PitchBook

The EV/Mobility SPAC Handbook

Mobility tech and electric vehicle startups, worth over $100 billion in combined value, find routes to liquidity through special purpose acquisition companies

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Key takeaways

- In 2020, 26 mobility tech companies merged with SPACs (or entered the process of doing so), representing a combined valuation of over $100 billion.
- In the latter half of the year, our Mobility SPAC Index generated a return of 77.7%, well above the S&P 500 total return and Nasdaq 100 total return of 22.2% and 27.4%, respectively.
- We believe these strong exit outcomes demonstrate that successful exits are possible for venture-backed startups and will serve to attract more early-stage capital to the mobility tech industry.
- The electric vehicle sector is seeing improving technology, strong regulatory tailwinds, and ongoing investment into electrification by incumbent automakers.
- Exposure to electric charging infrastructure and next-generation battery technology enables investors to gain exposure to the electrification of transportation without betting on a single startup or manufacturer.
- Autonomous driving startups could raise the capital they need to compete with Big Tech by tapping into public investor enthusiasm for self-driving.
- We believe the long-term growth of autonomous driving will spur opportunities to invest in lidar technology.
- Micromobility services providing personally owned or shared light electric vehicles will shape the future of last-mile commuting in urban areas.
- The emerging electric air taxi industry could significantly lower the cost of long-distance urban transportation while reducing emissions and traffic congestion within cities.

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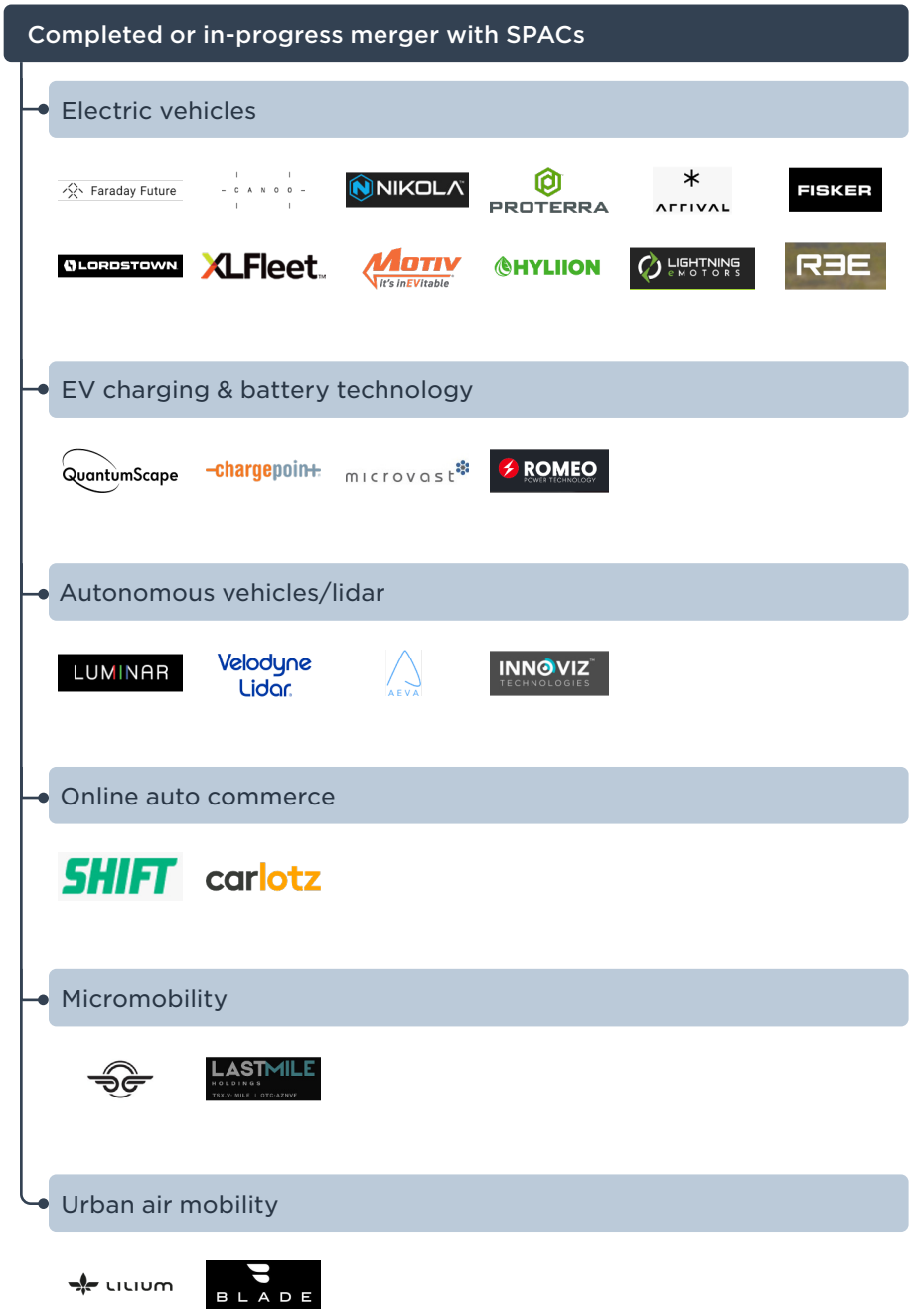
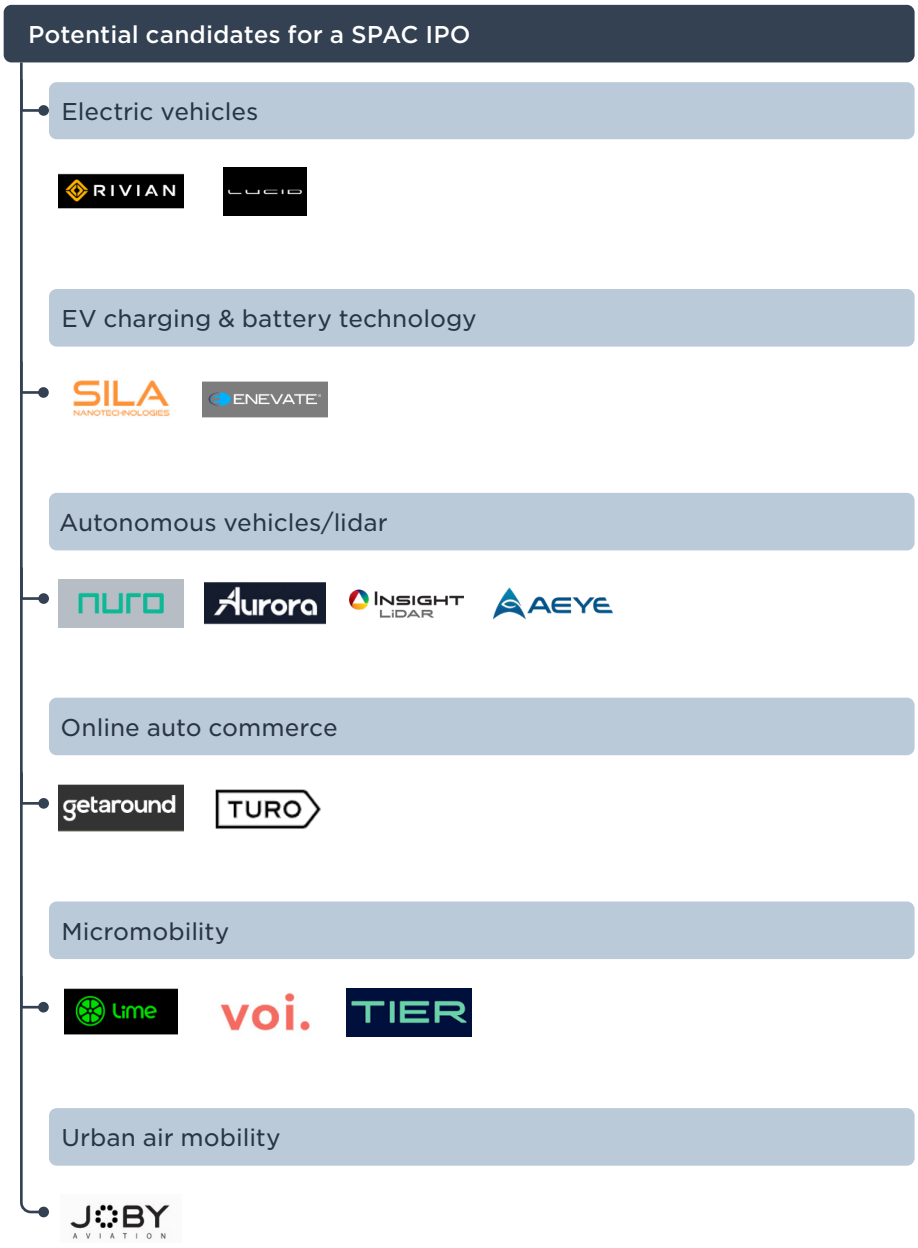
Mobility tech SPAC IPO landscape




Potential candidates for a SPAC IPO
Electric vehicles
RIVIAN
LUCID
EV charging & battery technology
SILA NANOTECHNOLOGIES
ENEVATE
Autonomous vehicles/lidar
nuro
Aurora
INSIGHT LiDAR
AEYE
Online auto commerce
getaround
TURO
Micromobility
Lime
voi.
TIER
Urban air mobility
JOBY AVIATION

Introduction

As special purpose acquisition companies (SPACs) sweep the mobility tech industry, they have ushered in a new era of mobility investing. Previously, investors in the industry largely consisted of VCs and strategic corporate investors. However, the popularization of reverse mergers with SPACs has created a vehicle for late-stage mobility tech companies to gain access to public markets, providing ordinary equity investors with a way to gain exposure to a disruptive industry that is reshaping the future of transportation. In 2020, 26 mobility tech companies merged with SPACs (or are in the process of doing so), representing a combined valuation of over $100 billion and generating an average return of 63.8% since their announcement dates.

This handbook provides an overview of the emerging SPAC landscape and the market trends shaping the industry. It also supplies an overview of key startups that have either utilized this route to the public markets or are in the process of completing a SPAC. In addition, we lay out attractive candidates for future SPAC mergers.

Historically, finding a path to exit through the public markets has been a challenging proposition for mobility tech companies. Despite soaring private market valuations, both Uber (NYSE: UBER) and Lyft (NASDAQ: LYFT) achieved lackluster public market performance following their IPOs amid heightened investor scrutiny and concern over profitability. This complicated the picture for other private mobility companies seeking to publicly list. However, the strength of recent mobility SPAC listings indicates high investor enthusiasm for transportation technology, such as electric vehicles, and demonstrates that mobility startups may be able to raise more capital in the public markets than they could as private entities. Given the length of time it takes to complete a traditional IPO, and the potential for this window of opportunity to close, SPACs may represent a more compelling option for startups wishing to take advantage of current favorable environment.

SPAC listings tend to receive less scrutiny relative to traditional IPOs, and this could benefit the mobility space, where startups are characterized by money-losing, cash-burning, highly capital-intensive business models—some of which may even be pre-revenue. While high-risk companies such as these would likely struggle to find buyers in a traditional IPO, a SPAC merger provides a means to raise money via a public vehicle that is already listed on an exchange. SPACs function like a traditional acquisition, where the company being acquired primarily negotiates with just one party (for example, the SPAC) rather than attracting many investors during a pre-IPO road show. This allows the company to share its vision more easily and provide long-term financial projections as opposed to the rigorous financial reporting required for an IPO. (We provide more details on the pros, cons, and financial structures of SPACs in our analyst note The 2020 SPAC Frenzy).

Mobility tech SPAC industry snapshot

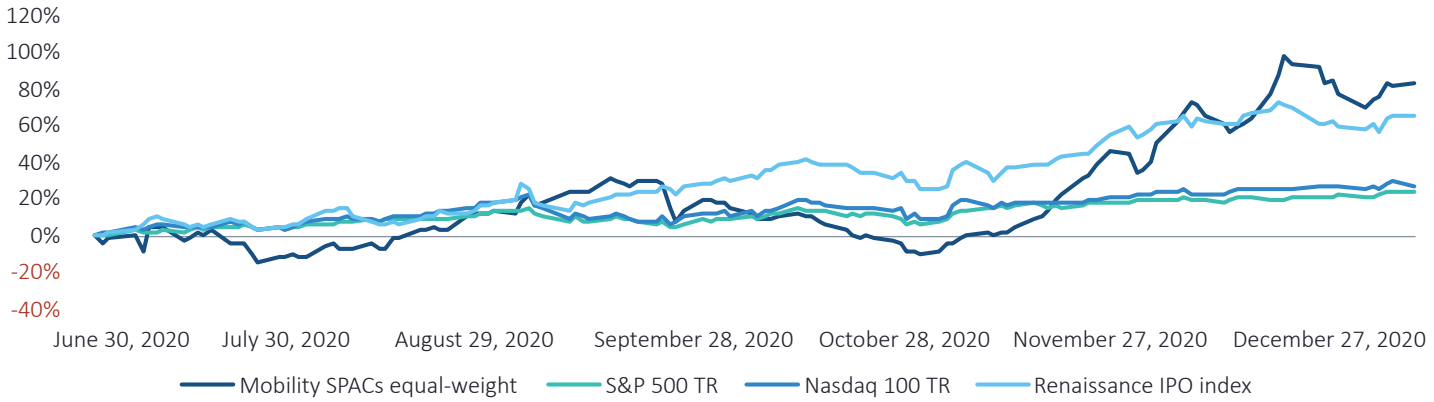
Total number of mobility tech SPACs*
26
Total market valuation of mobility tech SPAC targets*
$100.0 billion
Median market valuation of mobility tech SPAC targets*
$2.5 billion

Segment	Market cap ($B)*
Electric vehicles	$77.9
Autonomous vehicles	$17.6
Online auto commerce	$1.6

Segment	2025 market size ($B)
Electric vehicles	$436.6
Autonomous vehicles	$17.4
Online auto commerce	$4.1

Source: PitchBook | **Geography:** Global
*As of January 11, 2021

Mobility SPAC Index returns*



Source: PitchBook | **Geography:** Global
*As of January 11, 2021

Mobility SPAC index posts strong performance

We created a Mobility SPAC Index by equally weighting 26 mobility tech companies that have gone public through a reverse merger with a SPAC. New SPACs (including those that have announced an intent to list but have not yet done so) are included the day after their target announcement (thereby excluding the "first day pop" effect). The index begins at the start of Q3 2020, the first point at which at least three mobility companies make up the index.

According to our index, mobility SPAC mergers have been quite successful, posting strong performance compared to public equity benchmarks in the second half of 2020. In the latter half of the year, the Mobility SPAC Index generated a return of 77.7%, well above the S&P 500 total return and Nasdaq 100 total return of 22.2% and 27.4%, respectively. It even tops the Renaissance IPO Index's return of 59.5%. We believe these strong exit outcomes demonstrate that successful exits are possible for venture-backed startups and will serve to attract more early-stage capital to the mobility industry.

Mobility tech SPAC reverse merger deals and performance

Company	Ticker	SPAC	SPAC ticker	Announcement date	Segment	Market cap/last valuation ($M)*	Return since announcement date
Nikola Motor Company	NKLA	VectoIQ Acquisition	VTIQ	March 3, 2020	Electric vehicles (hydrogen/B2B)	$6,560.2	54.3%
Hylion	HYLN	Tortoise Acquisition	SNPR	June 19, 2020	Electric vehicles (hydrogen/B2B)	$2,641.0	23.0%
Shift Technologies	SFT	Insurance Acquisition	INSU	June 29, 2020	Auto commerce (digital marketplaces)	$703.1	-29.7%
Velodyne Lidar	VLDR	Graf Industrial	GRAF	July 2, 2020	Autonomous vehicles (lidar)	$3,907.4	28.1%
Fisker	FSR	Spartan Energy Acquisition	SPAQ	July 10, 2020	Electric vehicles (B2C)	$4,134.0	-8.7%
Lordstown Motors	RIDE	DiamondPeak Holdings	DPHC	August 3, 2020	Electric vehicles (B2C/B2B)	$4,471.8	77.4%
Canoo	GOEV	Hennessy Capital Acquisition	HCAC	August 18, 2020	Electric vehicles (B2C/B2B)	$4,017.9	43.0%
Luminar	LAZR	Gores Metropoulos	GMHI	August 24, 2020	Autonomous vehicles (lidar)	$10,191.0	189.4%
QuantumScape	QS	Kensington Capital Acquisition	KCAC	September 3, 2020	Electric vehicles (batteries)	$19,340.9	203.0%
XL Fleet	XL	Pivotal Investment II	PIC	September 18, 2020	Electric vehicles (B2B)	$2,696.1	75.5%
ChargePoint	CHPT	Switchback Energy Acquisition	SBE	September 24, 2020	Electric vehicles (charging)	$2,400.0	240.1%
Romeo Power	RMO	Riverside Management Group	RMG	October 5, 2020	Electric vehicles (batteries)	$2,453.3	92.9%
Faraday Future	N/A	Property Solutions Acquisition	PSAC	October 6, 2020	Electric vehicles (B2C)	$3,000.0	N/A
Microvast	N/A	Tuscan Holdings	THCB	October 12, 2020	Electric vehicles (batteries)	$2,000.0	57.2%

Source: PitchBook | **Geography:** Global
*As of January 11, 2021

CarLotz	LOTZ	Acamar Partners Acquisition	ACAM	October 22, 2020	Auto commerce (digital marketplaces)	$850.0	10.5%
Aeva	AEVA	InterPrivate Acquisition	IPV	November 2, 2020	Autonomous vehicles (lidar)	$2,100.0	77.2%
Arrival	ARVL	CIIG Merger	CIIC	November 18, 2020	Electric vehicles (B2B)	$5,400.0	106.0%
Metromile	MLE	INSU Acquisition II	INAQ	November 24, 2020	Pay-per-mile car insurance	$1,300.0	47.1%
Transfix	N/A	Tuscan Holdings II	THCAU	December 1, 2020	Digital freight marketplace	$800.0	N/A
Motiv Power Systems	N/A	Unknown	N/A	December 8, 2020	Electric vehicles (B2B)	N/A	N/A
Lightning eMotors	ZEV	GigCapital3	GIK	December 10, 2020	Electric vehicles (B2B)	$823.0	18.5%
Innoviz Technologies	N/A	Collective Growth	CGRO	December 11, 2020	Autonomous vehicles (lidar)	$1,400.0	6.8%
Electric Last Mile Solutions	ELMS	Forum Merger III	FIII	December 11, 2020	Electric vehicles (B2B)	$1,400.0	10.5%
BLADE Urban Air Mobility	N/A	Experience Investment	EXPC	December 15, 2020	Urban air mobility	$825.0	18.1%
Lucid Motors	N/A	Churchill Capital IV	CCIV	January 11, 2021	Electric vehicles (B2C)	$15,000.0	N/A
Proterra	ELMS	ArcLight	ACTC	January 12, 2021	Electric vehicles (B2B)	$1,600.0	-3.9%

Source: PitchBook | **Geography:** Global
*As of January 11, 2021

Although SPACs have primarily focused on opportunities in the electric vehicle market, we expect investor interest to expand across the mobility landscape to include autonomous vehicles, mobility services, and connected cars—subsectors that might be related to electrification but are in no way dependent upon electric vehicle adoption. The successful SPAC IPOs of both Velodyne (NASDAQ: VLDR) and Luminar (NASDAQ: LAZR), companies that provide platform-agnostic autonomous driving technology, set the stage for SPAC debuts across the broader mobility technology vertical.

We have provided a list of top picks for mobility tech startups that could be targets for a reverse merger with a SPAC. Criteria for target status include differentiated technology with a transportation use-case, a large and rapidly expanding market, pre-revenue or pre-profit financial status, and a potential equity valuation of at least $1 billion. Each of the following companies is discoverable through the PitchBook Platform and is included in our latest mobility tech market map, available for PitchBook clients.

Top mobility tech SPAC targets

Company	Company financing status	Last financing date	Segment	Total raised ($M)*	Last financing size ($M)	Last known valuation ($M)*
Rivian Automotive	PE-backed	July 11, 2020	Electric vehicles (B2C)	$6,001.3	$2,500.0	N/A
Nuro	VC-backed	November 9, 2020	Autonomous driving	$1,532.0	$500.0	$5,000.0
Lime	VC-backed	June 5, 2020	Micromobility (operator)	$947.1	$170.0	$510.0
Getaround	VC-backed	November 12, 2020	Carsharing (operator)	$839.6	$25.0	$1,025.7
Joby Aviation	VC-backed	December 10, 2020	Electric air taxis	$803.3	$75.0	$2,600.0
Bird Rides	VC-backed	April 28, 2020	Micromobility (operator)	$776.0	N/A	$2,850.0
Aurora	VC-backed	September 9, 2019	Autonomous driving	$765.6	$69.5	$3,069.5
Turo	VC-backed	April 28, 2020	Carsharing (operator)	$496.1	N/A	$1,200.0
Voi.Technology	VC-backed	December 1, 2020	Micromobility (operator)	$359.0	$160.0	$279.6
Sila Nanotechnologies	VC-backed	November 25, 2019	Electric vehicles (batteries)	$343.5	$218.8	$1,038.8
TIER Mobility	VC-backed	October 11, 2020	Micromobility (operator)	$296.3	$248.4	$1,176.1
Rimac Automobili	Corporate-backed	September 6, 2019	Electric vehicles (B2C)	$159.53	N/A	$88.56
Inrix	VC-backed	April 15, 2020	Connected cars (analytics)	$139.1	N/A	$584.1
Enevate	VC-backed	May 21, 2020	Electric vehicles (batteries)	$115.2	N/A	$260.0
Insight LiDAR	Pending transaction (VC)	August 31, 2020	Autonomous vehicles (lidar)	$110.9	$80.0	$380.0
Karma Automotive	VC-backed	July 8, 2020	Electric vehicles (B2C)	$100.0	$100.0	$150.0
AEye	VC-backed	December 22, 2020	Autonomous vehicles (lidar)	$91.6	$29.8	$220.2
REE Automotive	Potential target	January 21, 2021	Electric vehicles (B2B)	N/A	N/A	$573.6

Source: PitchBook | **Geography:** Global
*As of January 11, 2021

Potential risks

Although mobility SPACs have posted strong performance so far, we identify two main risks associated with this space: potentially overheated valuations and reputational risk.

As we have discussed previously, valuations in the space (especially for electric vehicle companies) have run up significantly. Tesla's (NASDAQ: TSLA) market capitalization has soared to over $800.0 billion after receiving a surge of orders and achieving profitability and inclusion in the S&P 500; solid state battery tech company QuantumScape obtained a valuation of $19.3 billion despite not being expected to generate any meaningful revenue until 2025. Most notably, hydrogen electric trucking company Nikola has maintained a valuation of more than $6.5 billion, despite multiple allegations of fraud and subsequent investigations by the US Securities and Exchange Commission (SEC) and the US Department of Justice (DOJ), the resignation of its founder Trevor Milton, the scaling down or cancellation of partnerships with GM and Republic Services, little substantial proprietary technology, significant hurdles in developing hydrogen fuel cell technology, and a relatively untested brand. While we are optimistic about electric vehicle adoption in the long term, we believe a major stock price decline in a high-profile name such as Tesla or Nikola could translate to a pullback in the broader electric vehicle and mobility SPAC ecosystem.

Additionally, we believe mobility companies going public through a SPAC could face some reputational risk. Historically, SPAC IPOs have been regarded as a back-door route to liquidity, favored by companies with lackluster financials. While we believe this mindset is experiencing a shift, we have heard anecdotally about non-investor corporate partners maintaining a degree of skepticism toward SPACs as a route to liquidity. This may be a risk to consider for mobility companies actively seeking new partnerships or customers.

Segment overview: Electric vehicles

Key takeaways

- The electric vehicle sector is seeing improving technology, strong regulatory tailwinds, and ongoing investment into electrification by incumbent automakers.
- We expect the electric vehicle market to expand from $102.3 billion in 2020 to $436.6 billion in 2025.
- Government commitments to phasing out gasoline and diesel vehicle sales will play a key role in the adoption of electric cars.

Strong investor enthusiasm for electrification has led to soaring valuations in the electric vehicle space, with publicly traded companies such as Tesla Motors and NIO (NYSE: NIO) experiencing stratospheric stock gains. To capitalize on this increasingly popular trade, several electric car startups including Canoo, Fisker Inc, Karma Automotive, and Lordstown Motors have gone public or announced plans to debut on public markets, many through SPAC deals.

We believe three primary factors are driving enthusiasm for electric vehicles: improving technology, strong regulatory tailwinds, and ongoing investment into electrification by incumbent automakers. It has become increasingly clear that the next era of the automotive industry will be electric. The technology has matured, and now electric cars have better performance, design, and safety than gas-powered vehicles. Ongoing investment into improving the convenience and affordability of electric vehicle ownership will likely expand the market fourfold over the next five years.

Regulation is also a key factor in the electrification story. China, Denmark, France, India, Israel, Norway, the UK, and Sweden have made soft commitments to phasing out new gasoline and diesel vehicle sales by the 2030-2040 timeframe. Municipalities are moving more quickly, with cities including Amsterdam, Brussels, Los Angeles, London, Madrid, Paris, Rome, and Vancouver making soft commitments to phase out gasoline and diesel vehicles by 2025-2030. In the US, California and Massachusetts have announced plans to ban the sale of gas-powered vehicles by 2035. These measures set an important precedent, and we believe a nationwide mandate to ban all sales of new gas-powered vehicles by 2035 could be in the cards for the US.

Our analyst note Electric Vehicles Poised to Reshape Auto Industry contains our additional thoughts on the electric vehicle market opportunity, advantages of electric powertrains, regulatory tailwinds, and the competitive positioning of startups compared to incumbent automakers as the shift to electric reshapes the mobility industry.

Highlighted companies

FISKER

Segment: Electric vehicles (passenger cars)

Ticker: NYSE: SPAQ to FSR

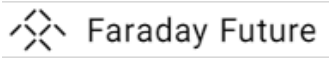
Status: Post-merger with Spartan Energy Acquisition

Market cap: $4.13 billion

Return since announcement date: -8.7% (as of January 11, 2021)

Fisker is a US-based electric vehicle startup founded by automotive designer Henrik Fisker and his wife Geeta Gupta-Fisker. The company is the relaunch of the Fisker brand, which produced the Fisker Karma (which was purchased by Wanxiang to form Karma Automotive). Fisker's first car will be the Ocean, an electric SUV launching at a competitive price point of $37,500, or a lease-like subscription plan costing $379 per month. The Ocean is expected to deliver strong performance with a 300-mile range and a 0-60 miles per hour (mph) time of 2.9 seconds. In addition, the company has teased designs of an upcoming electric pickup truck intended to maximize efficiency. Unlike many

electric vehicle companies, which focus on vertical integration, Fisker plans to outsource its manufacturing to Magna Automotive and focus its own asset-light business on developing designs, launching software-enabled features, and managing its subscription service. Thus far, the company has received over 10,000 orders for the Fisker Ocean and anticipates deliveries will begin in late 2022. The company expects to generate $10.6 billion in sales by 2024, based on sales of approximately 200,000 vehicles. In October 2020, Fisker acquired Spartan Energy Acquisition (NYSE: SPAQ) through a reverse merger, resulting in the combined entity trading on the NYSE under the ticker symbol FSR, at a pro-forma equity valuation of $2.9 billion.



Segment: Electric vehicles (passenger cars)

Ticker: NASDAQ: PSAC

Status: In-progress merger with Property Solutions Acquisition Corp

Pro-forma equity valuation: $3.0 billion

Return since announcement date: N/A (as of January 11, 2021)

Faraday Future designs and manufactures smart electric vehicles. The company was founded by Jia Yueting in 2014 and raised over $4.4 billion. However, Jia was forced to file for personal bankruptcy from previous business ventures in China. Subsequently, Faraday Future went through a significant restructuring and appointed Carsten Breitfeld as CEO. Breitfeld is the former CEO of Chinese electric vehicle startup Byton and led BMW's i8 program. With the restructuring largely complete and new management at the helm, Faraday Future is now focused on delivering its first vehicle—the FF 91—at a price point of $150,000 to $200,000. According to Faraday Future, the FF 91 will deliver 1050 horsepower and a range of over 300 miles. The FF 91 is built on the company's proprietary powertrain—the Variable Platform Architecture (VPA)—which is a modular platform designed to accommodate various vehicle shapes. Faraday Future seeks to differentiate through its focus on technology and luxury, with integrated software and high configurability. The company plans to launch its offering through a hybrid model of direct-to-consumer sales and brick-and-mortar dealerships. Faraday Future is currently in talks to go public through a reverse merger with Property Solutions Acquisition Corp (NASDAQ: PSAC) at a pro-forma equity valuation of $3.0 billion, down from its previous valuation of $4.4 billion in June 2018.

Segment: Electric vehicles (passenger cars)

Status: In-progress merger with Churchill Capital Corp IV

Ticker: NYSE: CCIV

Pro-forma equity valuation: $15.0 billion

Return since announcement data: N/A (as of January 11, 2021)

Lucid Motors is a US-based electric vehicle startup founded in 2007. The company's CEO, Peter Rawlinson, was the chief engineer for the Tesla Model S. The company raised $1.0 billion in development capital from Saudi Arabia's Public Investment Fund in late 2018. Lucid Motor's upcoming vehicle, the Lucid Air, is a luxury sedan meant to compete with upscale German luxury cars ($100,000+ price point). Lucid has unveiled impressive performance figures for the vehicle, which has an independently confirmed range of over 500 miles, provides 20 miles per minute of charging, and will reportedly deliver at least 1,000 horsepower, a 0-60 mph time of under three seconds, and a quarter-mile time in the nine-second range. The company's powertrain is proprietary as it was developed in-house, unlike several of Lucid's competitors that have outsourced their powertrains. We expect the Lucid Air to be a formidable new entrant in the broader luxury car segment, which has traditionally been dominated by German brands such as Mercedes and Audi. Although Lucid is currently well-capitalized, we believe the company will need to raise several hundred million dollars to launch its upcoming SUV platform. Given its impressive proprietary technology, need for capital, and the public market environment, we believe Lucid would be an ideal candidate for a SPAC IPO. In January 2021, reports surfaced that Lucid Motors was in talks to merge with Churchill Capital Corp IV at a valuation of $15.0 billion.

Segment: Electric vehicles (passenger cars/commercial delivery vans)

Status: Potential target

Last known valuation: $25.0 billion (January 2021)

Total raised: $6.0 billion

Valuation step-up: N/A

US-based electric vehicle startup Rivian has generated significant buzz around its upcoming vehicles, the R1T and R1S, which promise more than 400 miles of range at a starting price of approximately $70,000. The company markets itself as an adventure vehicle platform for the environmentally conscious outdoors enthusiast. Although production was originally slated for year-end 2020, the company has delayed its plans to launch into 2021 due to the COVID-19 pandemic. In our view, Rivian is one of the best-positioned electric vehicle startups. It has successfully raised a significant amount of capital and has the backing of transportation industry leaders Ford (NYSE: F) and Amazon (NASDAQ: AMZN). The company's focus on the relatively untapped premium electric truck market should allow it to gain rapid market adoption. Additionally, Rivian has an established book of B2B orders, as its investor Amazon has placed an order for 100,000 electric vans. Thus far, the company has raised over $6.0 billion and is rumored to be seeking an undisclosed amount of development capital, valuing the company at $25.0 billion. Although Rivian's management team has not announced imminent plans to go public, we believe the company would fetch a premium valuation in the current market environment. Given the company's outsized valuation, a SPAC transaction might be comparably difficult as SPACs are better suited for mid-market businesses. With that said, a larger SPAC and accompanying hefty PIPE deal could be enough to take this company public even at its premium valuation.

KARMA

Segment: Electric vehicles (passenger cars)

Status: Potential target

Total raised: $100.0 million

Last-known valuation: $150.0 million (March 2014)

Karma Automotive is an US-based electric vehicle company owned by China-based supplier Wanxiang Group. The company was formed out of assets purchased from Fisker Automotive for $149.2 million in a bankruptcy auction in 2015. The company's main product is the Karma Revero, a luxury hybrid sports sedan, while the Revero GT, a fully electric model, is set to debut in 2020 at a $130,000 price point. In addition, the company announced that the GS Series—a fully battery-enabled electric sedan priced at approximately $77,000—would launch in 2021. Relative to other electric car manufacturers, Karma Automotive differentiates on its exterior and interior design and focuses on creating an immersive driving experience. In addition, the company has announced a utility van platform with extended range electric vehicle (EREV) architecture, with an all-electric range to 200 miles or combined range of 400 miles. Karma is reportedly in talks with investment banks to help it go public, and we view it as an attractive candidate to publicly list via a SPAC merger.

Segment: Electric vehicles (passenger cars)

Status: Potential target

Total raised: $159.3 million

Last-known valuation: $88.6 million (November 2014)

Croatia-based Rimac Automobili manufactures electric powertrain components and hypercars. Rimac's upcoming $1.0 million hypercar, the C_Two, will generate an impressive 1,914 horsepower, powering the car to a 0-60 time of 1.85 seconds, a quarter-mile time of 9.1 seconds, a top speed of 258 miles per hour, and a range of over 620 miles. Although the company's limited-edition hypercars dominate headlines, the company's financial success has been driven by its third-party electrification business. The company brings its expertise in high-performance electric powertrains (curated from its hypercar development) to develop and manufacture motors, transmissions, battery systems, and power distribution systems for global automotive companies. Rimac's customers include Porsche, Hyundai, Aston Martin, Koenigsegg, Renault, and Pininfarina. In addition, the company has strong backing, with a 15.5% ownership stake held by Porsche, a 14% ownership stake held by Hyundai, and a 19% stake from Camel Group, a Chinese battery company. Although the company's founder Mate Rimac has remarked that SPAC funding hype could damage the electric vehicle industry, we believe Rimac would be an excellent candidate for a SPAC merger.

Segment overview: Commercial electric vehicles

Key takeaways

- The success of DoorDash's (NYSE: DASH) IPO highlighted the significant growth in last-mile delivery services, including e-commerce, restaurant, grocery, and convenience item delivery.
- More stringent emissions regulations and improving economics will drive electric delivery van adoption.
- Whereas some companies manufacture and sell commercial electric vehicles, others focus on retrofitting existing commercial vehicles with electric or hybrid powertrains.

The success of DoorDash's IPO highlighted the significant growth in last-mile delivery services, including e-commerce, restaurant, grocery, and convenience item delivery. We expect continued growth in last-mile delivery to drive spending on electric delivery vehicles due to more favorable economics and regulations on emissions. Relative to traditional internal combustion engines, electric powertrains offer reduced fuel costs, up to 20% lower maintenance costs (given fewer moving parts to service), less specialized equipment and

labor needs, longer warrantied lifetimes, and steadily declining battery costs. Additionally, governments are increasingly mandating electric powertrains for commercial vehicles in a bid to reduce emissions and pollution. In June 2020, California announced that it will require all new trucks sold in the state to be zero-emissions. The New York State Senate introduced a similar bill requiring new cars and trucks to be zero-emissions by 2035.

Favorable economics and more regulations are leading to increased spending on commercial electric vehicles. Amazon has placed an order for 100,000 electric delivery vans from Rivian and 1,800 Mercedes-Benz electric vans. In April 2020, UPS ordered 10,000 electric delivery vans from Arrival. Ford and Daimler (ETR: DAI) have announced new models of electric delivery vans. Additionally, electric vehicle startups such as Canoo have debuted electric delivery van models to capitalize on this trend.

Whereas some companies manufacture and sell electric commercial vehicles, others focus on retrofitting existing commercial vehicles with electric or hybrid powertrains. Commercial vehicles are typically built in two stages—in the first stage they are manufactured by companies such as Ford and GM, while in the second stage, work-performing components tailored to the vehicles' end-use are added by a second manufacturer. During this second stage, companies such as XL Fleet and Lightning EMotors convert internal combustion engine (ICE) commercial vehicles to hybrid powertrains. As battery costs decline and governments ramp up emissions mandates, economic incentives to electrify fleets will only increase. However, the supply of commercial electric vehicles available over the near to medium term will likely be constrained relative to demand. By retrofitting existing vehicles, startups such as XL Fleet and Lightning EMotors help mitigate the supply-demand mismatch, providing an important "stop-gap" in the road to commercial electric vehicle adoption.

Highlighted companies

ARRIVAL

Segment: Electric vehicles (commercial delivery vans)

Ticker: NASDAQ: CIIC to ARVL

Status: Post-merger with CIIG Merger Corp

Pro-forma equity valuation: $5.4 billion

Return since announcement date: 106.0% (as of January 11, 2021)

UK-based Arrival develops and manufactures electric delivery vans and buses. The company has raised capital from UPS Ventures and Hyundai Motor Company and currently holds a valuation north of $3 billion. The company is highly scaled with thousands of employees, and operates flexible, highly automated factories that enable low-cost manufacturing. In early 2020, Arrival received an order for 10,000 electric vans from UPS. The company's platform has an attractive B2B use-case.

Relative to ICE vehicles, electric delivery vans have more favorable operating economics. Benefits include reduced emissions, lower fuel costs, up to 20% lower maintenance costs given fewer moving parts to service, less specialized equipment and labor needs, longer warranty lifetimes, and steadily declining battery costs. In November 2020, the company reached a definitive agreement to merge with CIIG Merger Corp for $260.0 million, resulting in the combined entity trading on the Nasdaq under the ticker symbol ARVL and putting the company's post-money valuation at $5.4 billion.

Segment: Electric vehicles (passenger/commercial trucks)

Ticker: NASDAQ: DPHC to RIDE

Status: Completed merger with Diamond Peak Holdings Corp

Market cap: $3.4 billion

Return since announcement date: 56.2%: (as of January 11, 2021)

US-based Lordstown Motors develops and manufactures electric trucks. Founded in 2019, the company operates out of a reconfigured GM assembly plant in Lordstown, Ohio. The Lordstown Endurance, which is on course to launch in 2021, will reportedly retail for $52,500 and have a range of 250 miles. As of January 2020, the Endurance has received over 100,000 pre-orders. The company's primary differentiation comes from its unique four-hub electric motor systems. These are essentially larger versions of hub motors found in Bird and Lime electric scooters. This approach reduces the number of moving parts down to just the four wheels and could yield greater efficiency and reduce manufacturing cost. Potential downsides could include high repair bills associated with damaged wheels and greater unsprung weight, impairing handling. The company has established partnerships with Holman Enterprises to introduce the Endurance to vocational fleet operators in North America. In October 2020, Lordstown Motors acquired DiamondPeak Holdings through a reverse merger, resulting in the combined entity trading on the Nasdaq under the ticker symbol RIDE. The company is in the process of raising $500.0 million of development capital from Fidelity Management & Research, Wellington Management, Federated Hermes Kaufmann, and General Motors through a private placement.

Segment: Electric vehicles (Commercial electric vehicle powertrains)

Ticker: NYSE: PI to XL

Status: Post-merger with Pivotal Investment Corporation II

Market cap: $2.7 billion

Return since announcement date: 75.5% (as of January 11, 2021)

XL Fleet develops and manufactures electric powertrains for hybrid, plug-in hybrid, and eventually electric vehicle commercial and municipal fleets, enabling automotive industries to reduce fuel consumption and facilitate better performance. The company then sells this vehicle to customers such as UPS, FedEx, and Verizon. XL Fleet pairs its powertrain conversion with a fleet- and data-management platform as a subscription service. While the company currently offers hybrid powertrains, it is also developing a fully electric system. Additionally, XL Fleet plans to supply its technology to Class 7 and Class 8 vehicles starting in 2022. The company has over $220 million in its sales pipeline for the next 12 months, 95% of which is booked. In September 2020, XL Fleet successfully merged with Pivotal Investment Corporation II (NYSE: PI) and debuted on the NYSE under the ticker symbol XL. In conjunction, the company raised a $150.0 million PIPE round.

Segment: Electric vehicles (Commercial electric vehicle powertrains)

Ticker: NYSE: GIK to ZEV

Status: In-progress merger with GigCapital3

Pro-forma equity valuation: $823.0 million

Return since announcement date: 18.5% (as of January 11, 2021)

Lightning EMotors develops commercial electric vehicle technology, and is the only operator that provides its technology to a full range of Class 3-7 commercial vehicles, including ambulances, delivery vans, food trucks, and buses. The company's customers include Fluid Trucks, ABC Companies, ACE Parking, and California state hospitals. Lightning eMotors has an order backlog of approximately 1,500 vehicles over the next two years. The vehicles will be manufactured at its 250,000 square-foot facility in Loveland, Colorado,

which has an annual production capacity of 1,000 vehicles, and is expanding to 3,000 in 2021 and over 20,000 by 2025. In addition to its electric vehicle powertrains, the company provides a charging service, including planning, permitting, installation, operation, support, and maintenance. The company reached a definitive agreement to acquire GigCapital3 through a reverse merger, resulting in the combined entity trading on the NYSE under the ticker symbol ZEV on December 10, 2020. Prior to that, the company raised $47.0 million of Series C venture funding through a combination of debt and equity.

PROTERRA

Segment: Electric vehicles (Commercial electric bus powertrains)

Status: In-progress merger with ArcLight Clean Transition Corp

Ticker: NASDAQ: ACTC

Pro-forma equity valuation: $1.6 billion

Return since announcement date: N/A (as of January 11, 2021)

Proterra designs and manufactures battery electric powertrains for electric buses and commercial vehicles. Since Proterra's buses are based on electric powertrains, bus fleet operators can significantly reduce operating costs associated with fuel and maintenance while also cutting down emissions and noise pollution affecting local urban communities. The company's batteries are built for commercial usage, with rugged housings for harsh environments, high energy density to serve long transit routes on a single charge, and a configurable design based on use-case. In addition to selling battery technology and electric buses, Proterra has a fleet-as-a-service business called Proterra Energy, which provides infrastructure installation, fleet planning, charging, and energy management services to fleet operators. In October 2020, the company raised $200.0 million of venture funding in a deal led by Cowen Sustainable Investments. Broadscale Group, Soros Fund Management and Generation Investment Management also participated in the round. The funds are expected to be used for battery and electric drivetrain R&D, business development into adjacent commercial vehicle segments, and expanding the company's fleet-as-a-service business. In January 2020, Proterra announced that it would merge with ArcLight Clean Transition Group (NASDAQ: ACTC) and publicly list at a pro-forma equity valuation of $1.6 billion.

Segment: Electric vehicles (Commercial electric vehicle powertrains)

Status: Potential target

Last known valuation: approximately $200 million (according to Bloomberg)[1]

Total raised: N/A

Hyzon Motors supplies zero-emissions hydrogen fuel cell powered commercial and heavy vehicles, including heavy-duty trucks, buses, and coaches. Unlike some of its startup competitors, Hyzon has strong backing and vehicles currently on the road. Hyzon is a spin-off of established fuel cell manufacturer Horizon Fuel Cell Technologies, which is based in Singapore. Hyzon Motors most recently raised a funding round of more than $15 million led by Total, valuing the company at approximately $200 million.[2] Hyzon currently has around 400 trucks and buses on the road, and the company expects to deliver approximately 5,000 fuel cell trucks and buses over the next three years, as well as around 100,000 trucks by 2030 from its facilities in North America, Europe, and Asia. Hyzon recently signed a contract with New Zealand-based Hiringa Energy for 1,500 vehicles with deliveries beginning in 2021. In our view, Hyzon represents an example of fuel cell electric vehicles gaining traction in the freight sector, highlighting that the debate between hydrogen fuel cell and battery electric is not yet over. It remains to be seen how competitive fuel cell technology will be in electrifying freight compared to battery electric options such as Tesla's upcoming semitruck offering. Barriers to hydrogen fuel cell adoption include the necessity of highly capital-intensive infrastructure rollouts. Nevertheless, the technology is more compelling than battery electric for heavy freight applications due to the inherent technical advantages related to energy density.

Segment: Electric vehicles (Commercial electric vehicle powertrains)

Status: In-progress merger with undisclosed SPAC

Last known valuation: $573.6 million (December 2019)

Total raised: N/A

Israel-based REE Automotive develops a next-generation electric vehicle platform. The company's platform is flat and modular, enabling auto

1: "Total Adds Fuel-Cell Truck Maker to Alternative Energy Bets," Bloomberg, Edward Ludlow, October 8, 2020.
2: Ibid.

manufacturers, OEMs, delivery and logistic companies, retailers, and new mobility players to tailor electric vehicles for specific use-cases. Unlike other modular electric vehicle platform companies, REE integrates all drive components into the arch of the wheel. This enables each corner to be fully independent, allowing individualized throttle, braking, and steering inputs to be sent to each individual wheel from a central electronic control unit. The REEboard (REE's platform) is highly cost-efficient from a maintenance perspective. It utilizes a preventative maintenance AI to monitor and proactively flag potential failures before they occur. REE can address any problems detected through an over-the-air (OTA) software update, or the affected wheel arch can be serviced individually without affecting the rest of the vehicle. Additionally, REE's platform offers several benefits including improved vehicle design freedom, more volume dedicated for batteries, and compatibility with advanced driver-assistance systems and autonomous vehicle technology. REE Automotive is in talks to acquire an undisclosed SPAC through a reverse merger.

Segment overview: Electric vehicle charging and battery technology

Key takeaways

- Exposure to electric charging infrastructure enables investors to gain exposure to the electrification of transportation without betting on a single startup or manufacturer.
- A significant amount of new charging infrastructure will be needed to serve the growth of electric vehicle sales from under 3% of new vehicles sold globally to over 10% in 2025.
- We believe the long-term growth of electric vehicles will also drive opportunities to invest in next-generation battery technology.
- Improvements in battery affordability, efficiency, performance, charging speed, and safety will determine the relative success or failure of electric car brands.

Exposure to electric charging infrastructure allows investors to gain exposure to the electrification of transportation without betting on a single startup or manufacturer. Charging networks such as ChargePoint, Blink Charging, and Electrify America are well-positioned to benefit from increased general electric vehicle adoption, regardless of which brands win out. Assuming electric vehicles grow from under 3% of new vehicles sold globally to over 10% in 2025, we believe a significant amount of new charging infrastructure will be needed to service this growth. We expect the US government to lead substantial investment in electric vehicle charging networks and increased subsidies for electric vehicles. President-elect Joe Biden has made electrification a focal point of his agenda to combat climate change, including a plan to invest $2.0 trillion into electrification and renewables, which includes the installation of 500,000 public charging stations in the next four years.

We believe the long-term growth of electric vehicles will also drive opportunities for investment in next-generation battery technology. Batteries drive the value proposition of cars much more than internal combustion engines have in the past. Improvements in battery affordability, efficiency, performance,

charging speed, and safety will be key to the relative success or failure of electric car brands. Startups developing next-generation battery technology to service this need include QuantumScape, Sila Nanotechnologies, and Enevate.

Highlighted companies

Segment: Electric vehicles (charging network)

Ticker: NASDAQ: SBE to CHPT

Status: In-progress merger with Switchback Energy Acquisition

Pro-forma equity valuation: $2.4 billion

Return since announcement date: 240.1% (as of January 11, 2021)

ChargePoint develops an electric vehicle charging network that provides independently owned charging spots for homes, offices, and outdoor locations, enabling users to shift vehicles away from fossil fuels. ChargePoint's solution combines hardware sales with SaaS software and recurring service business. In addition to selling residential home chargers, the company is expanding into commercial fleets, which we believe represents a major growth opportunity for the company over the next 10 years. The vast majority of existing charging systems in the US are intended for consumer use, not commercial fleets. Assuming a fifteenfold increase in the global number of medium and heavy electric trucks on the road by 2025, we believe new charging infrastructure will be needed to service this growth. Without the right technology and products, converting a fleet to electric models can be a complicated and expensive process. Scheduling and routing vehicles to charge efficiently can be disruptive to daily operations and harm customer service. ChargePoint offers an integrated, turnkey-managed charging solution (for example, charging locations, software, and other infrastructure) that can share information with existing fleet management software (such as routing, dispatch, and telematics), so fleet operators can monitor fleets and power consumption in real time. As commercial fleets electrify over the next 10 years, we believe ChargePoint will see significant growth from fleet managers seeking to outsource the complications of developing and implementing charging infrastructure. Thus far, the company has seen significant growth from electric car adoption. The company generated $135.0 million in revenue in 2020, a figure that is expected to grow to $1.4 billion in 2025. The company has raised $944.6 million in the private markets from investors such as Chevron, Daimler, Siemens, and BMW i Ventures. ChargePoint reached a definitive agreement to acquire Switchback Energy Acquisition Corporation (NYSE: SBE) through a reverse merger on September 24, 2020. The company is also in talks to receive $225.0 million of development capital from Baillie Gifford and Neuberger Berman through a private placement.

Segment: Electric vehicles (batteries)

Ticker: NYSE: KCAC to QS

Status: Post-merger with Kensington Capital Acquisition

Market cap: $19.3 billion

Return since announcement date: 203.0% (as of January 11, 2021)

QuantumScape develops next-generation solid-state lithium-metal batteries for use in electric vehicles. Unlike conventional lithium-ion architectures, solid-state batteries replace the liquid electrolyte and separator with one solid piece, made up of a flame-retardant polymer. Relative to conventional architecture, QuantumScape's batteries will likely prove much safer during a collision and deliver greater power, faster charging, and superior life expectancy at a lower cost and form factor. Although many see solid-state batteries as the future, it will be some time before QuantumScape achieves scale. The company does not expect to produce any revenue until 2024 but predicts it will generate $6.4 billion in 2028. It faces competition from solid-state competitors such as Solid Power; Ilika, which works with Jaguar Land Rover; and Toyota, which is developing its own solid-state battery technology. Nevertheless, QuantumScape has strong backing, with Volkswagen and Bill Gates as investors. In November 2020, the company acquired Kensington Capital Acquisition through a reverse merger, resulting in the combined entity trading on the NYSE under the ticker symbol QS. Concurrently, the company received $500.0 million in development capital from Janus Henderson Investors and Fidelity Management & Research through a private placement.

Segment: Electric vehicles (batteries)

Ticker: NYSE: RMO to RMG

Status: Post-merger with Riverside Management Group

Market cap: $2.45 billion

Return since announcement date: 92.9% (as of January 11, 2021)

Romeo Power designs and manufactures lithium-ion battery modules and packs for commercial electric vehicles. Unlike competitors in the space, which focus on manufacturing lithium-ion cells, Romeo Power packages those cells and sells the entire system to customers. Romeo Power's packaging technology is form-factor agnostic and can be applied to both traditional and next-generation architectures such as solid-state. As such, Romeo Power is not beholden to any single customer in the electric vehicle value chain. Its modules and packs are customizable and scalable, and they are optimized by its proprietary battery management system. By making improvements throughout the electric vehicle battery stack, Romeo Power's technology enables improved range, acceleration, safety, and durability, while shortening charge times. Thus far, the company has secured approximately $310 million in revenue through signed contracts and expects to generate $1.65 billion in revenue in 2025. The company focuses on two main markets: North American trucks and buses, and European high-performance and commercial vehicles. The company signed a joint venture with established automotive supplier BorgWarner in 2019. In December 2020, Romeo Power acquired Riverside Management Group through a reverse merger, resulting in a combined entity trading on the NYSE under the ticker symbol RMO. Concurrently, the company received $150.0 million in development capital from The Heritage Group and Republic Services through a private placement.

Segment: Electric vehicles (batteries)

Status: Potential target

Last known valuation: $260.0 million (September 2018)

Valuation step-up: 1.33x

Total raised: $115.2 million (as of January 11, 2021)

Enevate develops and licenses advanced silicon-film lithium-ion battery technology to automotive OEM and electric vehicle battery makers. The company's technology enables five-minute extreme fast charging with high energy density, low temperature operation for cold climates, low cost, and safety advantages over conventional lithium-ion batteries. Unlike solid-state battery technology, Enevate's technology relies on existing manufacturing processes and will likely see faster revenue generation. The company is currently designing for 2024-2025 model electric cars and smaller electric vehicles such as electric motorcycles and e-mopeds. Enevate—which counts John Goodenough, a Nobel laureate for his work on lithium-ion batteries, as an advisory board member—has a 250+ patent portfolio and has secured partnerships with key OEMs and Tier-1 suppliers such as Nissan-Renault and LG Chem. Unlike some of its competitors, Enevate does not supply materials—the company generates revenue from licensing its technology to battery companies

and automotive OEMs. We believe Enevate's licensing-based business model is more defensible during a downturn relative to materials supplier competitors, and see the company as an excellent candidate for a SPAC merger.

Segment overview: Autonomous vehicles

Key takeaways

- Autonomous vehicles could reduce the cost of hailing a ride for commuters to below $0.75 per mile in major cities.
- Self-driving cars could help curb the approximately 40,000 lives lost annually due to human-caused car accidents.[3]
- Big Tech companies such as Alphabet (Waymo) and Amazon (Zoox) currently dominate the self-driving space thanks to their unmatched ability to invest capital in talent and technology.
- Independent startups could raise the capital they need to compete by tapping into public investor enthusiasm for self-driving.

Autonomous vehicles have the potential to significantly lower the cost of mobility for commuters. Driving as an activity is time-consuming and drains productivity. In the US, the mean commute time between 2014 and 2018 totaled over 200 hours every year.[4] According to McKinsey, traffic congestion has a negative impact of 2%-5% on GDP due to wasted time, fuel, and additional friction.[5] Additionally, autonomous vehicles present many potential benefits over traditional driving in both economic efficiency and safety. Human-caused car accidents result in approximately 40,000 deaths annually in the US.[6] Autonomous vehicles could solve many of these issues by routing traffic more efficiently and markedly reducing the potential for human error. As a result, automakers and technology companies are investing heavily in autonomous technology and fueling innovation in the space in a bid to dominate a burgeoning industry.

Although Big Tech currently commands the self-driving space, we believe independent startups could raise the capital they need to compete by tapping into public investor enthusiasm for self-driving. At this stage of the investment cycle, startups need billions of dollars in capital to develop a solution to compete with established leaders, and we believe independent startups face an uphill battle from a competitive standpoint. We view Waymo as a leader in terms of technological superiority and potential scalability. This is not surprising given Waymo's first-mover advantage. Other competitors include GM-owned Cruise Automation, whose chosen test ground of busy San Francisco streets may be a key advantage; Amazon-owned Zoox, whose

3: "National Vital Statistics Reports, Volume 68, Number 9," National Center for Health Statistics, Kenneth D. Kochanek, Sherry L. Murphy, Jiaquan Xu, and Elizabeth Arias, June 24, 2019.
4: "2014-2018 American Community Survey 5-Year Estimates," U.S. Census Bureau, 2018.
5: "Mobility's Second Greatest Inflection Point," McKinsey Quarterly, Rajat Dhawan, Russell Hensley, Asutosh Padhi, and Andreas Tschiesner, February 23, 2019.
6: "National Vital Statistics Reports, Volume 68, Number 9," National Center for Health Statistics, Kenneth D. Kochanek, Sherry L. Murphy, Jiaquan Xu, and Elizabeth Arias, June 24, 2019.

robotaxis have shown a penchant for navigating both urban and highway environments; Intel-owned Mobileye, which has adopted a camera-centric approach to autonomy; and Argo AI, which has received large financing rounds from Ford and Volkswagen. Chinese startup Pony.AI is also a key competitor in the space. Automakers including Tesla, Daimler, Volvo, BMW, Audi, and Toyota are also developing autonomous solutions. Other major players include China-based technology companies Baidu, Tencent, and Alibaba, all of which are testing their own autonomous vehicle solutions.

Segment: Autonomous vehicles (full stack)

Status: Potential target

Last known valuation: $5.0 billion (November 2020)

Total raised to date: $1.5 billion

Valuation step-up: 1.5x

Nuro develops a fully autonomous, on-road electric delivery vehicle built to deliver food, grocery items, and prescriptions. Nuro's vehicle—the R2—utilizes a full sensor suite of lidar, radar, and cameras paired with Nuro's proprietary self-driving software. In our view, Nuro's core competitive advantage comes from its cabless design; unlike many of its competitors, the Nuro vehicle does not have space for a driver or any passengers. This means Nuro's delivery vehicle can always prioritize pedestrians or other cars when making safety-critical decisions. This should enable the company to commercialize quicker than competitors, as the safety hurdle rate needed will be much lower regarding potential edge cases. The company has autonomous delivery pilots underway, including a partnership with CVS to deliver prescriptions in Houston, a partnership with Domino's to deliver pizza, and partnerships with Walmart and Kroger to deliver groceries. In December 2020, Nuro achieved a significant milestone, becoming the first company to receive a permit from California's Department of Motor Vehicles to launch commercial driverless services on public roads in the state. The company also acquired Ike Robotics, a self-driving truck startup for an undisclosed amount (Ike was last valued at $240.0 million in February 2019). In November 2020, Nuro raised $500.0 million of Series C venture funding in a deal led by T. Rowe Price, putting the company's post-money valuation at $5.0 billion. SoftBank Investment Advisers, Greylock Partners, Fidelity Management & Research, Ascolta Ventures, and Baillie Gifford also participated in the round. Although Nuro has not declared its intent to go public, we think the company would be an ideal candidate for a SPAC merger given its proprietary technology, the traction it has received on the private markets, the capital it will need to finance future growth, and public market enthusiasm for electric and autonomous vehicles.

Segment: Autonomous vehicles (full stack)

Status: Potential target

Last known valuation: $3.9 billion (September 2019)

Total raised to date: $765.6 million (as of January 11, 2021)

Valuation step-up: 1.17x

Aurora Innovation develops self-driving car technology, which utilizes advanced machine learning (ML) software and hardware including camera, radar, and lidar sensors. The company's self-driving stack serves both robotaxi and logistics applications, though the company's first product launch is expected to be a self-driving long-haul truck platform. Aurora has built its own proprietary testing simulator called the Offline Executor, which was purpose-built from the ground up for testing self-driving, unlike competitive simulators which are typically adapted from game engines and therefore limited. Thus far, Aurora has made two major acquisitions. In May 2019, Aurora acquired Blackmore, a developer of frequency-modulated continuous-wave (FMCW) lidar technology. In December 2020, the company acquired Uber's Advanced Technology Group, officially cementing the ridesharing giant's exit from the self-driving industry, where it has struggled to keep up with competitors, and validating Aurora's positioning as a leader in the space. Aurora has established partnerships with major companies including Hyundai, Fiat Chrysler, and Uber, and the startup counts Amazon, Hyundai/Kia, Shell, T. Rowe Price, and Sequoia as investors. In our view, Aurora would be an ideal candidate for a SPAC IPO, as it represents one of the few remaining startups with a real chance to challenge Big Tech in the self-driving race.

Segment overview: Lidar

Key takeaways:

- We believe the long-term growth of autonomous driving will provide opportunities to invest in lidar technology.
- We expect the lidar industry to expand to $20 billion by 2030.
- Product commoditization and gross margin compression present key risks to investing in this industry.
- Following in the footsteps of Velodyne, Luminar, Aeva, Innoviz, and Ouster, we believe additional lidar SPAC debuts are on the horizon, enabling public equity investors to gain exposure to automation, self-driving, and driver-assistance technology.

- We see two major success indicators for lidar companies: partnerships with automakers and Tier-1 auto suppliers and exposure to B2B.

Lidar, which uses light emitted from lasers to determine the shape and distance of an object, has seen rapid growth and adoption within the automotive industry in recent years. Although previously utilized in aerospace and industrial applications, lidar technology has seen this increase in use due to its unique applicability to self-driving vehicles. By providing three-dimensional mapping of surroundings, lidar systems enable vehicles to sense their environments, laying the essential technological foundation for autonomous driving. Lidar products continue to evolve, with emerging solid-state and continuous wave technologies helping drive adoption. We expect the lidar industry to expand to $20 billion by 2030. Several startups and OEMs are active in the space, which received over $600 million in VC investment in 2020. While fully autonomous vehicles may be years away from widespread commercial use, we expect lidar to remain a key focal point for mobility tech investors. Following in the footsteps of Velodyne, Luminar, Aeva, Innoviz, and Ouster, we believe additional lidar SPAC debuts are on the horizon, enabling public equity investors to gain exposure to automation, self-driving, and driver-assistance technology.

In our view, product commoditization presents the key risk to investing in this industry. Downward pricing pressure is already occurring in the lidar industry. Waymo has reportedly lowered the cost of its in-house mid-range lidar units to $4,000, and lidar company Strobe announced that it has lowered the cost of its lidar technology by 99%, after which it was acquired by Cruise Automation. Luminar's Iris unit and Livox's Horizon unit each cost $1,000 per unit. In early 2020, Velodyne unveiled its latest lidar system, which costs $100 per unit. Over the long term, we believe price compression for lidar systems will have a negative impact on gross margins for suppliers and make it more difficult for smaller providers to compete.

We see two major success indicators for lidar companies: partnerships with automakers and Tier-1 auto suppliers and exposure to B2B. As product cycles for automobiles can extend well over 10 years, long-term partnerships with leading automakers and suppliers can provide significant competitive advantages for startups in the space. Additionally, as automakers have strict requirements for performance, reliability, and longevity, partnerships can ensure R&D efforts meet the needs of potential customers. Velodyne, Luminar, AEye, and Innoviz have shown success at establishing partnerships with key OEMs and suppliers. Meanwhile, although KPIs including range, sensitivity, framerate, and resolution differentiate automotive and robotaxi applications, cheaper and more durable solutions could thrive in less safety-critical applications such as B2B delivery and the "middle mile" of logistics. These environments have lower success thresholds relative to consumer applications, meaning startups could prioritize alternative KPIs such as cost effectiveness, reliability, ease of integration, lower power consumption, and weight over performance. Startups exposed to the B2B end market, such as Velodyne and Sense Photonics, may see quicker growth compared to the longer adoption curve for B2C markets.

Highlighted companies

Segment: Autonomous vehicles (lidar)

Ticker: NASDAQ: GRAF to VLDR

Status: Post-merger with Graf Industrial

Market cap: $3.9 billion

Return since announcement date: 28.1% (as of January 11, 2021)

Velodyne was the first company to bring lidar to automotive applications in the mid-2000s. Since then, the company has become one of the dominant third-party lidar providers for industrial and automotive applications. Although solid-state scanning techniques are garnering increasing interest from investors and could eventually displace spinning lidar, we believe companies such as Velodyne have a strong runway of growth to supply self-driving and advanced driver-assistance systems applications over the medium term. The lidar systems Waymo has developed for its robotaxis are adapted from Velodyne's rotating gimbal design. Velodyne has secured over 20 multi-year contracts and established partnerships with multiple global companies, including Veoneer, Motional, May Mobility, Ford, and Baidu. Additionally, unlike some of its competitors, approximately half of Velodyne's sales are expected to come from non-automotive industrial applications, such as warehouse robotics and smart cities. In July 2020, the company acquired Graf Industrial through a reverse merger, resulting in the combined entity trading on the Nasdaq under the ticker symbol VLDR. Concurrently, the company received $150.0 million in development capital through a PIPE round from Baidu and Ford. Prior to its public market debut, the company's investors included Ford, Baidu, Nikon, and Hyundai Mobis.

Segment: Autonomous vehicles (lidar)

Ticker: NASDAQ: GMHI to LAZR

Status: Post-merger with Gores Metropoilos

Market cap: $10.2 billion

Return since announcement date: 189.4% (as of January 11, 2021)

Luminar utilizes polygonal mirrors for its lidar technology, which is shared by laser printers and has been used for over 30 years in non-automotive lidar applications such as sea mapping, collision avoidance, and military target identification. Luminar's system holds many advantages for automotive applications relative to competitors. It operates on the 1550 nanometer wavelength, which is higher than that of competitors such as Velodyne and Ouster, resulting in improved performance at range and lessened concerns over eye safety. Additionally, Luminar's system performs well under automotive-grade vibration environments and can effectively displace heat, both advantages relative to traditional spinning and micro-electromechanical systems (MEMs) lidar. Finally, Luminar's system is relatively inexpensive even at low volumes (which is important for testing). All these factors have enabled Luminar to have tremendous success at securing partnership agreements and raising capital to fund expansion. The company's network of partners and investors includes Volvo, Mobileye, and Daimler. In December 2020, the company acquired Gores Metropoulos (NASDAQ: GMHI) through a reverse merger for $406.0 million, putting its post-money valuation at $3.4 billion and resulting in the combined entity trading on the Nasdaq under the ticker symbol LAZR.

INNOVIZ™ TECHNOLOGIES

Segment: Autonomous vehicles (lidar)

Ticker: NASDAQ: CGRO to INVZ

Status: In-progress merger with Collective Growth

Pro-forma equity valuation: $1.4 billion

Return since announcement date: 6.8% (as of January 11, 2021)

Israel-based Innoviz utilizes silicon-based, frictionless MEMs mirrors to steer its lasers. Innoviz's lidar systems are relatively small, with an easy-to-integrate form factor more suitable for production vehicles than traditional, bulky spinning systems. Innoviz components are ISO 26262 compliant, which involves an extended process of certification for automotive-grade environments, a point of differentiation relative to competitors. The company has raised at least $264 million from investors including Aptiv, SoftBank, Delphi, Magna International, and Samsung, and has established an agreement with BMW to supply Innoviz lidar sensors manufactured by Magna International for autonomous driving. In December 2020, the company reached a definitive agreement to acquire Collective Growth through a reverse merger.

Segment: Autonomous vehicles (lidar)

Status: Potential target

Last known valuation: $220.2 million (January 2019)

Total raised to date: $91.6 million (as of January 11, 2021)

Valuation step-up: 3.75x

AEye touts industry-leading performance thanks to its extreme configurability. AEye's micro-optical mechanical-based lidar system is software-definable, enabling perception engineers to configure scanning for each use-case. The system allows users to define and utilize multiple scan patterns within a frame and zone in high-resolution regions of interest. Bore-sighting cameras with agile lidar enable 2D computer vision algorithms to extract true color and additional perceptual data from 3D point clouds. In our view, the most successful lidar companies will be those that provide expertise in both software and hardware. AEye's dual software and hardware focus enables it to interpret data at a much faster speed than typical lidar solutions, allowing prompt information processing and decision making. Additionally, AEye's business model benefits from the unique software definition of its product. The company's ability to focus on the most relevant information in real time permits fewer sensors per vehicle, reducing the total cost for potential buyers. In addition, the same system can be used for multiple use-cases, allowing automakers to source the same system for multiple vehicle form factors. Finally, outsourcing manufacturing helps AEye maintain a leaner business model relative to competitors. AEye's strategic investors include Hella Ventures, LG Electronics, Subaru-SBI, Intel Capital, Airbus Ventures, and Continental AG.

Segment: Autonomous vehicles (lidar)

Status: Potential target

Last known valuation: $380.0 million

Total raised: $110.9 million (as of January 11, 2021)

Valuation step-up: 1.71x

Insight Photonic Solutions has been developing swept laser sources since 2007, primarily for the medical imaging market. More recently, the company has spun out Insight Lidar, a new entrant in the automobile lidar market. Its solution is 10x-100x more sensitive than traditional lidar and utilizes FMCW technology. FMCW technology generates instantaneous velocity readings and is less susceptible to interference than traditional time-of-flight readings. Insight Lidar's system transmits velocity information in every pixel without the need for the computationally intense process of tying together multiple frames from a point cloud and calculating velocities. This reduces latency, allowing autonomous vehicles to receive velocity information instantaneously and make quick safety decisions. In addition to improved performance, Insight Lidar's laser source is built directly on the semiconductor, lending a large potential cost advantage relative to traditional offerings.

Segment overview: P2P carsharing

Key takeaways

- Peer-to-peer (P2P) carsharing consists of consumers using an app to rent cars directly from car owners.
- Relative to traditional car rental agencies, P2P providers do not own and operate vehicles, eliminating the costs of fleet procurement and management.
- Carsharing applications have seen significant growth due to the COVID-19 pandemic, driven by a boost in socially distanced vacationing.
- P2P carsharing startups are taking market share from the traditional car rental industry, which is struggling from its operations-heavy approach and dependence on business travel during the pandemic.

P2P carsharing consists of consumers using an app to rent cars directly from car owners. Relative to traditional car rental agencies, P2P providers do not own and operate vehicles, eliminating the costs of fleet procurement and management. This creates a more easily scalable business model that has the potential to drive higher margins. P2P carsharing is typically less expensive than traditional car rentals and creates a low-touch, seamless digital experience. Leading P2P carsharing providers in the US include Turo and Getaround.

Carsharing applications have seen significant growth due to the COVID-19 pandemic. Although industry observers originally expected the segment to experience pressure from a decline in business travel, this headwind has been more than offset by a boost from socially distanced vacationing. With international travel limited and airline travel viewed as risky from an infection perspective, road trips have posed a popular option for vacationers, and contactless carsharing apps have benefited from the trend. We believe startups such as Turo and Getaround are taking market share from the traditional car rental industry, which is struggling from its operations-heavy approach and dependence on business travel.

Highlighted companies

Segment: Carsharing (operator)

Status: Potential target

Last known valuation: $1.2 billion (July 2019)

Total raised: $496.1 million (as of January 11, 2021)

Valuation step-up: 1.29x

Turo is the largest P2P carsharing company in the world. The company enables private car owners to rent out their vehicles via an online and mobile interface. Consumers can rent vehicles for multiple days, making the business model ideal for vacationing. The company has benefited from pandemic conditions as consumers shy away from air travel in favor of road trips and renting local cars, growing revenue 7% in the back half of 2020. Turo generated approximately $153 million in revenue in 2020 and expects to achieve full-year profitability in 2022.[7] In early 2021, Turo's CEO revealed that the company plans to list on public markets in 2021, through either a traditional IPO or a SPAC merger. In our view, Turo is an excellent candidate for a reverse merger with a SPAC. Turo's backers include Google Ventures, InterActiveCorp, Kleiner Perkins, Shasta Ventures, and August Capital.

Segment: Carsharing (operator)

Status: Potential target

Last known valuation: $1.0 billion (September 2020)

Total raised: $839.6 million (as of January 11, 2021)

Valuation step-up: 0.53x

Getaround operates a P2P carsharing company that enables private car owners to rent out their vehicles via an online and mobile interface. Consumers can rent vehicles by the hour or for multiple days, and can remotely unlock and gain access to the vehicles through their smartphones.

7: "Turo CEO Says Car-Renting App Plans to Go Public in 2021," Heather Somerville, The Wall Street Journal, January 1, 2021.

Like Turo, Getaround has benefited from pandemic conditions as consumers shy away from air travel in favor of road trips. However, the company has also benefited from consumers making intra-city trips due to its greater flexibility in providing hourly rates. In addition, the company better supports socially distanced handoffs by using remote unlock devices. The company also offers a platform for fleet operators, with assistance for vehicle sourcing, insurance, and parking. Although Getaround is primarily US-based, it has expanded into Europe through its $300.0 million acquisition of Paris-based carsharing startup Drivy. Getaround's investors include SoftBank, Toyota, Menlo Ventures, SOSV, Broadscale Group, and Via ID.

Segment overview: Micromobility

Key takeaways

- Micromobility services providing personally owned or shared light electric vehicles will shape the future of last-mile commuting in urban areas.
- We believe micromobility serves a global total addressable market (TAM) of $105 billion by 2030, a significantly underpenetrated market.
- During the pandemic, micromobility has drawn urban commuters wary of sharing spaces away from public transit.
- The shift to larger vehicles, swappable batteries, and dynamic pricing will further unit economics in the industry.
- European micromobility companies are outperforming American micromobility companies, thanks to more favorable relationships with cities, infrastructure, cultural attitudes, and operations-light businesses enabling greater flexibility in dynamic environments.
- Venture investors deployed $1.7 billion into micromobility companies in 2020, and European micromobility companies captured an outsized portion of funding.

We believe micromobility will play a key role in the future of transportation. Micromobility services address the problems of "last-mile" personal transportation by supplying small non-car modes of transport. While the industry began with shared bikes, focus has shifted to e-scooters that incorporate IoT technology to offer low-cost urban transportation solutions. With a global TAM of $105 billion by 2030, we see a long runway of growth for this significantly underpenetrated industry.

During the pandemic, micromobility has drawn urban commuters away from public transit as e-bikes and e-scooters provide a potentially safer alternative for those wary of sharing space with others. Unit economics in the space have substantially improved, and upcoming catalysts such as the shift to larger form-factor vehicles, swappable batteries, and dynamic pricing will further bolster margins in the industry.

Whereas US-based micromobility companies such as Bird and Lime have suffered setbacks, the story has been much more positive for European micromobility companies such as Tier Mobility, Voi, and Bolt. Thanks to a more favorable regulatory environment and better infrastructure, ridership among these services has seen a significant increase. Additionally, the relatively operations-light business model of the leading European micromobility companies has allowed them to enter and exit markets during shutdowns with greater flexibility than their operations-heavy American competitors. Our funding data reflects this discrepancy; venture investors deployed $1.7 billion into global micromobility companies in 2020, and European competitors captured an outsized potion of that funding.

Highlighted companies

Segment: Micromobility (operator)

Status: In-progress merger (undisclosed SPAC)

Last known valuation: $2.9 billion (January 2020)

Total raised: $776.0 million (as of January 11, 2021)

Valuation step-up: 1.28x

US-based Bird Rides operates shared micromobility services focused on electric scooters. Its investors include Sequoia, Fidelity, Target Global, and Pegasus Tech Ventures. Bird currently operates in over 80 cities across the globe. Unlike other domestic competitors, Bird has taken a more cautious, asset-light approach to international market expansion by selling scooters to local operators in markets including New Zealand, Canada, and Latin America under a revenue share model. Additionally, the company has prioritized profitability, achieving positive unit economics on its latest scooter models at the tradeoff of lower growth than its primary competitor, Lime. In addition to its core shared micromobility business, Bird also sells e-scooters directly to consumers, a business that has benefited from increased demand for personally-owned micromobility. In November 2020, reports surfaced that Bird was in talks to go public through a reverse merger with a SPAC.[8] Although details about this market debut have been scant, we believe Bird's potential debut will set a precedent for future micromobility companies to go public.

8: "Scooter Startup Bird Discusses Going Public Via SPAC," Bloomberg, Katie Roof and Crystal Tse, November 16, 2020.

Segment: Micromobility (operator)

Status: Potential target

Last known valuation: $510.0 million

Total raised: $947.1 million (as of January 2021)

Valuation step-up: 0.14x

US-based Lime operates micromobility services, including shared electric bikes and scooters. Its investors include Uber, Google Ventures, BMW i Ventures, Andreessen Horowitz, and Fidelity. Although the company originally concentrated on bikes, it has since focused its fleet on electric scooters. Lime is one of the largest shared micromobility services, operating in over 120 cities across the globe. During the early months of the pandemic, Lime was forced to go into cash-preservation mode, pulling its vehicles off the road and withdrawing from certain markets. Ultimately, the company turned to Uber for an emergency financing round at a valuation of $510.0 million, a 75.6% haircut compared to Lime's Series D in 2019, valuing the company at $2.1 billion. However, since then the company's fortunes appear to have reversed; it has seen an uptick in usage from consumers running errands and essential worker commutes. The company made significant progress in improving the unit economics of its fleet and achieved positive EBITDA and free cash flow in Q3 2020.

Segment: Micromobility (operator)

Status: Potential target

Last known valuation: $1.2 billion (October 2020)

Total raised: $296.3 million (as of January 11, 2021)

Valuation step-up: 3.18x

Germany-based Tier Mobility operates shared micromobility services. Its latest valuation of $1.2 billion made the company the second-most valuable e-scooter company after Bird. TIER's investors include SoftBank, Goodwater Capital, Mubadala Ventures, and Northzone Ventures. The company

operates over 60,000 electric scooters in over 80 cities in 10 countries. Thanks to its focus on European markets, Tier has withstood the COVID-19 pandemic much better than its American competitors. Europe overall is a much more favorable market for micromobility due to more spending on biking infrastructure, greater cultural appetite for micromobility (versus car-based travel), and greater alignment between cities and micromobility operators. Tier has benefited from these factors, winning scooter permits in Paris (to Bird's loss) and bringing shared e-mopeds to market to augment its e-scooter fleet. In addition to its fleet offerings, Tier operates the TIER Energy Network, a network of thousands of micro-charging stations. In addition to increased revenue growth, Tier achieved profitability in the summer of 2020.

Segment overview: Urban air mobility

Key takeaways:

- The electric vertical take-off and landing (eVTOL) aircraft industry has the potential to significantly disrupt the landscape of urban mobility.
- Air taxis could dramatically lower the cost of long-distance urban transportation while reducing emissions and traffic congestion in cities.
- We believe urban air mobility serves a TAM of approximately $1.1 trillion in annual spending.[9]
- Relative to helicopters, electric air taxis could have significantly lower operating and maintenance costs, providing lower prices for commuters.
- We expect manufacturers and corporates with vested interests in shaping the evolution of the transportation industry will continue to fund R&D in the space.
- As electric air taxis near certification, we expect public equity investors to drive a new wave of funding in the urban air mobility space, attracted by the large potential market opportunity.

The air taxi industry—which we define as air taxi service providers as well as electric vertical take-off and landing (eVTOL) aircraft manufacturers—has the potential to significantly disrupt the landscape of urban mobility. Air taxis could dramatically lower the cost of long-distance urban transportation while reducing emissions and traffic congestion in cities. Relative to helicopters, electric air taxis have several potential advantages, including lower operating and maintenance costs. Most air taxis in development have multiple motors and redundancies, which should reduce the frequency of inspections and thereby lower maintenance costs. Battery or hybrid powertrains of air taxis should lead to significant fuel cost savings. Additionally, autonomous technology could reduce the need for certified pilots, which would significantly bring down operations costs.

Although the industry faces significant technological and regulatory hurdles, we believe nontraditional investors such as manufacturers and corporates

9: "TET 2018–Chapter 6–Household Spending on Transportation," Bureau of Transportation Statistics, United States Department of Transportation, n.d.

with vested interests in shaping the evolution of the transportation industry will continue to fund R&D in the space. As electric air taxis near certification, we expect public equity investors to drive a new wave of funding in the urban air mobility space, attracted by the large potential market opportunity. We believe the urban air mobility space has the potential to take a sizable chunk of market share from both ground-based transportation services and the helicopter industry. These industries combined represent a massive market of approximately $1.1 trillion in annual spending.[10] Even assuming a small share of this market could represent substantial returns for early investors.

Highlighted companies

Segment: Urban air mobility (operator)

Ticker: NASDAQ: EXPC

Status: In-progress merger with Experience Investment

Pro-forma equity valuation: $825.0 million

Return since announcement date: 18.1% (as of January 11, 2021)

Blade Urban Air Mobility operates a private air travel service for commuters through a mobile app. The company's platform reduces consumers' cost of air travel on private aircraft by maximizing passenger capacity. The company purchases aircraft time by the hour from operators, covering flight-associated costs, and leases terminal space from heliports and airports. Blade Urban Air Mobility's financial structure provides some degree of downside protection for investors. The company does not own its own fleet, functioning instead as an asset-light software intermediary. Additionally, the company's cost structure is largely variable with fixed hourly rates paid to operators covering pilot, fuel, maintenance, and additional costs. Blade Urban Air Mobility is well-positioned to see increased growth and expanded margins driven by eVTOL aircraft adoption, which the company expects to help propel its revenue to $875.0 million in 2026. In December 2020, Blade Urban Air Mobility reached a definitive agreement to acquire Experience Investment for $275.0 million through a reverse merger, putting the company's post-money valuation at $825.0 million. The company is also in talks to receive $125.0 million of development capital from KSL Capital Partners, Hedosophia, and HG Vora Capital Management through a private placement.

10: Ibid.

Segment: Urban air mobility (electric air taxis)

Status: In-progress merger with undisclosed SPAC

Last known valuation: $1.0 billion (June 2020)

Total raised: $391.5 million (as of January 11, 2021)

Valuation step-up: 1.26x

Germany-based Lilium develops a five-seat eVTOL aircraft. 36 swiveling ducted fans power Lilium's jet, unlike competitors which rely on relatively inefficient quadcopter systems. Lilium's aircraft is expected to offer a 186-mile range and a top speed of 187mph. In addition to manufacturing the aircraft, Lilium expects to launch its own regional air mobility service by 2025. With over 600 employees, Lilium is the largest eVTOL developer by employee count. In June 2020, the company raised $275.0 million of Series C venture funding in a deal led by Tencent Holdings, putting the company's post-money valuation at $1.0 billion. Additional investors include Atomico, Freigeist, LGT Group, Armada Investment, and Baillie Gifford. In December 2020, reports surfaced that Lilium was seeking to debut on public markets through a reverse merger with a SPAC.[11]

Segment: Urban air mobility (electric air taxis)

Status: Potential target

Last known valuation: $2.6 billion (January 2020)

Total raised: $803.3 million (as of January 11, 2021)

Valuation step-up: 4.47x

US-based Joby Aviation develops a four-seat eVTOL aircraft. The Joby aircraft is based on a quadcopter design and has a 150-mile range and a top speed of 200 miles per hour. Joby Aviation's strength lies in composite airframe design and fabrication, and the company has signed a long-term supply agreement with Toray Advanced Composites for high-strength, lightweight carbon fiber composite materials for its aircraft. Like Lilium, Joby plans to pair its eVTOL aircraft with a mobility service. In December 2020, Uber announced the sale of

11: "Lilium Reportedly Seeking Public Investment via SPAC in High-Stakes Test for Electric Air Taxi-Makers," eVTOL.com, Brian Garrett-Glaser, December 21, 2020.

its internal urban air mobility service, Elevate, to Joby Aviation. Concurrently, Uber will invest $75.0 million in the company. Previously, Joby Aviation raised $590.0 million of Series C venture funding in a deal led by Toyota Motor on January 15, 2020, putting the company's pre-money valuation at $2.0 billion. Intel Capital, Toyota AI Ventures, and other investors also participated in the round. Given Joby Aviation's position as the best-capitalized independent urban air mobility company, its ownership of Elevate, and its partnership with Uber, we believe the company is the best-positioned startup to bring electric air taxis to the masses. Joby's story should resonate with public equity investors, and as such we view the company as an ideal target for a reverse merger with a SPAC.

Additional companies

Metromile

Segment: Fleet management & connectivity (Pay-as-you go insurance)

Ticker: NASDAQ: INAQ to MLE

Status: In-progress merger with INSU Acquisition Corp II

Pro-forma equity valuation: $1.3 billion

Return since announcement date: 47.1% (as of January 11, 2021)

Car insurance provider Metromile focuses on personalized auto insurance policies, priced and billed by the mile rather than by using estimates and approximations. These insurance platforms are much more affordable relative to traditional offerings for consumers that drive less than average, such as city dwellers and retirees. We believe the COVID-19 pandemic has highlighted the need for pay-as-you-go insurance solutions. With commuting significantly reduced due to stay-at-home orders, many car owners are needlessly paying hundreds in insurance costs for their unused vehicles. Metromile tracks driving data through a telematics device plugged into the consumer's OBD-II ports. Paired with this tracking device, Metromile offers a mobile app platform that allows users to track their driving (and associated spending), set mileage limits, be alerted as to street sweeping dates, and monitor their vehicle's health for diagnostic codes. In November 2020, Metromile announced that it would go public through a merger with Insu Acquisition Corp II, at a pro-forma equity valuation of $1.3 billion. Concurrently, the company announced a $160.0 million PIPE round led by Social Capital.

Segment: Connected cars (transportation analytics)

Status: Potential target

Last known valuation: $584.1 million (November 2014)

Total raised: $139.1 million (as of January 11, 2021)

Valuation step-up: N/A

INRIX provides historical, real-time, and predictive mobility data and analytics services. The company collects data from smartphones, automobiles, and telematics devices and sells it as part of a suite of cloud-based applications for automaker, enterprise, and public sector customers. Initially focused on selling to the automotive industry, the company has since pivoted to the enterprise and public sector segments. INRIX's customers include more than 250 government agencies globally and enterprises such as Amazon and Starbucks, which leverage the company's traffic data to improve deliveries and placement of new retail locations. Currently, INRIX is in the process of expanding its SaaS business, which has seen an approximate 30% CAGR over the past five years.[12] The company's SaaS product provides near real-time analytics on road usage and performance, helping improve the investment of public funds, and enabling cities to digitize and manage laws associated with the usage of roads, curbs, and sidewalks. As autonomous driving technology matures to the point of commercialization and robotaxis become widespread, we believe the need for unified systems that can connect cars will grow. Additionally, as consumers move to smaller form-factor vehicles such as e-bikes and e-mopeds, and demand for e-commerce and delivery services increases, cities will require additional digital tools to manage usage of roads, curbs, and parking spaces. We believe INRIX is well-positioned to capitalize on these trends and could be an excellent target for a potential SPAC IPO.

12: "15 Years Later: Why Now is the Right Time to Transform Our Business," INRIX, October 28, 2020.