would be a better estimate.

Jeffrey David Osborne
TD Cowen, Research Division

Got it. And then, maybe just following up on Toyota. I think on prior calls, you had mentioned that there was some discussion about Toyota moving to more of a common platform across all of their electric vehicles instead of just the bZ. Did, Don, perhaps visit them on his way back from China? Or any update as to a broader scope expansion there at Toyota?

Ricardo C. Rodriguez
CFO & Treasurer

I think we have to wait until you hear something from them. I don't think you stop by Japan, right now.

Donald R. Young
President, CEO & Director

No, I did.

Ricardo C. Rodriguez

CFO & Treasurer

Yes.

Operator

The next question on the line is from Alex Potter from Piper Sandler.

Benjamin K Johnson

Piper Sandler & Co., Research Division

This is Ben Johnson on for Alex. And I guess my first question is in terms of, are you guys in close dialogue with General Motors as well as other automotive customers to kind of determine the level of demand for these newly launched vehicles? And can you kind of elaborate on how those discussions are going?

Ricardo C. Rodriguez

CFO & Treasurer

Well, the demand is determined by our customers, right? I'm not sure there's a ton that we could say to adjust their production levels. They're better at this than us, frankly. And I mean we get a demand feed from customers, and we supply to that, that's the extent. And sometimes, there isn't a ton of dialogue. I mean we basically just get a demand feed every week and we work hard to deliver that.

Donald R. Young

President, CEO & Director

Ben, I would just say, as Ricardo said, we do get a weekly update that looks out over the course of the next 4 weeks and beyond. And we do get a pretty good signal from that weekly communication. And so -- in part, we won the PACE Award for our collaboration and partnership with General Motors. We're pretty close to that company and really many of our OEMs.

And so, we have colleagues who are walking the halls of GM on a very regular basis and others as well. So we have close relationships with them. But there is still an element of arm's length when it comes to some of these communications.

Benjamin K Johnson

Piper Sandler & Co., Research Division

And then, just following up on a previous question. As a result of companies emphasizing hybrids nowadays, are you seeing any indications from OEMs that there's less urgency to move forward with full BEVs?

Ricardo C. Rodriguez

CFO & Treasurer

Yes. I mean, frankly, we see the emphasizing of hybrids in investor communications, not necessarily in development road maps and industrialization plans for these companies. So time will tell on how many hybrids will really be out there in 2 years or 3 years' time. A lot of OEMs that we've seen being very vocal about hybrids.

We just don't see people internally working on those hybrids. In some cases, the folks that would have been working on the modified ICE portion of the powertrain have actually been laid off from those OEMs.

So I think people are still with their foot on the accelerator around the EV transition. But obviously, when probe, if they have some alternate hybrids that they could sell in between. They'll just say, yes, we could do that without providing a specific plan. And I think that's what we're seeing inside of several of these customers, right?

Operator

And our next question is from Amit Dayal from H.C. Wainwright.

Amit Dayal

H.C. Wainwright & Co, LLC, Research Division

With respect to thermal barriers, the thermal barrier contracts, Ricardo, with these large OEMs, is there a cap on pricing, say, over the next 12 months to 18 months that could prevent margin upside? I guess I'm just trying to see if your costs move higher, could you pass those on to the systems?

Ricardo C. Rodriguez

CFO & Treasurer

No. I mean the contracts are very simple in terms of pricing. You basically have a part number and a price that is basically set unless there's a significant redesign on what that part entails. We don't have any sort of commodity pass-throughs with our customers just yet. And I think that was by design, just to keep things simple.

And as you are aware, right, I mean, these Tier 1 auto supplier contracts have evolved to the point that they're as vague and noncommittal as possible. But again, it's really the fact that you're designed in and the fact that you built up the capacity to support the customer that gives you staying power within the program.

Amit Dayal

H.C. Wainwright & Co, LLC, Research Division

And then, on the Plant II financing, right? I mean it looks like the DOE should award a company like you with this grant or loan. But in case that doesn't come through, are there plans in place to move quickly to other financing options, given sort of the sense of urgency I'm getting from this call about moving forward with Plant II.

Ricardo C. Rodriguez

CFO & Treasurer

Yes. I mean all I can say is that we're moving with the same sense of urgency within the DOE. And the DOE has actually moved with extreme urgency since we got to this final phase of due diligence and term sheet negotiations. That's why we added there on Slide 14, literally straight from the DOE's website what the work entails.

And if you look at what this workstream entails, it's pretty intense work. I mean, they've really given some of their best resources. They're extremely dedicated to getting this done. And we're all together playing to win in this. So plan A is to win.

Operator

We have no further questions. I'd like to hand back to Don Young for closing remarks.

Donald R. Young

President, CEO & Director

Thank you. Thank you, everyone. We appreciate your interest in Aspen Aerogels. And we look forward to reporting to you our second quarter 2024 results in early August. Be well. Have a good day. Thank you.

Operator

Thank you, everyone. This does conclude today's call. You may now disconnect your lines.

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