



## TOP PICKS: UNMANNED AERIAL SYSTEMS IN FUTURISTIC WARFARE

### OUR INVESTMENT THESIS

The U.S. Air Force (USAF) finds itself at a crossroads, facing unprecedented changes driven by the rapid evolution of drone technologies and other novel systems. At the AFA Warfare Symposium on February 13, 2024, Chief of Staff Gen. David W. Allvin acknowledged this seismic shift, stating that the armed forces must adapt to the profound transformations occurring globally in airpower. The lessons drawn from ongoing conflicts underscore the necessity for this adaptation, as drones and low-cost weapons are reshaping modern warfare. Drones are now integral to tactical operations, offering rucksack portability and seamless integration into military structures. Amid this backdrop, the U.S. Army announced the Short-Range Reconnaissance (SRR) program, to equip soldiers with a rapidly deployable small Unmanned aircraft systems (UAS) solution to conduct reconnaissance and surveillance (R&S) activities. The Army plans to execute multiple tranches for its SRR platforms to advance UAS technology developments and increase overall performance. **By prioritizing small, rapidly deployable UAS solutions, the program presents a significant opportunity for companies to capitalize on the increasing demand from the U.S. military and allied nations, positioning them for future growth in this critical market.**

### OUR INVESTMENT PICKS



#### Red Cat Holdings, Inc. (NASDAQ: RCAT)

Red Cat's focus on developing cutting-edge drone intelligence solutions for the U.S. military, NATO allies, and public safety organizations positions the company for significant growth. The company has secured contracts, including the SRR Program of Record with the U.S. Army and a deal with the Royal Australian Navy, expanding its global footprint. Strong financial growth, highlighted by a 59% YoY revenue increase and a \$13 million backlog, provides a solid foundation for continued expansion.



#### Skydio (Private)

The company has over 50% of its \$1.2 billion order pipeline coming from defense clients, and has secured significant contracts with U.S. law enforcement agencies. Its strategic shift towards software has improved its financials, with a 38.1% gross margin and over \$100 million in 2023 revenue. Additionally, Skydio's commitment to American manufacturing and recent \$170 million funding extension strengthens its position for long-term growth and profitability.



#### Saxon Unmanned (Private)

The company provides innovative products like the modular Viper M-Series, which can adapt to various mission profiles, and the Inspector UAS Multicopter, a proven solution for large-scale mapping, Intelligence, Surveillance, and Reconnaissance (ISR), Search and Rescue (SAR), and industrial inspections.

### IS AIR-BORNE WARFARE SHIFTING FROM FIGHTER JETS TO UAVS?

**In the rapidly evolving landscape of military strategy, a silent revolution has been underway over the past few years.** Drones have emerged as a disruptive force, reshaping the nature of modern warfare. This shift represents more than the introduction of a new weapon; it signifies a cost-effective means of warfare that redefines the strategic dynamics between military powers. The success of drone technology on the battlefield is compelling: Ukraine's unmanned surface vessels (USV) as suicide drones of the naval program permanently drove Russia's Black Sea fleet from Sevastopol, while the Houthis in Yemen persistently disrupt Red Sea access using drones. After two years, neither Russia nor Ukraine has achieved air superiority, leading both parties to rely heavily on unmanned systems, artillery, trenches, and electronic warfare (EW) for tactical advantage. This prolonged conflict has fueled the continuous development and deployment of new drones and EW systems, with each advancement spawning countermeasures from the opposing force, characterized by low production costs. These instances point to a new geostrategic reality where drones have become a fast, cheap, and disposable alternative to traditional large-scale military assets. They challenge conventional military practices, rendering tanks, helicopters, surface vessels, and even submarines vulnerable. As Defense News recently reported, low-cost first-person-view (FPV) drones are now capable of striking larger platforms with alarming frequency, underscoring the shift in warfare where traditional assets are no longer the dominant force.

**The size and cost of military drones have been decreasing significantly despite their sensor-rich nature.** This trend underscores the strategic importance of integrating these small "attributable" drones across all military operations. By 2028, the drone market is expected to reach \$18 billion, reflecting growing demand. Moreover, data integration and portability have become essential in modern warfare, with retired Four-Star Army General Paul Edward Funk II noting, "Operational success today depends on the ability to seamlessly move data across the battlefield." In this context, Small unmanned aerial systems play a vital role in ISR and surgical strike capabilities, enabling real-time decision-making based on immediate needs. This underscores the need for advancing drone technology further.

### THE U.S. MILITARY: A FRONTRUNNER IN DRONE ADOPTION, DRIVING THE MARKET GROWTH

**The U.S. Department of Defense (DoD) recognized this evolving landscape of military technology with the announcement of the Replicator Program in August 2023.** Aiming to deliver all-domain autonomous systems (ADA2) at a scale of thousands across multiple domains by August 2025, the DoD has allocated \$1 billion to this initiative. Concurrently, the military is advancing its small uncrewed aircraft systems (sUAS) capabilities through the SRR program. This initiative aims to replace the long-serving AeroVironment RQ-11 Raven, which has been the backbone of real-time reconnaissance, surveillance, and target acquisition (RSTA) capabilities for ground maneuver elements at the battalion level and below for nearly two decades. On February 8, 2024, Secretary of the Army Christine Wormuth and General Randy George, Army Chief of Staff, jointly announced plans to phase out the Raven as part of a comprehensive "rebalance" of the Army's aviation investments.

**The SRR program is meticulously designed to furnish soldiers with a swiftly deployable sUAS solution, enabling them to conduct R&S activities more effectively than before.** To drive this advancement, the Army is implementing multiple tranches for its SRR platforms, fostering technological developments and enhancing overall performance in the sUAS sector. We believe that this strategic pivot signals a recognition by the U.S. Army of the evolving battlefield dynamics and the necessity for more advanced, adaptable sUAS capabilities. The phasing out of the Raven, while a significant move, is not surprising given its age and the emergence of newer technologies. We think that the SRR program's focus on Group 1 and 2 UAS—those weighing less than 55 pounds and flying at or below 3,500 feet above ground level—indicates an emphasis on maintaining a low logistical footprint while maximizing operational flexibility. RCAT's innovative product designs stood the test, and were selected after the meticulous screening process.

**The broader implications of these advancements extend beyond individual platforms urging immediate action from the U.S. Army and DoD to strengthen the defense industrial base.** Michael Robbins, President and CEO of the Association for Uncrewed Vehicle Systems International (AUVSI), echoed this sentiment: "AUVSI urges... immediate action by placing large-scale orders for uncrewed systems." This decisive action is crucial not only for not only to adapt to modern warfare but also to reinforce the U.S.'s defense industrial base. We believe that strategic investments in drone

technology will yield significant dividends in terms of operational effectiveness, tactical flexibility, and long-term readiness.

### LEGISLATIVE INITIATIVES ARE ALSO BOOSTING THE DRONE MARKET

The U.S. drone industry's growth is also being driven by recent legislative actions aimed at reshaping its landscape and fostering domestic growth. The American Security Drone Act, passed earlier this year, has set forth a new regime that will prohibit the U.S. federal government from purchasing or using drones made in China or containing components manufactured from China after November 2025. This move is a response to China's, notably DJI's (A Chinese camera drone manufacturer), dominance in the global drone market, with its products accounting for nearly 90% of the U.S. consumer market and around 70% of its industrial segment. These and similar other legislative actions, we believe, could significantly catalyze growth among U.S. drone manufacturers over the next five years, with the global number of drones expected to reach 10 million by 2030. We think RCAT's active expansion into these attritable drone product offerings positions it well in this rapidly growing market. As military strategies continue to evolve, we expect the demand for affordable, yet capable drones to remain robust. The future of warfare may indeed be quiet and disposable, but its strategic implications are anything but silent. We spotlight RCAT below.

### COMPANY SPOTLIGHT: RED CAT HOLDINGS, INC. (NASDAQ: RCAT)

RCAT, headquartered in San Juan, Puerto Rico, focuses primarily on defense-focused aerial solutions. The company's portfolio spans critical situational awareness and actionable intelligence systems, designed to empower warfighters, battle commanders, firefighters, and public safety officials with time-critical information for faster decision-making. At its core, Red Cat operates through two wholly-owned subsidiaries: Teal Drones and Flightwave Aerospace. Both entities have been strategically selected by the Department of Defense as Blue UAS-approved vendors, a testament to their commitment to quality and innovation in sUAS for the U.S. government. **We believe that Red Cat's focus on developing advanced drone intelligence solutions for U.S. military forces and NATO allies positions it well in the dynamic defense sector.** Through its bleeding-edge Family of ISR and Precision Strike Systems, including the Teal 2 with industry-leading thermal imaging resolution, the Edge 130 Blue Tricopter for extended endurance and range, and FANG – the first line of NDAA compliant FPV drones optimized for military operations – Red Cat is investing in the future of U.S. defense solutions. We think investors should take note of this company's strategic positioning and potential growth opportunities in the drone technology space.

#### Chart 1: Red Cat Equipping Teal Drones with AI-Enhanced Voice-Control Capabilities



Source: Intro-act, Drone DJ

On November 19, 2024, RCAT's next-generation Teal-2 system of drones was announced as the winner of the SRR Program of Record. This caps off a rigorous, multi-tranche competitive process that involved the Army Project Management Office for Uncrewed Aircraft Systems, Army Maneuver Battle Lab, Army Test and Evaluation Command, and Army Operational Test Center. George Matus, founder of Teal and CTO of Red Cat, attributes this success to the collective efforts of the team over five years, emphasizing that soldier feedback, technical performance, volume manufacturability, and system cost were key factors in their victory. With this win, Red Cat is now primed to commence mass production of its next-generation system, recently unveiled as the Black Widow and WEB, ensuring warfighters are equipped with state-of-the-art tools for modern battlefield operations. The Teal-2, manufactured by Red Cat's subsidiary Teal Drones at their Utah facility, is not your average consumer drone. It is a cost-effective, man-portable system designed with military operations and public safety organizations in mind. The Teal-2 boasts best-in-class night vision capabilities, multi-vehicle control support, and a fully modular design, making it an invaluable asset for first responders in damage assessment and search and rescue missions. We believe that Teal-2's Blue UAS Certification and FAA Remote ID approval further cement its position as a reliable asset for such critical operations.

The SRR contract selection comes at a pivotal moment for RCAT, coinciding with significant momentum in other areas. The company's recent acquisition of FlightWave Aerospace, announcement of the ARACHNID family of systems, and establishment of the Red Cat Futures Initiative all contribute to a robust portfolio and strategic positioning. We believe this long-term contract will not only enable Red Cat to scale production and improve margins but also provide an opportunity to continually enhance the Black Widow system based on real-world feedback. Moreover, it has also secured a contract with the Royal Australian Navy for the supply of 12 FlightWave Edge 130 Blue systems. This deal, facilitated through Australian distributor Criterion Solutions Pty Ltd., marks an expansion of Red Cat's relationship with the Australian Defense Force and underscores the growing demand for advanced UAS in maritime operations. The FlightWave Edge 130 Blue, acquired by RCAT in September 2024, has proven to be a strategic asset for RCAT. This military-grade tricopter is designed specifically for government and military applications, offering long-range surveillance and reconnaissance capabilities that are particularly valuable in maritime environments due to its size, weight, and vertical take-off capabilities.

Further solidifying its position, Red Cat is supporting disaster response efforts through a recent order for Teal-2 drones from the Florida Army National Guard to assist in Hurricane Milton's aftermath, where over three million people were left without power. Looking ahead, Red Cat's product roadmap, including TRICHON, builds on the success of the FlightWave Edge 130 Blue. We think this ongoing innovation, coupled with strategic partnerships like the one with the Royal Australian Navy, positions Red Cat well to continue expanding its footprint in global defense markets.

In its FQ1 2025, ending July 31, 2024, RCAT reported a 59% YoY revenue increase to \$2.8 million. The company ended the quarter with a record backlog of \$13 million, reflecting the robust pipeline of opportunities. Jeff Thompson, Red Cat's Chairman and Chief Executive Officer, attributed this growth to strong domestic and international adoption of their Family of Systems, which now includes the Edge 130 Blue. He expressed confidence in maintaining this growth trend for CY 2025, with guidance set at \$50-\$55 million. The company also highlighted the significant market potential for NDAA compliant FPV precision strike drones within Red Cat's innovation roadmap. With \$7.7 million in cash at the end of the quarter, the company is well-positioned to fund its growth initiatives and capitalize on emerging opportunities in the drone technology sector.

RCAT is currently trading at an EV/Sales ratio of 41.60x and a P/S ratio of 7.68, both of which exceed its historical averages and the industry benchmark.

Chart 2: RCAT vs. S&P 500 – 1 Yr Price Performance



Source: Intro-act, Trading View, Close as of 11/27

### COMPANY SPOTLIGHT: SKYDIO (PRIVATE)

Founded in 2014 by MIT graduate colleagues, Skydio specializes in cutting-edge autonomous drone technology. Building on a decade of research in drones, artificial intelligence (AI), and computer vision—largely developed during their involvement with Google's Project Wing—the company launched its first consumer drone, the R1, in 2018, which quickly garnered recognition as an industry breakthrough. Notably, the company's products are distinguished by their unique flight capabilities, driven by proprietary AI and computer vision technologies that enable advanced autonomous flight. Additionally, demonstrating a strong commitment to American manufacturing, Skydio handles all design, assembly, and support processes domestically, ensuring not only superior product quality but also enhanced supply chain security, making it a trusted partner for government clients.

On November 15, 2024, Skydio secured an additional \$170 million in funding through an extension round, building upon its earlier Series E closure of \$230 million in early 2023. This latest tranche of investment was led by strategic partners such as Japanese telecom operator KDDI and Axon, the creator of the taser and other police technologies, alongside continued support from existing financial investors like Linse Capital, which holds over a 21% stake in the company. The timing of this extension round aligned with the robust growth in defense tech funding, with deals in this sector surpassing \$9.1 billion in H1 2024, according to PitchBook. However, Skydio opted against pursuing an initially planned Series F round, despite Linse Capital's pitch for a raise between \$200 million-\$300 million at the Series E's \$2.2 billion valuation. Instead, the company opted to extend its Series E, with KDDI's investment of approximately \$60 million playing a pivotal role in kickstarting this round. This decision highlights Skydio's focus on long-term growth and profitability, as the company plans to diversify its revenue streams, a strategy reflected in its financial projections. In 2023, the company achieved over \$100 million in annual revenue, with software contributing around 30% of that total, demonstrating a strong financial position as it moves toward greater profitability.

The company's strategic shift towards software has driven its gross margin up to 38.1%, reflecting favorable changes in its product mix and the benefits of economies of scale in production. Since discontinuing its consumer drone line in 2023, Skydio has made significant inroads in the enterprise and public safety sectors. Despite this strategic pivot, Linse Capital projects that Skydio's revenue will reach approximately \$180 million in 2024. Notably, over 50% of Skydio's \$1.2 billion order pipeline comes from defense clients, underscoring the company's growing military ambitions. Skydio has secured

numerous contracts with U.S. law enforcement agencies, aided by investor Ben Horowitz of Andreessen Horowitz, a key investor of the company. However, this has raised concerns among advocacy groups regarding the potential bypassing of procurement processes. Skydio, meanwhile, maintains that it provides essential, high-quality technology to police departments, emphasizing its commitment to equipping law enforcement with the best assets available.

Despite its funding success and growing law enforcement contracts, the company, like many hardware startups, faces considerable. Linse Capital's projections suggest a burn rate of around \$350 million by 2029, a more conservative figure than Skydio's estimates. Skydio's future growth will depend largely on its hardware releases and its ability to convince law enforcement and utility companies to choose its drones over competitors such as Brinc and DJI. Geopolitical tensions, particularly surrounding Chinese drone manufacturers, could present opportunities for Skydio, but the company must navigate challenges like supply chain disruptions resulting from recent sanctions imposed by China in response to Skydio's sales to Taiwan.

### COMPANY SPOTLIGHT: SAXON UNMANNED (PRIVATE)

Saxon Unmanned, established over two decades ago, specializes in the manufacturing of long-endurance, custom remote aircraft systems. With extensive experience in developing solutions for a wide range of air and sea applications, Saxon has proven its adaptability in meeting the diverse requirements of clients and missions. This flexibility is reflected in Saxon's ability to seamlessly serve both private and public sector contracts, managing projects from initial concept through to final delivery.

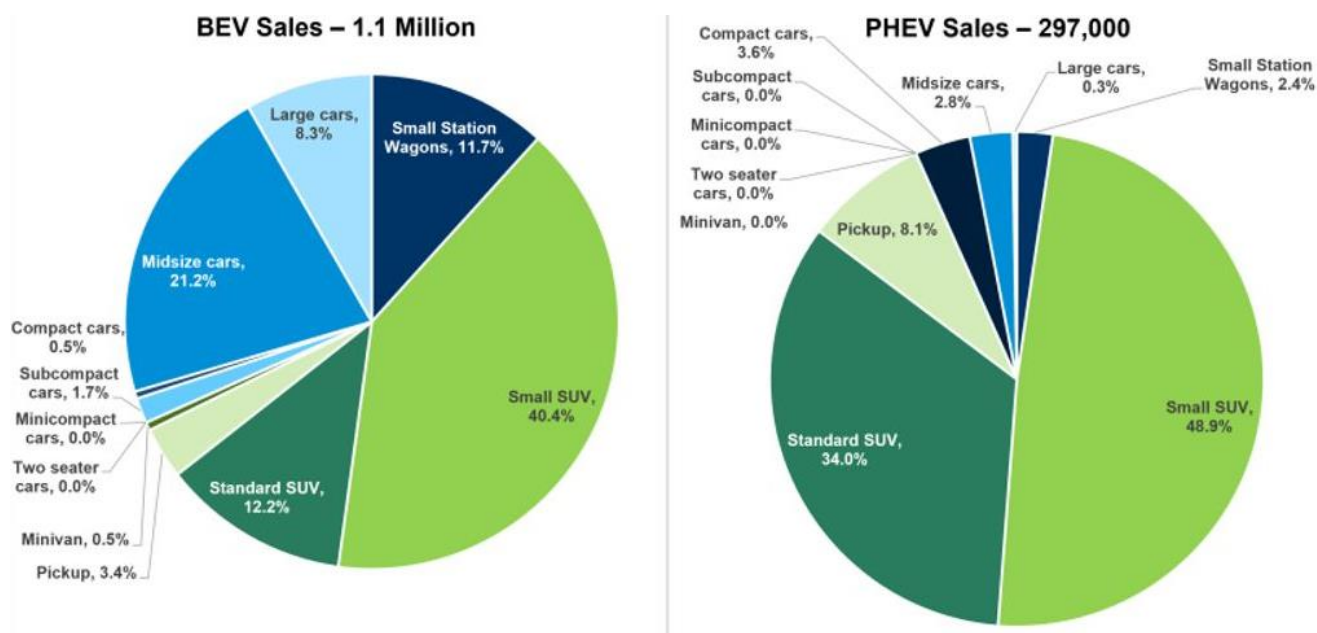
One of Saxon's flagship products is the M14 Monitor, a proven UAV renowned for its power and reliability. With hundreds of successful flights, including high-profile defense missions lasting up to 18 hours with an ISR payload, the M14 has earned its reputation as a dependable airframe. Its modular design facilitates swift field repairs, making it an ideal choice for critical long-range missions. Another notable product is the Inspector UAS Multicopter, a state-of-the-art multi-rotor platform designed for ultra-long-range missions. Capable of 45 minutes of flight time with a modest payload and favorable wind conditions, the Inspector has proven its mettle in large-scale mapping projects and other critical operations such as ISR, search and rescue (SAR), and industrial inspections. The Viper M-Series is another modular offering from Saxon. The nose cone and bottom fuselage sensor bays are easily swappable to accommodate various mission profiles. A unique feature of the M10 and M12 models is the ability to adjust the wing location to match the center of gravity, eliminating the need for internal component movement within the payload bay. Both electric and gas power options are available for these models.

## MOBILITY NEWS

### INDUSTRY TRENDS

**U.S. EV And PHEV Buyers Prefer Small SUVs: Midsize Electric Cars Popular Too.** U.S. EV and PHEV buyers prefer small SUVs, with 40.4% of sales in this category, followed by midsize cars at 21.2%, standard SUVs at 12.2%, small station wagons at 11.7%, and large cars at 8.3%. SUVs overall accounted for 53% of BEV sales and 83% of PHEV sales. The popularity of small SUVs is driven by models like the Tesla Model Y, while midsize electric cars are also in demand. Plug-in hybrid trucks have an 8.1% share of PHEV sales, but this may be due to a standard hybrid truck being misclassified as a PHEV. [Read more.](#) (Inside EVs)

Chart 3: BEV and PHEV Sales by Size Class, 2023

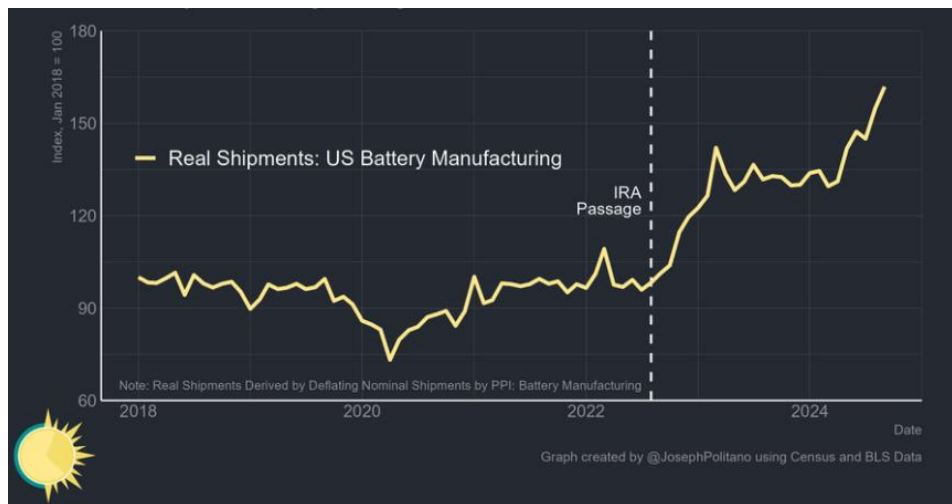


Source: Intro-act, Inside EVs

**Tesla Up, Germans Down: Trump Re-election Already Shifts the Market.** Donald Trump's reelection led to a 4.6-6.4% drop in shares of German automakers BMW, Mercedes-Benz, Porsche, and Volkswagen due to his plan to impose new import tariffs on goods from abroad. This could impact the U.S. market, which accounts for 12.9% of their production. Trump also threatened higher tariffs on Mexico if it doesn't address immigration concerns, affecting German automakers with factories in Mexico. The Inflation Reduction Act's potential repeal and federal tax credit for EVs may be affected, impacting manufacturers' incentives to build cars in the U.S. [Read more.](#) (Inside EVs)

**America is in The Middle of a Secret Battery Boom.** The U.S. is experiencing a secret battery boom, with domestic lithium-ion battery production increasing significantly since the passage of the Inflation Reduction Act (IRA). According to data analyst Joey Politano, battery production has risen 25% in the U.S. since 2023. This trend tracks with other studies showing China's global investments in clean technology manufacturing and control of the battery space are down from 2022 and 2023. The IRA's incentives have driven investment in EV battery making, reaching \$40 billion between 2020 and Q3 2023. [Read more.](#) (Inside EVs)

### Chart 4: American's Battery Manufacturing Boom



Source: Intro-act, Inside EVs

**U.S. EV industry set for boost as ExxonMobil and LG Chem strike lithium deal.** ExxonMobil is planning a lithium extraction project in Arkansas, partnering with LG Chem to supply up to 100,000 metric tons of lithium carbonate for the latter's Tennessee cathode plant. This domestic supply aims to reduce U.S. reliance on imports and boost EV battery production. The project will use Direct Lithium Extraction technology, cutting carbon emissions by two-thirds compared to traditional mining. The partnership could secure a stable, lower-emission lithium supply for U.S. EV makers, supporting General Motors' 5 million EVs contract with LG Chem from 2026-2035. [Read more.](#) (*Electrek*)

**As U.S. EV sales growth slows, election results could reverse or reinforce the trend.** U.S. electric vehicle sales have quadrupled since President Biden took office, with the administration funding a 500,000-public-charger network and extending tax credits for clean vehicles. However, the rollout of the national network has been slower than hoped. The next president will influence EV policy, including incentives and infrastructure programs, but their impact depends on Congress' makeup. Candidates have not made specific EV proposals, with Trump considering ending purchase tax credits and Harris supporting existing policies. EV sales growth has slowed, but still increased, with analysts predicting 29% of U.S. vehicle sales by 2030. [Read more.](#) (*Automotive Dive*)

**Challenges in Europe's Battery Sector, Mercedes-Benz's Cost-Cutting Measures, and Tesla's Stock Surge.** The electric vehicle (EV) race is increasingly focused on controlling the battery supply chain, and recent developments in Europe and the U.S. highlight key industry shifts. Northvolt, a Swedish battery manufacturer crucial to European automakers, has declared bankruptcy after struggling with delays and high costs, casting doubt on Europe's EV future. Meanwhile, Mercedes-Benz is adjusting its strategy amid weak sales and rising costs, emphasizing profitability over volume and slowing its EV transition. In contrast, Tesla's stock has surged, driven by investor optimism and speculation on CEO Elon Musk's influence in the upcoming Trump administration, despite questions about the company's fundamentals. [Read more.](#) (*Inside EVs*)

**Vehicle pricing fell year-over-year in Q3: Cox Automotive.** New vehicle prices remained stable in Q3 with a slight increase from August but a 0.4% decrease from September 2023, averaging \$48,397. Higher inventory led to aggressive incentive packages, accounting for 7.3% of transaction prices, up from 4.8% last year. Dealers had 2.84 million new vehicles in stock, a 37% increase from 2023. Smaller and more affordable vehicles like the Toyota Corolla (\$25,535) and Honda CR-V (often below \$40,000) contributed to subdued prices. Electric vehicle prices fell 0.9% year-over-year to \$56,351, with incentives averaging \$6,904 or 12.3% of the transaction price. [Read more.](#) (*Automotive Dive*)

### REGULATORY UPDATES

**Detroit Is Turning Lampposts into Internet-Connected EV Chargers.** AT&T and Voltpost are partnering to bring internet-connected lamppost EV chargers to Michigan and the Metro-Detroit area. Voltpost's curbside chargers can be installed in a few hours and charge up to four EVs from a single stall, with limited charging speeds like home chargers. The system is powered by the street lighting grid and has retractable cables for safety. This collaboration aims to expand access to EV charging, with Voltpost expecting to install tens of thousands of curbside chargers by 2030, starting with publicly available stalls in Michigan, New York, and Illinois in the coming months. [Read more.](#) *(Inside EVs)*

**Toyota Calls California EV Rules 'Impossible'.** Toyota's North American head, Jack Hollis, has called California's electric vehicle (EV) regulations "impossible" to meet, citing a lack of demand. The regulations require 35% of new vehicle sales to be zero-emissions from model year 2026. Despite this, Toyota plans to launch several EVs in the U.S., including a three-row family SUV in 2026. The company has increased investments in next-generation battery technologies and building out EV plants in the U.S. but criticizes the regulations for limiting customer choice and distorting the industry. [Read more.](#) *(Inside EVs)*

**Trump's Proposed Tariffs Could Impact U.S. EV Market, Especially Mexican-assembled Models.** President-elect Donald Trump's proposed 25% tariff on all goods imported from Mexico and Canada could disrupt the U.S. electric vehicle (EV) market, particularly affecting popular models like the Honda Prologue and Chevy Equinox EV, which are assembled in Mexico. While Tesla's vehicles are U.S.-made, they still rely on some components sourced from Mexico, making the company vulnerable as well. The tariffs could increase car prices and slow the momentum of EV sales in the U.S., which have been growing due to affordable new models. [Read more.](#) *(Electrek)*

**California to step up with an EV rebate if Trump kills the \$7,500 federal tax credit.** California Governor Gavin Newsom has proposed offering \$7,500 state EV tax rebates to residents if Trump eliminates the federal EV tax credit. The move is a response to Trump's repeated claims that he would kill the \$7,500 credit created by the Biden administration's Inflation Reduction Act. Funding for the rebates could come from California's Greenhouse Gas Reduction Fund, which is funded by polluters under the state's cap-and-trade program. This proposal aims to make clean transportation more affordable and support California's goal of having all new cars sold in the state be zero-emissions vehicles by 2035. [Read more.](#) *(Electrek)*

**California revises LCFS regulations to favor EV charging over biofuels.** The California Air Resources Board has revised the Low Carbon Fuel Standard (LCFS) regulations, making it harder for biofuel producers to generate regulatory credits. This change is expected to result in a larger share of credits going towards supporting electricity for EV charging. The program will provide \$500-1.4 billion annually to the charging sector while funding for biofuels producers like Phillips 66 and Marathon Petroleum will be reduced. Other states and countries may follow California's lead due to similar programs or planned introductions. [Read more.](#) *(Automotive Dive)*

**UCLA Secures \$20 Million Grant for Electric Bus Fleet and Wireless Charging System.** UCLA has received a nearly \$20 million grant from the state of California to transition its BruinBus fleet to 100% electric vehicles and introduce the state's first in-road wireless EV charging system, developed by Electreon. The grant, part of California's Transit and Intercity Rail Capital Program, will expand UCLA's fleet by adding eight electric buses and create charging infrastructure along key campus routes. The wireless charging technology will allow vehicles to recharge while driving, a system already in use in Detroit. [Read more.](#) *(Electrek)*

**Air taxis cleared for takeoff with final FAA rules.** The U.S. Federal Aviation Administration has issued final rules governing electric air taxis, recognizing them as a distinct category of aircraft. The rule covers pilot training and operations for power-lifted aircraft that take off vertically but fly like fixed-wing planes. Companies like Archer Aviation and Joby Aviation have been testing prototypes, and the new regulations will govern their use. The FAA's move is seen as a step towards leadership in clean flight technology, with Joby CEO JoeBen Bevirt praising the development. [Read more.](#) *(Charged EVs)*

### COMPANY NEWS

**Ford Mustang Mach-E Battery Production Is Moving to America.** Ford and LG Energy Solution (LGES) have agreed to move production of the Ford Mustang Mach-E's batteries from Poland to Michigan, starting next year. This change aims to help the electric vehicle regain federal tax credit eligibility after losing it this year due to new battery sourcing rules. The LGES Poland factory will instead produce batteries for Ford's commercial vans sold in the UK and EU. The move is expected to benefit from generous federal incentives under Section 45X of the Inflation Reduction Act, allowing locally-made battery cells to qualify for a \$35 credit per kilowatt-hour. [Read more.](#) *(Inside EVs)*

**Volvo, Polestar Owners Get Tesla Supercharger Access.** Polestar, a Swedish automaker, is struggling with declining EV sales, a 14% year-over-year drop in Q3 deliveries, and a share price that has hit rock-bottom. To turn things around, Polestar's new CEO Michael Lohscheller plans to review its strategy and operations, focusing on commercial capabilities and adopting a more active sales model. Stellantis, the parent company of Jeep, Ram, and Dodge, is undergoing a management shake-up, with CEO Carlos Tavares stepping down in 2026. Meanwhile, former President Donald Trump has expressed concerns about self-driving cars, citing concerns about their reliability and safety. [Read more.](#) *(Inside EVs)*

**Tesla Roadster Replacement Battery Cuts Weight, Improves Performance.** Re/Cell offers replacement Tesla Roadster battery packs that reduce weight and boost performance. The new batteries have slightly less capacity but still offer over 210 miles of range, with the larger pack shedding 275 pounds and increasing power to 382 hp from 288 hp. A smaller pack is also available, cutting 400 pounds and boosting power to 322 hp. Re/Cell's prices are lower than Tesla's, with a credit of up to \$11,500 available for trading in an old battery pack. The new batteries aim to improve handling and speed, matching the Roadster's racing pedigree. [Read more.](#) *(Inside EVs)*

**Hyundai Initium Hydrogen Concept Shows Where Design Is Headed Next.** Hyundai's new concept car, the Initium, previews a 2025 fuel-cell electric crossover and showcases the company's "Art of Steel" design language. The Initium is expected to replace the Nexu FCEV crossover and features a hydrogen fuel cell system with a claimed range of 404 miles on one tank. It will have bidirectional charging capabilities and a retro-influenced design, which will be previewed at the 2024 Los Angeles Auto Show. Hyundai plans to produce the Initium in 2025, aiming to meet its net zero carbon goals by 2045 through hydrogen power for passenger cars. [Read more.](#) *(Inside EVs)*

**Kia PV5 WKNDR EV's 'Hydro Turbine' Wheels Can Generate Electricity with Air or Water.** Kia showcased its PV5 WKNDR electric van at the 2024 SEMA show in Las Vegas, featuring off-road tires with freely spinning rims that can generate electricity using wind or water. The vehicle is highly modular, with seats and furniture that can be rearranged to create a living room, workstation, or kitchen. Its "hydro turbine" wheels move independently and can harness energy from nature's forces while stationary, complemented by a large solar roof. [Read more.](#) *(Inside EVs)*

**Rivian And VW's \$5.8B Joint Venture Will Power A Lot, Including 'Subcompact Cars'.** Rivian and Volkswagen Group's joint venture, called Rivian and VW Group Technology, LLC, has launched with a \$5.8 billion investment. The partnership will leverage Rivian's expertise in software and electrical architectures to develop next-generation technology for both companies' future electric vehicles, including subcompact cars. The venture will be jointly run by co-CEOs Wassym Bensaid and Carsten Helbing, and will focus on electronics and underlying vehicle software, with Volkswagen planning to put a vehicle with the new architecture into production by 2027. [Read more.](#) *(Inside EVs)*

**CATL's New Sodium-Ion EV Battery Works In -40 Degree Cold.** CATL's second-generation sodium-ion batteries can operate normally at -40 degrees Celsius, addressing concerns about extreme weather performance. Sodium-ion batteries have lower energy density than lithium-ion batteries and are less prone to thermal runaway. They can be used in low-energy applications and may replace 20-30% of LFP batteries in select cases. CATL aims to reach an energy density of 200 Wh/kg with its new cells, suitable for low-range EVs or entry-level trims. Sodium-ion batteries have entered production in China and are expected to launch in 2025, with mass production starting in 2027. [Read more.](#) *(Inside EVs)*

**Rivian (RIVN) and Volkswagen officially launch their new EV business partnership.** Rivian and Volkswagen have officially launched a new EV business partnership, with VW investing up to \$5.8 billion to form a joint venture. The partnership aims to accelerate the shift to electric vehicles by combining Rivian's software expertise with VW's global scale, cutting development costs and accelerating tech adoption. The JV will use Rivian's existing electrical architecture and software stack, enabling the launch of more affordable models like the R2 in 2026 and supporting the first Volkswagen EV from the JV as early as 2027. [Read more.](#) (*Electrek*)

**Uber, Lyft plan robotaxi fleet expansions.** Uber and Lyft are expanding their autonomous vehicle fleets, partnering with companies like May Mobility, Mobileye, Nexar, Cruise, Waymo, and others to deploy driverless vehicles in cities such as Atlanta, Austin, and Las Vegas. The ride-hailing companies aim to complement human-driven vehicles with robotaxis, providing a premium experience for customers. With Tesla's robotaxi debut, Uber and Lyft are driving deeper into the autonomous vehicle space, expecting regulatory challenges across federal, state, and city levels. [Read more.](#) (*Automotive Dive*)

**Microporous to build \$1.4B Virginia battery separator plant.** Microporous plans to build a \$1.4 billion plant in Danville, Virginia, producing lithium-ion battery separators for electric vehicles, energy storage systems, and consumer electronics. The facility will create 2,015 jobs and production is expected to begin in 2026. The project will be developed in two phases, with potential expansion to over 2 million square feet. Microporous will receive up to \$185.6 million in grants and incentives from the Department of Energy, state, and local authorities, creating an additional 282 jobs, mostly from local disadvantaged communities. [Read more.](#) (*Automotive Dive*)

**Rivian locks in a 5-year battery deal with LG Energy Solution.** Rivian has signed a five-year battery supply agreement with LG Energy Solution Arizona to source batteries for its R2 model, set to hit the North American market in 2026. The deal is expected to reduce sourcing and production costs, further lower battery weight, enhance energy storage, and improve battery pack assembly processing by 45%. The cylindrical batteries will be used in the R2's body as a structural element, helping Rivian meet Inflation Reduction Act standards for EV tax credits. LG Energy Solution also expects to expand its U.S. presence with a new plant in Arizona. [Read more.](#) (*Automotive Dive*)

**loneer receives a federal permit for its Rhyolite Ridge lithium-boron project in Nevada.** loneer has received the final permit approval from the U.S. Bureau of Land Management for its Rhyolite Ridge lithium-boron project in Nevada. The project aims to supply batteries for over 370,000 U.S. manufactured EVs annually and process battery materials on-site. Construction is scheduled to start in 2025 with the first production in 2028. loneer will use steam power to reduce its carbon footprint and minimize water consumption by deploying new technologies at the processing facility. The company expects to issue updated reserve figures and estimated project costs by December 2024, paving the way for a final investment decision in 2025. [Read more.](#) (*Charged EVs*)

**Rivian Secures \$6.6 Billion Loan to Expand Production.** Rivian has been granted a \$6.6 billion loan from the U.S. DoE to fund its new manufacturing plant in Georgia, significantly aiding its expansion plans. The loan will support the production of the R2 and R3 models, helping Rivian increase its vehicle output to 400,000 annually by 2028, creating 7,500 jobs. This financial boost comes at a critical time for the company, which had faced delays and concerns about its ability to scale. In addition, the U.S. government is pushing forward with a mandate for Automatic Emergency Braking (AEB) in all new cars, despite industry resistance over performance standards. [Read more.](#) (*Inside EVs*)

**Tesla Earns \$2.1 Billion From Selling Regulatory Credits.** Tesla earned \$2.1 billion in 2024 by selling regulatory credits to other automakers struggling to meet emissions targets, accounting for 43% of its profit. These credits are sold to companies that exceed emissions limits, allowing Tesla to profit from its zero-emissions vehicles. While these credit sales have been a lucrative revenue stream, Tesla's future earnings could be at risk if environmental standards are rolled back, a potential policy change promised by former President Donald Trump. Musk believes removing federal clean vehicle incentives could benefit Tesla, but weaker emissions standards might hurt the company's credit sales. [Read more.](#) (*Inside EVs*)

**Argonne develops a new dual-gradient cathode design for Li-ion batteries.** Argonne National Laboratory has developed a new "dual-gradient" cathode design for lithium-ion batteries that increases energy storage capacity, stability, and lifespan while reducing costs. The design features particles with a disordered surface and an ordered core, suppressing cracking and reactivity while maximizing ion transport. Tests confirmed the material's structural and chemical stability during high-voltage operation, with only a 2% loss of storage capacity after 500 charge-discharge cycles. This breakthrough enables the production of smaller, lower-cost batteries for widespread adoption in EVs and grid applications. [Read more.](#) *(Charged EVs)*

**Microchip launches IGBT 7 power devices for electric vehicles.** Microchip Technology has introduced a portfolio of IGBT 7 power devices for electric vehicles, solar inverters, commercial and agricultural vehicles, as well as More Electric Aircraft. The devices feature lower on-state voltage, improved diodes, and increased current capability, enabling lower losses, higher density, and efficiency. They are available in various packages, topologies, and voltage/current ranges, making them suitable for rugged aviation and defense applications at a lower system cost. [Read more.](#) *(Charged EVs)*

**EVgo to install up to 480 new fast EV charging stalls at Meijer grocery stores in the Midwest.** EVgo is expanding its partnership with Midwest grocery retailer Meijer to install up to 480 new DC fast charging stalls at Meijer store locations across six states. This builds on the existing 24 public fast-charging stalls already opened at six Meijer stores in Michigan and Ohio. EVgo plans to open up to 30 new stations by end-2026 and another 30 by end-2027, increasing Meijer's EV charging options from over 35% of its store locations. The partnership aims to provide effortless fast charging for EV drivers and support Meijer's sustainability goals. [Read more.](#) *(Charged EVs)*

**XCharge and Gresol partner to improve recycling solutions for EVSE supply chain waste.** XCharge North America is partnering with Swiss startup Gresol Group to address end-of-life waste from EVSEs, specifically EV charging cables and modules. XCharge will provide broken or worn-down EVSE materials to Gresol and WPI for industrial recycling solution development. Gresol's technologies will process the waste into useful raw materials, including critical metals for new charging stations. The partnership aims to promote sustainable solutions, determine the best recycling methods, and reduce carbon footprint through a continuous lifecycle for charging materials. [Read more.](#) *(Charged EVs)*

**Electrovaya receives a \$3.5 million order for EV batteries, and secures a loan from the U.S. Export-Import Bank.** Electrovaya, an Ontario-based lithium-ion battery manufacturer with operations in Canada and New York, received a \$3.5-million purchase order for immediate delivery of batteries to power material-handling EVs in a Fortune 100 e-commerce company's warehouse operations. The customer has used Electrovaya's batteries extensively, operating over 30 distribution centers. Separately, the company secured a \$50.8 million loan from the U.S. Export-Import Bank to fund its battery manufacturing facility buildout in Jamestown, New York. [Read more.](#) *(Charged EVs)*

**Tesla Introduces Lease Buyout Option, Signaling Shift in Autonomous Vehicle Strategy.** Tesla has introduced a new lease buyout option for all of its vehicles, including the Cybertruck and Model S, allowing customers to purchase their leased car at the end of the term. This marks a departure from Tesla's earlier plans to retain vehicles for a robotaxi fleet powered by Full Self-Driving technology, a vision that has not yet materialized as anticipated. Tesla had previously ended lease buyouts in 2022 to keep vehicles for this autonomous fleet, but with the technology still not fully realized, the company is adjusting its strategy. [Read more.](#) *(Electrek)*

**Evoy Vita to enter U.S. boating market with 300 hp fully electric outboard.** Evoy Vita, a Norwegian manufacturer of electric boat motor systems, has partnered with Finnish boat maker Axopar to supply its Evoy Storm 300+ hp fully electric outboard motors for Axopar's AX/E sub-brand. The boats will be available in the U.S. in 2025 and can also be made available to other builders. Evoy Vita has already made inroads in the U.S. commercial sector with its Vita Seal workboats, which offer up to 10 hours of continuous use and fast DC charging. [Read more.](#) *(Charged EVs)*

**Mitsubishi Chemical invests in Boston Materials' Z-axis carbon fiber technology.** Mitsubishi Chemical's U.S. based investing arm, Diamond Edge Ventures (DEV), has invested in Boston Materials, a startup that manufactures critical materials for semiconductors, aerospace parts, and automotive components. Boston Materials' Z-axis carbon fiber

technology produces conductive and durable materials like metal but light like plastic, with potential applications in thermal management across various industries. The \$13.5 million financing round was co-led by DEV and AccelR8, with participation from other venture capital funds. This investment validates the importance of Boston Materials' technology to Mitsubishi Chemical's industry partners and customers. [Read more.](#) *(Charged EVs)*

**Forge Nano receives \$10 million from GM Ventures to enhance GM battery materials.** Forge Nano received a \$ 10 million investment from GM Ventures to develop its battery coating technology, adding to its previous \$50 million Series C funding round. The company has raised over \$100 million, including investments from Volkswagen and LG Technology Ventures. The funds will enhance Forge Nano's Atomic Armor platform technology, which applies thin coatings to materials or objects to improve performance and durability. A strategic partnership with General Motors aims to use Atomic Armor equipment to coat cathode active materials for EV battery cells, enhancing their performance and lifetime. [Read more.](#) *(Charged EVs)*

**PPG develops a new application method for battery pack fire protection coatings.** PPG has developed Intelligent Dynamic Non-Masking Airless Application (IDNMAA), a new method for applying battery fire protection coatings. The coatings are highly adaptable to any battery pack design, accommodating increasingly complex packs. IDNMAA combines the advantages of airless and flat stream methods, offering precision and efficiency with rapid application and smooth finish, reducing masking needs, material waste, and costs related to manpower and materials usage. [Read more.](#) *(Charged EVs)*

**Yoshi Mobility spins off a fossil fuel refueling unit to focus on e-mobility.** Yoshi Mobility, a U.S. based mobile charging company, will spin off its fleet fuel division to focus on e-mobility. The unit will be acquired by EZFill Holdings. Yoshi has shifted its focus from traditional fueling to mobile vehicle charging for electric and autonomous fleets, virtual vehicle inspection, and on-site maintenance. This move aligns with the company's commitment to sustainability and an electric future, reducing environmental impact and meeting the growing demand for greener solutions in the automotive industry. [Read more.](#) *(Charged EVs)*

**General Motors to invest \$625 million in new Lithium Americas JV.** General Motors has invested \$625 million in a new joint venture with Lithium Americas to fund and develop the Thacker Pass lithium carbonate project in Nevada. GM provided \$430 million in direct cash funding and a \$195 million letter of credit facility, replacing its original \$ 330 million investment commitment. The JV gives GM a 38% interest and an additional 20-year offtake agreement for up to 38% of production volumes from Phase 2. Detailed engineering at Thacker Pass is progressing, with site preparation and process plant area excavation complete. [Read more.](#) *(Charged EVs)*

**Sylvatex secures \$1.4 million from DOE to develop lithium iron phosphate technology.** Sylvatex, a U.S. based battery materials manufacturing technology company, received \$1.4 million from the Department of Energy's ARPA-E to develop lithium iron phosphate (LFP) technology. The funding includes \$500,000 under the SEED program and supplemental funding of \$982,000 for an additional two-year project. This will enable Sylvatex to produce competitive, domestically sourced LFP materials and support new domestic LIB manufacturing, reducing energy consumption, waste, and cost through a controlled approach. [Read more.](#) *(Charged EVs)*

### EV SALES

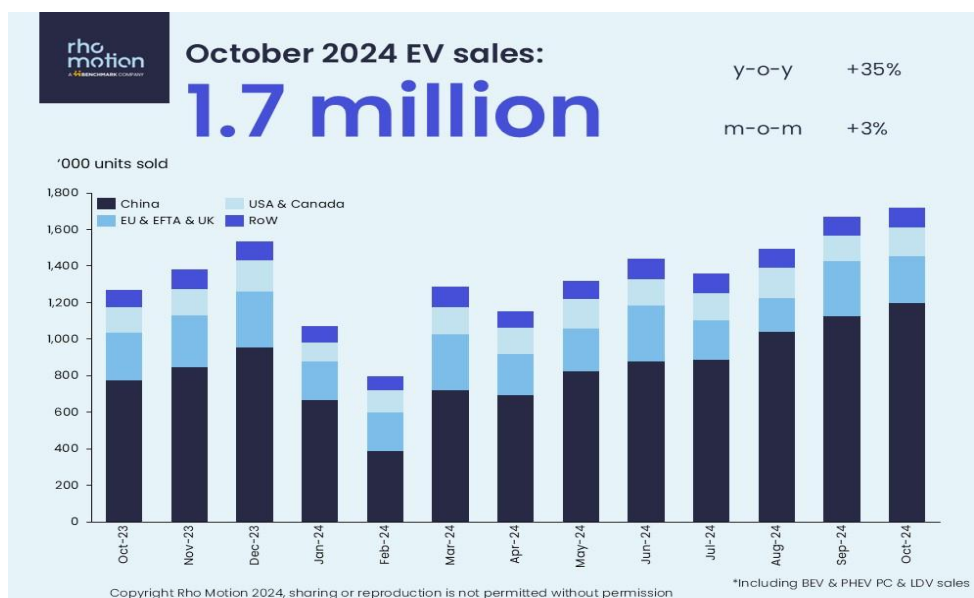
**BYD's Huge October Sales Prove It's Taking Over the World.** BYD, China's hybrid and EV giant, achieved a massive milestone in October with 500,526 units sold, including 310,912 hybrids. This represents a huge month for the company, which is also on track to meet its revised annual sales target of 4 million vehicles. BYD has doubled its overseas sales in nine months, driven by strong demand in Brazil and other parts of Asia. Meanwhile, Toyota's electrified vehicle sales topped 50% of combined monthly sales at Toyota and Lexus for the first time in October, with half of all vehicles sold being hybrid or electric. [Read more.](#) *(Inside EVs)*

**EVs And Hybrids Catapult Hyundai, Kia October U.S. Sales To New Record.** Hyundai and Kia reported record October sales in the U.S., driven by all-electric and hybrid models. Hyundai's overall auto sales increased 18% to 71,802

units, while Kia's sales rose 16% to 68,908 units. The Ioniq 5, Santa Fe Hybrid, and Tucson Hybrid were top performers for Hyundai, with sales up 51%, 136%, and 140% respectively. Kia's Sportage, Carnival, and EV6 also posted record sales, with the EV9 three-row electric SUV selling nearly 2,000 units. [Read more.](#) (Inside EVs)

**EV And PHEV Sales Set a New Record Last Month.** Global EV and PHEV sales hit a new record in October with over 1.7 million units sold worldwide. China led the pack with 1.2 million sales, a 6% month-over-month increase and 50% jump from last year's October sales. The U.S. saw a 9% year-to-date increase, while Europe experienced a 3% decrease in year-to-date sales despite some countries like Portugal and Denmark showing significant growth. Germany's market is slowly recovering with a 12% month-on-month increase, but still down 18% year-to-date. [Read more.](#) (Inside EVs)

Chart 5: Global EV Sales for October 2024



Source: Intro-act, Inside EVs

**EVgo shares record Q3 results and double-digit YoY growth for the eighth consecutive quarter.** EVgo, a leading U.S. based electric vehicle (EV) charging network, has published its Q3 2024 financial report, showing record revenue of \$67.5 million, up 92% year-over-year. The company added over 147,000 new customers in the quarter, bringing total users to 1.2 million, a 39% YoY increase. EVgo's network throughput grew 111% YoY to 78 GWh, with seven consecutive quarters of triple-digit growth. The company has rolled out various initiatives, including its "ReNew" program and partnerships with companies like Pilot/Flying J and General Motors, contributing to its success. [Read more.](#) (Electrek)

**Volkswagen's Q3 revenue drops by 41.7% YoY.** Volkswagen Group's operating revenue fell 21% to €12.9 billion in the first nine months of 2024, with a 41.7% decline in Q3 revenue due to fewer sales and restructuring expenses. The company cited higher fixed costs and new product investments as contributing factors. Despite this, Volkswagen reported a modest 1% YoY increase in gross revenue, driven by growth in its financial services business. Electrified vehicle sales declined 4.7%, but hybrid sales increased 9.1%. VW expects 2024 deliveries to reach 9 million units and total revenue to hit €320 billion with a 5.6% profit margin. [Read more.](#) (Automotive Dive)

**Subaru anticipates 15% drop in 2025 profits.** Subaru anticipates a 15% drop in profits for 2025 due to declining sales and increasing incentives. Sales decreased by 20% year-over-year to 450,000 vehicles in the first half of the year, with a forecasted 26% decline globally. In the US, Subaru's sales slid 10% during the first half, with a predicted 33% decline for the full year. The company aims to adapt to market changes by offering various powertrain options and reducing

supply chain costs through its monozukuri manufacturing method, which seeks to cut development time and production complexity in half as it shifts towards battery electric vehicle production. [Read more.](#) *(Automotive Dive)*

**Stellantis Q3 year-over-year revenue nosedives 27%.** Stellantis reported a 27% year-over-year decline in Q3 net revenue to €33 billion, citing pricing and foreign exchange impacts, fewer new vehicle shipments, and an inventory glut due to transitioning production to electric vehicles. The company's CFO Doug Ostermann acknowledged disappointment but noted it was "grinding through a transition year" with challenging industry dynamics and operational issues. U.S. sales fell 20.8% to 301,293 units, but Ostermann expected the drop as part of preparations for new vehicle launches, aiming to reduce dealer inventory by 10%. [Read more.](#) *(Automotive Dive)*

**Warranty spending weighs on Ford's Q3 profit.** Ford Motor Co.'s Q3 profit was impacted by higher-than-expected warranty costs, which reduced its profit by \$100 million YoY. Despite this, CEO Jim Farley sees the warranty challenge as an opportunity and reports a 31% improvement in three-months-in-service metric for 2024 model year vehicles. The company also cut launch production losses in half and reduced warranty costs through over-the-air updates, saving customers five to six days of waiting for repairs. Ford expects \$10 billion in adjusted profit this year, the low end of its projected range. [Read more.](#) *(Automotive Dive)*

**Mercedes-Benz Q3 earnings tumble amid subdued world economy.** Mercedes-Benz Cars' profit dropped 65% to €1.2 billion (\$1.3 billion) in Q3 due to lower vehicle sales, particularly in China, where weak consumer sentiment and fierce competition prevailed. The company plans to tighten costs and launch an "unprecedented product offensive" to boost resilience. New products include the all-electric CLA coupe (2025), mid-sized C-Class and electric GLC (2026), and AMG model with high-performance electric powertrain, as well as significant updates for GLE and S-Class in 2026. [Read more.](#) *(Automotive Dive)*

**EVs Made Up 22% Of California Auto Sales Last Month.** California's auto sales saw a significant shift with electric vehicles (EVs) making up 22% of all new car sales in September. Tesla dominated the market, holding over half of the new EV market share at 54.5%, followed by Hyundai and BMW. Other automakers like Rivian experienced growth, while some, such as Volvo, Polestar, Porsche, and Mazda, saw significant declines in EV sales. The combined market share of hybrids and plug-in hybrid vehicles (PHEVs) rose to 40%. [Read more.](#) *(Inside EVs)*

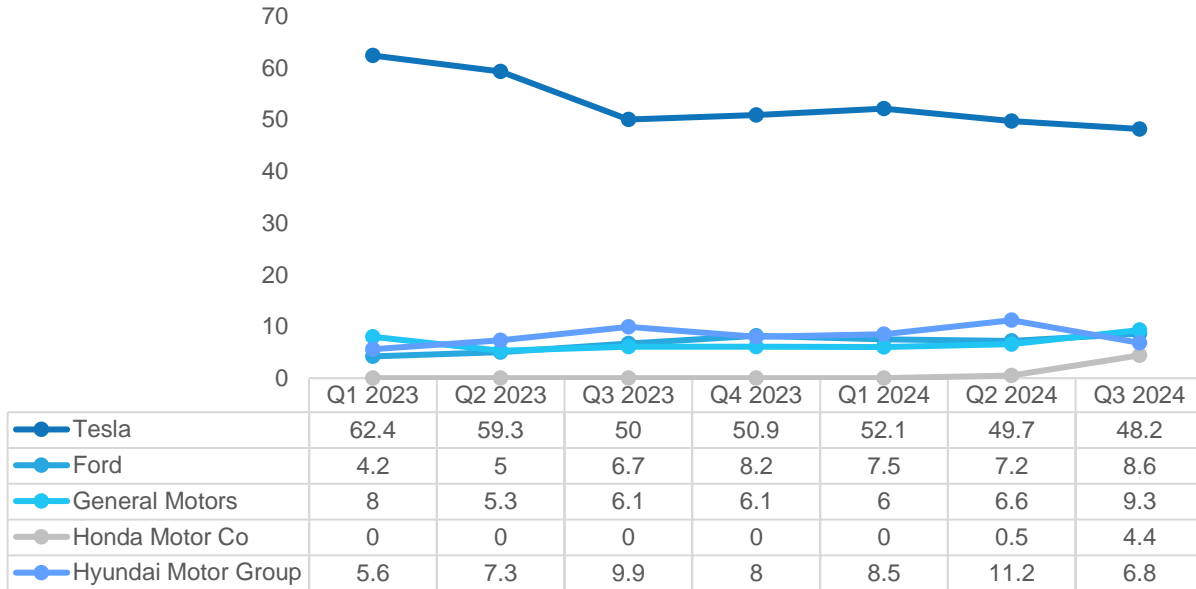
## M&A

**Geely's Zeekr Will Take Over Lynk & Co. to Chase BYD.** Geely's Zeekr will gain a controlling 51% stake in Lynk & Co, valued at \$2.5 billion, to streamline business and cut costs by eliminating overlap between the two brands. This move aims to increase combined sales to over 1 million units annually, up from 340,000 last year. Zeekr will act as Geely's research, development, and innovation leader, sharing technology with its 12 brands. The reorganization is expected to cut research spending by up to 20% and make the companies more competitive in an increasingly aggressive market. [Read more.](#) *(Inside EVs)*

**Boston-based Pure Lithium acquires cathode materials provider Dimien.** Boston-based Pure Lithium has acquired Dimien's assets to accelerate the development and commercialization of its lithium metal vanadium (LVO) battery. Dr. Brian Schultz, Dimien's founder and CEO, will join Pure Lithium as VP of Business Development and Technology. Dimien developed zeta vanadium oxide (ZVO), a low-cost, high-energy-density cathode material with low fire risk, produced in North America without nickel, cobalt, or graphite. The acquisition pairs well with Pure Lithium's lithium metal batteries, leveraging vanadium's unique properties to overcome lithium-ion battery limitations. [Read more.](#) *(Charged EVs)*

## MOBILITY CHART OF THE MONTH

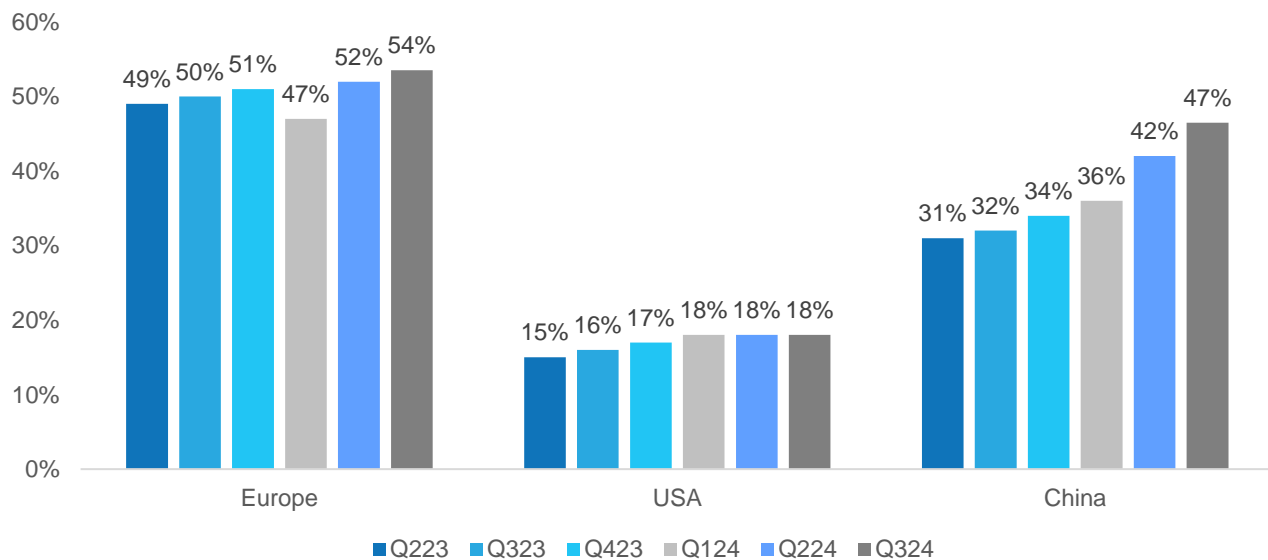
Chart 6: U.S. Electric Vehicle Market Share by Brand (%)



Source: Intro-act, Cox Automotives

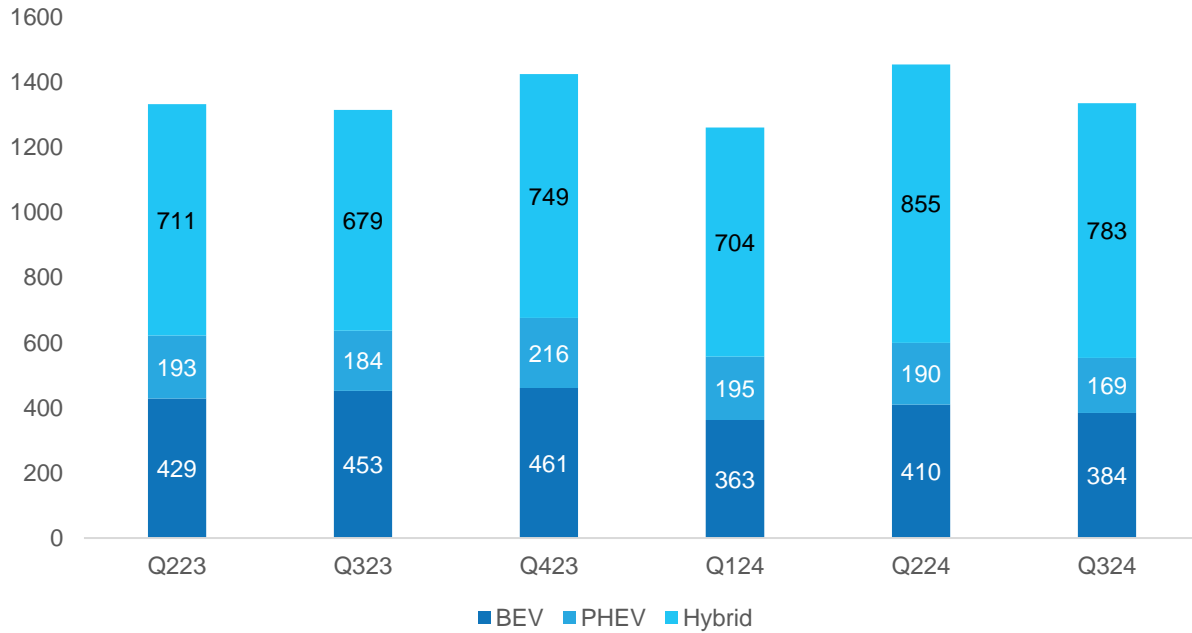
## EV SALES METRICS

Chart 7: Share of EV Registrations to Total Registrations in Key Geographies



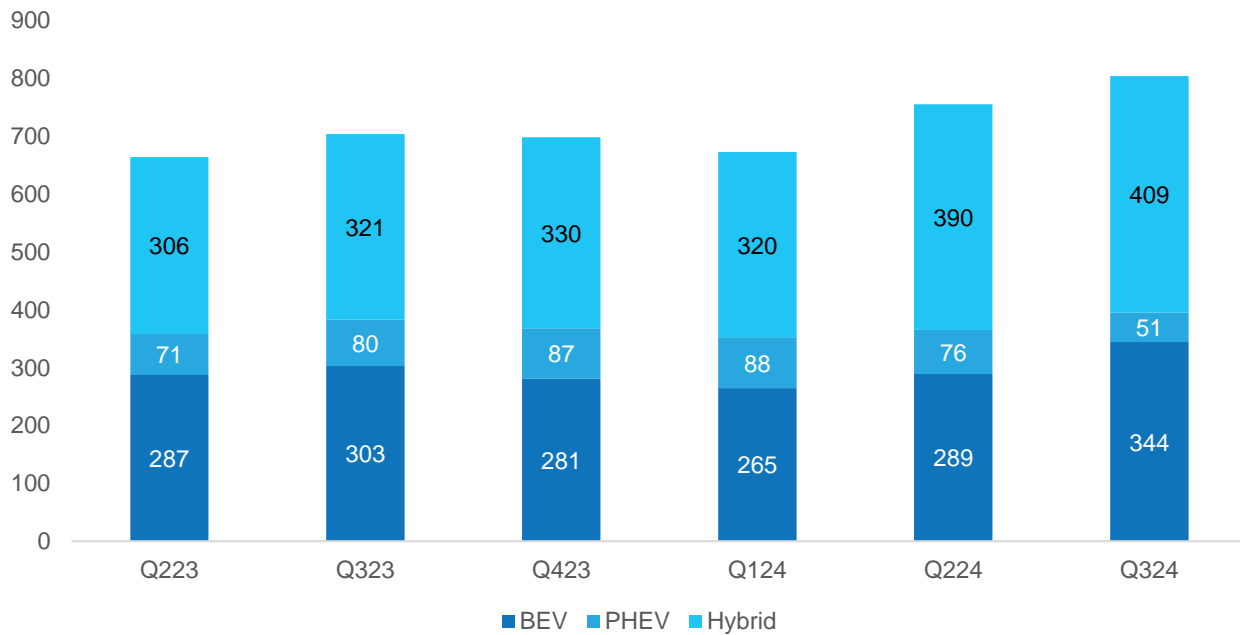
Source: Intro-act, PWC

Chart 8: Sales of BEV, PHEV, and Hybrid Vehicles in Europe (Sales in '000s)



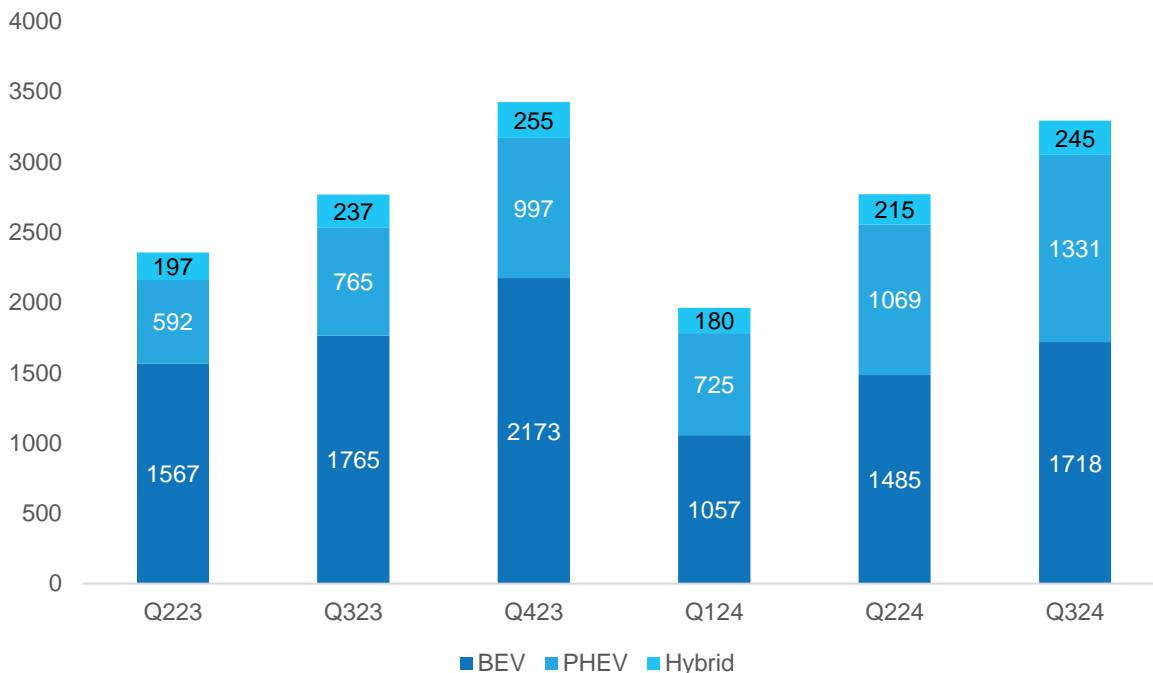
Source: Intro-act, PWC

Chart 9: Sales of BEV, PHEV, and Hybrid Vehicles in the U.S. (Sales in '000s)



Source: Intro-act, PWC

Chart 10: Sales of BEV, PHEV, and Hybrid Vehicles in China (Sales in '000s)



Source: Intro-act, PWC

## TOP SELLING ELECTRIC VEHICLES

Chart 11: Top-selling BEVs in Q1-Q3 2024 (ranking change Q1-Q3 2024 vs. H1 2024)

Europe Top 4			China			USA		
Model	Sales Q1-Q3 2024	Change	Model	Sales Q1-Q3 2024	Change	Model	Sales Q1-Q3 2024	Change
Tesla Model Y	52,871	→ 0	Tesla Model Y	337,648	→ 0	Tesla Model Y	284,831	→ 0
Tesla Model 3	29,290	→ 0	BYD Seagull	297,395	→ 0	Tesla Model 3	131,975	→ 0
Peugeot E-208	23,423	↑ 2	BYD Yuan Plus	197,099	→ 0	Ford Mustang Mach-E	35,626	→ 0
VW ID.3	23,225	→ 0	Wuling Hongguang Mini EV	154,432	↑ 1	Hyundai Ioniq 5	30,318	→ 0
Skoda Enyaq	21,809	↑ 5	BYD Qin Plus EV	136,603	↓ 1	Tesla Cybertruck	28,250	New
Fiat 500e	21,763	New	Wuling Bingo	128,703	↑ 3	Rivian R1S	23,399	↓ 1
MG 4	21,165	↓ 4	Tesla Model 3	122,552	↑ 1	Ford F-150 Lightning	22,807	↓ 1
VW ID.4, ID.5	19,557	↑ 1	Aion Y	120,807	↓ 2	Cadillac Lyriq	20,318	↓ 1
BMW iX1	18,447	↓ 1	BYD Dolphin	111,244	↑ 1	BMW i4	17,666	↑ 1
Volvo EX30	16,340	↓ 2	Aion S	108,757	↓ 3	VW ID.4	16,375	↓ 1

Source: Intro-act, PWC

## NEW AND UPCOMING EV LAUNCHES

Chart 12: BEV Model Launches 2024 (not exhaustive)

Brand	Model	Launch	Quarter
Alfa Romeo	Junior	2024	Q3
Audi	A6 e-tron	2024	Q4
BYD	Sealion 07	2024	Q2
Cadillac	Celestiq	2024	Q3
Changan	Qiyuan E07	2024	Q4
Dodge	Charger	2024	Q2
Fiat	Panda	2024	Q3
Honda	e:NP2	2024	Q4
Hyundai	IONIQ 9	2024	Q4
KIA	EV3	2024	Q2
Lucid	Gravity	2024	Q4
Lynk&Co	C-CUV	2024	Q2
Mercedes-Benz	EQG	2024	Q3
Mini	Aceman	2024	Q2
Renault	5	2024	Q2

Source: Intro-act, PWC

## NEW AND UPCOMING EV LAUNCHES

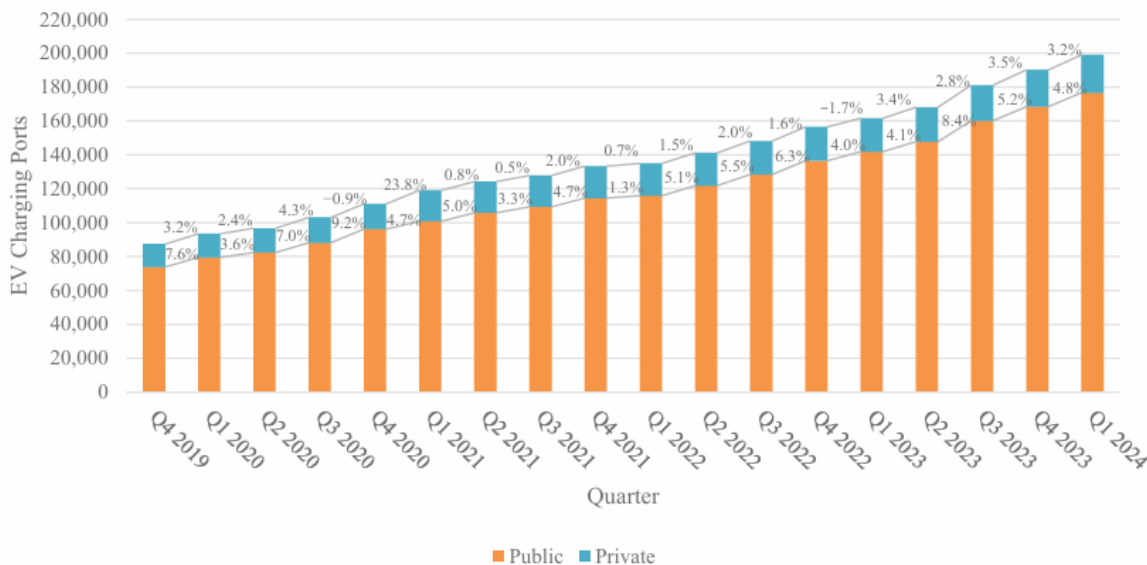
Chart 13: Expected BEV Model Launches 2025–2028 (not exhaustive)

Brand	Model	Launch
Acura	NSX EV	2026
Alfa Romeo	Giulia	2026
Audi	Q2 e-tron	2026
BMW	iX5	2026
BYD	Song MAX	2026
Changan	Lumin	2027
Chevrolet	Bolt EUV	2025
Citroen	C5 Aircross	2025
Dacia	Sandero	2028
Dodge	Durango	2026
Ferrari	Roma	2028
Ford	Maverick EV	2028
Geely	Geome E	2028
Genesis	GV80	2027
Honda	A-Hatch EV	2025

Source: Intro-act, PWC

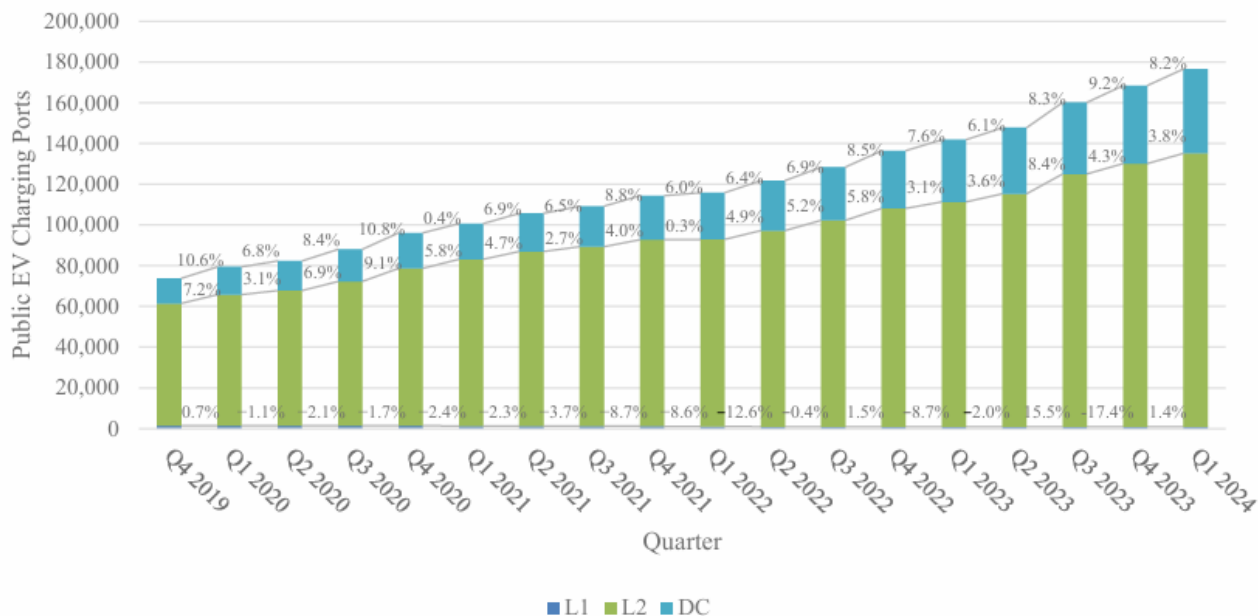
## EV CHARGING INFRASTRUCTURE – U.S.

Chart 14: Quarterly Growth of Public and Private Electric Vehicle Supply Equipment (EVSE) Ports



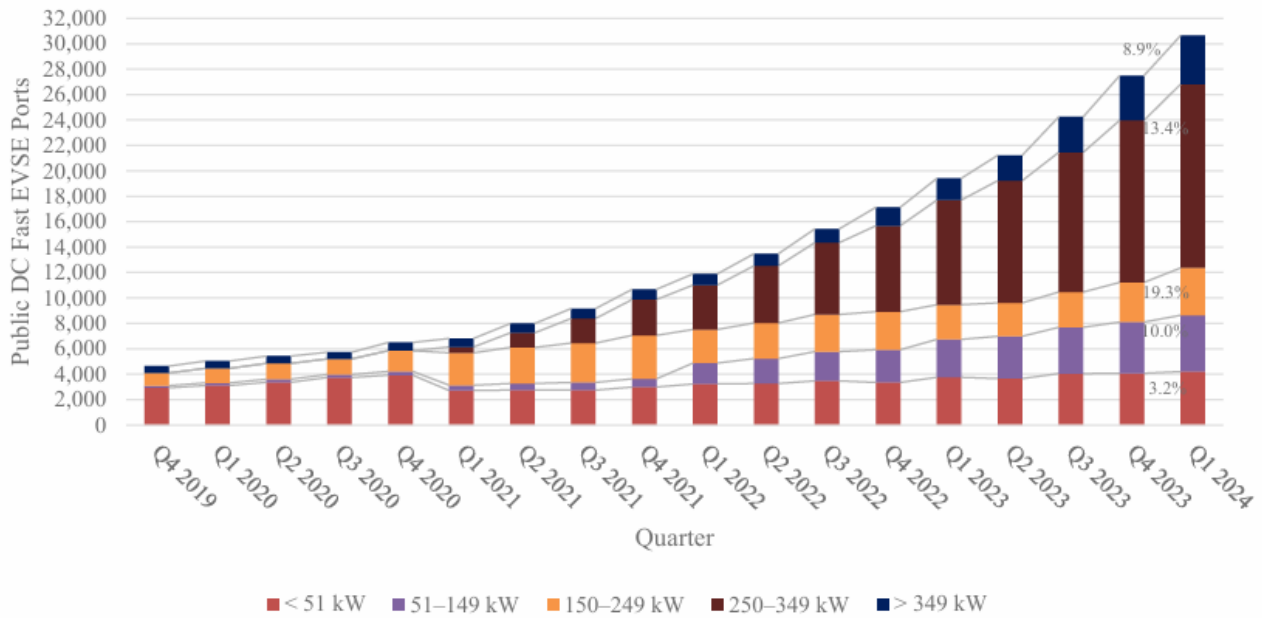
Source: Intro-act, [U.S. Department of Energy](#). Note: The percentages in this figure indicate the percent growth between each quarter. Data as of Q1, 2024

Chart 15: Quarterly Growth of Electric Vehicle Supply Equipment (EVSE) Ports by Type of Charging Level



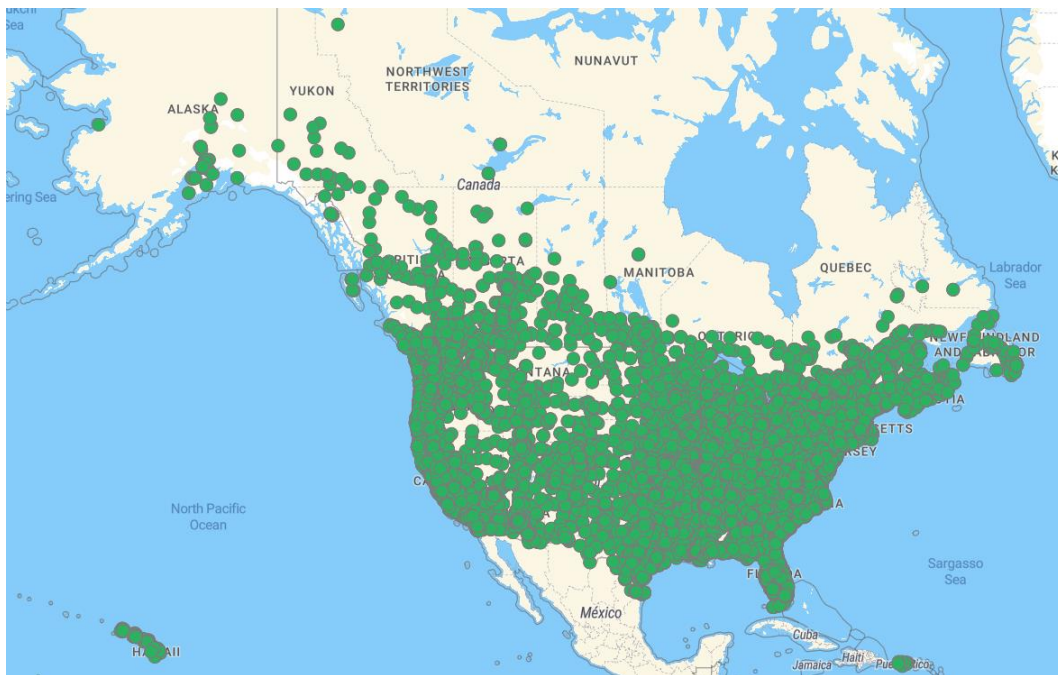
Source: Intro-act, [U.S. Department of Energy](#). Note: Figure excludes legacy EVSE ports that are not classified by charging level and are no longer manufactured. As of Q3, there were 26 public legacy EVSE ports in the Station Locator. Additionally, the percentages in this figure indicate the percent growth between each quarter. Data as of Q1, 2024

Chart 16: Quarterly Growth of Public DC Fast EVSE Ports by Power Output.



Source: Intro-act, [U.S. Department of Energy](#). Note: The percentages in this figure indicate the percent growth between each quarter. For an explanation of the changes seen in Q1 2021, see the Q1 2021 report (Brown, Schayowitz, and Klotz 2021). Data as of Q1, 2024

Chart 17: EV Charging Station Map – U.S. and Canada



Source: Intro-act, [U.S. Department of Energy](#). As of November 27, 2024.

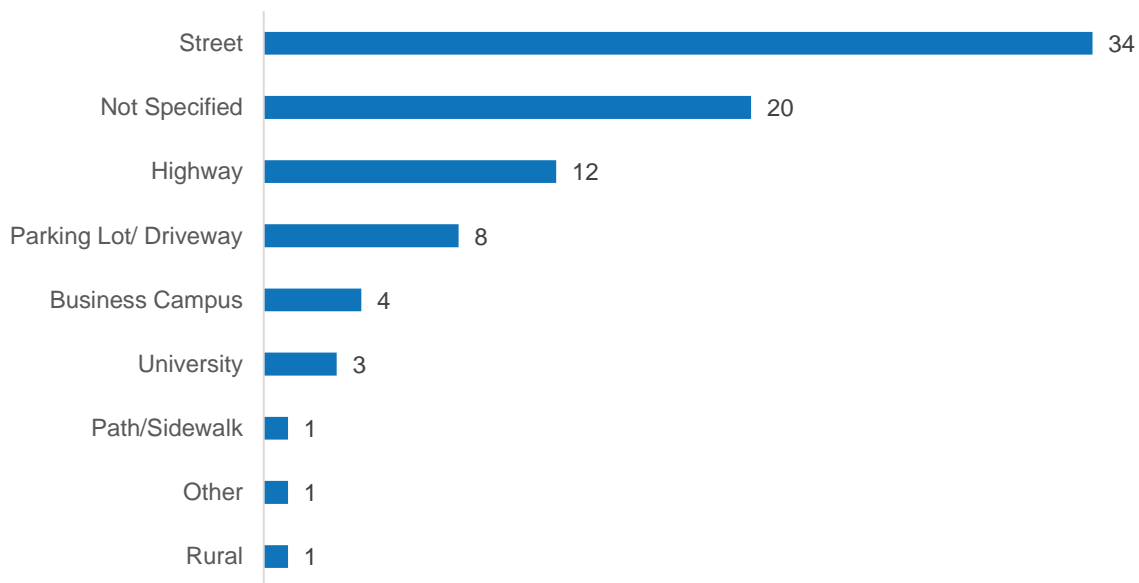
## AUTONOMOUS VEHICLES (AV) TESTING LOCATIONS – U.S.

Chart 18: Distribution of AV Testing Locations in the U.S.



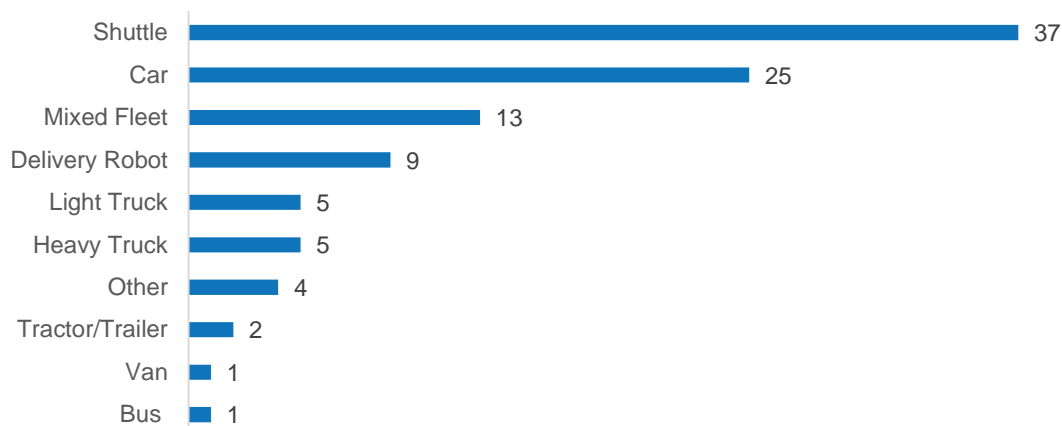
Source: Intro-act, ESRI, TomTom, U.S. Department of Commerce, U.S. Census Bureau, [NHTSA](#). The above map presents a snapshot of regions where AV Testing infrastructure is being built in the United States. Snapshot as of November 27, 2024.

Chart 19: Distribution of AV Testing Sites by Road Type



Source: Intro-act, [NHTSA](#). Data as of November 27, 2024. This chart compares the relative distribution of different types of AV testing infrastructure.

Chart 20: Distribution of AV Testing Sites by Vehicle Type



Source: Intro-act, [NHTSA](#). Data as of November 27, 2024. This chart compares the relative distribution of AV testing infrastructure that can be used to test different types of vehicles.

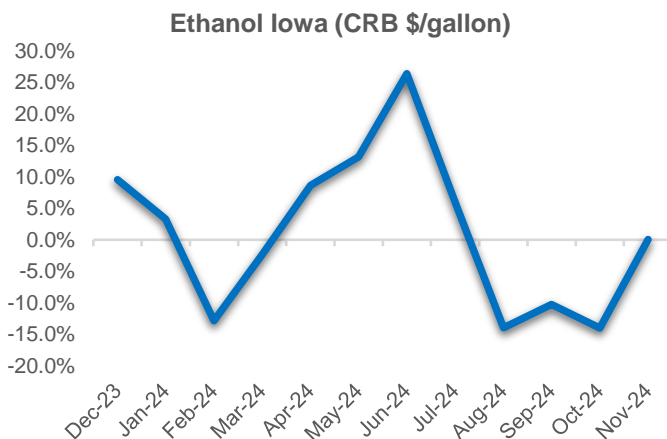
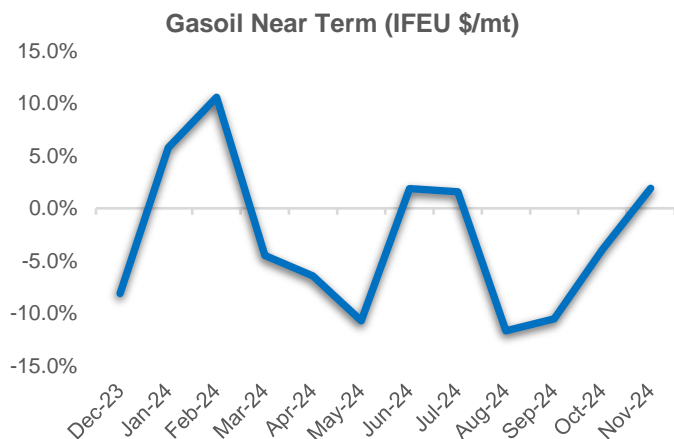
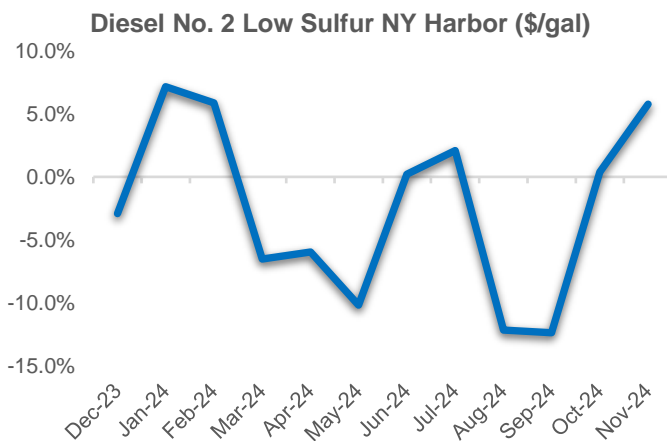
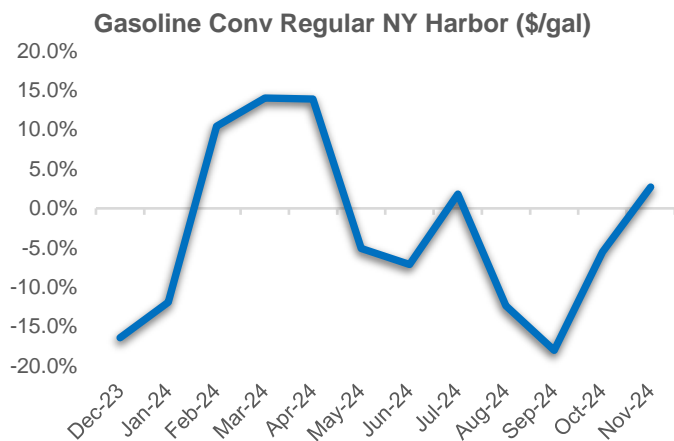
## AUTOMOTIVE COMMODITIES

Chart 21: Automotive Commodities Price Returns

Energy Commodities	Price as of 30 Nov 2024	1M	3M	6M	1Y	YTD
<b>Refined Products</b>						
Gasoline Conv Regular NY Harbor (\$/gal)	2.11	▲ 0.62%	▼ - 5.14%	▼ - 13.51%	▼ - 18.47%	▼ - 13.51%
Diesel No. 2 Low Sulfur NY Harbor (\$/gal)	2.23	▲ 0.54%	▲ 0.68%	▼ - 5.24%	▼ - 14.65%	▼ - 5.24%
Gasoil Near Term (IFEU \$/mt)	677.00	▲ 1.20%	▼ - 2.80%	▼ - 7.48%	▼ - 17.14%	▼ - 7.48%
Ethanol Iowa (CRB \$/gallon)	1.56	▲ 6.12%	▼ - 8.24%	▼ - 6.87%	▲ 5.76%	▼ - 6.87%
Metal Commodities	Price as of 30 Nov 2024	1M	3M	6M	1Y	YTD
<b>Base Metals and Bulks</b>						
Aluminum Cash Official LME (\$/mt)	2572.00	▼ - 1.74%	▲ 4.40%	▼ - 3.92%	▲ 13.30%	▼ - 3.92%
Iron Ore 62% Fe CFR China Cash (TSI) CRB (\$/mt)	102.44	▼ - 1.58%	▲ 3.79%	▼ - 12.83%	▼ - 6.47%	▼ - 12.83%
US Midwest Domestic HRC Steel (CRU) Near Term (NYM \$/st)	700.00	▼ - 2.10%	▼ - 1.96%	▼ - 8.02%	▼ - 18.60%	▼ - 8.02%
<b>Battery Materials</b>						
Lithium Carbonate 99%Min China (CNY/ tonne)	-	-	-	-	-	-
Nickel Cash Official LME (\$/mt)	15745.00	▲ 1.38%	▼ - 6.39%	▼ - 20.60%	▼ - 4.75%	▼ - 20.60%
Cobalt Cash Official LME (\$/mt)	24300.00	▲ 0.12%	▲ 1.25%	▼ - 9.70%	▼ - 14.33%	▼ - 9.70%
<b>Precious Metals</b>						
Palladium New York (\$/ozt)	990.00	▼ - 13.84%	▲ 0.20%	▲ 4.21%	▼ - 3.41%	▲ 4.21%
Platinum Indust (Engelhard) (\$/ozt)	935.00	▼ - 7.97%	▼ - 0.95%	▼ - 11.37%	▲ 1.63%	▼ - 11.37%
Rhodium Johnson Matthey Base Price London (\$/oz)	4575.00	▼ - 2.14%	▼ - 3.17%	▼ - 3.17%	▼ - 3.17%	▼ - 3.17%

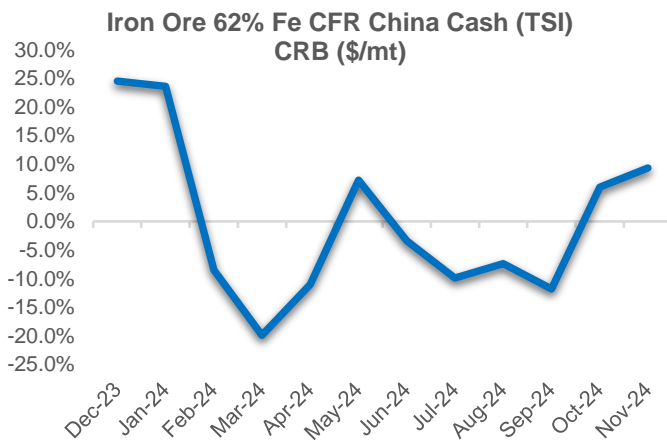
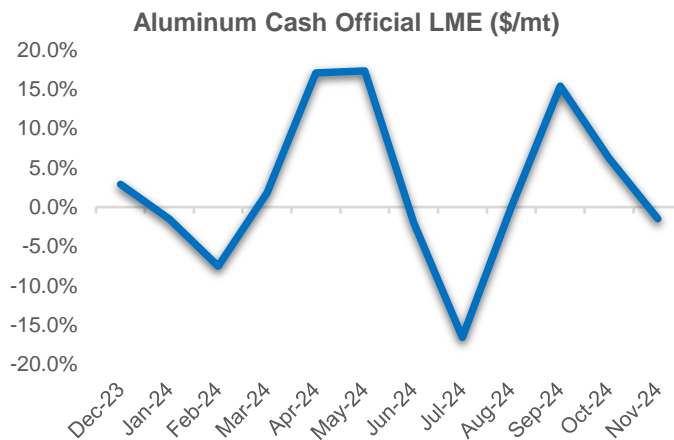
Source: Intro-act, FactSet, Investing.com. Data as of 11/30/2024.

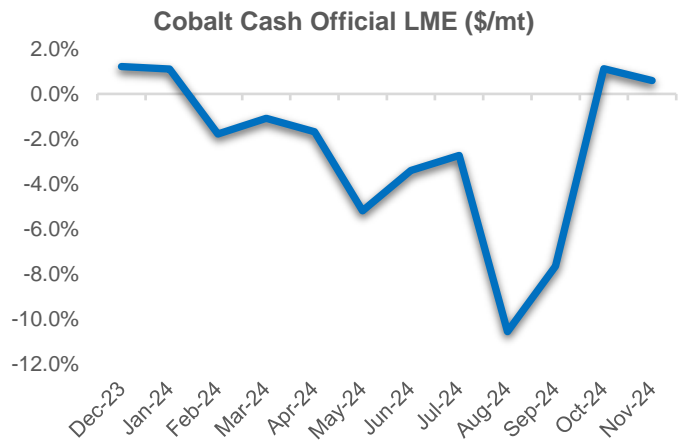
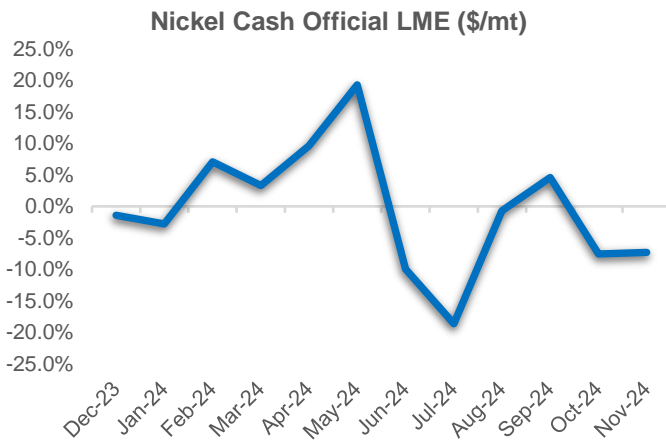
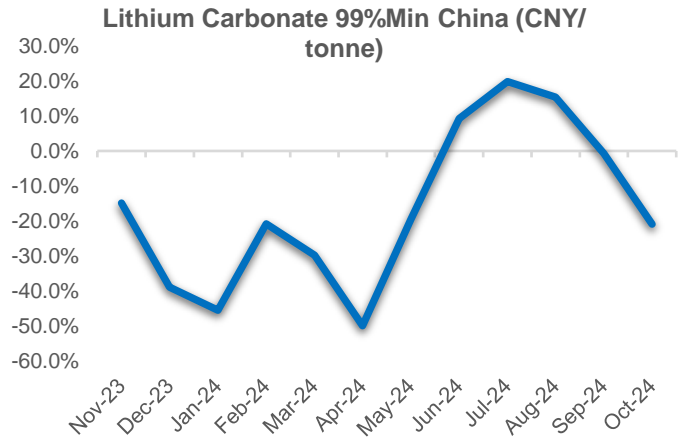
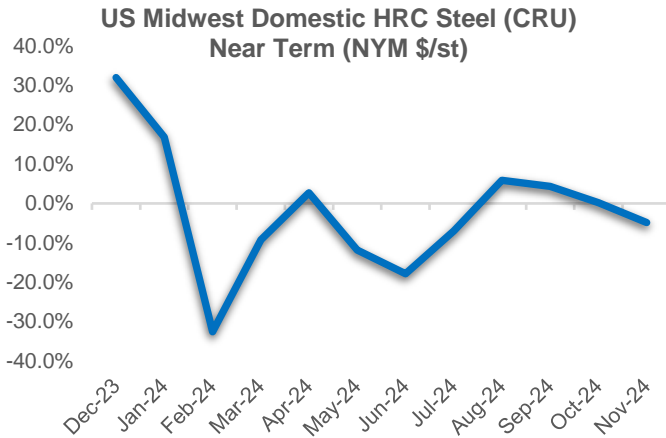
Chart 22: Indexed Change in Refined Products Prices in Last 12 Months



Source: Intro-act, FactSet. Data as of 11/30/2024.

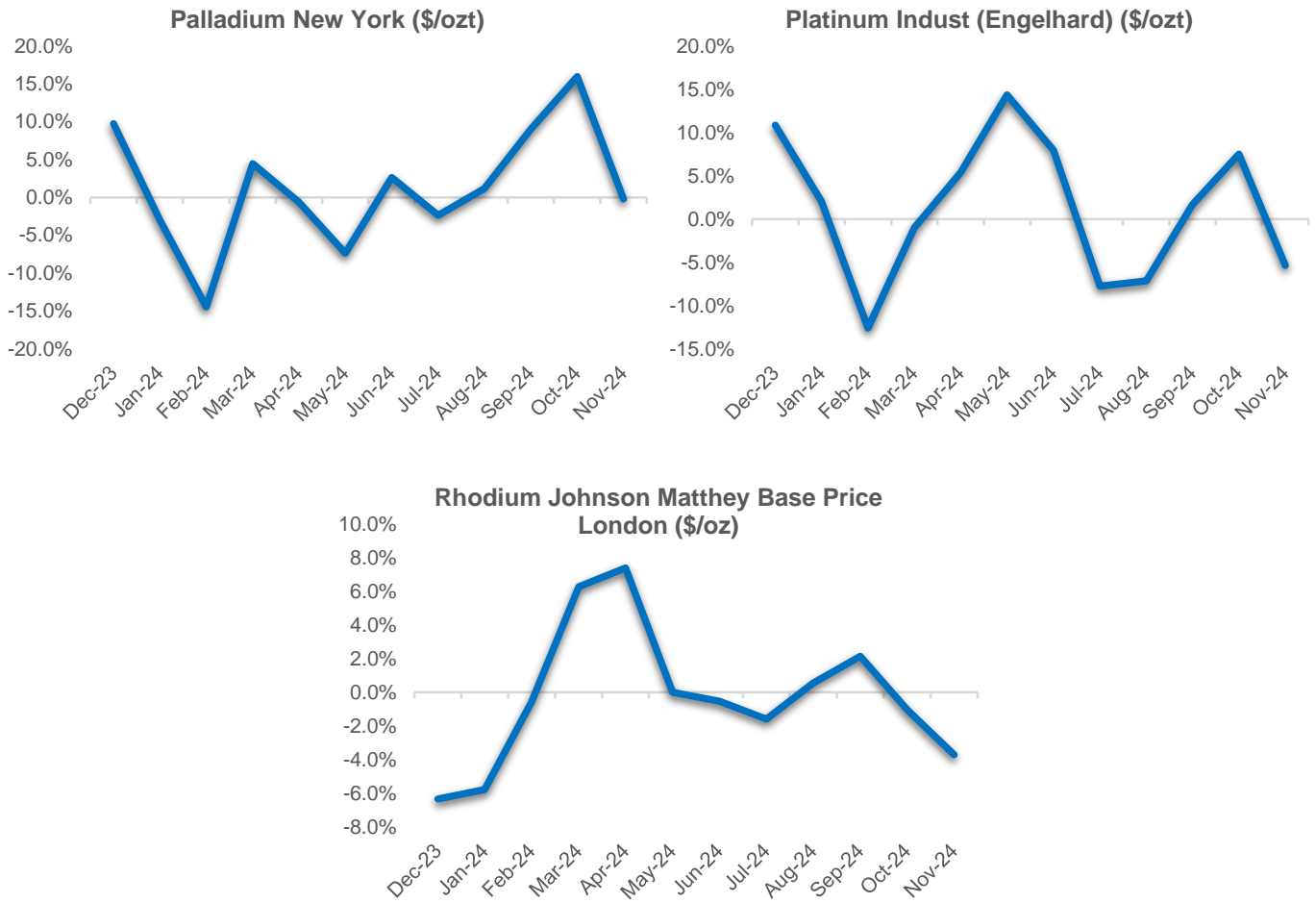
Chart 23: Indexed Change in Base Metals, Bulks, and Battery Materials in Prices Last 12 Months





Source: Intro-act, FactSet. Data as of 11/30/2024.

Chart 24: Indexed Change in Precious Metals Prices Last 12 Months



Source: Intro-act, FactSet. Data as of 11/30/2024.

## MOBILITY CAPITAL MARKET ACTION (October 2024)

Chart 25: M&A Activity

Target	Target Industry	Target Country	Acquirer	Deal Size (\$m)	Announcement Date
3TC Software Ltd	Packaged Software	United Kingdom	Motorola Solutions, Inc.	-	04-Nov-2024
9302204 Canada, Inc.	Medical Specialties	Canada	Departure Bay Capital Corp.	0.32	30-Oct-2024
ADS-TEC Energy Plc	Electrical Products	Ireland	Lucerne Capital Management LP	63.63	14-Nov-2024
Allen Measurement Services LLC	Oilfield Services/Equipment	United States	GW Allen LLC	-	15-Nov-2024
Angstrom Electric Ltda.	Auto Parts: OEM	Brazil	Stanley Electric Co., Ltd.	-	28-Oct-2024
Anhui Anfu Energy Technology Co., Ltd.	Electrical Products	China (People's Republic)	Anhui Anfu Battery Technology Co., Ltd.	201.03	26-Oct-2024
Annex Products Pty Ltd.	Miscellaneous Manufacturing	Australia	Thule Group AB	333.15	11-Nov-2024
AppBrew Inc.	Packaged Software	Japan	MCC Management Co., Ltd.	-	14-Nov-2024
AppBugs, Inc.	Packaged Software	United States	PasswordPing Ltd	-	19-Nov-2024
Artesian Solutions Ltd.	Packaged Software	United Kingdom	nCino, Inc.	135.00	30-Oct-2024
ASSDEV GmbH	Electronic Production Equipment	Germany	VR Equitypartner GmbH; Solectrix GmbH	-	11-Nov-2024
Bluecharge Lda.	Specialty Stores	Portugal	Helexia SA	-	12-Nov-2024
CaptionMate LLC	Packaged Software	United States	MEZMO Corp.	-	01-Nov-2024
Cat In A Flat Ltd.	Commercial Printing/Forms	United Kingdom	Rover Group, Inc.	-	31-Oct-2024
Cell C (Pty) Ltd.	Major Telecommunications	South Africa	The Prepaid Co. (Pty) Ltd.	330.35	14-Nov-2024
CETIN Group NV	Major Telecommunications	Netherlands	PPF TMT Holdco 2 BV	-	31-Oct-2024
Changzhou Jintan District Fujie New Energy Co., Ltd.	Electrical Products	China (People's Republic)	Suqian Guokai Investment Holding Grp New Energy Tech Co., Ltd.	0.88	04-Nov-2024
Clearstone Energy /Hartmoor Battery Storage/	Electrical Products	United Kingdom	Virmati Energy Ltd.	-	17-Nov-2024
COLLIGIO, LLC	Packaged Software	United States	Blue Mantis, Inc.; Recognize Partners LP	-	19-Nov-2024
Cornerstone Telecommunications Infrastructure Ltd.	Engineering & Construction	United Kingdom	Equitix Investment Management Ltd	241.88	30-Oct-2024
Don Davis Nissan, Inc.	Wholesale Distributors	United States	Clay Cooley Auto Group Co.	-	08-Nov-2024
Drg We Watch Network Private Ltd.	Packaged Software	India	USG Tech Solutions Ltd.	0.01	13-Nov-2024
E2E Networks Ltd.	Information Technology Services	India	Larsen & Toubro Ltd.	38.96	05-Nov-2024
Easybrain Ltd.	Packaged Software	Cyprus	Miniclip SA	1,200.00	14-Nov-2024
Eckoh Plc	Miscellaneous Commercial Services	United Kingdom	Bridgepoint Advisers Ltd.	195.88	30-Oct-2024
Elliott Machine Works, Inc.	Trucks/Construction/Farm Machinery	United States	Stellar Industries, Inc.	-	01-Nov-2024
EmpiraMed, Inc.	Information Technology Services	United States	StoryCatch Partners, Inc.	-	20-Nov-2024
Empower Energy Ltd.	Engineering & Construction	United Kingdom	Good Energy Group Plc	10.39	28-Oct-2024
Faradion Ltd.	Electrical Products	United Kingdom	Reliance New Energy Ltd.	-	29-Oct-2024

finanzen.net GmbH	Internet Software/Services	Germany	Inflexion Private Equity Partners LLP	317.28	15-Nov-2024
First Metro Asset Management, Inc.	Investment Managers	Philippines	ATR Holdings, Inc. (Philippines); Met Holdings, Inc.; ATRAM Investment Management Partners Corp.; First Metro Asset Management Corp. /Pvt Grp/	-	30-Oct-2024
Goldbach Austria GmbH	Advertising/Marketing Services	Austria	Azerion Group NV	-	11-Nov-2024
Greituolis UAB	Real Estate Investment Trusts	Lithuania	UAB IKI Lietuva	-	31-Oct-2024
Grubhub, Inc.	Air Freight/Couriers	United States	Wonder Group, Inc.	650.00	13-Nov-2024
H&H Reeds Printers Ltd.	Information Technology Services	United Kingdom	H&H Reeds Printers Ltd. /Management/	-	06-Nov-2024
Hebei Gellec New Energy Science & Technology Co., Ltd.	Electrical Products	China (People's Republic)	FSPG Hi-tech Co., Ltd.	-	01-Nov-2024
Hunan Ruigao New Energy Technology Co., Ltd.	Electrical Products	China (People's Republic)	Hunan Ruigao New Energy Technology Co. Ltd. /Gao Jianguo/	0.11	30-Oct-2024
Hydradyne LLC	Wholesale Distributors	United States	Applied Industrial Technologies, Inc.	272.00	22-Nov-2024
Income Power, Inc.	Engineering & Construction	United States	Nadex of America Corp.	4.00	31-Oct-2024
Innovid Corp.	Packaged Software	United States	Mediaocean LLC	444.63	21-Nov-2024
Intelliswift Software, Inc.	Information Technology Services	United States	L&T Technology Services LLC	110.00	11-Nov-2024
Jammu Pigments Ltd.	Wholesale Distributors	India	Godawari Power & Ispat Ltd.	30.22	19-Nov-2024
Jammu Pigments Ltd.	Wholesale Distributors	India	Godawari Power & Ispat Ltd.	8.23	22-Nov-2024
Kadokawa Corp.	Publishing: Books/Magazines	Japan	Sony Group Corp.	-	20-Nov-2024
Kompozitum sro	Other Metals/Minerals	Slovakia	Westinghouse Air Brake Technologies Corp.	-	12-Nov-2024
L.S.M. Gaming, Inc.	Movies/Entertainment	United States	Accel Entertainment LLC	-	05-Nov-2024
Landscape Management Network, Inc.	Packaged Software	Canada	Financial Technology Ventures Management Co. LLC; Five Elms Capital Management LLC; SingleOps LLC	-	04-Nov-2024
Lc Energy BV /Battery Energy Storage System/	Electrical Products	Netherlands	S4 Energy BV	-	29-Oct-2024
Log 9 Materials Scientific Pvt Ltd. /Rail &Ev Battery Div/	Electrical Products	India	Jupiter Electric Mobility Pvt Ltd.	-	30-Oct-2024
Low Carbon Ltd. /120mw Battery Project/	Electrical Products	United Kingdom	SSE Renewables Ltd.	-	06-Nov-2024
Maddox Industries LLC	Auto Parts: OEM	Puerto Rico	Envirotech Vehicles, Inc.	6.55	31-Oct-2024
Make Positive Ltd.	Packaged Software	United Kingdom	Salesforce Ventures LLC; Nextview Netherlands BV	-	18-Nov-2024
Melita Ltd.	Major Telecommunications	Malta	Goldman Sachs Asset Management LP (Private Equity)	-	22-Nov-2024
MG Motors	Specialty Stores	India	JSW Group of Cos.	-	29-Oct-2024
Nanoleq AG	Information Technology Services	Switzerland	Myant, Inc.	-	15-Nov-2024

Netranom Communications, Inc.	Information Technology Services	United States	Evergreen Services Group LLC	-	04-Nov-2024
Nevada Lithium Pty Ltd.	Other Metals/Minerals	Australia	Austroid Corp.	2.63	04-Nov-2024
Nexus Communications Ltd	Wireless Telecommunications	United Kingdom	Focus 4 U Ltd.	-	08-Nov-2024
Nexv Synergy Sdn. Bhd.	Specialty Stores	Malaysia	Careplus Group Bhd.	0.03	07-Nov-2024
Northvolt AB	Electrical Products	Sweden	Volvo Cars of North America LLC	-	30-Oct-2024
Novo Dia Group, Inc.	Packaged Software	United States	Farmers Food Assistance Bureau	-	04-Nov-2024
ONE Store International	Packaged Software	South Korea	Digital Turbine, Inc.	-	30-Oct-2024
Paytronix Systems, Inc.	Packaged Software	United States	Access Technology Group Ltd.	-	01-Nov-2024
Piedmont Lithium, Inc.	Chemicals: Agricultural	United States	Sayona Mining Ltd.	2.32	18-Nov-2024
Plarium Global Ltd.	Packaged Software	Israel	Modern Times Group MTG AB	820.00	11-Nov-2024
Q-PAR Antennas USA LLC	Electronics Distributors	United States	Solid State Plc	2.00	01-Nov-2024
Reach-Data Ltd.	Advertising/Marketing Services	United Kingdom	LINK Mobility Group Holding ASA	3.90	30-Oct-2024
Sichuan Indigo Material Technology Group Co., Ltd.	Electrical Products	China (People's Republic)	Ribo Fashion Group Co., Ltd.	-	31-Oct-2024
Smith Stone Walters Ltd.	Miscellaneous Commercial Services	United Kingdom	Envoy Global, Inc. (Illinois)	-	12-Nov-2024
Smovengo SAS	Movies/Entertainment	France	Indigo Infra SA	-	30-Oct-2024
Softrams LLC	Information Technology Services	United States	Sagewind Capital LLC; Best Practice Associates LLC (Virginia)	-	12-Nov-2024
Space Ape Games (UK) Ltd.	Packaged Software	United Kingdom	Supercell Oy	-	04-Nov-2024
Specialty Fleet Services, LLC	Miscellaneous Commercial Services	United States	Hexagon Agility, Inc.	-	11-Nov-2024
Telekom Romania Mobile Communications SA	Wireless Telecommunications	Romania	Vodafone Group Plc; Digi Communications NV; Telekom Romania Mobile Communications SA /Private Group/	-	31-Oct-2024
Terra One Climate Solutions GmbH /310 MW Battery Projects/	Electrical Products	Germany	S4 Energy BV	-	12-Nov-2024
Tikona Inifnet Pvt Ltd.	Wireless Telecommunications	India	SAR Televenture Ltd.	79.57	29-Oct-2024
TÜV SÜD Battery Testing GmbH	Miscellaneous Commercial Services	Germany	TÜV SÜD AG	-	06-Nov-2024
Twige Solutions, Inc.	Packaged Software	United States	TigerConnect, Inc.	-	20-Nov-2024
Wasl Technical Information Systems Co. Ltd.	Information Technology Services	Saudi Arabia	WSM for Information Technology Co.	-	27-Oct-2024
WL Winet BV	Engineering & Construction	Netherlands	Koninklijke BAM Groep NV	-	01-Nov-2024
Xiamen Heniva Industry Co., Ltd.	Electronics Distributors	China (People's Republic)	Zhenmei (Shanghai) Investment Management Co., Ltd.	0.29	30-Oct-2024
Yakobod, Inc.	Packaged Software	United States	Everfox Holdings LLC	-	01-Nov-2024
Yaoneng New Energy (Ganzhou) Co., Ltd.	Electrical Products	China (People's Republic)	Zhejiang Yaoneng New Energy Co., Ltd.	1.44	31-Oct-2024

ZEEKR Intelligent Technology Holding Ltd.	Motor Vehicles	China (People's Republic)	Luckview Group Ltd.	806.10	14-Nov-2024
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Source: Intro-act, FactSet

### Chart 26: PE/ VC Funding Activity

Company	Funding Round	Fund Raised (\$m)	Investors	Date
AI Buddy, Inc.	Seed Round6	11.07	BITKRAFT Ventures Management LLC; EduCapital SAS; Evolution VCP LLC; Goodwater Capital LLC; J Ventures Co. Ltd.; JointJourney Ltd.; Konstantin Senchenko; Leta Capital Ltd.; One Way Ventures Management Pbc, Inc.; Point72 Ventures Partners LLC; Sand Hill Angels, Inc.; Vassiliev Alex; YellowRockets	31-Oct-2024
Aira Technologies, Inc.	Series B3	14.50	Acrew Capital Management Corp.; Carl A. Waldspurger, PhD; In-Q-Tel; Intel Capital Corp.; Juniper Networks (Venture Capital); Neotribe Management Company LLC; Ryan D. Drant; Tsingyuan Ventures LLC; Venture Management Services, Inc.	19-Nov-2024
Ampd Energy Ltd.	Series B	27.30	2150 Uk Ltd.; Kibo Investment LP; MTR Corp. Ltd.; Openspace Ventures Pte Ltd.; Particle Accelerator Ltd; Taronga Ventures Pty Ltd.	05-Nov-2024
Antenna Research Associates, Inc.	Private Sh	0.00	OceanSound Partners LP	29-Oct-2024
Appcharge Ltd.	Series A	26.00	BITKRAFT Ventures Management LLC; Creandum Advisor AB; Glilot Capital Investments GP Ltd.; MonetaVenture Capital; Nuard Ventures Oy; Play Ventures Pte Ltd.; Rotem Gindi; Supercell Ventures Oy	25-Nov-2024
Argo Natural Resources Ltd.	Series A	12.90	Business Growth Fund Ltd; Centre for Process Innovation Ltd.; Cisco Investments Inc; Deep Future LLC; Green Angel Syndicate Ltd.; Kadmos Capital Limited; Kero Development Partners; Mark Cutifani; Nesta Nordics AB; Stephen M. McIntosh; Turner Smith Partners Ltd.; Vorwerk Direct Selling Ventures GmbH	18-Nov-2024
ASDA Group Ltd.	Private Sh	0.00	TDR Capital LLP	03-Nov-2024
BETA Technologies, Inc.	Series C	318.00	Amazon (Venture Capital); Chaifetz Group LLC; Fidelity Management & Research Co. LLC; Fund At Hula; PTK Investments LLC; Qatar Holding LLC; RedBird Capital Partners Management LLC; TPG Growth LLC; United Therapeutics Corp.; UP Partners Management Co. LLC; Wealthing VC Club, Inc.	31-Oct-2024
Bristol Environmental LLC	Private Sh	0.00	Garnett Station Partners, LLC	12-Nov-2024
Busup Technologies SL	Series B	14.12	360 Tec SA De CV; AutoTech Management LLC; Banco de Sabadell SA (Private Equity); Finaccess México SA de CV SOSI; Finaves SA; Proeza Capital SAPI de CV	30-Oct-2024
Busup Technologies SL	Series B	14.12	360 Tec SA De CV; AutoTech Management LLC; Banco de Sabadell SA (Private Equity); Finaccess México SA de CV SOSI; Finaves SA; Proeza Capital SAPI de CV	30-Oct-2024
Certinia, Inc.	Private Sh	0.00	General Atlantic LLC; Haveli Investment Management LLC; TA Associates Management LP	19-Nov-2024
Dash Electric Pte Ltd.	Seed Round2	0.00	Aksara Ventures; Antler Innovation Pte Ltd.; Bali Investment Club; Kevin Bryan Aluwi; Schneider Electric SE; The Radical Fund	05-Nov-2024
Ding SAS	Seed Round	8.05	Seedcamp Investment Management LLP; Singular Capital Partners SAS	13-Nov-2024
Ding SAS	Seed Round	8.05	Seedcamp Investment Management LLP; Singular Capital Partners SAS	13-Nov-2024
Echion Technologies Ltd.	Series C	12.62	Barclays PLC; Boundary Capital Partners LLP; Business Growth Fund Ltd; Cambridge Enterprise Ltd.; Companhia Brasileira de Metalurgia & Mineracao; Kima Ventures SASU; Martlet Capital; Newable Private Investing; Origin Capital Ltd. (United Kingdom); Parkwalk Advisors Ltd. (Venture Capital); University of Cambridge; Volta Energy Technologies LLC	21-Nov-2024
Ecore International, Inc.	Private Sh	0.00	Beyondnetzero; CommonWealth Equity Partners LLC; Element Management LP; Farol Investment Advisers LP; Stephens Capital Partners LLC	18-Nov-2024
EECOMOBILITY INC.	Seed Round2	0.00	Automotive Ventures LLC; Emerson Ventures, Inc.; Risc Capital; RiSC Capital Corp.	20-Nov-2024
EECOMOBILITY INC.	Seed Round2	0.00	Automotive Ventures LLC; Emerson Ventures, Inc.; Risc Capital; RiSC Capital Corp.	19-Nov-2024

Elevate CDB, Inc.	Private Sh	20.00	Anthemis Group SA; Bowery Capital Management LLC; Fin Capital LLC; Fin Venture Capital Management LLC; Firebolt Ventures Management Co. LLC; Greycroft LLC; Norwest Venture Partners; SaaS Ventures LLC	29-Oct-2024
Elevate CDB, Inc.	Private Sh	20.00	Anthemis Group SA; Bowery Capital Management LLC; Fin Capital LLC; Fin Venture Capital Management LLC; Firebolt Ventures Management Co. LLC; Greycroft LLC; Norwest Venture Partners; SaaS Ventures LLC	29-Oct-2024
Eni Plenitude SpA Società Benefit	Private Sh	222.54	Energy Infrastructure Partners AG	11-Nov-2024
Epicor Software Corp.	Private Sh	0.00	Clayton Dubilier & Rice LLC; CVC Advisers Ltd.	30-Oct-2024
Foodsip Sp zoo	Seed Round3	1.30	AIP Seed ASI SA; Arkadiusz Krupicz; Bartosz Ciolkowski; CofounderZone Sp zoo; Foodtech.ac VC Sp zoo; FRYSZCZYN JAKUB BENEDYKT; Marcin Celejwski; Marcin Wozniak; Michal Karol Kowalczyk; Piotr Czajkowski; Piotr Markowski; Satus Venture Sp zoo	29-Oct-2024
G Cards, Inc.	Seed Round5	3.73	43north LLC; Alumni Ventures Group LLC; Black Operator Ventures LLC; Buffalo Angels; Correlation Management LLC; Gaingels LLC; Glenmont Mucker Management LLC; MaC Venture Capital Management LLC; TechStars Central, LLC; The Western Union Co.	20-Nov-2024
GOVECS AG	Series D	1.73	Companisto GmbH	28-Oct-2024
Huacai (Hefei) New Energy Technology Co., Ltd.	Private Sh	0.00	City of Hefei; Hainan Huaying Private Fund Management Co. Ltd.; Hefei Baohe Innovation Investment PE Fund Mgmt Co. Ltd.; Hefei High-Tech Venture Capital Management Partnership LP; Hkust Silicon Valley Guidance Fund; Shenzhen Co-Win Venture Capital Investments Ltd.	31-Oct-2024
Huzhou Inna New Energy Materials Co. Ltd.	Seed Round	0.00	Beijing Dancheng Asset Management Co. Ltd.; Hangzhou Oriental Jiafu Asset Management Co., Ltd.	01-Nov-2024
Infinite Machine Technologies, Inc.	Seed Round	9.30	Adjacent Ventures LLC; AH Capital Management LLC; Necessary Ventures LLC; Nico Rosberg; Otherwise Fund Management LLC	29-Oct-2024
Insider Pte Ltd.	Series E2	500.00	212 Ltd.; 500 Startups Management Co LLC; Aslanoba Capital (Turkey); Endeavor Global, Inc.; Esas Venture Capital Teknoloji Yatirimlari AS; General Atlantic LLC; Öncü Girişim Sermayesi Yatırım Ortaklığı AS; Peak XV Partners; Qatar Investment Authority (Investment Company); Riverwood Capital Management LP; Wamda Capital	01-Nov-2024
Ion Beam Services SA	Private Sh	0.00	Ardian SA	31-Oct-2024
Iontra, Inc.	Series C	45.00	Flag Group Co. Pty Ltd.; Riverstone Bcf Gp LLC; Volta Energy Technologies LLC	20-Nov-2024
Kanpla ApS	Series A	8.68	HENQ Invest BV	01-Nov-2024
Kyotherm SAS	Private Sh	0.00	InfraVia Capital Partners SAS; Noria SASU	20-Nov-2024
Lunar Outpost, Inc.	Series A	0.00	Cathexis Ventures; Explorer 1 Fund; Industrious Ventures; Promus Ventures LLC; Space Angels Holdings, Inc.; Type One Ventures LLC; Wasson Enterprise LLC	13-Nov-2024
Maintain Altitude Ltd.	Seed Round	0.50	Hiro Capital 1 LLP	28-Oct-2024
Molyon Ltd.	Series A	4.60	Cambridge Enterprise Ltd.; IQ Capital Partners LLP; Plural Platform SARL	26-Nov-2024
Moniepoint Inc	Series C	110.00	Bil Group Ltd.; Continent Venture Partners; Development Partners International LLP; Endeavor Global, Inc.; FMO Investment Management BV; Gbenga Oyebode; Global Ventures Ltd; GV Management Co. LLC; Kepple Africa Ventures; Lightrock LLP; Novastar Ventures Ltd.; OUI Capital Management Company LLC; QED Investors LLC; Quantum Capital Partners GP Ltd.; Soma Capital Management LLC; Ventures Platform Ltd; Verod Capital Management Ltd.	29-Oct-2024
NSI Industries LLC	Private Sh	0.00	Sentinel Capital Partners LLC	18-Nov-2024
Pat Tank, Inc.	Private Sh	0.00	Plexus Capital LLC; Transition Capital Partners Ltd.	05-Nov-2024
Photoneo Brightpick Group	Series A	12.00	Eduard Kucera, PhD; European Bank for Reconstruction & Development (Private Equity); Juraj Duriš; Maximilian Kolowrat-krakowsky; Miroslav Trnka; Pavel Baudiš	12-Nov-2024
Pole Star Space Applications Ltd.	Private Sh	0.00	ABRY Partners LLC; Brooke Private Equity Associates; Delta-V Capital LLC; Farol Investment Advisers LP; Florence Venture Partners LLC; Wavecrest Management Co LLC	02-Nov-2024

QSR Automations, Inc.	Private Sh	0.00	Battery Ventures	01-Nov-2024
Quanscient Oy	Private Sh	5.67	Crowberry Capital ehf; First Fellow Oy; MAKI Ventures Oy; Mikko Jussi Suonenlahti, MBA; Speen Holding AG; Teemu Jokinen	05-Nov-2024
Qutope, Inc.	Series A	3.59	Bluepoint Partners, Inc.; Company K Partners Ltd. (Private Equity); E&Venture Partners Co. Ltd.; SJ Investment Partners Co., Ltd.	20-Nov-2024
Reactiv Inc. (Canada)	Seed Round	5.00	Alumni Ventures Group LLC; Anthemis Group SA; Bonfire Ventures Management LLC; Daher Investment Management Ltd.; Foxe Capital	28-Oct-2024
Recreations Lab Pvt Ltd.	Series A	5.00	360 One Asset Management Ltd. (Private Equity); InfoEdge Ventures	12-Nov-2024
Rideflux, Inc.	Series B	18.81	Atinum Investment Co., Ltd. (Private Equity); Capstone Partners LLC (South Korea); Friend Investment Partners Co., Ltd.; Government of South Korea; Hyundai Investment Partners Co. Ltd.; IM Investment Partners Co. Ltd.; Industrial Bank of Korea /Private Equity/; Korea Investment & Securities Co. Ltd. /Private Equity/; Korea Investment Partners Co., Ltd.; Murex Partners Co. Ltd.; NVESTOR Co. Ltd.; SBI Investment Co., Ltd.; SBI Investment Korea Co., Ltd. (Private Equity); Seoul Investment Partners Co., Ltd.; Smart Study Ventures; Socar, Inc.; Yellow Dog Financial, Inc.; Yuanta Investment Co., Ltd.; Yuanta Investment Corp.	30-Oct-2024
Sanjeevani Dairy Farms Pvt Ltd.	Series A	3.00	Ankit Tandon; Arjun Vaidya; Atomic Capital /India/; Indigram Labs Foundation; Investopad Advisors; Ramakant Sharma, MBA; Saurabh Jain; Singularity AMC LLP	20-Nov-2024
SAS Ouigroup	Series B	1.62	BPIFrance Investissement SAS; Moon Venture	07-Nov-2024
Satsipay SpA	Series E	63.89	Addition LP; B Heroes Srl Societa Benefit; Banca Alpi Marittime Credito Cooperativo Carrù SCpA; Banca di Piacenza SCpA; Banca Popolare Etica SCpA; Banca Sella (Corporate Venture Capital); Banca Valsabbina SCpA; Block, Inc.; Cassa di Risparmio di Bolzano SpA; Club Degli Investitori; Coatue Management LLC (Private Equity); Copper Street Capital LLP (Private Equity); Endeavor Global, Inc.; Giuseppe Donagemma; Greyhound Capital Management LLP; Iccrea Banca SpA; Lightrock LLP; Mediolanum Gestione Fondi SGRpA; Nicolas Carbonari; Proximity Capital Srl; Ray Iglesias; Shenzhen Tencent Industrial Investment Fund Co., Ltd.; Smartclub SRL; Telecom Italia SpA (Corporate Venture Capital)	11-Nov-2024
Shanghai Shide Technology Co. Ltd.	Series B	0.00	Beijing Hongtai Tongchuang Investment Management Co. Ltd.; BlueRun Ventures China; Far East Horizon Ltd.; Korea Investment Partners Co., Ltd.; Shenzhen Decent Investment Co. Ltd.; Xinyu Kunnuo Investment Management Co. Ltd.	31-Oct-2024
Shrieve Chemical Co. LLC	Private Sh	0.00	Cordish Dixon Private Equity Fund series(Private Equity); Gemspring Capital Management LLC; Onex Falcon Investment Advisors LLC; StepStone Group LP	31-Oct-2024
Snap! Mobile, Inc.	Private Sh	23.00	Elysian Park Ventures LLC; PSG Equity LLC; Runway Growth Finance Corp /Venture capital/	13-Nov-2024
Solarbox Africa, Inc.	Seed Round3	1.00	Government of France; Jones Lang LaSalle, Inc.; Launch Africa Ventures; On.Capital; Teranga Capital SA; Wuri Ventures LLC	22-Nov-2024
Solvay Tech Solutions Pvt Ltd.	Series D	25.00	Binny Bansal; Blume Venture Advisors Pvt Ltd.; Creaegis Ltd.; Deer Management Co. LLC; Dharana Capital Ltd; Elevation Capital (India); ICICI Venture Funds Management Co. Ltd.; Nirvana Venture Advisors Pvt Ltd.; Plug & Play Health; Rahul Mahinder Kumar Khanna, MBA; Sachin Bansal; SMK Ventures LLC; Tiger Global Management LLC (Private Equity)	21-Nov-2024
SPIG Energia Srl	Private Sh	0.00	AUCTUS Capital Partners AG	30-Oct-2024
Super Telecom Co., Ltd.	Private Sh	0.00	Shanghai Ever Bright Investment Management Co. Ltd.	07-Nov-2024
Superscale S R O	Series A2	1.21	Across Private Investments o.c.p. a.s.; Byron Capital Partners Ltd. (Private Equity); Cyprus Popular Bank Public Co. Ltd.; LevelUp Ventures BV; Strecko Investments; Venture to Future Fund AS	19-Nov-2024
TactoTek Oy	Series E	60.00	3M Ventures; Ascend Capital Partners Co. Ltd.; Business Finland Venture Capital Oy; Conor Venture Partners Oy; Cornes & Co., Ltd.; Ehrnrooth Family; Ely Center LLC; European Investment Bank; Faurecia Ventures SASU; Forvia SE; Ingman Group Oy AB; Keskinäinen Työeläkevakuutusyhtiö Elo; Leaguer Group Co. Ltd.; Nanogate SE; Nidoco AB; Nordea Bank Abp; Nordic Option (Management); OPmobility SE; Repsol Energy Ventures SA; Suomen Teollisuussijoitus Oy; Veraventure Oy; Voima Ventures Oy; VTT Technical Research Center of Finland Ltd.; VTT Ventures	19-Nov-2024

Take Blip	Series C	60.00	M12 Ventures; SoftBank Capital Partners LLC; Warburg Pincus LLC	18-Nov-2024
tozero GmbH	Seed Round2	11.67	Atlantic Internet GmbH; Honda Motor Co., Ltd.; In-Q-Tel; JB Nordic Ventures Oy; JGC Holdings Corp.; Jochem Peter Heizmann, PhD; Possible Ventures; Verve Capital Partners AG	12-Nov-2024
Van Moer Group NV	Private Sh	0.00	Arxior Partners; Vectis Partners CVBA	05-Nov-2024
Vecmocon Technologies Pvt Ltd.	Series A	10.00	BII Group Ltd.; Blume Venture Advisors Pvt Ltd.; Ecosystem Integrity Management LLC; Government of India; SMK Ventures LLC; Tessellate Tech Ventures Pvt Ltd.; Tiger Global Management LLC (Private Equity)	15-Nov-2024
Verkor SAS (Auvergne-Rhone-Alpes)	Series C2	0.00	Airbridge Investments BV; Arkema SA; Aster Capital Partners SAS; BPIFrance Investissement SAS; Capgemini SE; CMA CGM SA; Demeter Partners SA; EQT Ventures; European Investment Bank; Government of France; GROUPE IDEC SAS; ING Sustainable Investments BV; Invescap SARL; ISALT-Investissements Stratégiques en Actions Long Terme SASU; KIC InnoEnergy SE; Macquarie Group Ltd.; Meridiam Infrastructure Partners SAS; Renault SA; SAS Rue la Boétie; SE Ventures /CA/; Sibanye Stillwater Ltd.; Tokai Carbon Co., Ltd.	31-Oct-2024
Writer, Inc.	Series C	200.00	Accenture Ventures; Alex MacCaw; Allison Pickens, MBA; Ankur Nagpal; Ashby Monk, PhD; Aspect Management LLC; Austin Rief; B Capital Group Management LP; Balderton Capital (UK) LLP; Bonfire Ventures Management LLC; Broadway Angels; Camille Ricketts; Citi Ventures, Inc.; Earl Grey Capital; Faysal A. Sohail; Gradient Ventures; Granite Ventures LLC; GTMfund LLC; IBM Ventures; ICONIQ Capital (Private Equity); Insight Venture Management LLC; Jack Altman; James Beshara; Julia Lipton; Lemonade Capital LLC; Lenny Rachitsky; MBC Ventures FZ LLC; McArthur Capital; Michael Stoppelman; Oliver Jay, MBA; Packy McCormick; PremjiInvest; Radical Ventures Investments, Inc.; Reform Ventures LLC; Rincon Venture Management LLC; Salesforce Ventures LLC; Scott Belsky, MBA; Silicon Oasis Founders FZCO; The Vanguard Group, Inc.; Todd & Rahul Angel Fund; Upfront Ventures Management LLC; ValueStream Ventures LLC; Vibe Capital LLC; Vivek Sodera; WndrCo Holdings LLC; Workday Ventures	12-Nov-2024
ZE Energy SAS	Series B2	57.99	Amundi Transition Energétiqu SAS; Caisse Des Dépôts & Consignations (PRIVATE EQUITY); Demeter Ventures SA; EverWatt SAS; High-Tech Gründerfonds Management GmbH; Marguerite Adviser SA; Syndicat Énergies Vienne; Ze Way Invest	06-Nov-2024

Source: Intro-act, FactSet

## MOBILITY INSTITUTIONAL INVESTOR LEAGUE

Chart 27: Mobility Institutional Owners League (Current)

Rank	Investor Name	Invested in Mobility (\$)	Q/Q Change (\$)	Change in Positions (#)	Mobility as % of AUM
1	The Vanguard Group, Inc.	898,208,850,012	(129,988,302,232)	(5)	12%
2	BlackRock Fund Advisors	512,149,491,133	(73,062,402,658)	(8)	7%
3	SSgA Funds Management, Inc.	403,350,486,022	(64,635,003,096)	(11)	5%
4	Fidelity Management & Research Co. LLC	244,794,498,363	(48,283,095,930)	(2)	3%
5	Geode Capital Management LLC	226,983,070,612	(28,053,980,496)	(11)	3%
6	T. Rowe Price Associates, Inc. (IM)	136,449,327,711	(29,313,629,239)	-	2%
7	JPMorgan Investment Management, Inc.	106,371,201,937	(18,728,855,100)	(8)	1%
8	Capital Research & Management Co. (World Investors)	102,275,643,754	(22,119,601,309)	(1)	1%
9	BlackRock Advisors (UK) Ltd.	91,265,318,575	(12,336,302,215)	(9)	1%
10	Northern Trust Investments, Inc. (Investment Management)	87,445,132,361	(13,248,472,467)	(11)	1%
11	Capital Research & Management Co. (Global Investors)	83,027,235,136	(21,166,065,585)	3	1%
12	Charles Schwab Investment Management, Inc.	77,686,378,807	(8,833,841,416)	(7)	1%
13	BlackRock Investment Management (UK) Ltd.	76,062,549,163	(10,723,706,097)	(17)	1%
14	Capital Research & Management Co. (International Investors)	67,911,076,668	(16,237,267,930)	3	1%
15	Wellington Management Co. LLP	67,051,829,823	(10,784,491,942)	-	1%
16	Morgan Stanley Smith Barney LLC (Investment Management)	55,213,087,730	(8,817,524,707)	(3)	1%
17	Goldman Sachs Asset Management LP	50,773,742,767	(7,908,721,956)	(7)	1%
18	Legal & General Investment Management Ltd.	50,722,653,577	(5,936,430,308)	(6)	1%
19	Massachusetts Financial Services Co.	46,721,719,740	(10,999,362,960)	(5)	1%
20	Dimensional Fund Advisors LP	46,416,706,995	(5,951,107,290)	1	1%
21	Parametric Portfolio Associates LLC	46,381,898,203	(6,094,839,745)	(7)	1%
22	AllianceBernstein LP	45,443,993,440	(6,960,400,252)	(35)	1%
23	Columbia Management Investment Advisers LLC	43,948,358,822	(7,085,800,433)	3	1%
24	Invesco Capital Management LLC	42,805,955,179	(1,712,140,405)	(7)	1%
25	TIAA-CREF Investment Management LLC	42,125,285,344	(3,542,674,776)	(8)	1%
	Others	3,839,528,135,950	(828,057,487,655)	(3,763)	51%
	<b>Total</b>	<b>7,491,113,627,824</b>	<b>(1,400,581,508,199)</b>	<b>(3,921)</b>	<b>100%</b>

Source: Intro-act, 13F Filings

Chart 28: Top 25 Mobility Buyers (Q/Q)

Rank	Investor Name	Invested in Mobility (\$)	Q/Q Change (\$)	Change in Positions (#)	Mobility as % of AUM
1	Capital Performance Advisors LLP	11,852,561	2,869,049	126	4%
2	KB Asset Management Co. Ltd.	1,241,563,911	1,241,563,911	123	27%
3	Hemington Wealth Management LLC	12,063,995	668,182	94	3%
4	Claris Advisors LLC	4,213,462	554,764	85	2%
5	Sterling Capital Management LLC	914,817,706	214,738,194	85	12%
6	The Bryn Mawr Trust Co. (Investment Management)	391,028,801	132,845,900	81	7%
7	Ashton Thomas Securities LLC	35,664,161	2,900,486	60	7%
8	Catalyst Funds Management Pty Ltd.	49,252,182	49,252,182	59	11%
9	Corecap Advisors LLC	90,605,356	55,680,296	58	4%
10	RBC Dominion Securities, Inc.	62,356,831	(96,424,700)	58	1%
11	Caitlin John LLC	12,764,579	12,764,579	55	8%
12	Novate Global Markets Ltd. (United Kingdom)	53,494,344	53,494,344	55	19%
13	Prospera Private Wealth LLC	67,113,463	55,783,514	53	12%
14	Legacy Investment Solutions LLC	1,869,702	1,869,702	51	1%
15	Legacy Wealth Management LLC (Idaho)	1,869,702	1,869,702	51	1%
16	Jaffe Tilchin Investment Partners LLC	121,646,993	(6,456,141)	50	9%
17	Brooklyn Investment Group LLC	54,520,566	(2,226,247)	47	18%
18	FSA Wealth Management LLC	7,437,327	7,437,327	47	3%
19	Eastern Bank (Investment Management)	837,970,928	370,205,691	41	15%
20	Flagship Harbor Advisors LLC	111,544,464	111,544,464	40	6%
21	CWA Asset Management Group LLC	244,254,477	244,254,477	39	13%
22	Intech Investment Management LLC	1,301,793,117	(228,714,555)	37	14%
23	Mendota Financial Group LLC	2,298,497	(524,872)	37	1%
24	Truvestments Capital LLC	50,802,593	7,597,737	37	14%
25	CTBC Investments Co., Ltd.	256,733,611	183,287,229	36	5%

Source: Intro-act, 13F Filings

Chart 29: Top 25 Mobility Sellers (Q/Q)

Rank	Investor Name	Invested in Mobility (\$)	Q/Q Change (\$)	Change in Positions (#)	Mobility as % of AUM
1	Norges Bank Investment Management	2,515,046,601	(174,228,106,217)	(233)	0%
2	Russell Investment Management Ltd.	62,363,339	(206,908,431)	(223)	1%
3	Nuveen Asset Management LLC	18,613,474	(4,660,097,969)	(146)	0%
4	OP Asset Management Ltd.	2,622,919	(1,422,705,963)	(116)	0%
5	Credit Suisse Asset Management (Schweiz) AG	2,005,984,661	(800,353,519)	(101)	8%
6	Pictet Asset Management SA	16,328,979,569	(4,335,769,592)	(97)	12%
7	Bosera Asset Management Co., Ltd.	61,227,159	(956,784,333)	(95)	0%
8	Texas Permanent School Fund Corp.	986,138	(1,917,048,651)	(92)	0%
9	State Board of Administration of Florida Retirement System	9,074,375,975	(3,320,925,326)	(88)	11%
10	KBC Asset Management NV	5,083,123,859	(2,264,729,391)	(84)	11%
11	KBC Fund Management Ltd.	53,669,549	(375,771,101)	(76)	1%
12	China Asset Management Co., Ltd.	2,114,315,807	(2,995,741,005)	(75)	2%
13	Mediolanum International Funds Ltd.	1,088,496,100	(1,025,764,684)	(74)	5%
14	CI Investments, Inc.	3,252,025,501	(1,337,240,217)	(72)	8%
15	Gradient Investments LLC	225,625,006	(8,440,489)	(69)	5%
16	IndexIQ Advisors LLC	102,715,610	(286,675,821)	(68)	3%
17	Huatai-PineBridge Fund Management Co., Ltd.	101,451,738	(2,275,835,683)	(67)	0%
18	ANIMA Sgr SpA	2,030,497,237	(791,788,623)	(66)	14%
19	Pictet Asset Management (Europe) SA (Italy)	325,714,250	(113,097,749)	(66)	15%
20	1832 Asset Management LP	4,985,032,018	(1,944,603,802)	(63)	6%
21	Innealta Capital LLC	509,619	(1,748,032)	(63)	0%
22	Redwood Wealth Management Group LLC	19,709,036	(7,111,588)	(63)	18%
23	Russell Investments Ltd.	383,479,099	(454,512,183)	(63)	4%
24	Amundi Austria GmbH	724,243,243	(176,363,794)	(61)	11%
25	Kelly Financial Services LLC	3,813,377	(1,844,537)	(60)	1%

Source: Intro-act, 13F Filings

## ETF SPOTLIGHT

### ARK Autonomous Tech. & Robotics ETF (ARKQ)

Closing Price (\$)	CUSIP	Expense Ratio	Inception
74.26	00214Q203	0.75	30/09/2014
AUM (\$ million)	Shares Outstanding (#)	Fund Flows (1M, \$)	Fund Flows (YTD, \$)
915	12 MM	-17 MM	-327 MM

#### Fund Description

ARKQ is an actively managed Exchange Traded Fund (ETF) dedicated to achieving long-term capital growth. The fund strategically allocates its assets primarily (at least 80%) to both domestic and foreign equity securities of autonomous technology and robotics companies. These companies are positioned to benefit from disruptive innovation across various sectors like energy, automation, manufacturing, materials, artificial intelligence, and transportation. By focusing on businesses at the forefront of technological advancements, ARKQ aims to capitalize on its potential to drive transformative changes and deliver substantial returns.

#### ETF Returns Annualized (As of 09/30/2024)

1 Year	3 Year	5 Year	Since Inception
16.14%	-7.67%	14.35%	12.57%

#### ETF Returns Cumulative (As of 09/30/2024)

1 Month	3 Month	YTD	Since Inception
8.46%	10.57%	5.55%	226.91%

#### Top 10 Holdings (updated as of 11/26/2024)

Holdings	% Allocation	Market Value
TESLA INC	15.02%	\$137,812,224.62
KRATOS DEFENSE & SECURITY	8.43%	\$77,357,636.64
TERADYNE INC	7.47%	\$68,531,733.48
ROCKET LAB USA INC	6.93%	\$63,619,403.88
IRIDIUM COMMUNICATIONS INC	5.30%	\$48,618,648.38
ARCHER AVIATION INC-A	4.75%	\$43,579,138.24
TRIMBLE INC	4.48%	\$41,112,869.20
PALANTIR TECHNOLOGIES INC-A	3.58%	\$32,867,866.05
AEROVIRONMENT INC	3.56%	\$32,655,866.55
UIPATH INC - CLASS A	3.30%	\$30,261,920.50

Source: Intro-act, FactSet

For more information on ARKQ visit <https://ark-funds.com/funds/arkq/>

### Autonomous & Electric Vehicles ETF (DRIV)

Closing Price (\$)	CUSIP	Expense Ratio	Inception
23.76	37954Y624	0.68	13/04/2018

AUM (\$ million)	Shares Outstanding (#)	Fund Flows (1M, \$)	Fund Flows (YTD, \$)
417	18 MM	-16 MM	-263 MM

#### Fund Description

The Global X Autonomous & Electric Vehicles ETF (DRIV) is strategically designed to invest in enterprises actively engaged in the advancement of autonomous vehicle technology, electric vehicles (EVs), and the production of EV components and essential materials. This encompasses companies at the forefront of autonomous vehicle software and hardware development, as well as those contributing to the manufacture of EVs, critical components like lithium batteries, and essential materials such as lithium and cobalt. With a resolute aim, DRIV seeks to mirror the price and yield performance of the Solactive Autonomous & Electric Vehicles Index, offering investors an opportunity to align with the dynamic growth potential of the autonomous and electric vehicles sector, while aiming for optimal investment outcomes.

#### ETF Returns Annualized (As of 09/30/2024)

1 Year	3 Year	5 Year	Since Inception
-1.55%	-3.75%	13.47%	8.61%

#### ETF Returns Cumulative (As of 09/30/2024)

1 Month	3 Months	YTD	Since Inception
3.47%	0.13%	-4.07%	70.70%

#### Top 10 Holdings (updated as of 11/26/2024)

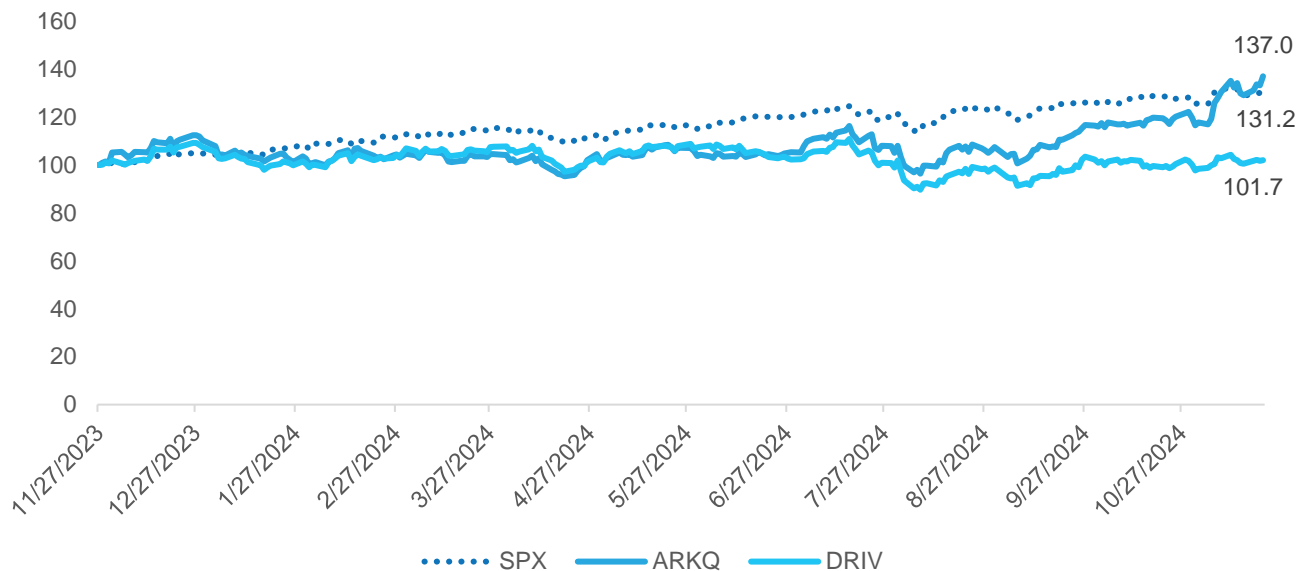
Holdings	% Allocation	Market Value
TESLA INC	4.31%	17,758,427.92
NVIDIA CORP	3.43%	14,140,549.92
MICROSOFT CORP	3.03%	12,491,744.13
ALPHABET INC-CL A	2.91%	11,991,791.84
HONEYWELL INTL	2.82%	11,614,464.00
TOYOTA MOTOR CORP	2.68%	11,030,139.88
QUALCOMM INC	2.42%	9,974,470.80
HITACHI LTD	2.30%	9,476,721.12
BLOOM ENERGY CORP- A	2.00%	8,242,974.26
GENERAL MOTORS CO	1.90%	7,812,615.68

Source: Intro-act, FactSet

For more information on DRIV visit: <https://www.globalxetfs.com/funds/driv/>

## ETF COMPARISON

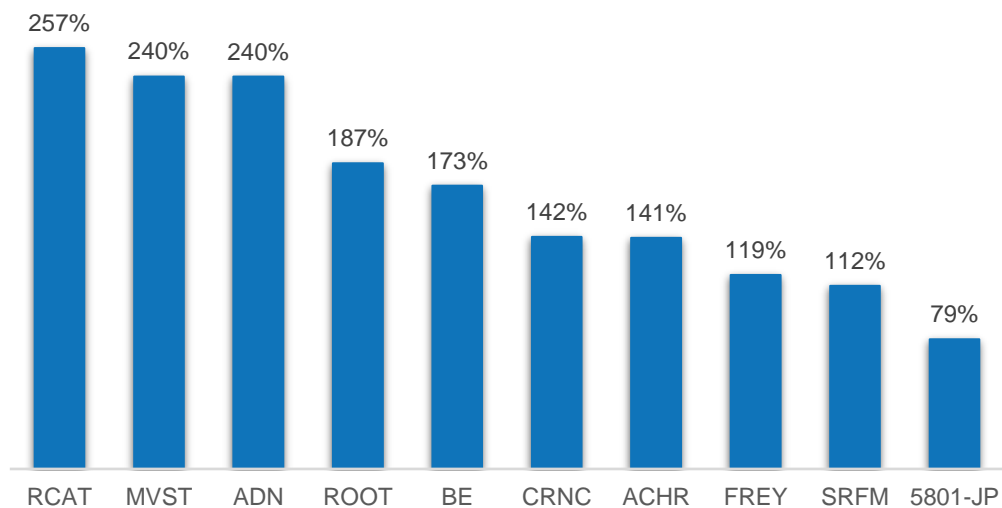
Chart 30: 12-month Indexed Returns of ARKQ and DRIV vs. S&P 500



Source: Intro-act, FactSet as of November 27, 2024

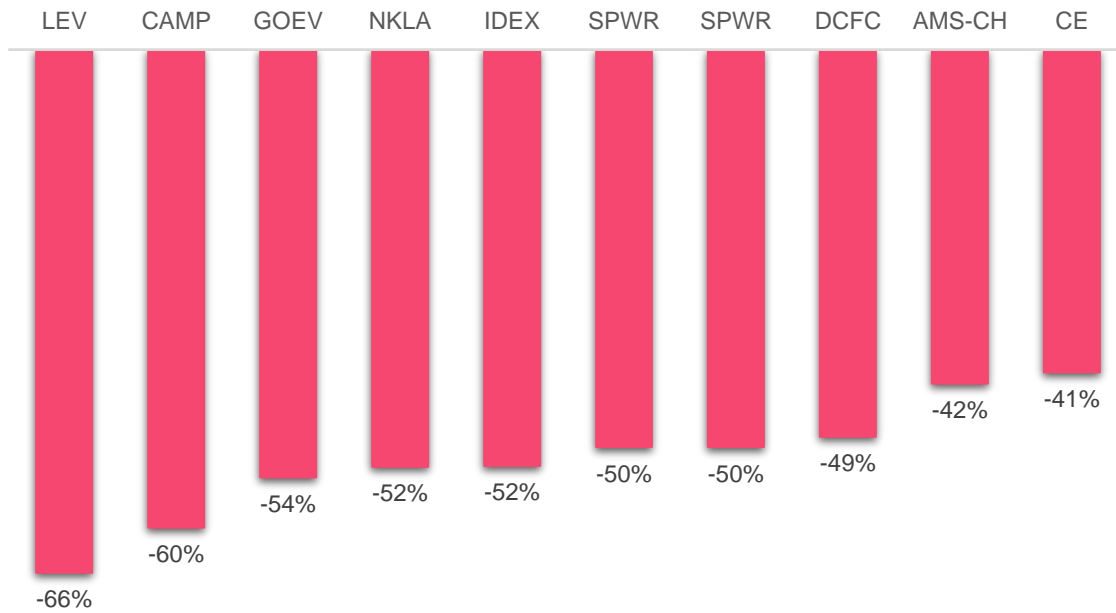
## GAINERS AND LOSERS – MOBILITY STOCKS (NOVEMBER 2024)

Chart 31: Top 10 M/M Mobility Gainers



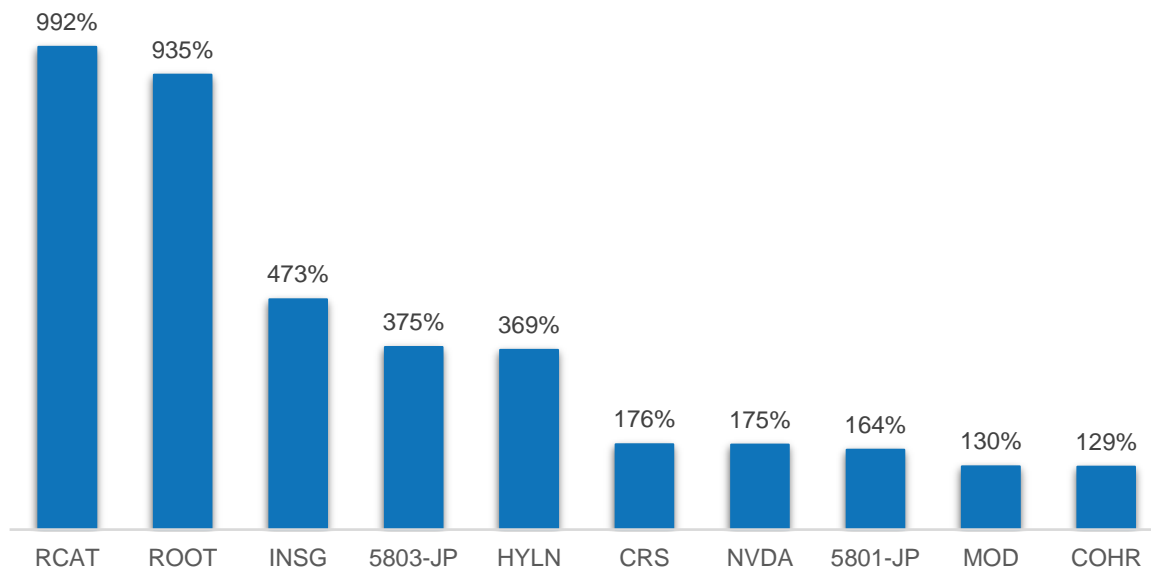
Source: Intro-act, FactSet

Chart 32: Top 10 M/M Mobility Losers



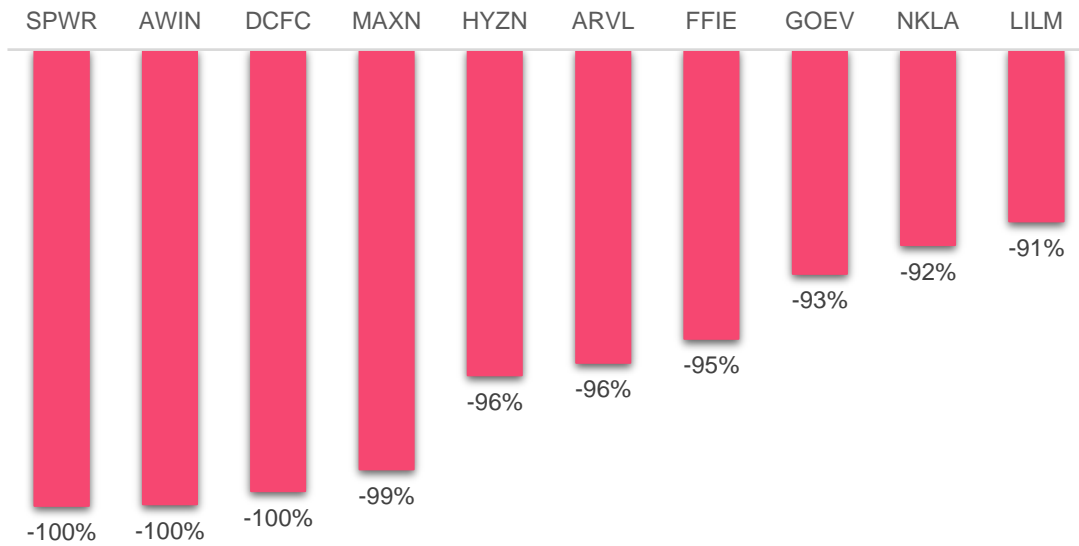
Source: Intro-act, FactSet

Chart 33: Top 10 YTD Mobility Gainers



Source: Intro-act, FactSet

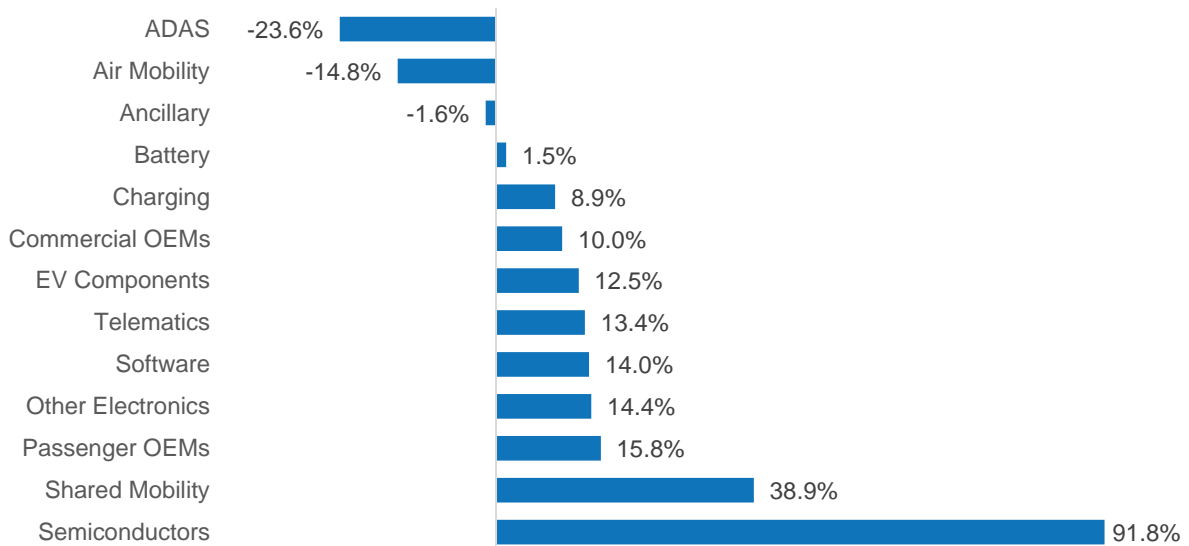
Chart 34: Top 10 YTD Mobility Losers



Source: Intro-act, FactSet

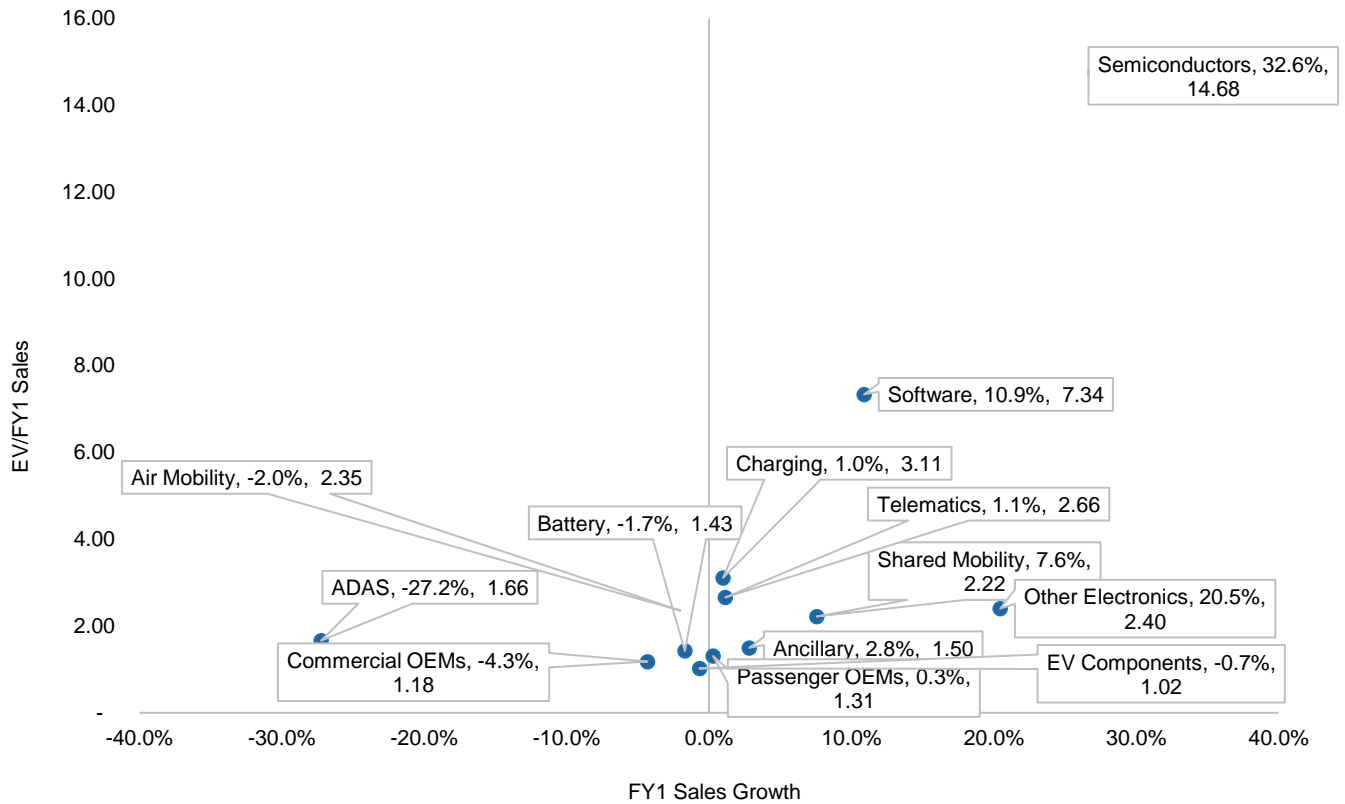
## SEGMENT RETURN AND VALUATION

Chart 35: YTD Stock Price Returns by Segment



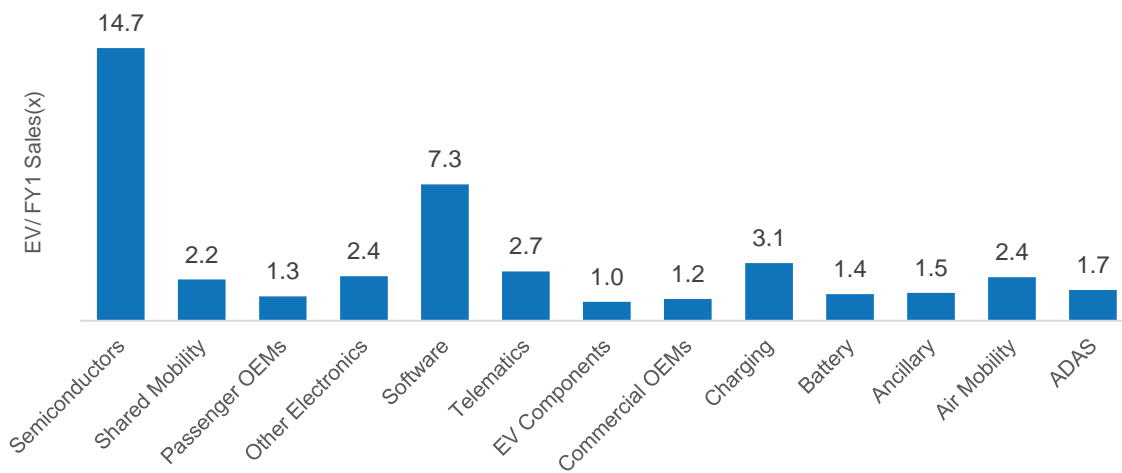
Source: Intro-act, FactSet

Chart 36: Mobility Industry Growth and Valuation by Segment



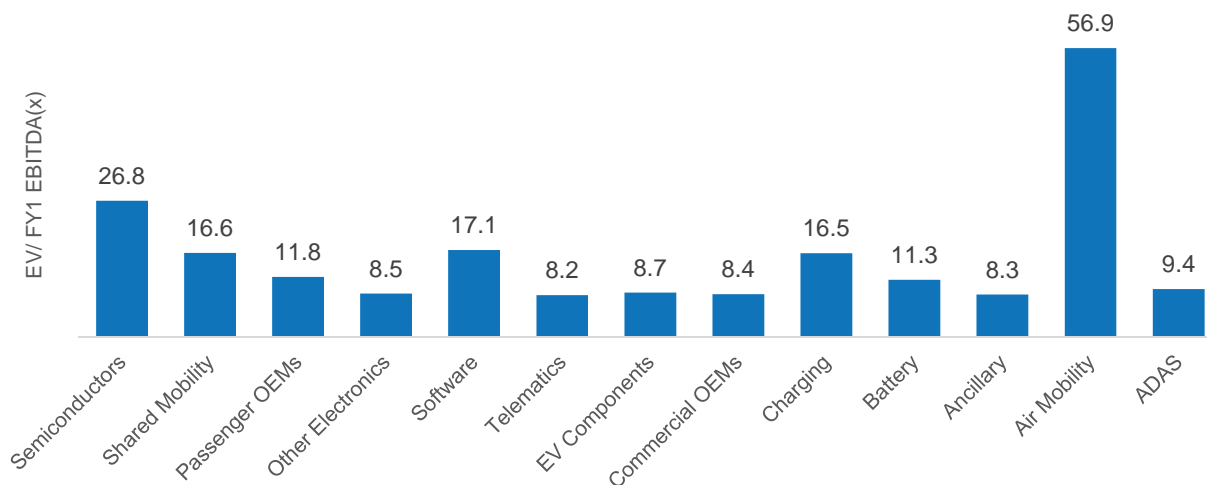
Source: Intro-act, FactSet. Data Through the end of November 2024. FY0 = last reported year. FY1 = first unreported year.

Chart 37: EV/ FY1 Sales Multiple by Segment



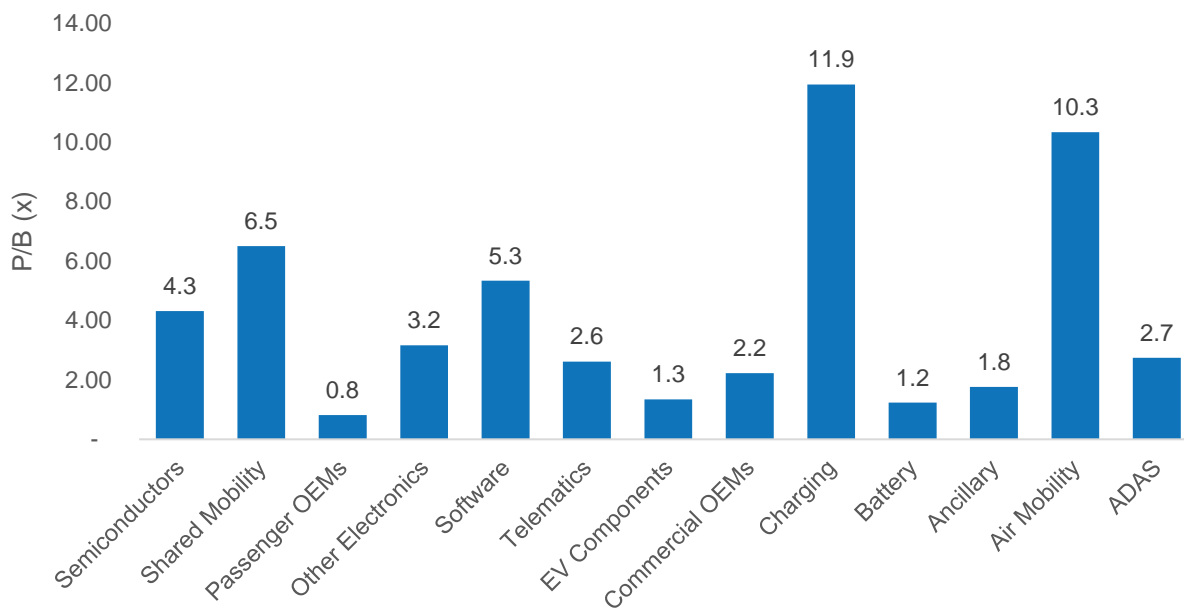
Source: Intro-act, FactSet. Data Through the end of November 2024. FY0 = last reported year. FY1 = first unreported year.

Chart 38: EV/ FY1 EBITDA Multiple by Segment



Source: Intro-act, FactSet. Data Through the end of November 2024. FY0 = last reported year. FY1 = first unreported year.

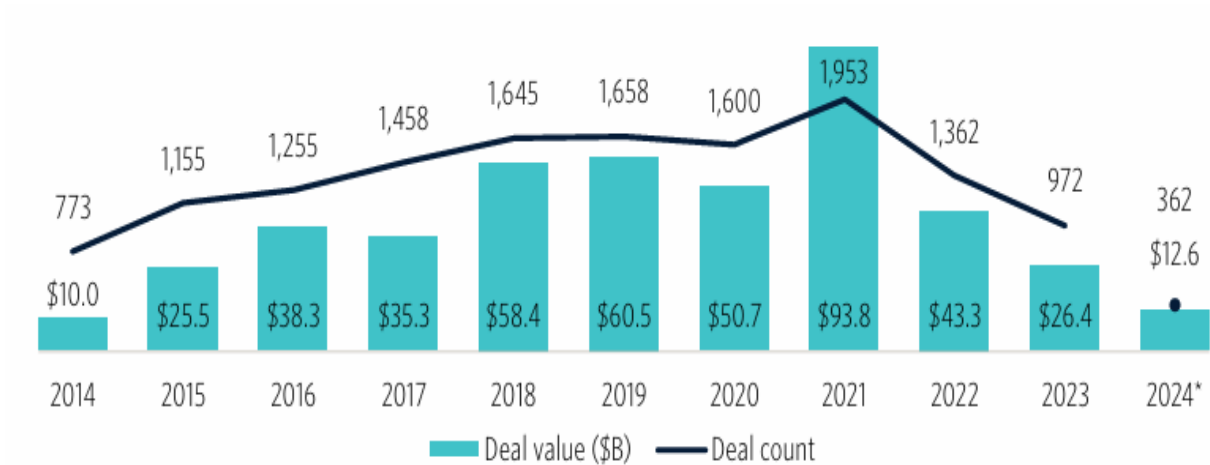
Chart 39: Price-to-Book Multiple by Segment



Source: Intro-act, FactSet. Data Through end of November 2024. FY0 = last reported year. FY1 = first unreported year.

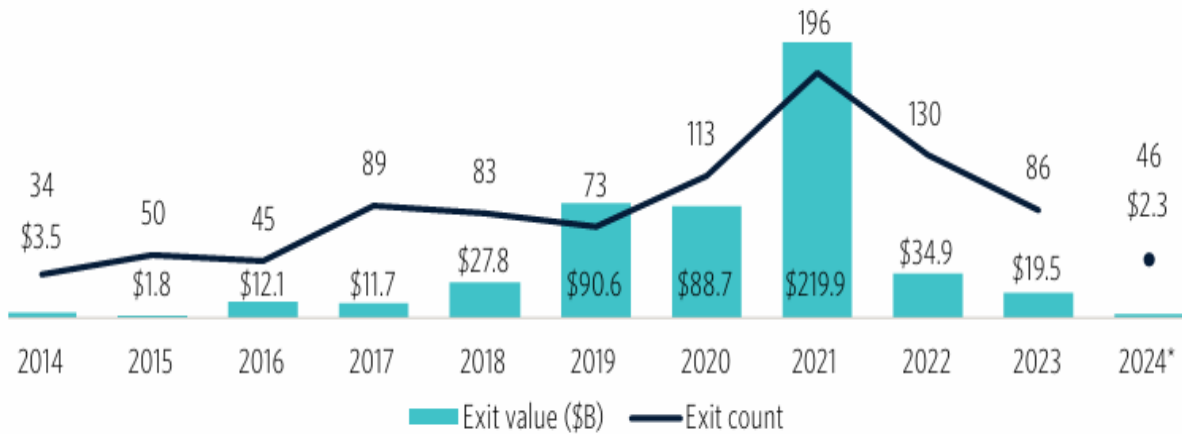
## CAPITAL MARKETS TRENDS (As of Q2 2024)

Chart 40: Mobility VC Funding Activity



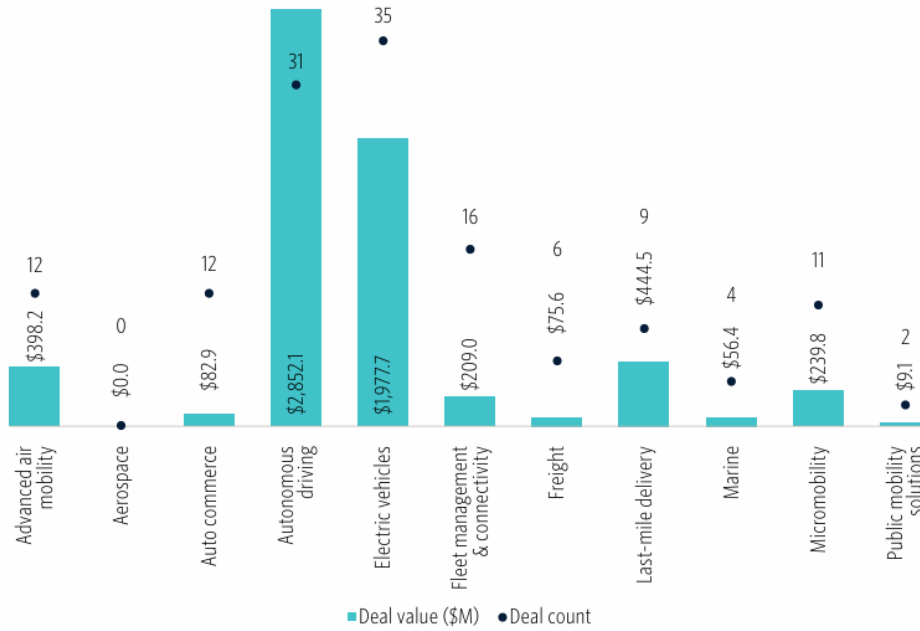
Source: Intro-act, Pitchbook

Chart 41: Mobility VC Exit Activity



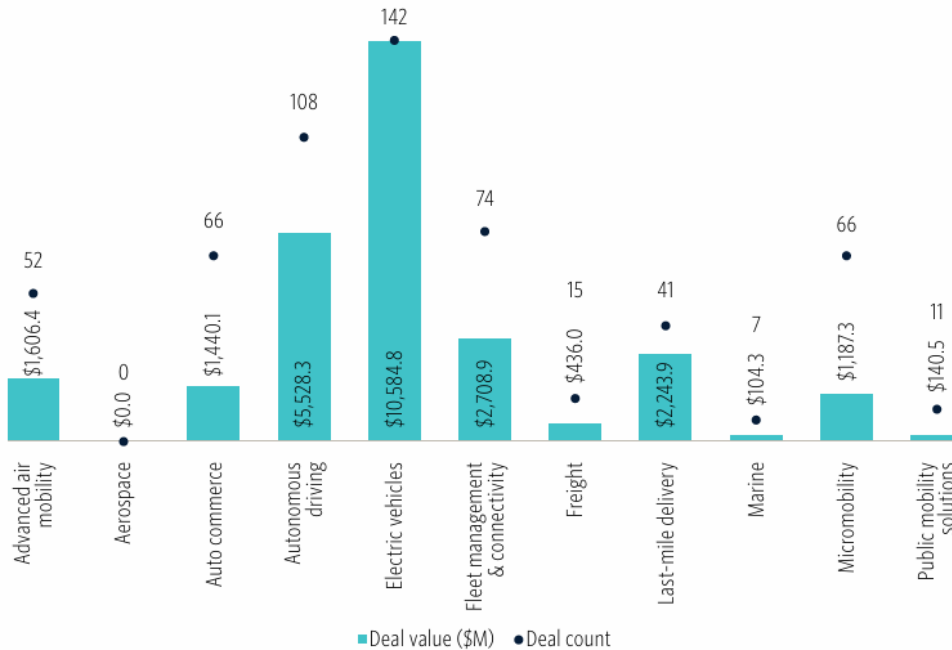
Source: Intro-act, Pitchbook

Chart 42: Q2 2024 Mobility Tech VC Deal Activity by Segment



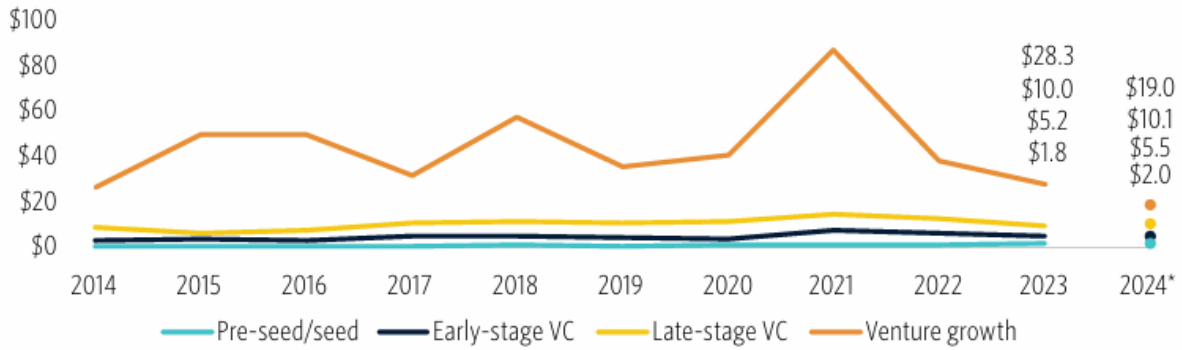
Source: Intro-act, Pitchbook

Chart 43: Trailing 12-Month Mobility Tech VC Deal Activity by Segment\*



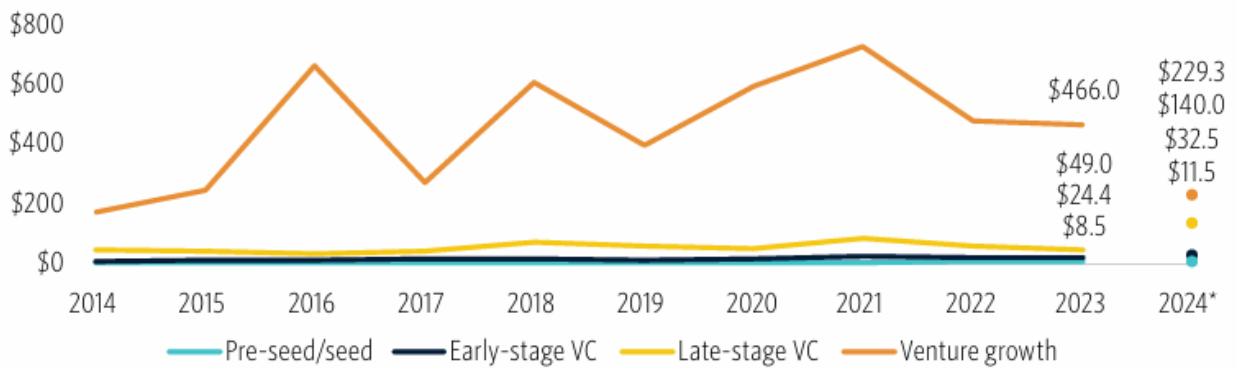
Source: Intro-act, Pitchbook

Chart 44: Median Mobility Tech VC Deal Value (\$ Million) by Stage



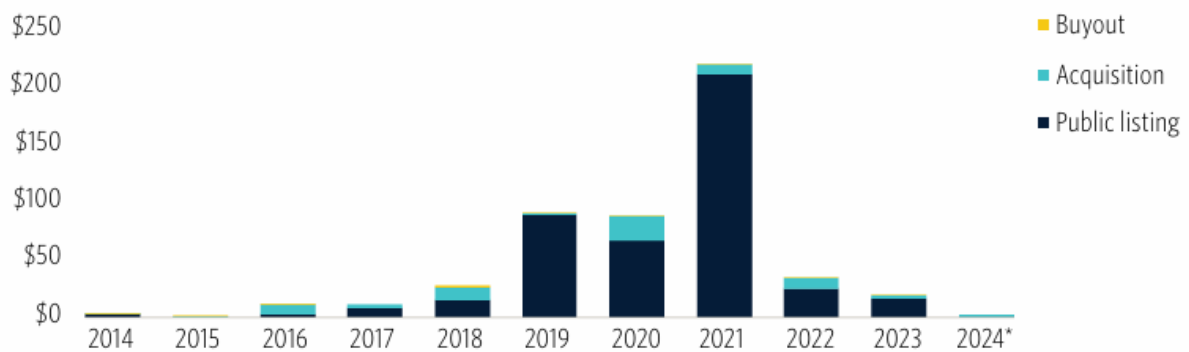
Source: Intro-act, Pitchbook

Chart 45: Median Mobility Tech VC Pre-money Valuation (\$ Million) by Stage



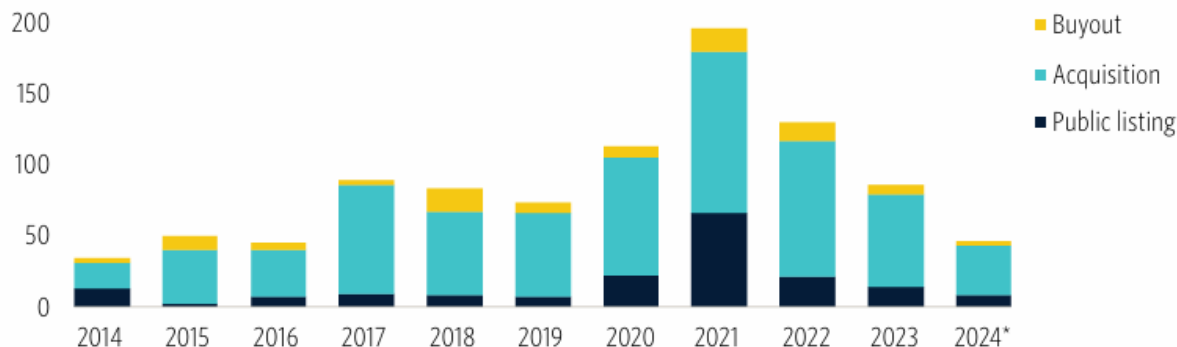
Source: Intro-act, Pitchbook

Chart 46: Mobility Tech VC Exit Value (\$ Million) by Type



Source: Intro-act, Pitchbook

Chart 47: Mobility Tech VC Exit Count by Type



Source: Intro-act, Pitchbook

Chart 48: Top VC Funding Deals

Company	Close Date	Deal value (\$M)
Wayve	May-07	\$1,050.0
Scale AI	May-21	\$1,000.0
Neta Auto	Apr-15	\$693.3
Sila	Jun-27	\$375.0
Getir	Jun-25	\$250.0
Waabi	Jun-16	\$200.0
Neta Auto	Jun-07	\$167.6
Pateo	Jun-14	\$150.3
Zūm	Apr-10	\$140.0
Leekr Technology	Apr-08	\$138.9

Source: Intro-act, Pitchbook

Chart 49: Top VC Funding Exits

Company	Close date	Exit value (\$M)
Motional	May-16	\$923.0
Le Travenues Technology	Jun-18	\$417.7
Drone Racing League	Apr-19	\$250.0
SEA Electric	Apr-05	\$248.0
Gett	May-09	\$175.0
TIER	Mar-26	\$65.8
Ryde Group	Mar-06	\$64.5
Autostreet	May-31	\$62.7
Everli	Feb-21	\$24.5
Hatch Work	Mar-26	\$21.2

Source: Intro-act, Pitchbook

Chart 50: Top VC Funding Raised to Date\*

Company	VC (\$M) Raised to Date	Subsegment
Ele.me	\$7,335.5	Delivery
Northvolt	\$6,867.5	Batteries, battery tech & materials
Waymo	\$5,500.0	Full stack
Xingsheng Selected	\$5,440.0	Delivery
Gopuff	\$4,934.7	Delivery
Ola	\$4,152.0	Ride-hailing platforms
Hello Inc.	\$4,131.6	Network operators
Neta Auto	\$3,835.2	Consumer BEVs
Guazi Used Car	\$3,810.0	Digital marketplaces
Swiggy	\$3,530.4	Delivery

Source: Intro-act, Pitchbook, \*As of March 31, 2024

## MOBILITY SPAC ACTION

Chart 51: Mobility SPACs (Searching)

S. No	SPAC Name	Ticker	Trust Value (\$ Mn)	IPO Date	Completion Date
1	Arogo Capital Acquisition Corp.	AOGO	104	12-23-20	12-29-24
2	EVe Mobility Acquisition Corp	EVE	250	12/14/2021	6/14/2024
3	Atlantic Coastal Acquisition Corp.	ACAH	345	3/3/2021	9/8/2024
4	AI Transportation Acquisition Corp	AITR	60	11/8/2023	5/8/2025
5	Integrated Rail and Resources Acquisition Corp.	IRRX	230	11/11/2021	11/15/2024
6	Spree Acquisition Corp. 1 Ltd	SHAP	200	12/15/2021	12/20/2024

Source: Intro-act, Boardroom Alpha

Chart 52: Mobility SPACs (Business Combination Agreement Announced)

S. No	SPAC Name	Ticker	Target Company	EV (\$ Mn)	Expected Closing
1	Direct Selling Acquisition Corp.	DSAQ	FlyBlade (India) Private Limited (Hunch Mobility)	223	1Q24
2	Feutune Light Acquisition Corp	FLFV	Thunder Power	400	1Q24
3	Project Energy Reimagined Acquisition Corp.	PEGR	Heramba Electric	450	2Q24
4	Pegasus Digital Mobility Acquisition Corp.	PGSS	The SCHMID Group	504	2Q24
5	Cactus Acquisition Corp. 1 Ltd	CCTS	Tembo E-LV B.V.	904	4Q24
6	Yotta Acquisition Corp	YOTA	DRIVEiT Financial Auto Group, Inc.	100	4Q25
7	Hudson Acquisition I Corp.	HUDA	Aiways Automobile Europe GmbH	410	4Q25

Source: Intro-act, Boardroom Alpha

**Chart 53: Mobility SPACs (Closed Deals Since January 2022)**

S. No	SPAC Name	Ticker (Old)	DE-SPAC	Ticker	Closing Date
1	Yellowstone Acquisition Co	YSAC	Sky Harbour LLC	SKYH	25-Jan-22
2	ECP Environmental Growth Opportunities Corp.	ENNV	Fast Radius, Inc.	FSRD	4-Feb-22
3	CITIC Capital Acquisition Corp	CCAC	Quanergy Systems	QNGY	8-Feb-22
4	Growth Capital Acquisition Corp.	GCAC	Cepton Technologies, Inc	CPTN	10-Feb-22
5	Queens Gambit Growth Capital	GMBT	Swvl	SWVL	31-Mar-22
6	Archimedes Tech SPAC Partners Co	ATSPT	SoundHound	SOUN	27-Apr-22
7	Zanite Acquisition Corp.	ZNTE	Eve	EVEX	9-May-22
8	Gores Guggenheim, Inc	GGPI	Polestar Automotive Holding UK Plc	PSNY	23-Jun-22
9	Global SPAC Partners Co.	GLSPT	Gorilla Technology Group Inc.	GRRR	13-Jul-22
10	Ventoux CCM Acquisition Corp.	VTAQ	Presto	PRST	21-Sep-22
11	AEA-Bridges Impact Corp	IMPX	LiveWire	LVWR	26-Sep-22
12	ACE Convergence Acquisition Corp	ACEV	Tempo Automation	TMPO	22-Nov-22
13	InterPrivate II Acquisition Corp.	IPVA	Getaround	GETR	8-Dec-22
14	Pacifico Acquisition Corp.	PAFO	Caravelle International Group	CACO	16-Dec-22
15	Crescent Cove Acquisition Corp.	COVA	ECARX	ECX	20-Dec-22
16	Jack Creek Investment Corp.	JCIC	Bridger Aerospace Group	BAER	24-Jan-23
17	PONO Capital Corp	PONO	AERWINS Technologies Inc.	AWIN	3-Feb-23
18	HPX Corp	HPX	Ambipar Emergency Response	AMBI	3-Mar-23
19	GX Acquisition Corp. II	GXII	Niocorp Developments Ltd	NB	17-Mar-23
20	CIIG Capital Partners II, Inc.	CIIG	Zapp	ZAPP	28-Apr-23
21	Goldenbridge Acquisition Limited	GBRG	Auto Services Group Limited	SDA	17-May-23
22	Jupiter Wellness Acquisition Corp.	JWAC	Chijet Motor Company	CJET	1-Jun-23
23	GoGreen Investments Corp	GOGN	Lifezone Metals Ltd	LZM	6-Jul-23
24	PROOF Acquisition Corp I	PACI	Volato, Inc.	SOAR	1-Dec-23
25	Prospector Capital Corp.	PRSR	LeddarTech	LDTTC	21-Dec-23
26	EG Acquisition Corp.	EGGF	flyExclusive	FLYX	27-Dec-23
27	Innovative International Acquisition Corp.	IOAC	Zoomcar	ZCAR	28-Dec-23
28	Pono Capital Three, Inc	PTHR	Horizon Aircraft	HOVR	12-Jan-24
29	Pegasus Digital Mobility Acquisition Corp.	PGSS	The SCHMID Group	SHMD	01-May-24
30	Andretti Acquisition Corp	WNNR	Zapata AI	ZPTA	01-Apr-24
31	Mobiv Acquisition Corp.	MOBV	SRIVARU	SVMH	11-Dec-23

32	Perception Capital Corp. II	PCCT	Spectaire Inc	SPEC	20-Oct-23
33	Graf Acquisition Corp. IV	GFOR	NK Gen, Biotech, Inc.	NKGN	20-Oct-23
34	GSR II Meteora Acquisition Corp.	GSRM	Bitcoin Depot	BTM	03-Jul-23

Source: Intro-act, Boardroom Alpha

## MOBILITY EVENTS CALENDAR

S. No.	Event	Place	Dates
1	Logimotion: Navigating the Future of Global Logistics & Mobility	Dubai - United Arab Emirate	10 - 12 Dec 2024
2	Consumer Electronics Show (CES)	Las Vegas, NV, USA	07 - 10 Jan 2025
3	ASEAN Rail Summit	Kuala Lumpur, Malaysia	09 - 10 Jan 2025
4	HyVolution	Paris Expo Porte de Versailles	28 - 30 Jan 2025
5	6th EV Charging Infrastructure Summit – North America, East	Atlanta	28 - 29 Jan 2025
6	GreenBiz	JW Marriott, Desert Ridge, Phoenix AZ	10 - 12 Feb 2025
7	Geo Week	Denver Colorado Convention Center	10 - 12 Feb 2025
8	RTR Conference	Brussels, Belgium	11 - 13 Feb 2025
9	American Hydrogen Forum	Houston, TX, USA	12 - 13 Feb 2025
10	Equip Auto Algeria	Alger	17 - 20 Feb 2025
11	Euro City Expo	Luxembourg	25 - 27 Feb 2025
12	Fintech Revolution Summit	Hotel Crowne Plaza Manama, Bahrein	25 - 26 Feb 2025
13	The Roads & Traffic Expo Thailand	Bangkok, Thailand	26 - 27 Feb 2025
14	EVCharge Live Thailand	Bangkok, Thailand	26 - 27 Feb 2025
15	Green Hydrogen Summit USA	The Westin Hotel, Seattle	26 - 27 Feb 2025

Source: Intro-act, Multiple Web Sources

## MOBILITY COMP TABLE

Chart 54: Comp Table (1/15)

Peer Set	Ticker	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
					% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/ EBITDA	Book/ Share	P/BV	
ADAS			450,943	495,076			-24%	333,248	297,754	1.7 x	72,176	52,516	9.4 x		2.7 x	
1	QUALCOMM INC	QCOM	158.8	176,449	178,589	45%	-21%	10%	38,944	42,473	4.2 x	15,002	15,910	11.2 x	23.61	6.7 x
2	INTEL CORP	INTC	24.9	107,264	138,746	106%	-26%	-51%	54,228	52,663	2.6 x	13,563	10,431	13.3 x	23.10	1.1 x
3	STELLANTIS N.V	FCAU	13.4	39,641	31,202	121%	-5%	-41%	203,987	169,534	0.2 x	32,919	18,205	1.7 x	29.78	0.4 x
4	INFINEON TECH	IFX-DE	31.9	41,653	46,372	35%	-6%	-23%	15,867	15,300	3.0 x	5,029	4,451	10.4 x	13.38	2.4 x
5	MICROCHIP TECHNOLOGY	MCHP	69.9	37,510	43,682	44%	-10%	-23%	7,634	4,574	9.5 x	3,652	1,468	29.8 x	11.69	6.0 x
6	TELEDYNE TECHNOLOGIES	TDY	477.6	22,258	24,500	3%	-26%	7%	5,636	5,618	4.4 x	1,348	1,355	18.1 x	205.78	2.3 x
7	COHERENT CORP	COHR	99.8	15,435	21,339	12%	-65%	129%	4,708	5,563	3.8 x	1,002	1,238	17.2 x	35.60	2.8 x
8	ALLEGRO MICROSYSTEMS	ALGM	22.3	4,108	4,335	49%	-17%	-26%	1,049	715	6.1 x	364	111	39.1 x	5.09	4.4 x
9	AMBARELLA INC	AMBA	67.3	2,777	2,564	1%	-41%	10%	226	267	9.6 x	(22)	(16)	-	13.27	5.1 x
10	INDIE SEMICONDUCTOR	INDI	5.4	993	1,208	61%	-41%	-33%	223	217	5.6 x	(30)	(55)	-	2.30	2.3 x
11	NAVITAS SEMICONDUCTOR	NVTS	2.8	519	430	204%	-37%	-66%	79	84	5.1 x	(29)	(40)	-	2.04	1.4 x
12	NLIGHT INC	LASR	11.2	540	446	34%	-12%	-17%	210	204	2.2 x	(4)	(11)	-	4.87	2.3 x
13	LUMINAR TECHNOLOGIES	LAZR	9.6	258	707	477%	-9%	-81%	70	71	10.0 x	(307)	(260)	-	(7.77)	-1.2 x
14	OUSTER INC	OUST	9.9	492	362	71%	-53%	29%	83	111	3.3 x	(132)	-	-	3.47	2.8 x
15	HESAI GROUP	HSAI	4.8	463	172	136%	-31%	-47%	262	304	0.6 x	(67)	(41)	-	4.39	1.1 x
16	INNOVIZ TECH	INVZ	0.7	116	40	336%	-34%	-73%	21	25	1.6 x	(112)	(89)	-	-	-!
17	AEVA TECH	AEVA	4.5	242	112	61%	-51%	19%	4	9	12.6 x	(131)	(140)	-	2.40	1.9 x
18	ARBE ROBOTICS	ARBE	1.9	164	169	33%	-28%	-11%	1	2	112.9 x	(32)	-	-	0.33	5.9 x
19	CEPTON INC	CPTN	3.1	50	111	67%	-24%	-1%	13	20	5.5 x	(41)	-	-	(3.24)	-1.0 x
20	AEYE INC	LIDR	1.1	10	(12)	372%	-28%	-52%	1	0	-66.6 x	-	-	-	1.67	0.7 x

Source: Intro-act, FactSet

Chart 55: Comp Table (2/15)

	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
				% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/ EBITDA	Book/ Share	P/BV	
<b>Peer Set</b>															
Ancillary	Ticker	934,730	1,064,172			-2%	690,816	710,379	1.5 x	105,174	127,495	8.3 x		1.8 x	
21	SAMSUNG ELECTRONIC 005930-KR	41.3	246,629	221,960	56%	-14%	-32%	194,013	216,480	1.0 x	33,859	54,622	4.1 x	40.13	1.0 x
22	EATON CORP PLC ETN	376.7	148,864	156,991	1%	-40%	56%	23,196	25,026	6.3 x	4,946	5,779	27.2 x	48.37	7.8 x
23	HONEYWELL INTL INC HON	230.6	149,947	171,577	5%	-18%	10%	36,662	38,679	4.4 x	9,442	10,315	16.6 x	26.77	8.6 x
24	DOW INC DOW	45.9	32,113	47,205	32%	-6%	-16%	44,622	43,207	1.1 x	5,365	5,590	8.4 x	26.16	1.8 x
25	CUMMINS INC CMI	375.3	51,480	58,368	1%	-41%	57%	34,065	33,760	1.7 x	3,017	5,264	11.1 x	75.24	5.0 x
26	LYONDELLBASELL IND. LYB	84.1	27,299	37,410	27%	-3%	-12%	41,107	40,493	0.9 x	5,182	4,631	8.1 x	42.24	2.0 x
27	WABTEC WAB	199.3	34,254	38,192	2%	-43%	57%	9,677	10,426	3.7 x	1,844	2,168	17.6 x	59.63	3.3 x
28	APTIV PLC APTV	57.1	13,428	21,986	60%	-10%	-36%	20,051	19,678	1.1 x	2,788	3,083	7.1 x	37.80	1.5 x
29	PRYSMIAN SPA PRY.IT	65.9	19,484	24,926	15%	-43%	48%	16,615	17,589	1.4 x	1,762	1,984	12.6 x	17.76	3.7 x
30	CELANESE CORP CE	76.5	8,362	21,332	125%	-7%	-51%	10,940	10,289	2.1 x	2,444	2,373	9.0 x	66.57	1.1 x
31	SUMITOMO ELECTRIC 5802-JP	19.3	15,329	19,842	2%	-38%	54%	28,235	29,619	0.7 x	2,728	3,088	6.4 x	19.39	1.0 x
32	EASTMAN CHEM CO EMN	105.8	12,268	16,774	8%	-24%	18%	9,210	9,422	1.8 x	1,591	1,778	9.4 x	48.80	2.2 x
33	ITT INC ITT	159.6	13,009	13,484	1%	-33%	34%	3,283	3,634	3.7 x	665	783	17.2 x	33.73	4.7 x
34	AUTOLIV INC ALV	101.6	7,999	9,978	27%	-12%	-8%	10,475	10,480	1.0 x	1,242	1,378	7.2 x	29.07	3.5 x
35	SKF AB SKF.B-SE	19.0	8,091	9,843	22%	-10%	-5%	10,054	8,865	1.1 x	1,500	1,372	7.2 x	11.40	1.7 x
36	UNITED STATES STL X	38.6	8,687	11,317	30%	-30%	-21%	18,053	15,859	0.7 x	2,139	1,403	8.1 x	51.42	0.8 x
37	GENTEX CORP GNTX	31.1	7,069	6,874	21%	-9%	-5%	2,299	2,371	2.9 x	590	593	11.6 x	10.63	2.9 x
38	ZHEJIANG HUAYOU 603799-CN	4.5	7,617	15,990	20%	-37%	-1%	9,140	9,061	1.8 x	1,219	1,503	10.6 x	2.99	1.5 x
39	ALLISON TRANSMISSION ALSN	119.2	10,325	11,958	3%	-55%	105%	3,035	3,212	3.7 x	1,108	1,155	10.4 x	18.69	6.4 x
40	FUJIKURA 5803-JP	36.5	10,810	10,392	14%	-80%	409%	5,114	5,766	1.8 x	594	852	12.2 x	8.27	4.4 x
41	CARPENTER TECH CRS	195.1	9,724	10,277	1%	-70%	176%	2,760	3,033	3.4 x	498	643	16.0 x	33.31	5.9 x
42	MODINE MFG CO MOD	137.4	7,214	7,642	7%	-64%	130%	2,408	2,620	2.9 x	314	388	19.7 x	16.36	8.4 x
43	NEXANS SA NEX-FR	111.6	4,883	5,766	42%	-32%	28%	8,384	8,428	0.7 x	716	788	7.3 x	44.95	2.5 x
44	GUANGZHOU TINCI 002709-CN	3.4	6,612	7,335	6%	-47%	-3%	2,134	1,838	4.0 x	443	257	28.6 x	0.96	3.6 x
45	GEM CO LTD 002340-CN	1.0	5,070	9,211	12%	-44%	29%	4,208	4,978	1.9 x	456	561	16.4 x	0.53	1.9 x
46	KOITO MFG CO LTD 7276-JP	12.8	3,955	2,289	34%	-6%	-14%	6,042	6,076	0.4 x	662	600	3.8 x	13.87	0.9 x
47	HONGFA TECHNOLOGY 600885-CN	4.4	4,544	5,198	16%	-33%	12%	1,788	2,021	2.6 x	446	487	10.7 x	1.19	3.7 x
48	JOHNSON MATTHEY JMAT-GB	18.9	3,244	4,402	27%	-2%	-13%	4,963	4,463	1.0 x	756	744	5.9 x	16.64	1.1 x
49	XIAMEN TUNGSTEN 600549-CN	2.9	4,063	6,751	14%	-35%	19%	5,441	5,049	1.3 x	639	619	10.9 x	1.20	2.4 x
50	CIE AUTOMOTIVE CIE-ES	26.7	3,198	4,877	16%	-5%	-6%	4,300	4,197	1.2 x	771	777	6.3 x	12.43	2.1 x

Source: Intro-act, FactSet

Chart 56: Comp Table (3/15)

		Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value	
					% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/EBITDA	Book/ Share	P/BV
<b>Peer Set</b>															
Ancillary	Ticker		934,730	1,064,172			-2%	690,816	710,379	1.5 x	105,174	127,495	8.3 x		1.8 x
51	NINGBO SHANSHAN 600884-CN	1.2	2,808	5,010	58%	-26%	-33%	2,737	3,104	1.6 x	385	410	12.2 x	1.41	0.9 x
52	STANLEY ELECTRIC 6923-JP	16.5	2,770	2,032	20%	-1%	-7%	3,015	3,302	0.6 x	465	610	3.3 x	20.57	0.8 x
53	TOYOTA BOSHOKU 3116-JP	12.8	2,411	2,051	40%	-11%	-15%	12,421	12,381	0.2 x	824	788	2.6 x	16.37	0.8 x
54	XIAMEN FARATRONIC 600563-CN	17.7	3,982	3,872	10%	-45%	36%	537	661	5.9 x	183	200	19.4 x	3.14	5.6 x
55	ADIENT PLC ADNT	20.0	1,694	3,800	86%	-7%	-45%	14,688	14,251	0.3 x	880	868	4.4 x	25.15	0.8 x
56	TOYODA GOSEI 7282-JP	16.6	2,117	2,364	36%	-11%	-11%	6,810	6,910	0.3 x	744	706	3.3 x	27.07	0.6 x
57	SHENZHEN ENVICOOL 002837-CN	4.8	3,566	3,611	11%	-62%	62%	487	665	5.4 x	69	97	37.2 x	0.53	9.1 x
58	ASPEN AEROGELS ASPN	15.1	1,235	1,325	120%	-31%	-5%	239	448	3.0 x	(23)	90	14.7 x	6.58	2.3 x
59	SK IE TECHNOLOGY 361610-KR	20.1	1,435	2,351	237%	-13%	-67%	491	176	13.4 x	147	(55)	-	23.82	0.8 x
60	CHENGXIN LITHIUM G 002240-CN	2.3	2,080	2,817	49%	-35%	-28%	1,097	707	4.0 x	96	81	35.0 x	1.88	1.2 x
61	GARRETT MOTION GTX	8.4	1,790	3,214	21%	-15%	-13%	3,886	3,508	0.9 x	635	590	5.5 x	(3.62)	-2.3 x
62	DANA INC DAN	8.9	1,287	4,115	70%	-15%	-39%	10,555	10,365	0.4 x	845	865	4.8 x	10.21	0.9 x
63	HANON SYSTEMS 018880-KR	3.0	1,600	4,516	93%	-11%	-47%	7,159	7,105	0.6 x	656	688	6.6 x	3.26	0.9 x
64	KCC CORPORATION 002380-KR	166.6	1,481	4,386	50%	-10%	13%	4,736	4,756	0.9 x	569	656	6.7 x	503.64	0.3 x
65	NANTONG JIANGHAI 002484-CN	2.6	2,171	2,099	12%	-40%	14%	669	717	2.9 x	139	143	14.7 x	0.95	2.7 x
66	GENTHERM INC THRM	43.8	1,356	1,457	44%	-9%	-16%	1,469	1,462	1.0 x	181	192	7.6 x	21.33	2.1 x
67	TS TECH CO.LTD. 7313-JP	11.0	1,501	657	23%	-2%	2%	2,833	2,880	0.2 x	189	199	3.3 x	16.61	0.7 x
68	LOTTE ENERGY MA 020150-KR	19.3	888	997	122%	-4%	-41%	611	666	1.5 x	65	42	23.6 x	21.49	0.9 x
69	TOKAI RIKAI CO 6995-JP	13.8	1,298	824	27%	-14%	-1%	4,008	3,899	0.2 x	314	304	2.7 x	24.27	0.6 x
70	NEXTEER AUTOMOTIVE 1316-HK	0.4	932	793	90%	-21%	-41%	4,207	4,396	0.2 x	345	433	1.8 x	0.78	0.5 x
71	SL CORPORATION 005850-KR	22.4	1,041	837	54%	-7%	-18%	3,634	3,580	0.2 x	404	434	1.9 x	34.47	0.6 x
72	HYUNDAI WIA CORP 011210-KR	30.4	826	1,106	68%	-7%	-39%	6,440	6,237	0.2 x	387	381	2.9 x	94.42	0.3 x
73	AMERICAN AXLE & MFG AXL	6.8	802	3,055	32%	-20%	-23%	6,080	6,144	0.5 x	693	730	4.2 x	5.24	1.3 x
74	EXEDY CORP 7278-JP	29.1	1,415	1,110	1%	-45%	84%	1,960	1,976	0.6 x	24	207	5.4 x	32.42	0.9 x
75	F.C.C. CO LTD 7296-JP	19.4	1,008	453	4%	-39%	66%	1,541	1,616	0.3 x	178	198	2.3 x	24.37	0.8 x
76	MUSASHI SEIMITSU 7220-JP	22.0	1,442	1,982	6%	-57%	105%	2,237	2,283	0.9 x	244	252	7.9 x	11.18	2.0 x
77	MARTINREA INTL INC MRE-CA	7.6	561	1,349	45%	-10%	-30%	3,940	3,593	0.4 x	452	443	3.0 x	14.99	0.5 x
78	STANDARD MTR PRODS SMP	33.2	722	956	26%	-21%	-17%	1,358	1,417	0.7 x	127	128	7.4 x	29.41	1.1 x
79	TIANQI LITHIUM COR 9696-HK	3.6	586	7,958	58%	-34%	-35%	5,596	1,710	4.7 x	4,877	836	9.5 x	3.78	0.9 x
80	SNT MOTIV CO LTD 064960-KR	30.3	443	21	24%	-5%	10%	861	692	0.0 x	110	100	0.2 x	57.47	0.5 x
81	IRISO ELECTRONICS 6908-JP	17.6	432	290	53%	-18%	-26%	355	354	0.8 x	79	76	3.8 x	20.62	0.9 x
82	HOLLEY INC HLLY	2.9	352	890	78%	-22%	-40%	660	600	1.5 x	130	116	7.7 x	3.86	0.8 x
83	NIPPON CERAMIC 6929-JP	17.2	467	186	19%	-10%	4%	164	161	1.2 x	40	40	4.6 x	14.22	1.2 x
84	LUXFER HLDGS PLC LXFR	14.5	388	470	8%	-48%	62%	405	378	1.2 x	39	49	9.6 x	8.40	1.7 x
85	W-SCOPE CO 6619-JP	2.1	118	946	236%	-4%	-66%	322	356	2.7 x	77	88	10.7 x	7.02	0.3 x
86	WESTPORT FUEL SYS. WPRT	4.5	78	104	74%	-13%	-32%	332	298	0.3 x	(24)	(11)	-	8.65	0.5 x
87	REE AUTOMOTIVE REE	7.3	79	22	21%	-60%	81%	2	0	78.2 x	(98)	(55)	-	8.34	0.9 x

Source: Intro-act, FactSet

Chart 57: Comp Table (4/15)

	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
				% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/ EBITDA	Book/ Share	P/BV	
<b>Peer Set</b>															
<b>Passenger OEMs</b>	<b>Ticker</b>	<b>1,915,544</b>	<b>2,966,526</b>			<b>16%</b>	<b>2,262,841</b>	<b>2,269,377</b>	<b>1.3 x</b>	<b>263,926</b>	<b>251,158</b>	<b>11.8 x</b>			<b>0.8 x</b>
88	TESLA INC TSLA	338.6	1,086,894	1,066,325	7%	-59%	36%	96,773	99,767	10.7 x	15,816	15,045	70.9 x	21.81	15.5 x
89	TOYOTA MOTOR CORP 7203-JP	17.5	275,699	437,709	47%	-12%	14%	289,825	304,502	1.4 x	44,189	42,705	10.2 x	17.16	1.0 x
90	MERCEDES-BENZ MBG-DE	55.4	59,280	158,315	52%	-4%	-18%	165,636	152,941	1.0 x	28,415	21,051	7.5 x	93.80	0.6 x
91	HONDA MOTOR CO 7267-JP	8.8	46,466	84,159	47%	-4%	-5%	131,008	138,341	0.6 x	13,020	13,138	6.4 x	17.37	0.5 x
92	BAYER MOTOREN WERK BMW-DE	72.7	42,143	147,574	72%	-5%	-33%	168,889	155,620	0.9 x	28,419	22,398	6.6 x	158.26	0.5 x
93	GENERAL MTRS CO GM	60.2	66,196	162,558	2%	-54%	68%	171,842	181,804	0.9 x	16,476	19,441	8.4 x	64.49	0.9 x
94	FORD MTR CO DEL F	11.4	44,499	167,762	30%	-17%	-6%	176,191	182,918	0.9 x	14,215	15,037	11.2 x	11.15	1.0 x
95	VOLKSWAGEN AG VOW-DE	89.2	26,308	273,293	86%	-4%	-32%	352,692	334,172	0.8 x	49,018	44,749	6.1 x	353.77	0.3 x
96	HYUNDAI MOTOR CO 005380-KR	156.3	32,724	136,332	39%	-14%	1%	121,732	123,409	1.1 x	15,025	14,522	9.4 x	276.97	0.6 x
97	KIA CORPORATION 000270-KR	69.4	27,732	13,296	45%	-9%	-9%	74,716	76,478	0.2 x	10,471	11,161	1.2 x	96.65	0.7 x
98	SUZUKI MOTOR CORP 7269-JP	10.5	20,725	23,644	19%	-14%	0%	34,363	36,858	0.6 x	4,231	4,855	4.9 x	9.45	1.1 x
99	SAIC MOTOR CORP 600104-CN	2.7	31,149	49,200	1%	-40%	43%	102,644	87,974	0.6 x	4,765	4,235	11.6 x	3.60	0.7 x
100	GREAT WALL MOTOR 601633-CN	3.7	22,812	33,197	29%	-28%	4%	23,966	28,592	1.2 x	1,977	2,895	11.5 x	1.28	2.9 x
101	LI AUTO INC LI	22.4	19,817	5,400	107%	-22%	-35%	17,206	20,154	0.3 x	1,292	1,185	4.6 x	8.95	2.5 x
102	RENAULT SA RNO-FR	41.9	12,385	65,563	42%	-14%	5%	56,367	56,416	1.2 x	6,811	6,587	10.0 x	114.67	0.4 x
103	SUBARU CORP. 7270-JP	16.0	11,741	7,389	47%	-5%	-10%	30,160	30,913	0.2 x	3,899	3,640	2.0 x	22.76	0.7 x
104	NISSAN MOTOR CO 7201-JP	2.6	9,790	55,153	63%	-10%	-28%	81,381	82,203	0.7 x	6,638	5,004	11.0 x	10.36	0.3 x
105	GEELY AUTOMOBILE GELYF	1.7	16,720	12,821	18%	-45%	48%	24,891	32,186	0.4 x	1,732	2,363	5.4 x	1.30	1.3 x
106	RIVIAN AUTOMOTIVE RIVN	11.6	11,749	10,788	112%	-29%	-50%	4,434	4,612	2.3 x	(3,981)	(2,943)	-	5.73	2.0 x
107	NIO INC NIO	4.7	9,069	8,490	105%	-23%	-48%	7,725	9,569	0.9 x	(2,638)	(2,132)	-	0.77	6.0 x
108	ISUZU MOTORS 7202-JP	13.4	10,054	12,318	15%	-14%	5%	21,804	21,164	0.6 x	2,475	2,213	5.6 x	12.94	1.0 x
109	MAZDA MOTOR CORP 7261-JP	6.5	4,097	2,117	103%	-2%	-40%	30,959	32,769	0.1 x	2,333	2,301	0.9 x	17.83	0.4 x
110	LUCID GROUP INC LCID	2.2	6,535	6,528	145%	-11%	-48%	595	775	8.4 x	(2,609)	(2,381)	-	1.15	1.9 x
111	XPENG INC XPEV	11.6	9,008	6,908	61%	-44%	-20%	4,261	5,674	1.2 x	(1,324)	(721)	-	4.84	2.4 x
112	POLARIS INC PII	71.2	3,971	5,997	42%	-9%	-25%	8,934	7,105	0.8 x	999	636	9.4 x	24.04	3.0 x
113	ZHEJIANG LEPMOTOR 9863-HK	3.7	4,103	3,558	47%	-35%	-20%	2,320	4,373	0.8 x	(544)	(417)	-	1.08	3.4 x
114	GUANGZHOU AUTOMOBIL 2238-HK	0.4	1,173	2,186	27%	-29%	-15%	17,946	15,767	0.1 x	180	593	3.7 x	1.54	0.3 x
115	DONGFENG MOTOR GRO 489-HK	0.5	1,284	4,263	4%	-54%	3%	13,741	13,603	0.3 x	(449)	453	9.4 x	2.55	0.2 x
116	BAIC MOTOR CORP LT 1958-HK	0.3	755	2,346	20%	-26%	3%	27,461	26,038	0.1 x	4,529	4,302	0.5 x	1.03	0.3 x
117	POLESTAR AUTOMOTIVE PSNY	1.2	562	1,040	121%	-49%	-47%	2,378	2,678	0.4 x	(1,227)	(582)	-	(0.29)	-4.1 x
118	FARADAY FUTURE FFIE	1.4	64	173	10886%	-15%	-95%	1	-	-	-	-	-	5.10	0.3 x
119	CANOO INC GOEV	0.4	41	120	1863%	-12%	-93%	1	3	39.7 x	(224)	(177)	-	2.44	0.2 x
120	FISKER INC FSR	0.0	1		334186%	-100%	-100%	273	-	-1	(520)	-	-	(0.22)	0.0 x

Source: Intro-act, FactSet

Chart 58: Comp Table (5/15)

	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
				% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/ EBITDA	Book/ Share	P/BV	
<b>Peer Set</b>															
Battery	Ticker	511,847	776,848			2%	553,996	544,596	1.4 x	65,219	68,982	11.3 x		1.2 x	
121	CONTEMPORARY AMPER 300750-CN	36.4	160,485	150,508	17%	-46%	59%	55,710	51,853	2.9 x	9,841	12,068	12.5 x	7.56	4.8 x
122	LG ENERGY SOLUTION 373220-KR	299.3	70,041	85,109	18%	-25%	-10%	25,254	18,571	4.6 x	3,202	2,540	33.5 x	62.61	4.8 x
123	BYD COMPANY LTD 002594-CN	39.1	45,398	109,752	23%	-42%	40%	83,324	104,279	1.1 x	10,672	13,321	8.2 x	7.52	5.2 x
124	PANASONIC HLDGS CO 6752-JP	10.0	24,422	28,681	8%	-32%	6%	54,506	55,681	0.5 x	4,882	5,344	5.4 x	12.48	0.8 x
125	SAMSUNG SDI 006400-KR	198.0	13,616	20,142	86%	-15%	-43%	17,081	12,795	1.6 x	2,533	1,974	10.2 x	210.97	0.9 x
126	LG CHEMICAL 051910-KR	218.7	15,438	41,677	88%	-13%	-44%	41,443	35,165	1.2 x	4,711	4,309	9.7 x	303.47	0.7 x
127	AES CORP AESC	13.2	9,357	41,519	69%	-1%	-32%	12,668	12,431	3.3 x	3,377	3,673	11.3 x	4.63	2.8 x
128	ALBEMARLE CORP ALB	110.0	12,927	17,454	40%	-35%	-24%	9,617	5,493	3.2 x	3,370	1,071	16.3 x	68.11	1.6 x
129	ECOPROBM CO.LTD 247540-KR	101.2	9,902	11,368	168%	-15%	-55%	5,197	2,019	5.6 x	185	52	217.9 x	9.62	10.5 x
130	EVE ENERGY CO LTD 300014-CN	6.7	12,449	16,367	23%	-37%	13%	6,736	6,975	2.3 x	853	979	16.7 x	2.52	2.7 x
131	JFE HOLDINGS INC 5411-JP	11.3	7,234	19,428	55%	-1%	-27%	33,257	34,753	0.6 x	3,579	3,177	6.1 x	26.01	0.4 x
132	SUMITOMO METAL 5713-JP	24.5	7,125	11,101	48%	-3%	-14%	9,272	10,227	1.1 x	992	1,085	10.2 x	46.77	0.5 x
133	ASAHI KASEI CORP 3407-JP	7.1	9,933	15,778	9%	-14%	-3%	17,901	19,626	0.8 x	1,940	2,349	6.7 x	8.37	0.9 x
134	LUNDIN MINING CORP LUN-CA	10.2	7,936	10,803	29%	-36%	24%	3,392	4,345	2.5 x	1,265	1,849	5.8 x	6.27	1.6 x
135	MITSUBISHI CHEM 4188-JP	5.6	8,374	24,091	22%	-9%	-4%	28,245	29,579	0.8 x	3,487	3,481	6.9 x	8.02	0.7 x
136	AGC INC 5201-JP	29.9	6,495	11,650	29%	-4%	-18%	13,514	13,510	0.9 x	2,035	2,076	5.6 x	42.58	0.7 x
137	PILBARA MINERALS PLS-AU	1.6	4,914	4,199	83%	-6%	-39%	850	523	8.0 x	369	107	39.4 x	0.71	2.3 x
138	SK INNOVATION CO 096770-KR	85.3	12,889	37,512	30%	-23%	-21%	58,213	52,586	0.7 x	2,797	2,257	16.6 x	158.35	0.5 x
139	SOCIEDAD QUIMICA SQM	38.8	5,547	7,912	66%	-17%	-36%	7,468	4,518	1.8 x	3,234	1,485	5.3 x	17.74	2.2 x
140	GANFENG LITHIUM GR 002460-CN	5.9	7,117	17,126	8%	-41%	-2%	4,540	2,674	6.4 x	614	297	57.6 x	3.08	1.9 x
141	EXIDE INDUSTRIES 500086-IN	5.1	4,323	4,487	46%	-34%	33%	1,921	2,050	2.2 x	224	245	18.3 x	1.93	2.6 x
142	SHANGHAI PUTAILAI 603659-CN	2.8	6,046	6,702	18%	-48%	-4%	2,120	1,977	3.4 x	461	438	15.3 x	1.21	2.3 x
143	ENERSYS ENS	99.0	3,942	4,770	14%	-13%	-2%	3,582	3,690	1.3 x	516	540	8.8 x	46.17	2.1 x
144	GOTION HIGH-TECH 002074-CN	3.4	4,554	11,265	6%	-34%	14%	4,363	5,131	2.2 x	401	564	20.0 x	2.00	1.7 x
145	IGO LTD IGO-AU	3.2	2,422	2,097	98%	-2%	-48%	571	318	6.6 x	396	123	17.0 x	2.78	1.2 x
146	SHENZHEN KEDALI 002850-CN	14.9	4,025	4,250	14%	-48%	25%	1,452	1,701	2.5 x	305	337	12.6 x	5.80	2.6 x
147	SUMITOMO CHEM CO 4005-JP	2.4	4,033	13,755	28%	-20%	1%	15,753	16,963	0.8 x	(2,133)	1,731	7.9 x	3.65	0.7 x
148	BEIJING EASPRING M 300073-CN	6.5	3,177	2,431	22%	-43%	21%	2,093	1,108	2.2 x	322	145	16.8 x	3.65	1.8 x
149	QUANTUMSCAPE QS	5.4	2,449	1,996	87%	-13%	-23%	0	0	-0!	(249)	(294)	-	2.17	2.5 x
150	AMARA RAJA ENERGY 500008-IN	14.7	2,699	2,667	44%	-46%	50%	1,357	1,480	1.8 x	195	214	12.5 x	4.72	3.1 x
151	PLUG POWER INC PLUG	2.2	2,005	2,623	134%	-27%	-51%	891	717	3.7 x	(1,073)	(724)	-	3.44	0.6 x
152	GS YUASA CORP 6674-JP	18.2	1,828	2,548	20%	-27%	29%	3,610	3,847	0.7 x	415	452	5.6 x	21.68	0.8 x
153	UBE CORPORATION 4208-JP	16.1	1,712	3,144	23%	-9%	9%	2,994	3,260	1.0 x	362	340	9.2 x	26.99	0.6 x
154	FURUKAWA ELECTRIC 5801-JP	41.5	2,933	5,050	1%	-64%	165%	6,756	7,311	0.7 x	320	459	11.0 x	30.16	1.4 x
155	MITSUMI MINING & SM 5706-JP	30.6	1,757	2,736	18%	-19%	0%	4,135	4,429	0.6 x	400	520	5.3 x	35.65	0.9 x

Source: Intro-act, FactSet

Chart 59: Comp Table (6/15)

	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
				% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/ EBITDA	Book/ Share	P/BV	
<b>Peer Set</b>															
Battery	Ticker	511,847	776,848			2%	553,996	544,596	1.4 x	65,219	68,982	11.3 x		1.2 x	
156	ENOVIX CORPORATION ENOVX	9.5	1,795	1,792	96%	-40%	-24%	8	22	80.9 x	(102)	(99)	-	0.94	10.1 x
157	GUANGZHOU GREAT 300438-CN	4.8	2,400	2,917	17%	-52%	20%	957	965	3.0 x	87	145	20.2 x	1.52	3.1 x
158	UACJ CORP 5741-JP	35.8	1,728	4,033	4%	-39%	31%	5,709	6,083	0.7 x	472	566	7.1 x	39.74	0.9 x
159	GANFENG LITHIUM 1772-HK	3.2	1,307	9,817	19%	-41%	-12%	4,540	2,735	3.6 x	613	307	32.0 x	3.04	1.1 x
160	BALLARD PWR SYS. BLDP-CA	1.5	435	(175)	176%	-14%	-61%	102	74	-2.4 x	(153)	(158)	-	2.33	0.6 x
161	LITHIUM AMERS CORP LAC-CA	4.1	887	548	90%	-48%	-37%	0	0	-0!	(21)	(24)	-	2.92	1.4 x
162	ADS TEC ENERGY PLC ADSE	13.3	674	669	13%	-54%	86%	115	200	3.4 x	(17)	13	52.4 x	(0.04)	-336.1 x
163	VARTA AG VAR1-DE	2.3	98	693	948%	-64%	-90%	887	872	0.8 x	23	64	10.9 x	4.46	0.5 x
164	TMC THE METALS COMP. TMC	0.9	308	331	130%	-11%	-18%	0	0	-0!	(68)	(35)	-	(0.07)	-13.6 x
165	FUELCELL ENERGY FCEL	10.4	213	140	429%	-48%	-78%	123	103	1.4 x	(105)	(93)	-	36.60	0.3 x
166	SES AI CORPORATION SES	0.3	108	(139)	614%	-41%	-81%	-	0	-0!	(59)	(103)	-	0.86	0.4 x
167	STELLA CHEMIFA 4109-JP	25.0	330	230	24%	-15%	20%	195	237	1.0 x	38	-	-	24.96	1.0 x
168	FREYR BATTERY INC FREY	2.2	313	149	28%	-59%	19%	0	-	-	(75)	-	-	3.83	0.6 x
169	KANTO DENKA KOGYO 4047-JP	7.0	401	528	1%	-26%	15%	417	429	1.2 x	-	-	-	7.54	0.9 x
170	SOLID POWER INC SLDP	1.2	209	86	103%	-14%	-20%	17	19	4.4 x	(76)	(86)	-	2.45	0.5 x
171	PIEDMONT LITHIUM PLL	13.2	256	211	141%	-50%	-53%	40	92	2.3 x	(32)	(46)	-	14.73	0.9 x
172	TANAKA CHEMICAL 4080-JP	4.2	138	177	105%	-3%	-34%	308	249	0.7 x	-	-	-	3.67	1.2 x
173	CB&K ENERGY TECH. CBAT	0.9	81	50	131%	-11%	-14%	204	201	0.2 x	-	-	-	1.46	0.6 x
174	OPAL FUELS INC OPAL	3.7	105	979	65%	-18%	-33%	256	320	3.1 x	53	93	10.5 x	(6.33)	-0.6 x
175	AMPRIUS TECH. AMPX	2.0	216	206	195%	-70%	-61%	9	20	10.5 x	(31)	(35)	-	0.60	3.4 x
176	MICROVAST MVST	0.7	234	393	113%	-79%	-48%	307	358	1.1 x	(20)	(21)	-	1.58	0.5 x
177	LI-CYCLE HOLDINGS LICY	2.3	54	448	556%	-48%	-50%	18	28	16.0 x	(149)	(92)	-	12.73	0.2 x
178	FLUX PWR HLDGS FLUX	2.0	34	48	192%	0%	-51%	-	-	-	-	-	-	0.33	6.2 x
179	ADVENT TECH. ADN	6.5	17	17	141%	-74%	-3%	5	-	-	-	-	-	(1.09)	-5.9 x

Source: Intro-act, FactSet

Chart 60: Comp Table (7/15)

	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
				% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/ EBITDA	Book/ Share	P/BV	
<b>Peer Set</b>															
<b>Charging</b>	Ticker	467,632	584,512			9%	186,250	188,079	3.1 x	33,048	35,440	16.5 x		11.9 x	
180	SIEMENS AG SIE-DE	189.7	151,722	199,025	9%	-14%	3%	80,304	83,307	2.4 x	14,106	15,089	13.2 x	68.46	2.8 x
181	SCHNEIDER ELECTRIC SU-FR	252.1	145,111	153,360	10%	-29%	29%	38,638	39,407	3.9 x	7,937	8,117	18.9 x	53.59	4.7 x
182	ABB LTD ABBN-CH	56.3	104,722	107,496	6%	-32%	28%	32,235	32,879	3.3 x	5,876	6,277	17.1 x	7.45	7.6 x
183	LEGRAND SA LR-FR	100.6	26,378	30,053	19%	-5%	-3%	9,058	8,925	3.4 x	2,138	2,049	14.7 x	28.30	3.6 x
184	EVERSOURCE ENERGY ES	64.0	23,442	52,041	8%	-19%	4%	11,911	12,434	4.2 x	3,603	4,168	12.5 x	41.34	1.5 x
185	BLOOM ENERGY CORP BE	26.0	5,932	7,132	4%	-68%	75%	1,333	1,415	5.0 x	73	119	60.0 x	1.89	13.8 x
186	SUNRUN INC RUN	11.5	2,584	15,913	93%	-20%	-41%	2,260	2,060	7.7 x	(1,427)	60	267.0 x	23.55	0.5 x
187	SOLAREEDGE TECH. SEDG	13.8	798	878	649%	-26%	-85%	2,977	938	0.9 x	346	(1,047)	-	16.72	0.8 x
188	SHENZHEN KSTAR 002518-CN	2.7	1,504	1,592	51%	-22%	-32%	751	613	2.6 x	159	95	16.8 x	1.05	2.5 x
189	DAIHEN CORP 6622-JP	45.9	1,176	1,515	53%	-19%	6%	1,210	1,348	1.1 x	130	143	10.6 x	36.67	1.3 x
190	SHOALS TECH. SHLS	5.1	845	976	245%	-20%	-67%	489	393	2.5 x	173	98	10.0 x	3.27	1.6 x
191	ALFEN NV ALFEN-NL	11.9	258	340	489%	-2%	-82%	541	508	0.7 x	60	28	12.2 x	8.39	1.4 x
192	CHARGEPOINT CHPT	1.3	539	599	150%	-16%	-47%	507	408	1.5 x	(276)	(137)	-	0.54	2.3 x
193	SUNNOVA ENERGY NOVA	5.3	667	9,607	206%	-44%	-65%	721	847	11.3 x	275	653	14.7 x	14.24	0.4 x
194	SUNPOWER CORP SPWR	0.0	0		6369900%	-99%	-100%	1,749	-	-	(84)	-	-	2.41	0.0 x
195	NICHICON CORP 6996-JP	7.0	548	529	46%	-15%	-13%	1,165	1,147	0.5 x	103	82	6.5 x	10.80	0.7 x
196	BLINK CHARGING CO BLNK	1.6	164	111	177%	-9%	-52%	141	129	0.9 x	(58)	(70)	-	1.92	0.8 x
197	WALLBOX NV WBX	0.7	150	368	221%	-23%	-63%	156	206	1.8 x	(81)	(62)	-	0.48	1.4 x
198	EVGO INC EVGO	6.6	706	1,450	38%	-75%	84%	161	259	5.6 x	(59)	(34)	-	(3.24)	-2.0 x
199	STEM INC STEM	0.4	65	588	971%	-25%	-90%	462	153	3.9 x	(20)	(37)	-	(2.11)	-0.2 x
200	MAXEON SOLAR TECH MAXN	8.0	122	438	9674%	-38%	-99%	1,125	605	0.7 x	4	(135)	-	(48.34)	-0.2 x
201	BEAM GLOBAL BEEM	4.2	62	59	103%	-9%	-41%	67	55	1.1 x	(14)	(7)	-	3.14	1.3 x
202	IDEAL PWR INC IPWR	6.5	53	35	114%	-14%	-16%	0	-	-	-	-	-	2.48	2.6 x
203	PIONEER PWR PPSI	6.0	66	67	22%	-44%	-12%	41	44	1.5 x	1	(7)	-	1.34	4.4 x
204	NAAS TECHNOLOGY NAAS	3.1	15	154	1533%	-54%	-88%	44	-	-	-	-	-	(2.51)	-1.2 x
205	TRITIUM DCFC LIMITED DCFC	0.2	0	188	24900%	0%	-100%	-	-	-	-	-	-	(202.32)	0.0 x

Source: Intro-act, FactSet

Chart 61: Comp Table (8/15)

Peer Set	Ticker	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
					% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/EBITDA	Book/ Share	P/BV	
Commercial OEMs			129,901	203,932			10%	180,522	172,707	1.2 x	25,364	24,235	8.4 x		2.2 x	
206	PACCAR INC	PCAR	116.5	61,102	67,262	8%	-23%	19%	33,316	32,460	2.1 x	5,986	5,089	13.2 x	35.60	3.3 x
207	VOLVO AB	VOLV.B-SE	24.5	38,977	68,107	23%	-8%	-6%	53,006	47,493	1.4 x	8,901	7,780	8.8 x	8.24	3.0 x
208	TRATON SE	8TRA-DE	30.2	15,077	39,609	30%	-30%	28%	50,957	49,261	0.8 x	6,378	6,788	5.8 x	37.06	0.8 x
209	RYDER SYS INC	R	169.5	7,166	15,761	1%	-38%	47%	11,783	12,751	1.2 x	2,847	2,826	5.6 x	72.26	2.3 x
210	IVECO GROUP NV	IVG-IT	9.8	2,656	6,254	64%	-20%	12%	17,488	15,805	0.4 x	1,462	1,579	4.0 x	10.01	1.0 x
211	BLUE BIRD CORP	BLBD	42.8	1,386	1,395	39%	-58%	59%	1,347	1,455	1.0 x	183	193	7.2 x	4.25	10.1 x
212	HINO MOTORS	7205-JP	2.7	1,548	3,936	31%	-13%	-18%	9,640	10,762	0.4 x	307	559	7.0 x	2.07	1.3 x
213	REV GROUP INC	REVG	32.0	1,661	1,860	2%	-53%	76%	2,638	2,381	0.8 x	157	161	11.5 x	7.59	4.2 x
214	NIKOLA CORP	NKLA	2.1	128	279	1543%	-13%	-92%	36	111	2.5 x	(540)	(444)	-	6.86	0.3 x
215	THE LION ELECTRIC	LEV	0.2	48	410	841%	-15%	-88%	253	148	2.8 x	(34)	(71)	-	1.24	0.2 x
216	HYZON MOTORS INC	HYZN	1.8	14	(16)	3364%	-28%	-96%	0	11	-1.4 x	(131)	(141)	-	2.35	0.8 x
217	WORKHORSE GROUP	WKHS	1.2	47	65	663%	-50%	-84%	13	7	8.7 x	(96)	(58)	-	1.48	0.8 x
218	XOS INC	XOS	4.5	36	72	231%	-19%	-44%	45	62	1.2 x	(56)	(28)	-	6.34	0.7 x
219	TUSIMPLE HOLDINGS	TSP	0.2	50	(674)	383%	-100%	-72%	-	-	-	-	-	-	3.36	0.1 x
220	IDEANOMICS INC	IDEX	0.2	4	48	1065%	-100%	-90%	15	-	-	-	-	-	(1.85)	-0.1 x
221	ARRIVAL	ARVL	0.1	1	(436)	2700%	-100%	-96%	-	-	-	-	-	-	-	-

Peer Set	Ticker	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
					% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/EBITDA	Book/ Share	P/BV	
EV Components			372,637	407,575			12%	401,390	398,710	1.0 x	41,648	46,711	8.7 x		1.3 x	
222	HITACHI	6501-JP	24.7	114,555	119,803	14%	-46%	73%	62,089	61,273	2.0 x	7,735	8,903	13.5 x	7.86	3.1 x
223	DENSO CORP	6902-JP	14.7	46,275	41,344	34%	-11%	5%	45,427	46,681	0.9 x	4,743	6,505	6.4 x	11.34	1.3 x
224	NIDEC CORPORATION	6594-JP	18.6	22,145	24,701	38%	-5%	-5%	15,148	16,714	1.5 x	1,904	2,471	10.0 x	9.13	2.0 x
225	DELTA ELECTRONIC	2308-TW	12.1	31,502	31,640	10%	-28%	19%	12,693	13,027	2.4 x	2,021	2,340	13.5 x	2.63	4.6 x
226	SHENZHEN INNOVANCE	300124-CN	8.0	18,328	22,600	32%	-32%	-10%	4,197	5,142	4.4 x	692	755	29.9 x	1.39	5.8 x
227	HYUNDAI MOBIS	012330-KR	175.9	16,356	10,671	16%	-17%	-1%	44,344	40,986	0.3 x	2,411	2,748	3.9 x	348.28	0.5 x
228	JABIL INC	JBL	134.0	15,121	16,504	17%	-28%	5%	28,883	27,026	0.6 x	2,248	2,113	7.8 x	15.27	8.8 x
229	MAGNA INTL INC	MG-CA	46.5	13,362	20,300	30%	-18%	-22%	42,797	42,269	0.5 x	3,701	3,823	5.3 x	41.40	1.1 x
230	ZHEJIANG SANHUA	002050-CN	3.1	11,687	12,077	37%	-30%	-24%	3,391	3,823	3.2 x	600	629	19.2 x	0.69	4.5 x
231	AISIN CORP.	7259-JP	10.7	8,639	12,153	30%	-8%	-5%	31,215	31,499	0.4 x	2,598	3,016	4.0 x	16.09	0.7 x
232	BOSCH LTD	500530-IN	415.7	12,261	11,846	12%	-39%	56%	2,099	2,176	5.4 x	252	281	42.2 x	51.34	8.1 x
233	HELLA GMBH	HLE-DE	88.9	9,882	10,076	15%	-6%	-2%	8,725	8,368	1.2 x	1,119	1,097	9.2 x	30.22	2.9 x
234	NINGBO TUOPU	601689-CN	7.3	12,262	12,969	13%	-43%	2%	2,719	3,732	3.5 x	533	682	19.0 x	1.57	4.6 x
235	LG CORP	003550-KR	54.7	8,597	7,532	42%	-7%	-15%	5,605	5,522	1.4 x	1,359	1,207	6.2 x	125.25	0.4 x
236	BORGWARNER INC	BWA	35.2	7,694	10,629	9%	-16%	-2%	14,198	14,088	0.8 x	1,899	1,993	5.3 x	28.15	1.2 x
237	LEAR CORP	LEA	101.0	5,487	8,418	46%	-9%	-28%	23,467	23,079	0.4 x	1,723	1,689	5.0 x	87.31	1.2 x
238	LG INNOTEK CO	011070-KR	123.2	2,915	4,608	80%	-8%	-34%	15,426	14,997	0.3 x	1,388	1,462	3.2 x	152.68	0.8 x
239	VISTEON CORP	VC	95.9	2,648	2,615	37%	-10%	-23%	3,954	3,879	0.7 x	434	471	5.5 x	42.93	2.2 x
240	VALEO	FR-FR	8.7	2,140	7,194	84%	-6%	-43%	23,855	22,646	0.3 x	2,864	2,887	2.5 x	16.27	0.5 x
241	VITESCO TECHNOLOGI	VTSC-DE	55.5	2,221	2,423	87%	-7%	-36%	10,053	-	-	910	-	-	79.51	0.7 x
242	ZHEJIANG SHUANGHUA	002472-CN	3.8	2,888	3,519	20%	-35%	6%	1,116	1,320	2.7 x	231	266	13.2 x	1.43	2.7 x
243	MITSUBI HIGH TEC	6966-JP	4.9	973	1,067	175%	-2%	-49%	1,326	1,403	0.8 x	201	195	5.5 x	3.81	1.3 x
244	ZHUZHOU CRRC	688187-CN	6.4	1,651	8,918	42%	-34%	24%	3,016	3,515	2.5 x	537	633	14.1 x	4.04	1.6 x
245	MEIDENSHA CORP	6508-JP	26.8	1,221	1,378	4%	-40%	56%	1,846	1,966	0.7 x	152	188	7.3 x	17.84	1.5 x
246	TI FLUID SYSTEMS	TIFS-GB	2.3	1,147	2,054	5%	-39%	19%	3,839	3,553	0.6 x	429	409	5.0 x	1.48	1.6 x
247	HYLIION HOLDINGS	HLYN	3.8	664	519	7%	-86%	369%	1	1	1,038.5 x	(128)	(54)	-	1.48	2.6 x
248	LOBO EV TECH.	LOBO	2.1	17	17	181%	-34%	-	15	26	0.7 x	-	-	-	1.01	2.0 x

Source: Intro-act, FactSet

Chart 62: Comp Table (9/15)

	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
				% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/EBITDA	Book/ Share	P/BV	
<b>Peer Set</b>															
Air Mobility	Ticker	300,325	392,295			-15%	170,100	166,709	2.4 x	13,305	6,893	56.9 x		10.3 x	
249 LOCKHEED MARTIN	LMT	521.9	123,706	139,876	19%	-21%	15%	67,571	71,257	2.0 x	10,017	9,889	14.1 x	30.51	17.1 x
250 BOEING CO	BA	153.1	114,454	161,624	75%	-10%	-41%	77,794	68,639	2.4 x	1,085	(5,631)	-	(38.12)	-4.0 x
251 TEXTRON INC	TXT	85.8	15,908	18,519	14%	-14%	7%	13,683	13,863	1.3 x	1,567	1,686	11.0 x	37.47	2.3 x
252 HEICO CORP NEW	HEI	276.4	15,157	40,747	3%	-39%	55%	2,968	3,880	10.5 x	757	1,008	40.4 x	25.54	10.8 x
253 ELBIT SYS LTD	ESLT	253.1	11,260	12,739	1%	-31%	19%	5,975	6,678	1.9 x	534	669	19.0 x	69.02	3.7 x
254 AEROVIRONMENT	AVAV	193.1	5,447	5,413	23%	-40%	53%	717	826	6.5 x	128	152	35.7 x	29.98	6.4 x
255 JOBY AVIATION INC	JOBY	8.2	6,274	5,595	3%	-45%	23%	1	0	52,477.8 x	(348)	(453)	-	1.09	7.5 x
256 KRATOS DEFENSE	KTOS	26.4	3,990	3,977	8%	-37%	30%	1,037	1,141	3.5 x	95	105	37.9 x	8.89	3.0 x
257 ARCHER AVIATION	ACHR	7.5	2,911	2,751	6%	-62%	22%	0	1	4,640.5 x	(305)	(375)	-	1.10	6.8 x
258 EHANG HOLDINGS	AHR	15.3	672	563	51%	-38%	-9%	16	59	9.6 x	(39)	(24)	-	1.39	11.0 x
259 LILIUM N V	LILM	0.1	63	(40)	1269%	-64%	-91%	0	0	-/0!	(264)	-	-	(0.05)	-2.0 x
260 BLADE AIR MOBILITY	BLDE	3.7	293	179	14%	-34%	6%	225	247	0.7 x	(17)	1	271.0 x	2.98	1.3 x
261 VERTICAL AEROSPACE	EVTL	7.0	133	192	83%	-49%	1%	0	0	-/0!	(119)	(89)	-	(0.24)	-29.3 x
262 SURF AIR MOBILITY	SRFM	3.8	58	156	215%	-76%	-62%	113	118	1.3 x	(51)	(44)	-	(10.05)	-0.4 x
263 AERWINS TECH.	AWIN	0.0	0	4	290567%	-79%	-100%	-	-	-	-	-	-	(8.99)	0.0 x
<b>Peer Set</b>															
Shared Mobility	Ticker	3,195,347	3,384,425			39%	1,417,242	1,524,500	2.2 x	168,112	204,402	16.6 x		6.5 x	
264 AMAZON	AMZN	201.5	2,118,249	2,177,244	7%	-29%	33%	574,785	637,738	3.4 x	109,647	141,339	15.4 x	24.66	8.2 x
265 WALMART	WMT	89.5	719,423	778,266	2%	-44%	70%	648,125	679,770	1.1 x	38,930	42,308	18.4 x	10.51	8.5 x
266 UBER TECH.	UBER	73.4	154,601	159,652	18%	-25%	19%	37,281	43,765	3.6 x	4,052	6,491	24.6 x	7.02	10.5 x
267 FEDEX CORP	FDX	305.2	74,555	106,301	3%	-23%	21%	87,700	88,555	1.2 x	10,418	10,834	9.8 x	85.46	3.6 x
268 DOORDASH INC	DASH	179.1	69,667	69,753	0%	-48%	81%	8,635	10,681	6.5 x	1,190	1,893	36.9 x	18.23	9.8 x
269 DIDI GLOBAL INC	DIDIY	4.8	21,280	17,769	8%	-93%	22%	26,724	28,899	0.6 x	150	783	22.7 x	2.87	1.7 x
270 GRAB HOLDINGS	GRAB	5.1	19,748	15,101	11%	-44%	53%	2,359	2,802	5.4 x	(22)	313	48.2 x	1.58	3.3 x
271 LYFT INC	LYFT	17.9	7,268	6,735	16%	-50%	19%	4,404	5,786	1.2 x	222	372	18.1 x	1.58	11.3 x
272 YADEA GROUP	1585-HK	1.5	4,647	3,700	36%	-23%	-13%	4,829	4,482	0.8 x	422	449	8.2 x	0.37	4.0 x
273 AVIS BUDGET	CAR	108.8	3,823	30,059	88%	-40%	-39%	12,008	11,813	2.5 x	2,490	826	36.4 x	(6.80)	-16.0 x
274 HERTZ GLOBAL	HTZ	4.6	1,405	18,723	136%	-46%	-5%	9,371	9,139	2.0 x	553	(1,310)	-	2.22	2.1 x
275 SOCAR INC.	403550-KR	12.3	403	657	37%	-9%	3%	298	300	2.2 x	57	61	10.8 x	4.15	3.0 x
276 GOGORO INC	GGR	0.5	142	445	429%	-23%	-80%	350	306	1.5 x	29	40	11.3 x	0.91	0.6 x
277 NIU TECHNOLOGIES	NIU	1.8	125	10	94%	-13%	-18%	368	457	0.0 x	(23)	7	1.5 x	1.82	1.0 x
278 RYDE GROUP	RYDE	0.4	10	9	5250%	-5%	-	6	6	1.4 x	(3)	(2)	-	0.11	3.7 x

Source: Intro-act, FactSet

Chart 63: Comp Table (10/15)

	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
				% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/ EBITDA	Book/ Share	P/BV	
<b>Peer Set</b>															
Other Electronics	Ticker	609,980	643,384			14%	222,521	268,030	2.4 x	39,201	75,438	8.5 x		3.2 x	
279	APPLIED MATLS AMAT	174.6	143,900	141,468	47%	-17%	8%	27,176	29,538	4.8 x	8,347	9,402	15.0 x	22.85	7.6 x
280	MICRON TECH. MU	104.5	115,841	121,813	51%	-30%	22%	25,111	38,149	3.2 x	9,417	19,192	6.3 x	40.70	2.6 x
281	SK HYNIX INC 000660-KR	126.3	91,942	97,470	43%	-26%	21%	24,529	47,313	2.1 x	4,427	25,912	3.8 x	68.67	1.8 x
282	AMPHENOL APH	73.3	88,359	92,334	2%	-39%	48%	12,555	14,965	6.2 x	2,994	3,806	24.3 x	7.84	9.3 x
283	MITSUBISHI ELEC 6503-JP	17.0	35,948	33,651	12%	-23%	22%	33,556	34,929	1.0 x	3,431	3,953	8.5 x	11.85	1.4 x
284	ROCKWELL AUTOMATION ROK	298.7	33,722	37,513	5%	-19%	-4%	8,264	8,190	4.6 x	1,597	1,660	22.6 x	30.93	9.7 x
285	TERADYNE INC TER	110.7	18,024	17,552	47%	-18%	2%	2,676	2,808	6.3 x	660	709	24.8 x	17.81	6.2 x
286	ENPHASE ENERGY ENPH	71.9	9,716	9,281	97%	-19%	-46%	2,291	1,335	7.0 x	752	382	24.3 x	6.89	10.4 x
287	SAMVARDHANA 517334-IN	2.0	13,790	15,585	32%	-47%	60%	11,841	13,918	1.1 x	1,106	1,336	11.7 x	0.55	3.6 x
288	AVIC JONHON OPTR 002179-CN	5.4	11,218	11,418	25%	-24%	-1%	2,789	3,045	3.7 x	579	593	19.2 x	1.48	3.7 x
289	YAGEO CORP 2327-TW	16.6	8,619	10,230	27%	-14%	3%	3,404	3,752	2.7 x	930	1,017	10.1 x	9.48	1.8 x
290	LITTELFUSE INC LFUS	251.4	6,238	6,538	10%	-11%	-6%	2,363	2,186	3.0 x	529	416	15.7 x	103.69	2.4 x
291	AVNET INC AVT	55.2	4,799	7,717	7%	-21%	10%	23,757	22,429	0.3 x	998	812	9.5 x	57.74	1.0 x
292	INNOLUX CORP 3481-TW	0.5	3,792	3,576	32%	-11%	-10%	6,714	6,917	0.5 x	412	837	4.3 x	0.87	0.5 x
293	SYNAPTICS INC SYNA	81.7	3,271	3,439	49%	-17%	-28%	959	1,043	3.3 x	155	199	17.3 x	36.64	2.2 x
294	LG DISPLAY 034220-KR	7.0	3,525	14,581	45%	-4%	-22%	15,954	18,841	0.8 x	1,228	3,356	4.3 x	10.11	0.7 x
295	QINGDAO TGOOD 300001-CN	3.1	3,222	4,292	17%	-33%	13%	2,015	2,455	1.7 x	169	257	16.7 x	0.94	3.3 x
296	SITIME CORP SITM	215.3	5,029	4,601	6%	-66%	76%	144	199	23.2 x	(13)	8	605.4 x	29.80	7.2 x
297	ALPS ALPINE 6770-JP	10.1	2,205	2,175	11%	-34%	23%	6,185	6,127	0.4 x	389	380	5.7 x	12.16	0.8 x
298	CTS CORP CTS	55.5	1,671	1,705	8%	-31%	27%	550	521	3.3 x	118	111	15.4 x	17.59	3.2 x
299	AMS-OSRAM AG AMS-CH	6.8	680	2,170	303%	-10%	-73%	3,872	3,608	0.6 x	536	628	3.5 x	13.65	0.5 x
300	SHENZHEN YINGHE 300457-CN	3.1	1,973	2,063	23%	-46%	20%	1,345	1,352	1.5 x	167	206	10.0 x	1.43	2.2 x
301	SOLUM CO. LTD. 248070-KR	14.4	721	873	60%	-24%	-30%	1,463	1,149	0.8 x	145	92	9.5 x	6.42	2.2 x
302	BOE VARITRONIX 710-HK	0.7	554	138	54%	-26%	-23%	1,376	1,623	0.1 x	93	94	1.5 x	0.71	1.0 x
303	METHODE ELECTRS MEI	10.7	377	588	137%	-20%	-53%	1,115	1,080	0.5 x	56	65	9.1 x	21.12	0.5 x
304	GILAT SATELLITE GILT	5.6	316	215	23%	-27%	-9%	266	310	0.7 x	3	43	5.0 x	5.11	1.1 x
305	MICROVISION INC MVIS	1.0	215	185	204%	-16%	-63%	7	9	19.8 x	-	-	-	0.31	3.2 x
306	MAGNACHIP SEMI. MX	4.0	148	62	105%	-11%	-47%	230	230	0.3 x	(23)	(27)	-	8.03	0.5 x
307	VUZIX CORP VUZI	2.3	166	152	11%	-63%	8%	12	6	25.3 x	(40)	-	-	0.54	4.2 x

Source: Intro-act, FactSet

Chart 64: Comp Table (11/15)

Peer Set	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value		
				% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/EBITDA	Book/ Share	P/BV	
Semiconductors		5,794,131	5,820,783			92%	299,092	396,553	14.7 x	149,745	216,794	26.8 x		4.3 x	
308 NVIDIA	NVDA	136.0	3,331,130	3,302,868	12%	-67%	175%	60,922	128,525	25.7 x	36,301	84,968	38.9 x	2.69	50.6 x
309 TAIWAN SEMI.	TSM	185.1	959,926	924,738	15%	-49%	78%	68,430	89,470	10.3 x	46,081	61,373	15.1 x	21.73	8.5 x
310 BROADCOM INC	AVGO	164.8	769,804	829,812	13%	-45%	48%	35,819	51,602	16.1 x	23,213	31,578	26.3 x	14.06	11.7 x
311 ADVANCED MICRO DEVICES	AMD	141.1	229,027	226,721	61%	-18%	-4%	22,680	25,690	8.8 x	5,097	6,972	32.5 x	35.11	4.0 x
312 TEXAS INSTRS INC	TXN	202.9	185,116	190,938	9%	-25%	19%	17,519	15,507	12.3 x	8,562	6,963	27.4 x	18.93	10.7 x
313 ANALOG DEVICES INC	ADI	223.6	111,006	116,563	9%	-20%	13%	12,306	9,389	12.4 x	6,257	5,997	19.4 x	70.85	3.2 x
314 NXP SEMICONDUCTORS	NXPI	233.9	59,434	66,806	27%	-15%	2%	13,276	12,622	5.3 x	5,209	4,893	13.7 x	37.03	6.3 x
315 STMICROELECTRONICS	STMMI-IT	25.7	23,175	19,984	100%	-7%	-48%	17,286	12,976	1.5 x	6,156	3,266	6.1 x	18.95	1.4 x
316 RENE SAS ELECTRONIC	6723-JP	13.1	24,508	32,269	64%	-5%	-24%	9,834	8,930	3.6 x	3,896	3,097	10.4 x	7.85	1.7 x
317 ON SEMICONDUCTOR	ON	72.4	30,823	31,717	20%	-18%	-13%	8,253	7,122	4.5 x	3,253	2,594	12.2 x	20.17	3.6 x
318 SKYWORCS SOLUTIONS	SWKS	87.9	14,062	13,700	37%	-7%	-22%	4,178	3,991	3.4 x	1,459	1,277	10.7 x	39.63	2.2 x
319 FUJI ELECTRIC CO.	6504-JP	56.6	8,446	8,543	23%	-29%	37%	7,014	7,268	1.2 x	993	1,127	7.6 x	28.55	2.0 x
320 SANAN OPTOELECTRON	600703-CN	1.8	8,854	9,522	20%	-25%	-9%	1,952	2,349	4.1 x	505	567	16.8 x	1.04	1.7 x
321 ROHM CO LTD	6963-JP	9.6	3,875	4,591	115%	-5%	-48%	3,007	3,061	1.5 x	742	576	8.0 x	16.13	0.6 x
322 WINGTECH TECHNOLOG	600745-CN	5.4	6,730	8,305	30%	-38%	-9%	8,447	9,803	0.8 x	749	538	15.4 x	4.26	1.3 x
323 SHINKO ELEC INDS	6967-JP	33.9	4,582	4,328	17%	-1%	-13%	1,335	1,467	3.0 x	369	414	10.5 x	13.26	2.6 x
324 SG MICRO CORP	300661-CN	11.6	5,266	5,210	46%	-30%	-7%	361	450	11.6 x	45	77	67.3 x	1.28	9.1 x
325 HANGZHOU SILAN MIC	600460-CN	3.8	6,267	6,700	27%	-42%	17%	1,291	1,517	4.4 x	183	215	31.2 x	1.02	3.7 x
326 WOLF SPEED INC	WOLF	9.9	1,269	5,891	377%	-39%	-77%	807	814	7.2 x	(162)	(229)	-	4.96	2.0 x
327 SICC CO LTD	688234-CN	8.1	3,502	3,441	32%	-30%	-12%	173	274	12.6 x	14	71	48.2 x	1.73	4.7 x
328 VISHAY INTERTECHNOLOGY	VSH	17.1	2,120	2,625	44%	-13%	-29%	3,402	2,945	0.9 x	663	324	8.1 x	15.96	1.1 x
329 STARPOWER SEMICOND	603290-CN	13.5	3,224	3,291	42%	-30%	-26%	507	493	6.7 x	148	118	28.0 x	3.87	3.5 x
330 SINO WEALTH ELECTR	300327-CN	3.4	1,158	1,111	27%	-44%	6%	180	188	5.9 x	20	14	77.0 x	0.70	4.8 x
331 BOMIN ELECTRONICS	603936-CN	1.2	742	1,017	38%	-38%	-18%	-	-	-	-	-	-	1.03	1.1 x
332 AMTECH SYS INC	ASYS	5.9	84	93	37%	-43%	40%	113	101	0.9 x	(8)	3	29.0 x	5.75	1.0 x

Source: Intro-act, FactSet

Chart 65: Comp Table (12/15)

	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value	
				% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/ EBITDA	Book/ Share	P/BV
<b>Peer Set</b>														
Software		4,692,538	5,804,092			14%	713,286	790,958	7.3 x	288,198	339,509	17.1 x		5.3 x
333 MICROSOFT CORP MSFT		3,113,654	3,132,064	12%	-13%	11%	245,122	278,602	11.2 x	132,733	152,981	20.5 x	38.69	10.8 x
334 ALPHABET INC GOOGL		979,579	1,988,263	14%	-24%	20%	307,394	350,439	5.7 x	122,164	150,568	13.2 x	25.61	6.5 x
335 IBM		209,090	255,579	5%	-32%	38%	61,860	62,823	4.1 x	14,536	15,991	16.0 x	26.44	8.6 x
336 SYNOPSIS INC SNPS		86,311	85,025	12%	-19%	9%	5,843	6,124	13.9 x	2,208	2,555	33.3 x	50.19	11.2 x
337 MARVELL TECHNOLOGY MRVL		79,898	83,746	3%	-45%	53%	5,508	5,526	15.2 x	1,351	1,699	49.3 x	16.40	5.6 x
338 ROPER TECHNOLOGIES ROP		59,827	67,934	4%	-9%	2%	6,178	7,000	9.7 x	2,521	2,841	23.9 x	173.20	3.2 x
339 ANSYS INC ANSS		30,795	30,367	3%	-22%	-3%	2,270	2,521	12.0 x	928	1,241	24.5 x	66.67	5.3 x
340 KEYSIGHT TECH. KEYS		29,794	30,198	2%	-30%	8%	4,979	5,229	5.8 x	1,383	1,487	20.3 x	29.58	5.8 x
341 JACOBS SOLUTIONS J		17,308	19,002	12%	-12%	7%	11,501	12,213	1.6 x	1,059	1,241	15.3 x	36.61	3.8 x
342 GEN DIGITAL INC SYMC		18,868	26,719	1%	-38%	34%	3,812	3,921	6.8 x	2,247	2,164	12.3 x	3.41	9.0 x
343 CONTINENTAL AG CTTAY		13,110	19,644	30%	-14%	-23%	45,141	43,044	0.5 x	4,774	4,948	4.0 x	7.68	0.9 x
344 FULL TRUCK ALLIANCE YMM		8,913	6,057	8%	-40%	35%	1,172	1,521	4.0 x	190	366	16.5 x	5.52	1.7 x
345 IUPATH INC PATH		6,779	6,313	92%	-28%		1,308	1,423	4.4 x	261	187	33.7 x	3.27	4.4 x
346 RAMBUS INC DEL RMBS		6,063	5,661	34%	-34%	-17%	559	577	9.8 x	234	290	19.5 x	9.75	5.8 x
347 KPIT TECHNOLOGIES 542651-JN		4,441	4,365	43%	-6%	-11%	584	695	6.3 x	119	146	29.9 x	1.10	14.8 x
348 VERRA MOBILITY VRRM		3,954	4,811	29%	-18%	4%	817	878	5.5 x	372	402	12.0 x	2.95	8.1 x
349 CHROMA ATE INC 2360-TW		5,630	5,622	9%	-54%	91%	592	659	8.5 x	171	196	28.7 x	1.71	7.7 x
350 AURORA INNOVATION AUR		8,718	9,959	9%	-68%	48%	0	0	39,835.5 x	(670)	(650)	-	1.18	5.5 x
351 MOBILEYE GLOBAL MBLY		1,842	13,701	140%	-43%	-57%	2,079	1,641	8.3 x	732	234	58.5 x	14.89	1.2 x
352 CENTRE TESTING 300012-CN		2,796	3,204	39%	-29%	-8%	774	845	3.8 x	194	214	14.9 x	0.57	3.2 x
353 SECURIT SECURITY YSN-DE		779	771	63%	-19%	-25%	426	423	1.8 x	67	65	11.9 x	20.77	5.8 x
354 KAROOO LTD KARO		1,273	1,265	12%	-43%	70%	231	250	5.1 x	93	110	11.5 x	4.87	8.5 x
355 CONDUENT INC CNDT		616	1,295	14%	-23%	5%	3,722	3,367	0.4 x	378	151	8.6 x	5.49	0.7 x
356 PONY TESTING INTER 300887-CN		755	669	46%	-40%	-17%	341	235	2.8 x	58	10	68.9 x	0.82	1.7 x
357 XPERI INC XPER		418	409	32%	-26%	-15%	521	495	0.8 x	35	74	5.5 x	8.43	1.1 x
358 ITERIS INC NEW ITI		291	278	0%	-44%	38%	172	189	1.5 x	13	15	17.9 x	1.63	4.4 x
359 CERENCE INC CRNC		295	467	207%	-67%	-64%	332	243	1.9 x	81	20	22.9 x	3.37	2.1 x
360 RED CAT HLDGS RCAT		725	720	7%	-95%	992%	18	59	12.1 x	(14)	(18)	-	0.43	22.2 x
361 WISEKEY INTL WKEY		4	(24)	44%	-35%	40%	31	14	-1.7 x	(12)	-	-	15.08	0.2 x
362 CYNGN INC CYN		13	11	827%	-56%	-56%	1	0	90.5 x	(19)	(18)	-	3.28	2.0 x

	Share Price	Mkt Cap (\$ Mns)	EV (\$ Mns)	Price Performance			Sales			EBITDA			Book Value	
				% to High	% to Low	% YTD	FY0	FY1	EV/Sales	FY0	FY1	EV/ EBITDA	Book/ Share	P/BV
<b>Peer Set</b>														
Telematics		335,635	508,124			13%	188,963	191,130	2.7 x	60,563	61,899	8.2 x		2.6 x
363 VERIZON VZ		185,139	355,422	3%	-17%	17%	134,000	134,574	2.6 x	47,789	48,488	7.3 x	22.88	1.9 x
364 TE CONNECTIVITY TEL		45,691	49,147	5%	-16%	9%	15,845	16,530	3.0 x	3,795	4,037	12.2 x	41.19	3.7 x
365 GARMIN LTD GRMN		41,193	38,879	1%	-44%	67%	5,228	6,172	6.3 x	1,271	1,687	23.1 x	39.07	5.5 x
366 BAIDU INC BIDU		23,565	17,364	53%	-4%	-32%	18,697	18,433	0.9 x	4,606	4,442	3.9 x	102.00	0.8 x
367 TRIMBLE INC TRMB		17,815	18,772	2%	-40%	37%	3,799	3,647	5.1 x	978	995	18.9 x	18.26	4.0 x
368 SENSATA TECH. ST		5,022	7,714	28%	-9%	-11%	4,054	3,915	2.0 x	907	880	8.8 x	19.71	1.7 x
369 VONTIER CORPORATION VNT		5,861	7,791	17%	-20%	13%	3,095	2,975	2.6 x	715	685	11.4 x	6.86	5.7 x
370 IRIDIUM COMM. IRDM		3,414	5,049	39%	-20%	-27%	791	820	6.2 x	463	468	10.8 x	5.81	5.2 x
371 ROGERS CORP ROG		1,984	1,875	30%	-10%	-19%	908	830	2.3 x	148	117	16.0 x	69.93	1.5 x
372 NAVINFO CO LTD 002405-CN		3,076	2,777	25%	-41%	6%	431	473	5.9 x	(148)	(85)	-	0.57	2.3 x
373 ROOT INC ROOT		1,160	1,367	9%	-93%	935%	455	1,136	1.2 x	(43)	83	16.6 x	12.13	8.9 x
374 CEVA INC CEVA		715	562	3%	-47%	33%	97	105	5.4 x	-	-	-	11.25	2.7 x
375 STONERIDGE INC SRI		188	337	193%	-13%	-65%	961	898	0.4 x	48	42	8.0 x	9.80	0.7 x
376 ZENRIN CO LTD 9474-JP		301	209	25%	-3%	-9%	390	415	0.5 x	48	64	3.3 x	5.97	0.9 x
377 INSEGO CORP INSG		188	293	64%	-87%	473%	196	199	1.5 x	17	21	13.6 x	(6.78)	-1.9 x
378 VOXX INTL CORP VOXX		155	190	54%	-70%	-28%	469	-	-	-	-	-	13.26	0.6 x
379 ONDAS HLDGS INC ONDS		67	119	130%	-38%	-44%	16	9	13.5 x	(30)	(26)	-	0.20	4.4 x
380 CALAMP CORP CAMP		90	256	176%	-9%	-	-	0	1,758.2 x	-	(51)	-	(7.89)	-0.6 x

Source: Intro-act, FactSet

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