

Cell Production



All-in on AI

AI for Manufacturing

AI for Safety

AI for Science

Letter to Our Shareholders

Q2 2024

"Remembering that you are going to die is the best way I know to avoid the trap of thinking you have something to lose. You are already naked. There is no reason not to follow your heart."

Steve Jobs

Dear Shareholders,

In this special letter, I want to talk about the seismic shift across any industry by generative AI and large language models (LLMs). AI represents a pivotal development of this decade. This transformative technology is set to disrupt industries, from those seeking the next innovation S-curve to those grappling with shrinking margins.

The fact is, today's EV battery market is completely different from that of three years ago, or even just one year ago. The incumbent battery players dominate the global market. The next-generation battery companies must deliver something completely different and lightyears ahead to become relevant. We cannot compete on their terms.

Previously, we announced that we are entering the air mobility market, including urban air mobility, or UAM (larger aircrafts), and drones (smaller aircrafts), in addition to our existing EV work. For next-gen batteries to compete with incumbent batteries, we must overcome three hurdles at commercial scale: **quality, safety** and **future material development**. The traditional

human-based approach simply takes too long. That's why the introduction of next-gen battery technologies has always been very slow.

As the world's leader in Li-Metal and the first to enter automotive A-sample and B-sample joint development agreements (JDAs) with global automakers, we have strategically integrated AI into our operations, encompassing technology development, manufacturing, and aftermarket support. Since embarking on embedding AI into Li-Metal, we have realized that the value of AI materializes when it fundamentally reshapes the business model. By adopting a thematic approach with a platform-building mindset, we aim to generate both internal and external value. We are excited to share the preliminary outcomes of our initiatives.

Today, we are introducing a paradigm shift. Our AI solutions will accelerate the commercialization of all next-gen battery technologies. Li-Metal represents the forefront of this new approach, but our AI will ultimately be agnostic to any battery technology.

1. EV

Last quarter, we announced our B-sample joint development partnership with Hyundai to build a line within their Electrification Center in Ui-Wang, South Korea. With our latest update, I am glad to share that we are on track to hit our target of completion of the line in the fourth quarter of this year. This will yield one of the largest capacity Li-Metal lines globally and will manufacture 50 Ah to 100 Ah large automotive Li-Metal B-sample cells. We continue to work with our automotive OEMs with a goal to reach EV-C sample in 2025 and start of production (SOP) in 2026.

2. UAM and Drones

We continue to see strong demands from UAM and drone markets. For UAM, we are converting our previous EV A-sample lines to UAM lines. We expect to complete Field Acceptance Test (FAT) in August, Site Acceptance Test (SAT) in September, and start producing cells in October. Both UAM lines will make 20 Ah to 30 Ah medium Li-Metal cells and modules. We are making great progress testing these Li-Metal modules based on the rigorous safety tests for aviation certification. We have already entered a few cell testing agreements with leading UAM OEMs and expect to enter a few more later this year.

For drones, we are seeing growing demand from both industrial and defense customers, especially for small swarm drones. The drone market was estimated to be \$28 billion in 2023 (Skyquest), about 1.8x the \$16 billion estimated market size for AR/VR goggles in 2023 (Consegic Intelligence). We have already converted our small cell lines to make 4 Ah to 6 Ah small Li-Metal cells and modules (configuration ranging from 2 cells to 12 cells).

3. Data Collection

Without data, there cannot be intelligence. The development of artificial general intelligence (AGI) relies extensively on the tremendous amount of data that our human species accumulated, including stories, books, writings, social media profiles, and online data. However, the equivalent battery data does not exist today, at least nowhere near the same scale. **Collecting large amounts of well-labeled and high-quality data becomes imperative to the successful development of AI for batteries.**

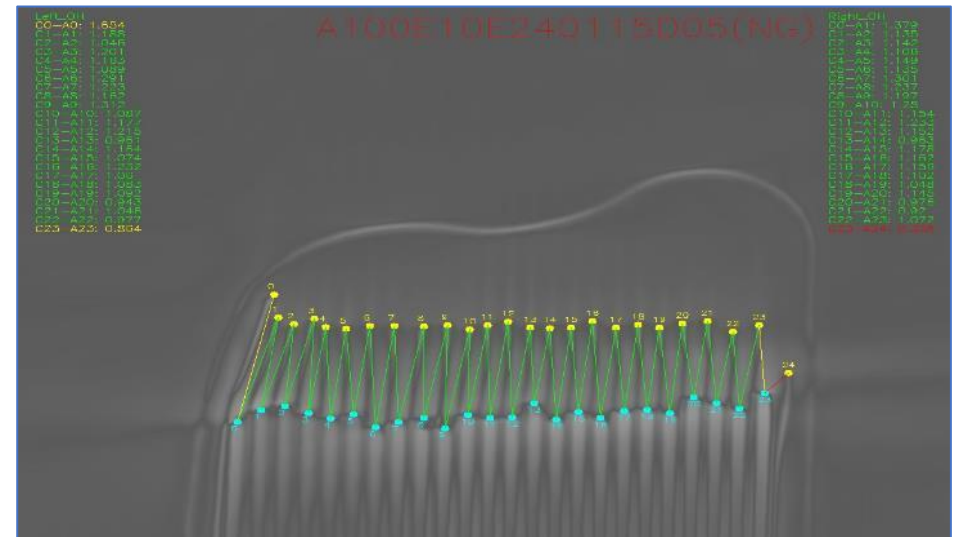
AI for Manufacturing

The traditional approach to optimizing cell design and process and improving manufacturing quality is through human experience, where the human engineers define and optimize quality specifications, typically takes at least eight years. Battery manufacturing is often more of an art than a science, especially between the good ones and the very best. While this traditional human experience-based approach has worked well in the past and works today for mature Li-ion cell technologies, it slows down large-scale commercialization of next-gen battery technologies. **We believe AI for Manufacturing can accelerate this timeline by 10x. It uses machine learning to define and fine-tune quality specifications based on manufacturing process data collected, which is much faster and more accurate than human engineers.**

Our EV-B sample, UAM and drone lines produce an enormous amount of data, the largest manufacturing data of Li-Metal cells anywhere in the world. We produce more than 1,000 cells per line per month and growing. There are more than 1,000 quality check points per cell and growing, including both time-series data and images such as CT, X-ray, ultrasound, and vision. There are thousands of process steps with complex individual and group relationships. **Our AI for Manufacturing model has already been pre-trained on more than 15,000 Li-Metal cells.**

We are very excited to announce the installation of AI for Manufacturing on ALL of our Li-Metal lines, from EV-B sample to UAM to small drones. We expect it will provide very detailed and accurate individual cell and process step level quality and group steps relationship analysis. This will further accelerate the optimization of manufacturing quality, preparing us for EV-C sample and larger scale UAM and drone manufacturing. In addition to in-house AI for Manufacturing development, we also plan to partner with big tech companies and incorporate the latest AI for Manufacturing approach from the semiconductor industry.

As we continue to work with our automotive OEMs for EV-C sample and SOP, this AI for Manufacturing capability allows us to bring enormous value to our auto OEM and large battery manufacturing partners.



AI tools are developed to assist CT analysis of a cell during manufacturing

AI for Safety

Traditional vehicle battery health monitoring and safety prediction are based on a set of boundary conditions determined by humans (physics-based models). These would include, for example, state-of-health (SOH), state-of-charge (SOC), capacity, voltage, temperature, current, time, to name a few. While the boundary conditions are well understood by humans, they are not enough to accurately predict battery remaining useful life and incidents.

AI is far more accurate and powerful at detecting anomalies than even the best human engineers. In AI for Safety, rather than relying solely on human-developed boundary conditions, we have pre-trained our large language models (LLMs) with the cell cycling data of more than 15,000 Li-Metal cells under various mission profiles, including more than 100 actual flight hours of drones using our Li-Metal modules.



A drone equipped with Li-Metal modules in test flight

Interestingly, the LLMs identified features that can detect anomalies and send early warning signals far more accurately. These AI-developed features work remarkably, and we are working on improving the explainability of these AI models. With more vehicle battery data training, we believe that AI for Safety can help guarantee near 100% safety in the field, addressing the core issue of not only Li-Metal but all next-gen batteries with higher energy densities – safety.

In working with our OEM partners, our AI for Safety model has been able to predict 100% of more than 40 incidents. Our model predicted the incidents 10 to 30 cycles earlier than they occurred and sent warning signals. We also continued the cycle test until the actual incidents to verify the prediction accuracy. In comparison, our human-based models were only able to predict around 80% of the incidents.

AI for Science

Human research and development on battery materials has been the single slowest step in commercialization of next-gen battery technologies. For example, the entire global Li-ion industry spent 30 years studying less than 1,000 unique molecules, when there are 100 billion (10^{11}) unique molecules that could be used and should be studied. On average it takes human scientists 10 years to introduce a new battery material. We believe AI for Science can do that in one year.

Unlike AI for Manufacturing and Safety that collect actual data from the lines and vehicles, AI for Science requires an enormous molecular property database that currently does not exist, synthesizing this property database requires massive computing power.

Recently, we started a new initiative called [Molecular Universe](#) whose goal is to crowdsource subsidized and free computing resources to map the properties of small molecules. Several universities, national labs and big tech companies have participated in this initiative, and we have already mapped about 10^6 molecules. With more GPUs, we expect to map a large enough Molecular Universe that our AI model training will reach sufficient accuracy. Once we have this map, we believe we can accelerate material discovery for any battery problem. This includes not just Li-Metal for

EV, UAM and drones, but also Li-ion batteries for consumer electronics, grid storage, automotive, and other applications.

Most of these molecules are completely new and not commercially available. That's why we built Electrolyte Foundry, which has been operational since April this year and is already included in our 2024 guidance. This Electrolyte Foundry employs some of the best organic synthesis chemists in the world. **Now we have complete ability from molecular mapping to generative AI models for new molecules, to molecular synthesis and purification, to high-throughput electrolyte formulation screening, and to small and large cell testing. We believe no one in the battery industry has such a complete capability.**



The new Electrolyte Foundry just outside our Boston HQ



4. Deployment and Monetization

These three AI solutions represent what we expect to be exciting and sooner-than-expected revenue streams, as well as the future business model of electric transportation.

AI for Manufacturing and Safety

To truly ensure near 100% safety in the field, manufacturing quality and vehicle safety data must be integrated. Here is where SES AI comes in. Our Li-Metal cells for EV, UAM and drones will be the first time that manufactur-

ing and safety data are integrated to ensure near 100% safety. We are also working with some of our peers in both next-gen Li-ion and Li-Metal batteries to consolidate manufacturing and safety data for our model training. The larger and more diverse the data, the more accurate the models become.

The value proposition for these OEMs is that incident prediction can prevent costly recalls, and more accurate remaining useful life prediction can help extend battery lifetime.

AI for Science

SES AI has the strongest battery electrolyte development capability.

Many battery companies and OEMs do not have the resources to develop good electrolyte materials. We can in-source intelligence and help them solve their challenges. We will start by seeking to beat the Li-Metal electrolyte Coulombic Efficiency record set by human scientists. We will then expand to Li-ion applications such as low temperature performance and fast charge, non-volatility, and expand from automotive to consumer electronics to grid storage and many other applications.

This type of in-source intelligence for the AI for Science business model can find an analogy in the pharmaceutical industries that enjoy much higher profit margins. We have been applying this to Li-Metal material discovery and expect we will also apply it to Li-ion material discovery.

5. All-in on AI

AI is changing everything. Our AI for Manufacturing, AI for Safety, and AI for Science models are accelerating the commercialization, time to revenue and profitability of Li-Metal for EV, UAM and drones. But they can also be applied to the broader Li-ion applications.

Having navigated numerous industry cycles, I'm particularly proud of developing a technology from the ground up that many deemed impossible. Our collaboration with a diverse portfolio of world-class customers further validates our efforts. However, I have never been more excited about our business than I am now with the integration of AI into every aspect of our operations. I firmly believe this will enable us to drive transformative change on a global scale. I am truly fortunate to be living in this exciting period in transportation, science and AI.

Financial Highlights and Outlook

In the second quarter, our GAAP operating expenses were \$24.6 million. Cash used in operations was \$22.1 million and capital expenditures were \$3.7 million. We ended the second quarter with \$294.7 million in liquidity.

As we continue to be very prudent with our cash and management of expenditures, we updated our full year 2024 guidance. We now expect total cash usage to be in the range of \$100 million to \$120 million (down from \$110 million to \$130 million previously). This range is comprised of cash usage from operations of \$85 million to \$95 million (compared with \$90 million to \$100 million previously) and capital expenditures in the range of \$15 million to \$25 million (compared with \$20 million to \$30 million previously). We expect our strong balance sheet to provide liquidity for the company well into 2027. Going forward in C-sample and beyond, we expect to share capacity build-up capital expenditures with our OEM partners. UAM/drones and our AI solutions could provide potential upside to earlier commercialization.

2024 Goals

In addition to the vision we have outlined for our three AI solutions, our top priorities for the year remain focusing on capital efficiency, attracting top talent, continuing to make progress on delivering Li-Metal cells to our EV, UAM and drone partners, and leading the AI transformation of the battery industry.



Qichao Hu

Founder, CEO and Chairman



Jing Nealis

Chief Financial Officer

SES AI Corporation
Condensed Consolidated Balance Sheets
(Unaudited)

(in thousands, except share and per share amounts)	June 30, 2024	December 31, 2023
Assets		
Current Assets		
Cash and cash equivalents	\$ 54,816	\$ 85,671
Short-term investments	239,939	246,775
Receivable from related party	590	3,911
Inventories	519	558
Prepaid expenses and other assets	14,275	11,712
Total current assets	310,139	348,627
Property and equipment, net	41,236	37,959
Intangible assets, net	1,281	1,345
Right-of-use assets, net	11,123	13,099
Deferred tax assets	1,057	1,057
Other assets, non-current	3,535	4,723
Total assets	\$ 368,371	\$ 406,810
Liabilities and Stockholders' Equity		
Current Liabilities		
Accounts payable	\$ 2,363	\$ 4,830
Operating lease liabilities	2,474	2,404
Accrued expenses and other liabilities	9,121	13,121
Total current liabilities	13,958	20,355
Sponsor Earn-Out liabilities	1,880	4,166
Operating lease liabilities, non-current	9,348	11,316
Unearned government grant	9,023	9,270
Other liabilities, non-current	2,589	2,753
Total liabilities	36,798	47,860
Stockholders' Equity		
Preferred stock, \$0.0001 par value; 20,000,000 shares authorized, none issued and outstanding as of June 30, 2024 and December 31, 2023, respectively	—	—
Common stock: Class A shares, \$0.0001 par value, 2,100,000,000 shares authorized; 312,025,684 and 310,266,922 shares issued and outstanding as of June 30, 2024 and December 31, 2023, respectively;		
Class B shares, \$0.0001 par value, 200,000,000 shares authorized; 43,881,251 shares issued and outstanding as of June 30, 2024 and December 31, 2023, respectively	35	35
Additional paid-in capital	568,199	559,214
Accumulated deficit	(234,140)	(198,686)
Accumulated other comprehensive loss	(2,521)	(1,613)
Total stockholders' equity	331,573	358,950
Total liabilities and stockholders' equity	\$ 368,371	\$ 406,810

SES AI Corporation
Condensed Consolidated Statements of Operations and Comprehensive Loss
(Unaudited)

(in thousands, except share and per share amounts)	Three Months Ended June 30,		Six Months Ended June 30,	
	2024	2023	2024	2023
Operating expenses:				
Research and development	\$ 15,057	\$ 6,347	\$ 26,822	\$ 14,836
General and administrative	9,570	12,924	19,076	26,047
Total operating expenses	24,627	19,271	45,898	40,883
Loss from operations	(24,627)	(19,271)	(45,898)	(40,883)
Other income (expense):				
Interest income	3,995	4,129	8,157	8,269
Gain on change in fair value of Sponsor Earn-Out liabilities	1,411	2,926	2,286	3,495
Miscellaneous (expense) income, net	(580)	(405)	294	415
Total other income, net	4,826	6,650	10,737	12,179
Loss before income taxes	(19,801)	(12,621)	(35,161)	(28,704)
Provision for income taxes	(96)	(327)	(293)	(470)
Net loss	(19,897)	(12,948)	(35,454)	(29,174)
Other comprehensive loss, net of tax:				
Foreign currency translation adjustment	(93)	(1,492)	(550)	(1,420)
Unrealized loss on short-term investments	(59)	(721)	(358)	(254)
Total other comprehensive loss, net of tax	(152)	(2,213)	(908)	(1,674)
Total comprehensive loss	\$ (20,049)	\$ (15,161)	\$ (36,362)	\$ (30,848)
Net loss per share attributable to common stockholders:				
Basic and diluted	\$ (0.06)	\$ (0.04)	\$ (0.11)	\$ (0.09)
Weighted-average shares outstanding:				
Basic and diluted	320,833,854	314,578,498	319,812,287	314,003,663

SES AI Corporation
Condensed Consolidated Statements of Cash Flows
(Unaudited)

(in thousands)	Six Months Ended June 30,	
	2024	2023
Cash Flows From Operating Activities		
Net loss	\$ (35,454)	\$ (29,174)
Adjustments to reconcile net loss to net cash used in operating activities:		
Gain from change in fair value of Sponsor Earn-Out liabilities	(2,286)	(3,495)
Stock-based compensation	9,586	13,787
Depreciation and amortization	3,666	2,317
Accretion income from available-for-sale short-term investments	(3,889)	(5,851)
Other	(1,478)	(346)
Changes in operating assets and liabilities:		
Receivable from related party	3,321	(47)
Inventories	22	63
Prepaid expenses and other assets	(2,548)	(6,602)
Right-of-use assets	1,802	(812)
Accounts payable	(274)	2,332
Accrued expenses and other liabilities	(1,824)	(3,815)
Operating lease liabilities	(1,715)	778
Net cash used in operating activities	(31,071)	(30,865)
Cash Flows From Investing Activities		
Purchases of property and equipment	(10,454)	(7,787)
Purchase of short-term investments	(133,999)	(136,011)
Proceeds from the maturities of short-term investments	145,000	120,000
Net cash provided by (used in) investing activities	547	(23,798)
Cash Flows From Financing Activities		
Proceeds from stock option exercises	128	77
Net cash provided by financing activities	128	77
Effect of exchange rates on cash	(501)	(595)
Net decrease in cash, cash equivalents and restricted cash	(30,897)	(55,181)
Cash, cash equivalents and restricted cash at beginning of period	86,966	107,936
Cash, cash equivalents and restricted cash at end of period	\$ 56,069	\$ 52,755
Supplemental Cash and Non-Cash Information:		
Income taxes paid	\$ 203	\$ 158
Accounts payable and accrued expenses related to purchases of property and equipment	\$ 2,081	\$ 3,877
Operating lease liabilities arising from obtaining right-of-use assets	\$ —	\$ 1,754

Forward-looking Statements

This letter contains statements that SES AI believes are “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements include, without limitation, statements relating to expectations for future financial performance, business strategies or expectations for our business. These statements are based on the beliefs and assumptions of the management of SES AI. Although SES AI believes that its plans, intentions and expectations reflected in or suggested by these forward-looking statements are reasonable, it cannot provide assurance that it will achieve or realize these plans, intentions or expectations. These statements constitute projections, forecasts and forward-looking statements, and are not guarantees of performance. Such statements can be identified by the fact that they do not relate strictly to historical or current facts. When used in this press release, words such as “anticipate”, “believe”, “can”, “continue”, “could”, “estimate”, “expect”, “forecast”, “intend”, “may”, “might”, “plan”, “possible”, “potential”, “predict”, “project”, “seek”, “should”, “strive”, “target”, “will”, “would” and similar expressions may identify forward-looking statements, but the absence of these words does not mean that a statement is not forward-looking.

You should not place undue reliance on these forward-looking statements. Should one or more of a number of known and unknown risks and uncertainties materialize, or should any of SES AI’s assumptions prove incorrect, our actual results or performance may be materially different from those expressed or implied by these forward-looking statements. Some factors that could cause actual results to differ include, but are not limited to the following risks: risks related to the development and commercialization of SES AI’s battery technology and the timing and achievement of expected business milestones; risks relating to the uncertainty of achieving and maintaining profitability; risks relating to the uncertainty of meeting future capital requirements; the ability of SES to integrate its products into electric vehicles (“EVs”) and Urban Air Mobility (“UAM”), drones and other applications; the risk that delays in the pre-manufacturing development of SES AI’s battery cells could adversely affect SES AI’s business and prospects; the market for air mobility, and for use of Li-Metal technology in air mobility applications, is still emerging and may not achieve the growth potential we expect; risks relating to the development of the UAM market and demand for batteries from the UAM industry; potential supply chain difficulties; the ability of SES AI to engage target original equipment manufacturers (“OEMs”) customers successfully and integrate SES AI’s products into EVs manufactured by OEM customers; the ability to obtain raw materials, components or equipment through new or existing supply relationships; risks resulting from SES AI’s joint development agreements and other strategic alliances and investments; our use of artificial intelligence and machine learning may result in legal and regulatory risk; product liability and other potential litigation, regulation and legal compliance; SES AI’s ability to attract, train and retain highly skilled employees and key personnel; developments in alternative technology or other fossil fuel alternatives; risks related to SES AI’s intellectual property; business, regulatory, political, operational, financial and economic risks related to SES AI’s business operations outside the United States; SES AI has identified material weaknesses in its internal control over financial reporting and may identify material weaknesses in the future or otherwise fail to develop or maintain an effective system of internal controls; the volatility of SES AI’s common stock and value of SES AI’s public warrants; and the other risks described in “Part I, Item 1A. Risk Factors” in our annual report on Form 10-K for the fiscal year ended December 31, 2023 filed with the Securities and Exchange Commission (“SEC”) on February 27, 2024 and other documents filed from time to time with the SEC. There may be additional risks that SES AI presently knows and/or believes are immaterial that could also cause actual results to differ from those contained in the forward-looking statements. In addition, forward-looking statements reflect SES AI’s expectations, plans or forecasts of future events and views only as of the date of this press release. SES AI anticipates that subsequent events and developments will cause its assessments to change. However, while SES AI may elect to update these forward-looking statements at some point in the future, SES AI specifically disclaims any obligation to do so. These forward-looking statements should not be relied upon as representing SES AI’s assessments as of any date subsequent to the date of this letter.