

February 13, 2024



ASPEN AEROGELS

Q4 AND FULL YEAR 2023 FINANCIAL RESULTS CALL

Disclaimer on Forward Looking Statements

This presentation and any related discussion contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995 that involve risks and uncertainties that could cause actual results to be materially different from historical results or from any future results expressed or implied by such forward-looking statements, including statements relating to Aspen’s 2023 financial outlook. These statements are not historical facts but rather are based on Aspen’s current expectations, estimates and projections regarding Aspen’s business, operations and other factors relating thereto, including with respect to Aspen’s 2024 financial outlook. Words such as “may,” “will,” “could,” “would,” “should,” “anticipate,” “predict,” “potential,” “continue,” “expects,” “intends,” “plans,” “projects,” “believes,” “estimates,” “outlook,” “assumes,” “targets,” “opportunity,” and similar expressions are used to identify these forward-looking statements. Such forward-looking statements include statements regarding, among other things, EV thermal barrier awards and quotes, Aspen’s expectations about capacity, revenue, backlog, costs, expenses, profitability, cash flow, gross profit, gross margin, operating margin, net loss, adjusted EBITDA, adjusted EBITDA margin and related decreases, improvements, timing, variability or trends; beliefs about higher than expected demand from OEM customers and how they may enable path to continued profitability, expectations about improvement in ability to absorb fixed costs and reduction of conversion costs as a percentage of sales and the same leading to target gross margins; beliefs about the general strength, weakness or health of Aspen’s business; acceleration in demand; demand increase from OEM customers, level of penetration in the EV market, and growth in energy industrial markets; beliefs about anticipated battery pack designs from OEMs specifying PyroThin; beliefs about current or future trends in the energy, energy infrastructure, chemical and refinery, LNG, sustainable building materials, EV thermal barrier, EV battery materials or other markets and the impact of these trends on Aspen’s business; beliefs about the strength, effectiveness, productivity, costs, profitability or other fundamentals of Aspen’s business; beliefs about the role of Aspen’s technology and opportunities in the EV market; beliefs about Aspen’s ability to provide and deliver products and services to EV customers; beliefs about content per vehicle, revenue, costs, expenses, profitability, investments or cash flow associated with Aspen’s EV customer opportunities, including the EV thermal barrier business; beliefs about revenue growth and profitability; beliefs about the performance of PyroThin® including its ability to mitigate the propagation of thermal runaway in electric vehicles; beliefs about Aspen’s ability to expand the market for PyroThin, to achieve design wins, to commence shipments of production parts, and to become an industry standard solution for thermal runaway management; beliefs about Aspen’s thermal barrier design, prototype, quoting and assembly activities; expectations about the cost of the capital projects, beliefs about our Mexico assembly facility and its timely operations, and our third-party suppliers, including in China, and their ability to meet the demand; the growth in thermal barrier demand to match the assembly operation and vice versa; and our beliefs about the Department of Energy loan application process. All such forward-looking statements are based on management’s present expectations and are subject to certain factors, risks and uncertainties that may cause actual results, outcome of events, timing and performance to differ materially from those expressed or implied by such statements. These risks and uncertainties include, but are not limited to, the following: inability to execute the growth plan through 2028, inability to manage supply chain disruptions to avoid undue delay or impact on operations, inability to create new product, partnership and market opportunities; any sustained downturn in the industry or energy prices; any sustained downturn in the energy, energy infrastructure, chemical and refinery, LNG, sustainable building materials, EV thermal barrier, EV battery materials or other markets; any failure to sustain project-based demand in the subsea, LNG, on-shore or other markets; the right of EV thermal barrier customers to cancel contracts with Aspen at any time and without penalty; any costs, expenses, or investments incurred by Aspen in excess of projections used to develop pricing under the contracts with EV thermal barrier customers; any failure of Aspen or PyroThin to meet contractual specifications and requirements under contracts with EV thermal barrier customers; Aspen’s inability to create customer or market opportunities for, including PyroThin; any other battery performance and safety products, battery materials or for other new products developed from Aspen’s aerogel technology; any disruption or inability to achieve expected capacity levels in any of our three existing production lines in East Providence, RI or the Mexico assembly facility, or from our third-party suppliers, including in China; any inability to establish or timely establish thermal barrier assembly operations in Mexico or any other location; the failure to receive all regulatory or other approvals required to operate, maintain or expand any of Aspen’s facilities; any failure to achieve demand for Aspen’s products; any failure to achieve expected price increases or average selling prices for Aspen’s products; any significant increase in the cost of raw materials, utilities or any other manufacturing consumable; shortages of raw materials, utilities or any other manufacturing consumable; the failure to generate sufficient operating cash flow or to obtain significant additional capital to pursue Aspen’s strategy; the failure of Aspen’s products to become widely adopted; the competition Aspen faces in its business; any failure to enforce any of Aspen’s patents; any failure to protect or expand Aspen’s Aerogel Technology Platform™; any future finding of invalidity of any of Aspen’s patents in any jurisdiction; any failure to generate sufficient operating cash flow or to obtain sufficient additional capital to continue to pursue Aspen’s new business, technology, patent enforcement, or patent defense strategy; any failure of Aspen’s products to meet applicable specifications and other performance, safety, technical and delivery requirements; the general economic conditions and cyclical demands in the markets that Aspen serves; the economic, operational and political risks associated with sales and expansion of operations in foreign countries, including Mexico; the loss of any direct customer, including distributors, contractors and OEMs; compliance with health and safety laws and regulations; the maintenance and development of distribution channels; and the other risk factors discussed under the heading “Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2022 and filed with the Securities and Exchange Commission (“SEC”) on March 16, 2023, as well as any updates to those risk factors filed from time to time in our subsequent periodic and current reports filed with the SEC. All statements contained in this presentation are made only as of the date of this presentation. Aspen does not intend to update this information unless required by law.

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The industry and market data contained in this presentation is based either on our management's own estimates or on independent industry publications, reports by market research firms or other publicized independent sources. Although the Company believes these sources are reliable, it has not independently verified the information and cannot guarantee its accuracy and completeness, as industry and market data are subject to change and cannot always be verified with complete certainty due to limits on the availability and reliability of raw data, the voluntary nature of the data gathering process and other limitations and uncertainties inherent in any statistical survey or market shares. Accordingly, you should be aware that the industry and market data contained in this presentation, and estimates and beliefs based on such data, may not be reliable. Unless otherwise indicated, all information contained in this presentation concerning our industry in general or any segment thereof, including information regarding our general expectations and market opportunity, is based on management's estimates using internal data, data from industry related publications, consumer research and marketing studies and other externally obtained data. Certain financial or other targets are based on management estimates, currently available information and assumptions that may change. Accordingly, there can be no assurance that we will achieve our financial targets or other expectations. The expectations are inherently subject to significant economic, competitive and other uncertainties and contingencies, many of which are beyond the control of management. Actual results may vary materially based on a number of factors. For example, the Company's estimates in this presentation are based on assumptions about the following factors: (i) adoption rates of EV and our customers' market penetration, (ii) the aggregate pricing of our products, and (iii) the average amount of our products incorporated in each vehicle. Due to the rapid pace of technical development in lithium batteries, the Company's assumptions may evolve in the future due to various external factors resulting in different estimates than those arrived here. There are a wide range of estimates being published, including ones that would result in lower per vehicle figures. While the Company's management believes its estimates regarding possible pricing and market size are based on reasonable assumptions and methodology, there can be no assurance that the future pricing and market size will align with the Company's estimates. Such data may be outdated and involves a number of assumptions and limitations and contains projections and estimates of the future performance of the industries in which we operate that are subject to a high degree of uncertainty. We caution you not to give undue weight to such projections, assumptions and estimates.

Q4 2023 Developments and Year-End Highlights

Record company revenue and continued gross margin expansion driven by focus on accelerating path to profitability

Balance Sheet

- Completed \$75M registered direct offering in December
- Cash balance can fund plans without Plant II

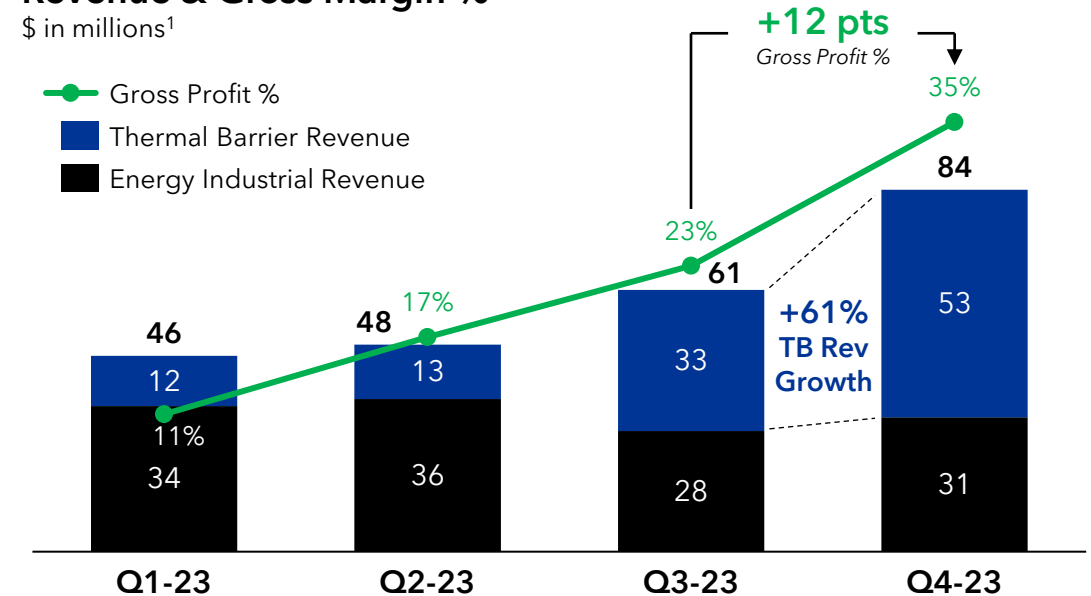
Energy Industrial

- Delivered \$3.1M from supplemental supply
- Infrastructure in place to deliver \$150M of revenues

2023 Financial Performance Progression

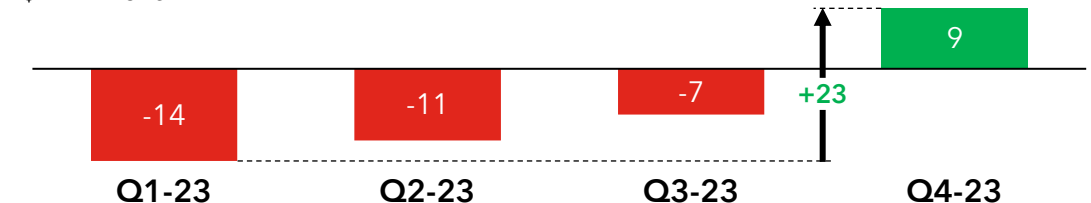
Revenue & Gross Margin %

\$ in millions¹



2023 Adjusted EBITDA

\$ in millions^{1,2}



Cost of Capital

- DoE loan for Plant II in due diligence phase
- Capital lease - \$5M in January 2024

Thermal Barriers

- New PyroThin® award



- Awaiting acceptance on terms with 6th OEM award

Operational Excellence

- Record quarterly profitability in Q4 with 35% gross margins
- Productivity gains = \$500M Thermal Barrier capacity

Sustainability

- Awarded Silver Medal rating status with EcoVadis for second consecutive year



1- Unaudited financials for 2023

2- See slide 14 herein for a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA

Note: Figures may not total due to rounding

Q4 and Full Year 2023 Financial Highlights

On a scalable and profitable path by optimizing mix, reducing fixed expenses, and right-timing CAPEX spend

\$ in millions except per share figures

	Q4 2022	Q4 2023 ¹	2022	2023 ¹	Commentary
REVENUES YoY Growth	\$59.6 89%	\$84.2 41%	\$180.4 48%	\$238.7 32%	<ul style="list-style-type: none"> \$53M of EV Thermal Barrier revenues in Q4 led to 2x revenue growth year-over-year, headlined by GM's ramp \$31M of Energy Industrial revenues in Q4 still reflect supply constrained volume, but a more profitable product mix
Adj. EBITDA²	\$(4.5)	\$9.1	\$(60.6)	\$(22.9)	<ul style="list-style-type: none"> Double-digit gross margin growth Maximizing capacity with higher margin products, an improved material cost structure, and operating leverage
Net (Loss)	\$(9.6)	\$(0.5)	\$(82.7)	\$(45.8)	<ul style="list-style-type: none"> Gross profit improvement and careful OPEX management led to over 60% of the \$58.3M in YoY revenue growth falling to the bottom-line 89% of incremental revenues fell to the gross profit line
EPS (Loss)	\$(0.20)	\$(0.01)	\$(2.10)	\$(0.66)	<ul style="list-style-type: none"> Continued investments to deliver on increasing customer demand Close to breaking even in Q4 2023
Cap Ex	\$58.6	\$27.8	\$178.0	\$175.5	<ul style="list-style-type: none"> \$115M spent towards Plant II in 2023; construction spend right-timed Remainder primarily invested in EV Thermal Barrier assembly tooling in Mexico to drive H2 2024 revenues

1- Unaudited financials for 2023

2- See slide 14 herein for a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA for the presented period

2024 EV Thermal Barrier Revenue Drivers

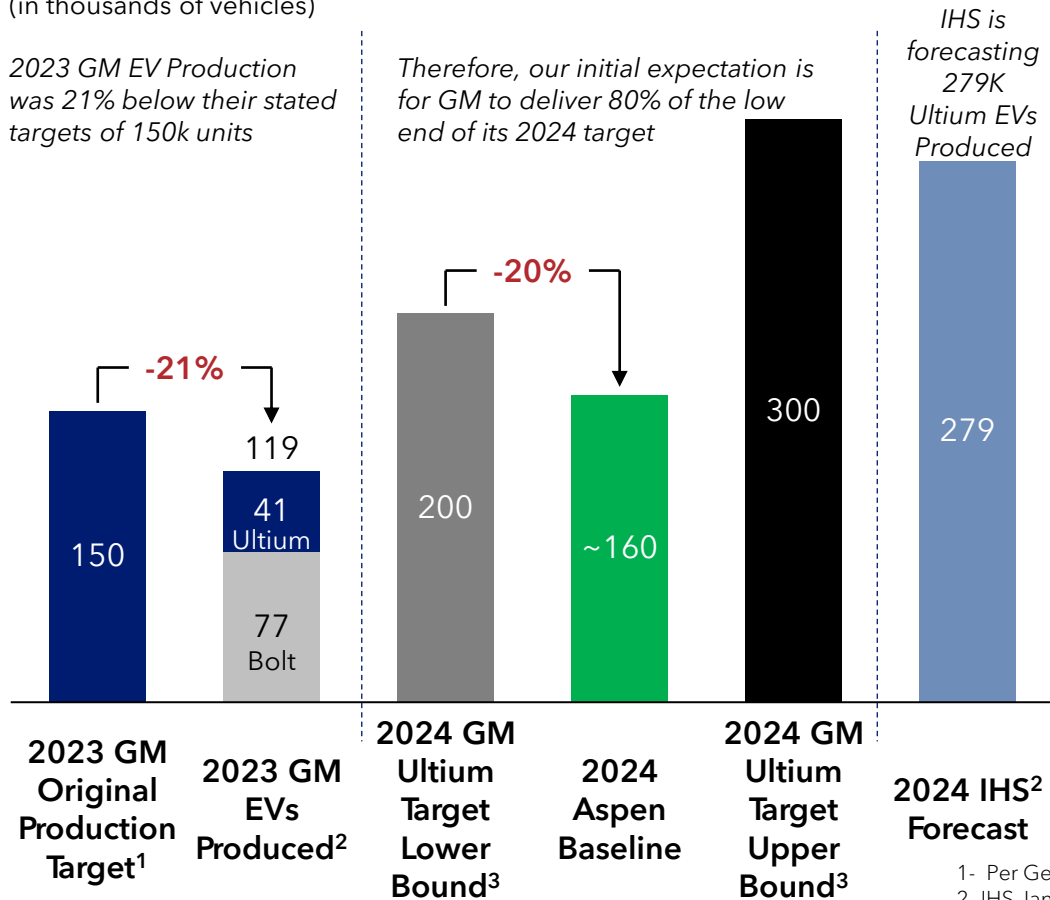
Customer volume ramps provide visibility into \$200M thermal barrier baseline revenue scenario with upside potential

ASPN 2024 Baseline revenue assumes 20% discount to low end of GM's 2024 Ultium EV production goals

Estimated GM Ultium EV Production (in thousands of vehicles)

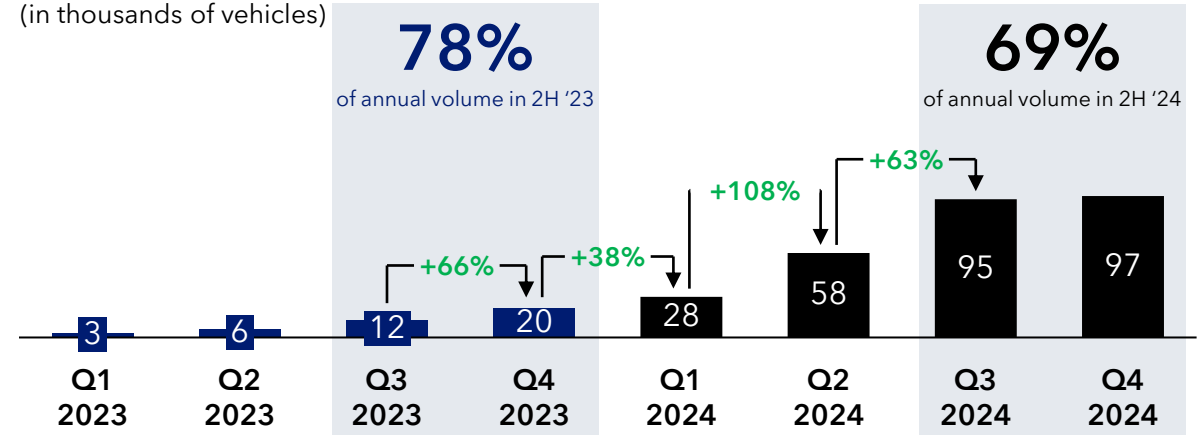
2023 GM EV Production was 21% below their stated targets of 150k units

Therefore, our initial expectation is for GM to deliver 80% of the low end of its 2024 target



A potential Ultium production ramp is expected for the second half of 2024, akin to the one experienced in 2023

2023 Historical and 2024 IHS Quarterly Ultium EV Production Forecast (in thousands of vehicles)



Potential volume ramp relies on four main nameplates

IHS 2024 estimated production²



Equinox EV
71k units



Blazer EV
48k units



Prologue
37k units



Silverado EV
29k units

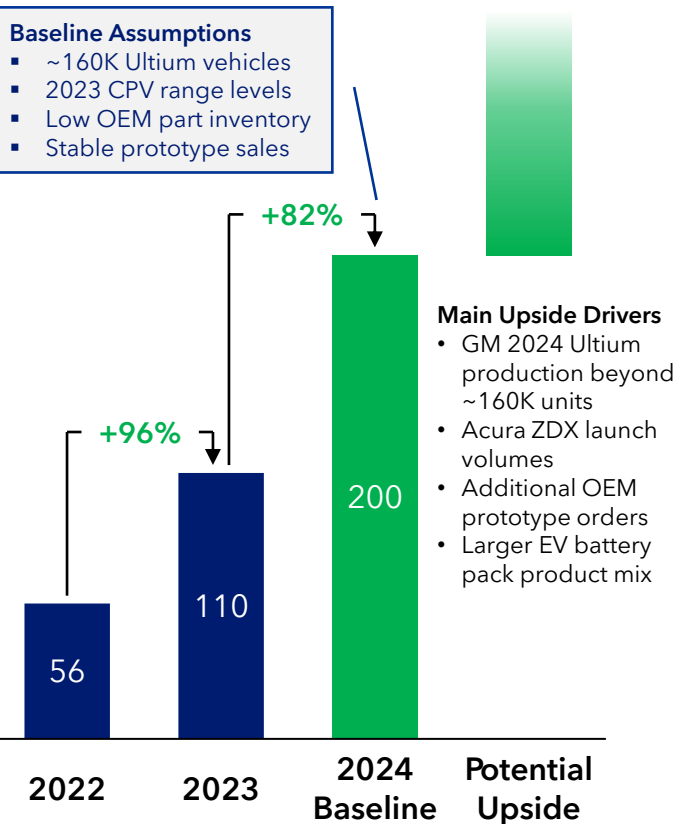
1- Per General Motors official company communications and as cited on 4/25/23 during GM earnings call
 2- IHS January 2024 vehicle production forecast. Please see slide 13 for a further breakdown of volumes by OEM and nameplate
 3- Per General Motors Q4 2023 earnings call on 1/30/24, which stated "Our plan is to produce and wholesale 200,000 to 300,000 Ultium-based Chevrolet, GMC, Cadillac and BrightDrop EVs in North America this year"

2024 Revenue and EBITDA Outlook

Positioning ourselves to capture potential outsized upside with the right cost structure is our main 2024 executional priority

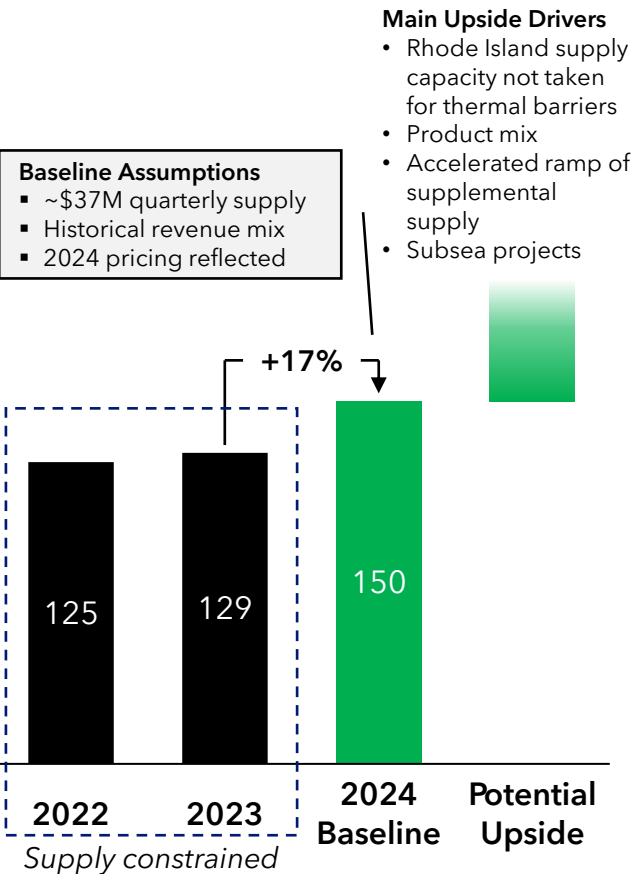
Thermal Barrier revenues growing by at least 82% YoY...

Thermal Barrier Revenues
\$ in millions



...alongside \$150M+ Energy Industrial business...

Energy Industrial Revenues
\$ in millions



...enable over \$30M of EBITDA potential and breakeven Operating Income (EBIT).

Total Revenue Baseline: \$350M

Positive Gross Profit > OPEX = Operating Income

\$30M EBITDA Baseline

- EBITDA Tailwinds**
- Higher revenues
 - H2 OPEX optimization
 - Energy Product mix
 - Favorable material trends
 - Production yields & uptime

- EBITDA Headwinds**
- New launch investments
 - Higher prototype sales
 - Engineering changes
 - Opportunistic OPEX spend
 - Expedited freight costs

Historical Trends and 2024 Baseline Outlook

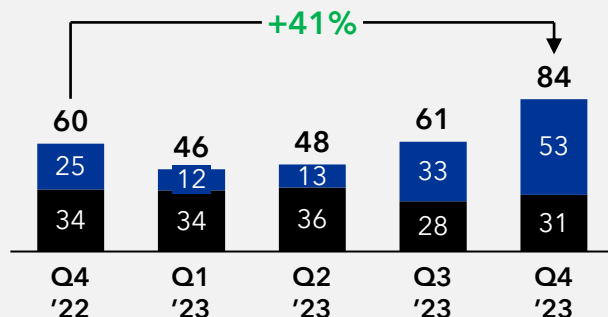
Continued EV thermal barrier revenue growth drives 47% baseline revenue growth and positive EBITDA

15 Month Quarterly Trajectory¹

Revenues

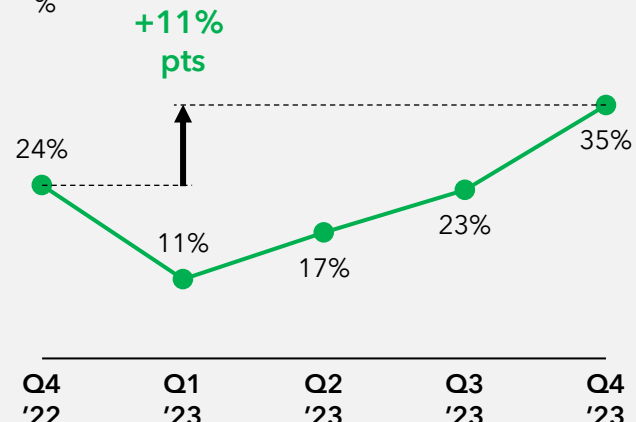
\$ in millions

- Thermal Barriers
- Energy Industrial



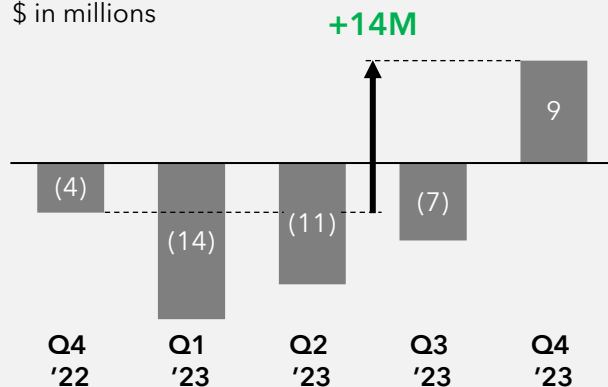
Gross Profit Margin

%



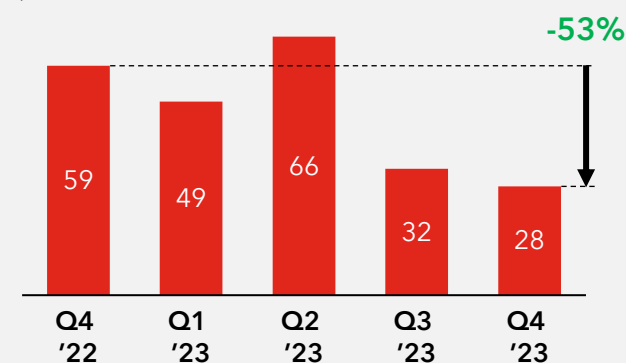
Adj. EBITDA²

\$ in millions



Capital Expenditures

\$ in millions



2024 Baseline Outlook²

\$ in millions, except per share figures

REVENUES YoY Growth	>\$350 >47%
Adj. EBITDA²	>\$30
Net (Loss)	>\$(23)
EPS (Loss)	>\$(0.30)
Cap Ex (excl. Plant II) + Plant II Capex (1H / 2H)	\$50 \$30 / \$15*

1- Unaudited financials for 2023

2- See slide 14 herein for a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA for the presented period

* Assuming continued construction right-timing

Note: Figures may not total due to rounding

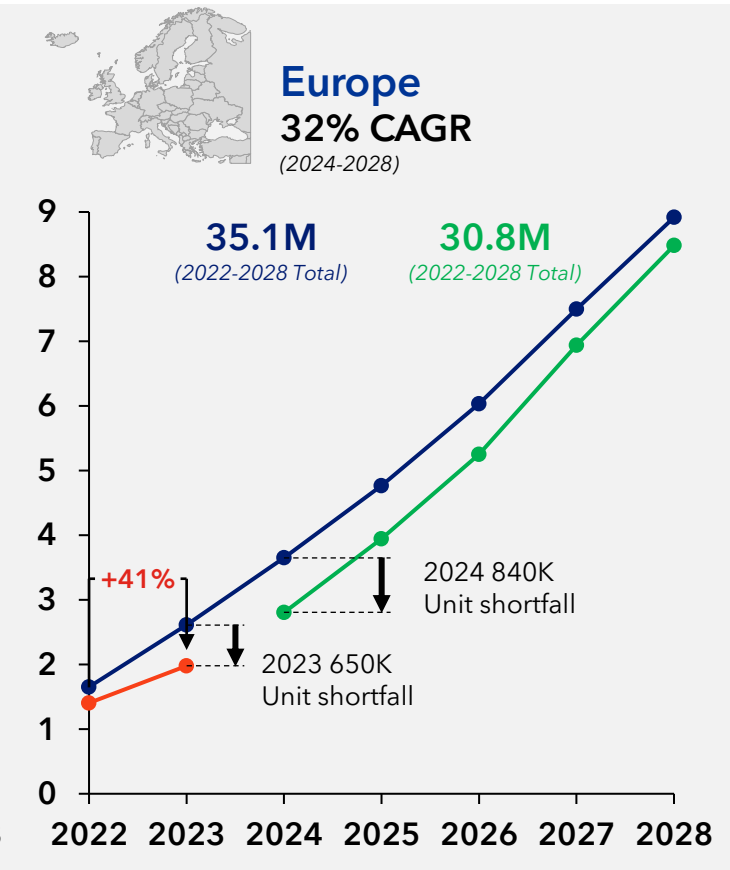
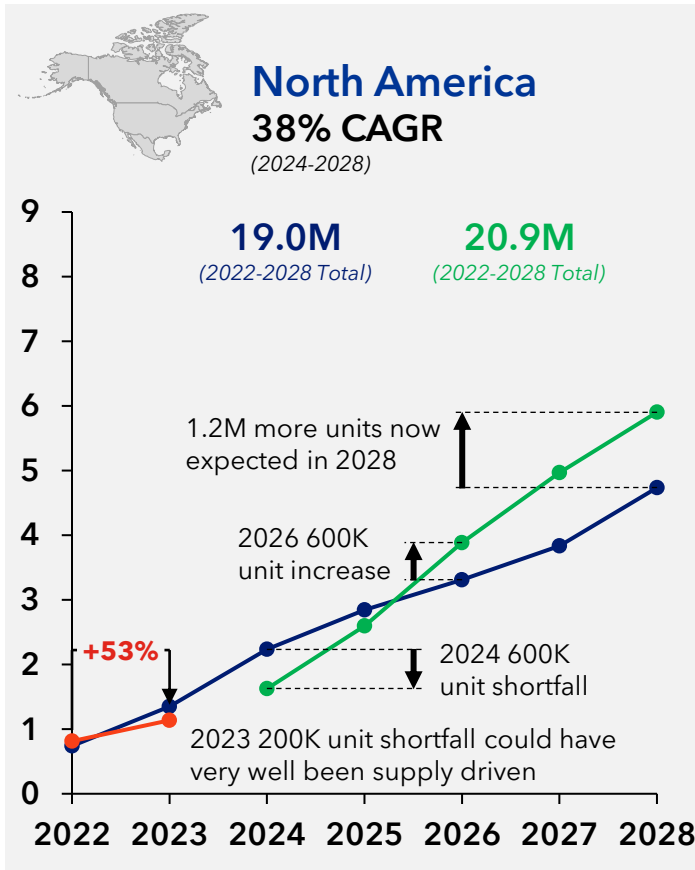
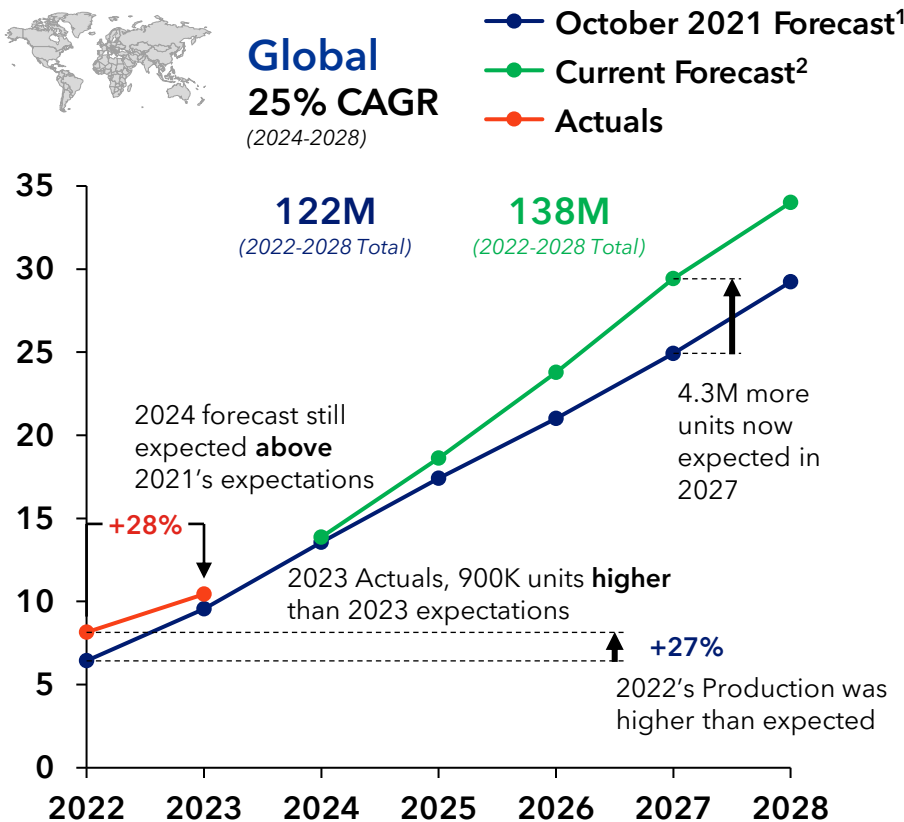
Long-term EV Production Trends Remain Strong

Looking beyond the recent headlines, global EV production in 2023 has outpaced expectations from October of 2021

Global EV production is ahead of 2021's expectations, primarily driven by China...

...while expectations in North America make up for adoption delays and Europe remains on track to continue outpacing North America.

Electric Vehicle (EV) light vehicle production forecast
Vehicles in Millions



5 Year EV Thermal Barrier Award and Quote Pipeline

Pipeline with ~\$9.3B in potential value over the next 5 years can drive our current and planned asset base utilization

EV Thermal Barrier Estimated Awarded and Quoted Pipeline Value^{1,2}

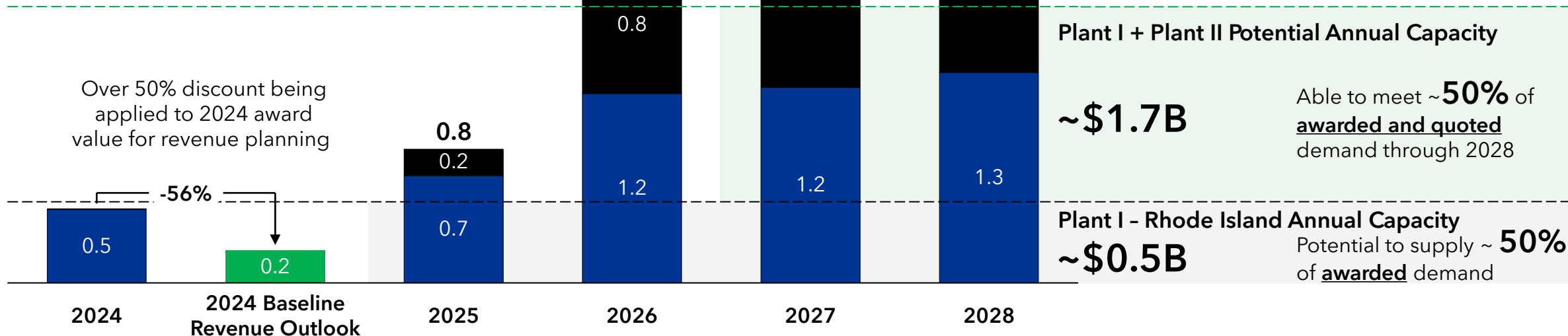
\$ in billions



Potential 5 Year Demand and Capacity Overview

$$\$9.3B - \$4.9B = \$4.4B$$

Cumulative Demand Cumulative Supply
 \$2.5B from Plant I
 \$2.4B from Plant II Potential Excess Demand



1. Estimates based on current visibility and certain market and customer-based assumptions. Awarded and quoted value as of 2/13/2024. There can be no assurance that awards or quotes will convert into orders for our products or revenue. Value based on customer provided part volumes and quoted / contracted pricing.

2. Assumes Plant II annual revenue capacity of \$1.2B starting in 2027

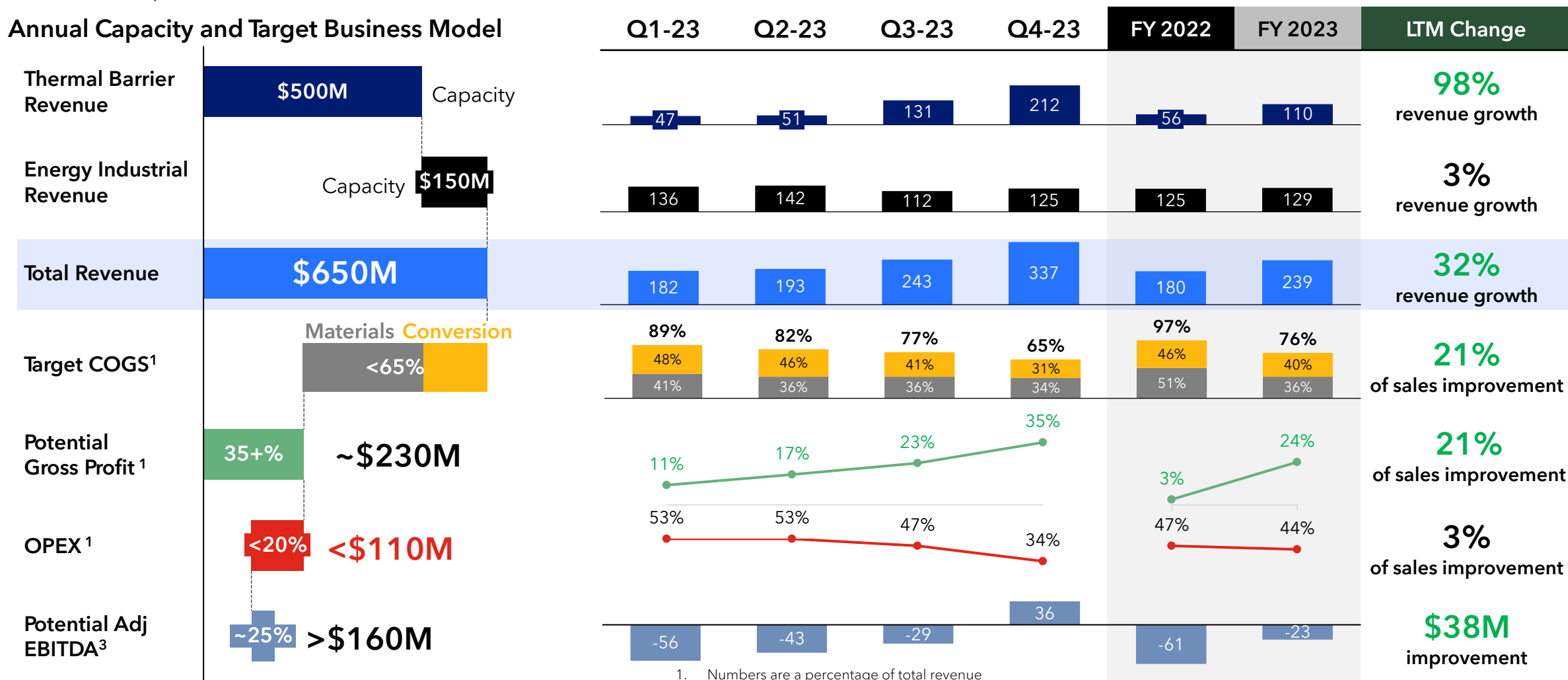
Note: Figures may not total due to rounding

Operating Plan Gearing and Recent Results

Making quarterly progress towards being a \$650M+ revenue business of 25% EBITDA margins with our current capacity

\$ in millions, expressed as *Annual Run Rate*²

Annual Capacity and Target Business Model



1. Numbers are a percentage of total revenue
 2. Unaudited financials for 2023
 3. See slide 14 herein for a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA

Note: Figures may not total due to rounding

Summary

Earning our right to win by leveraging the Aerogel Technology Platform[®], executing, and investing to grow profitably

ACCELERATING NEAR-TERM PROFITABILITY

\$84.2 million in Q4 2023 revenue enabled record quarterly gross margins of 35% and adjusted EBITDA of \$9.1 million^{1,2}

INCREASING FLEXIBILITY TO MEET DEMAND

Successfully delivered \$3.1M of Energy Industrial products to customers through supplemental supply in the fourth quarter

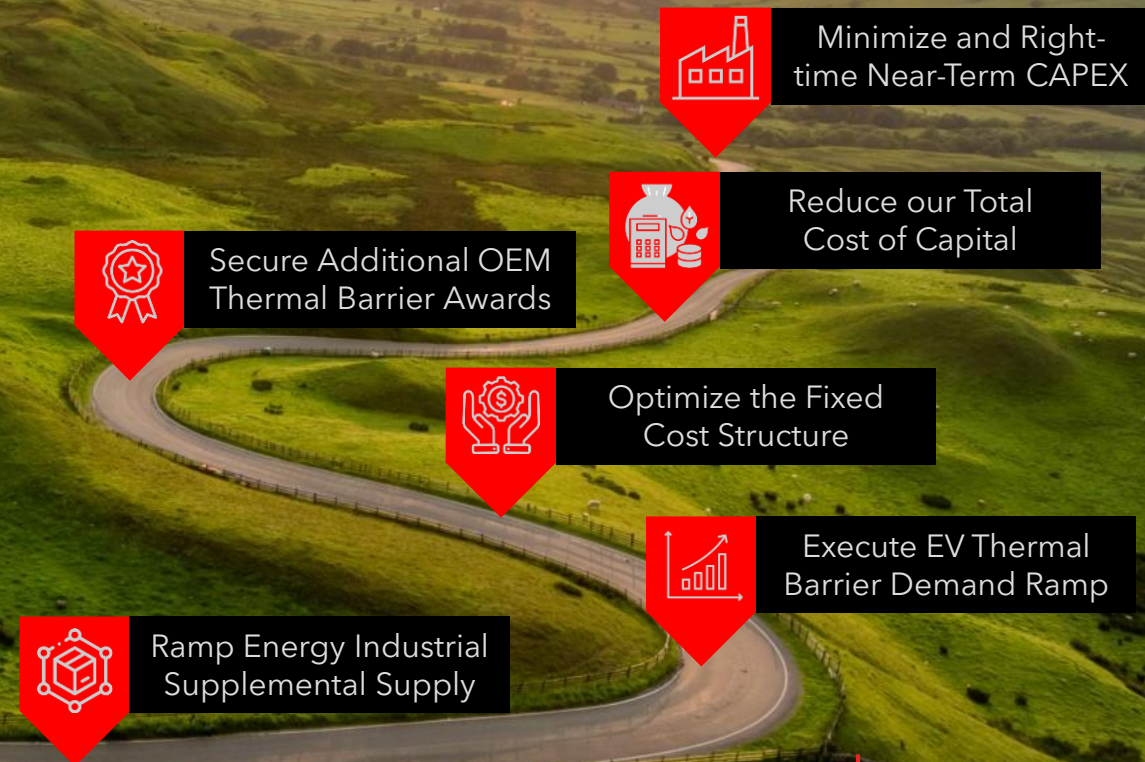
ADVANCED PYROTHIN[®] COMMERCIAL PROGRESS

Continued traction towards diversified customer base; robust pipeline with over \$9B in potential value over the next 5 years

DEMONSTRATED OPERATING EXECUTION

Delivered record level Thermal Barrier revenues of \$52.9M in Q4, up 61% QoQ, while slightly reducing quarterly OPEX QoQ

The Road to Creating Near Term Value



1- Unaudited financials for 2023

2- See slide 14 herein for a reconciliation of net loss, the most directly comparable GAAP measure, to Adjusted EBITDA for the presented period

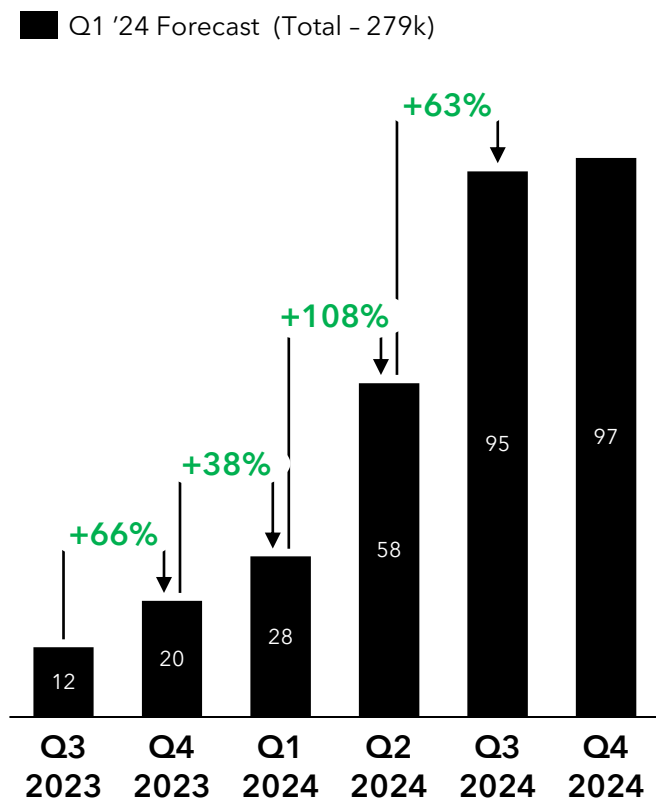
Appendix

Demand Overview - GM Ultium IHS Forecast

GM Ultium production began to ramp in Q4 2023 and is expected to accelerate in Q2 2024

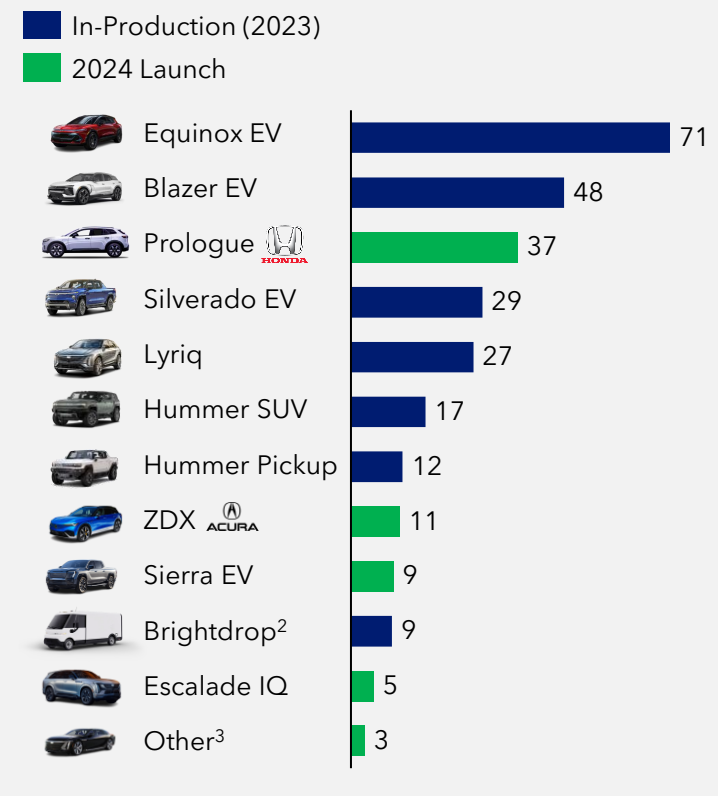
Ultium platform volumes are expected to ramp in Q2 2024

GM Ultium Production Actuals & Forecast¹
(Vehicles in thousands)



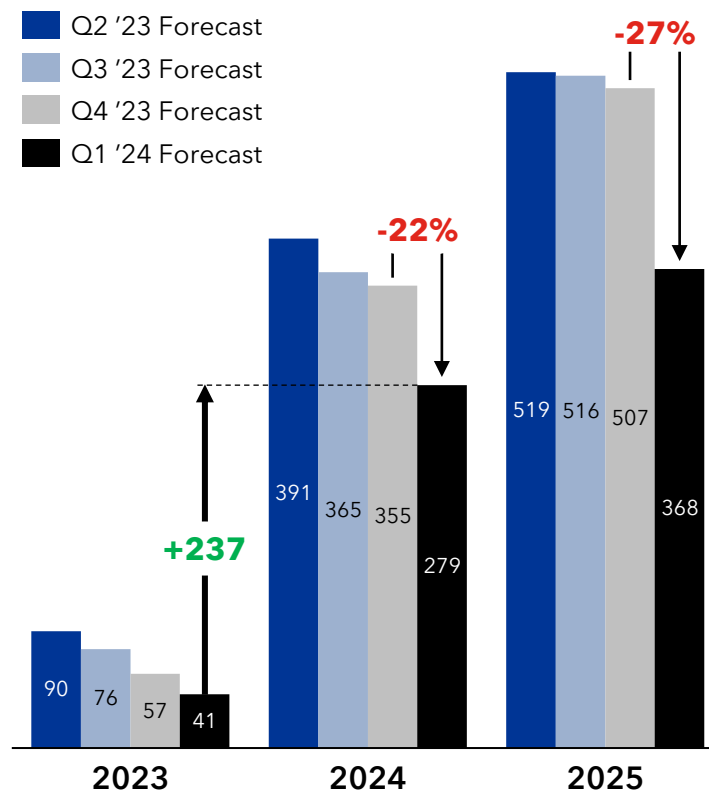
2024: major GM nameplates to scale; Honda Prologue to launch

2024 GM Ultium EV Production Forecast¹
(Vehicles in thousands)



The long-term outlook remains strong

GM Ultium Production Actuals & Forecast⁴
(Vehicles in thousands)



1- IHS January 2024 vehicle production forecast

2. Brightdrop includes Zevo 400 and Zevo 600

3. Other includes Optiq and Celestiq

4. IHS April 2023, July 2023, October 2023, January 2024 vehicle production forecasts

GAAP to Non-GAAP Reconciliation

(\$ in millions)	2022		2023					Outlook
	Q4	FY	Q1	Q2	Q3	Q4	FY	FY 2024
Net Loss	(9.6)	(82.7)	(16.8)	(15.4)	(13.1)	(0.5)	(45.8)	(23.0)
Depreciation and Amortization	2.5	9.2	2.7	3.5	4.6	4.6	15.3	30.0
Stock-based Compensation	2.7	9.4	2.3	2.7	2.8	3.2	11.0	14.0
Other (Income) Expense	(0.1)	3.5	(2.1)	(1.6)	(1.6)	1.9	(3.4)	9.0
Adjusted EBITDA	(4.5)	(60.6)	(13.9)	(10.8)	(7.3)	9.1	(22.9)	30.0

Note: Figures may not total due to rounding

PyroThin® Thermal Barrier Opportunity Drivers

Eight different macro parameters drive our content per vehicle (CPV) opportunity, and long-term revenue potential

		Commentary
1	Vehicle sales by region 	<ul style="list-style-type: none"> China expected to lead global EV penetration Higher price and content vehicles in NA and EU
2	Vehicle classification 	<ul style="list-style-type: none"> Demonstrated commercial success within Light-duty Most recent award in M/HDT segment highlights commercial vehicle opportunity potential
3	Powertrain technology 	<ul style="list-style-type: none"> TP risk increases as OEMs pack more energy density into EV batteries, both in EV's and Plug-In Hybrids OEMs seeking to provide more range in PHEVs
4	Cell chemistry 	<ul style="list-style-type: none"> All battery chemistries have thermal propagation risk Highest CPV in nickel-based chemistries due to higher energy density
5	Cell form factor 	<ul style="list-style-type: none"> Pouch and Prismatic expected to continue to account for ~70% of global market Cylindrical less suited for cell-to-cell solutions
6	Battery capacity 	<ul style="list-style-type: none"> OEMs seeking to increase range, while higher density packs have more risk of thermal propagation NA and EU vehicles have larger batteries
7	Use case 	<ul style="list-style-type: none"> Aerogel solutions excel as a cell-to-cell barrier Core requirements are thermal isolation, fire protection and mechanical properties
8	TR/TP mitigation goals 	<ul style="list-style-type: none"> Recalls and global regulation expected to continue to driving OEM awareness and Stop TP goals OEM goals to Stop TP results in more content

Core Focus Area
 Potential Focus Area
 Currently Out of Scope

An aerial photograph of a dense evergreen forest covered in snow. A dark, winding road or path cuts through the trees, curving from the bottom left towards the top right. The overall color palette is monochromatic, consisting of various shades of blue, grey, and white.

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