THE DEVIL'S ADVOCATE REPORT

July 9, 2021

Hyliion Holdings Corp.

(SELL)

Price:	$10.61	**Ticker:**	HYLN
52-Week Range:	$7.69-$58.66	**Dividend:**	Zero
Shares Outstanding:	172.3 million	**Yield:**	Zero
Market Capitalization:	$1.8 billion		

Data As of July 8, 2021

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The Devil's Advocate Report

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Investment Thesis

Hyliion Holdings Corp., which came public last year by merging with a special purpose acquisition company (SPAC), designs, develops, and intends to sell electrified powertrain solutions for the commercial transportation industry, specifically the large Class 8 trucks, of which there is a market opportunity worth over $800 billion, according to the company. The Hyliion solutions can be retrofitted onto existing trucks, almost regardless of brand and which fuel is used, which makes this a lower-cost solution for fleet operators compared to buying new, fully electric or hydrogen fuel cell powered trucks. The company does not have any revenues at the current time, but is aiming for a late-2021 commercial launch, with volume shipments of its ERX truck expected in 2022. Since there have been delays, and no specific date announced for when deliveries will take place, estimating future revenues is currently impossible. There are three Wall Street analysts covering the company, and their range of revenue forecasts for 2022 is between $63 and $123 million, up from essentially zero in the current year. Hyliion itself has projected more than $300 million in 2022 revenues.

Perhaps most market observers do not just expect passenger vehicles to be mainly electric within the near future, but that the entire transportation sector could soon become zero-emissions electric. As a result, many companies involved in the renewable energy segment have had great success in the stock market. Hyliion is no exception. Large fleet operators are trying to identify ways to reduce the carbon footprint of their fleets while, at the same time, avoiding the many negative consequences of such a move, such as higher prices for the trucks, lesser range, longer charge/refueling times, and insufficient charging/refueling network infrastructure. Consequently, while perhaps most fleet operators believe fully electric trucks are the future, they might also believe that, presently, there are too many trade-offs. Hyliion's solutions—hybrid and Hypertruck ERX—can be considered bridge technologies in that they can be retrofitted onto existing trucks, are less expensive than electric trucks, have ranges on par with diesel fuel, and they are not dependent on an electric charging network but, rather, mainly use more widely available natural gas to generate power on board.

Yet, there are many competing technologies available, and in late-stage development, with the objective to reduce the carbon footprint of the heavy transportation industry. If fleet operators believe that fully electric trucks will be widely available, and without too many trade-offs, within the next few years, perhaps they might choose to wait an additional year or two for such trucks rather than invest in Hyliion technology. Almost all of the leading truck brands, including Paccar, Navistar, Volvo, Mack Trucks and Daimler, are investing in electric or hydrogen-powered technologies. Since fleet operators generally have long relationships with these brands, and know what to expect in terms of reliability and support, a new competitor such as Hyliion is fighting an uphill battle. An added challenge is that existing trucks with Hyliion's solutions, which entails a substantial upgrade to the truck's powertrain, potentially voids the manufacturer's warranty. That is likely a deal breaker for fleet operators, and potential solutions will have the added expense of having to pay for such a warranty, whoever that payor might be.

Hyliion's has adopted an asset-light business model, having, in effect, outsourced most of the tasks associated with the construction of these systems, so its capital expenditures are low, at less than $1 million in the past year. This could be both an advantage and a disadvantage. However, in choosing that strategy, the company does not appear to have much of a defensive moat and it might end up competing against some of the companies to which it has outsourced its operations, should its

solutions prove to be successful. Also, if there is substantial industry demand for Hyliion's retrofit solution, there is no reason to believe that the OEMs will not develop similar solutions. After all, Hyliion has existed for just six years and, prior to last year's merger, only raised a total of $50 million. That indicates that a relatively modest investment in R&D by the OEMs might render a competitive product relatively quickly. If that is representative of the barrier to entry, Volvo Trucks spends around $2 billion per year on R&D.

While the company has announced that it has1,000 pre-orders for its ERX solution, it should be noted that that order was placed by Agility Transport, Hyliion's launch partner which also has an equity interest in the company. Moreover, the order appears to be largely non-binding. Consequently, it cannot be used as an indication of the potential commercial viability of the product.

Hyliion generates no revenue and it is possible that fleet operators will decide to wait for more attractive options, such as the complete electrification of their fleet, rather than what they might perceive as a bridge technology on the way to electrification, which may void their manufacturers' warranties. Competition to provide environmentally-friendly trucking with as few drawbacks as possible will no doubt be fierce and it appears Hyliion's projections of catching just a few percent of such a market will be easier said than done. Yet, the market appears to price the shares as if the odds of success are high. If any but the most favorable of scenarios were to materialize, revenues will be considerably lower than expected, losses will be greater, the need to raise additional capital will be more urgent, and the stock market will pay a much lower valuation multiple on the reduced revenues.

On the one hand, the share price/valuation reflects the high expectations for renewable energy vehicle technology, since it is an enormous market and all social/political /regulatory signals are pushing in that direction. Yet, Hyliion appears to lack the most basic barrier-to-entry protection. Some businesses rely on a high entry cost as protection, but, if it cost (capital raised) only $50 million to develop, each of the major incumbent companies have normalized R&D budgets orders of magnitude larger. Also, these incumbents have proprietary, or sticky, customer relationships, whereas Hyliion has the opposite problem; trying to wrest a portion of the incumbent companies' customers' business away. Finally, while it appears to have some degree of first-mover advantage, the reality is that it is a complex solution that requires a variety of parties with varying goals, pressures and interests, to work together. This kind of dynamic is an old story. The incumbents, with comparatively limitless funding advantages and political influence, appear to be 'losing' the opportunity to a competitor. But, really, that is only because the new company has not yet made a sufficient impression upon the market to be worth troubling about. Yet, once such a competitor does take enough business, the incumbents can seize the opportunity for themselves (if there is no truly proprietary/barrier-to-entry obstacle). They can outspend on R&D, can undercut on price, or purchase competitors in order to more rapidly advance their entry. Consequently, since the downside case appears considerably more likely to materialize than the upside, shares of Hyliion Holdings are recommended for sale and short sale.

Company Overview

Founded in 2015, and headquartered in Austin, Texas, Hyliion Holdings (a semantic play on Hybrid Lithium Ion) engineers, develops, and markets hybrid and fully electric powertrain solutions for

Class 8 commercial vehicles. Class 8 is the classification for some of the largest trucks, those with Gross Vehicle Weight Ratings (GVWRs) of more than 33,000 pounds. This usually includes cement trucks and dump trucks, as well as 'big rigs' such as Freightliner, Kenworth, and Volvo.

Since inception, Hyliion had raised, and largely spent, approximately $50 million when, approximately one year ago, it merged with Tortoise Acquisition Corp., a publicly traded special purpose acquisition company (SPAC) with a strategic focus on the energy sector and decarbonizing commercial transportation in North America. The merger added a total of $560 million in cash, and on November 30th of last year, Hyliion raised a further $144 million from conversion of warrants. A total of 12.5 million warrants were exchanged for 12.5 million shares of common stock, at a conversion price of $11.50. Consequently, the merger with Tortoise essentially saved Hyliion since it was rapidly running out of capital, with $8 million in cash on its balance sheet, $36 million in debt, and an annual burn rate of approximately $16 million, as of September 30, 2020 (just prior to the close of the merger). Thomas Haley, age 28, who is the founder, president and CEO of Hyliion, owns approximately 20% of the outstanding shares.

Perhaps the main reason trucking fleets are looking to migrate to more environmentally-friendly technologies stems from the fact that transportation creates 28% of all greenhouse gases (GHG) and, within that subset, heavy-duty trucking accounts for 23% of transportation-related GHG, which naturally makes them a target for improvement.[1] While industry observers tend to believe that trucks will become electrified over the next decade, as diesel trucks are phased out because of climate change concerns, Hyliion aims to offer batteries with as much as five times more cycle life than a conventional electric vehicle battery. Improved heat dissipation is expected to improve the charge and discharge rates. Furthermore, the faster charging, which is expected to take less than eight minutes, would be vastly superior to existing EV battery solutions. Finally, the module design cuts operating temperatures, which improves safety levels. Hyliion believes that it has a total addressable market of eight million trucks in operation, and close to one million trucks sold annually. That constitutes a replacement opportunity worth approximately $800 billion, according to the company.

Hyllion is developing two electrified powertrain systems for long-haul Class 8 commercial vehicles: Its *Hybrid system* and its *Hypertruck ERX system*. These utilize the company's proprietary battery systems, control software and data analytics, combined with fully integrated electric motors and power electronics, to produce electrified powertrain systems that either augment, in the case of the Hybrid system, or fully replace, in the case of the Hypertruck ERX system, conventionally fueled powertrains.

The Hybrid system has been installed in very low volume on some initial customers' commercial vehicles, such as Wegmans (free of charge) and logged a total of more than two million real-world miles in 2020. These systems can either be installed on new vehicles during assembly, or retrofit to existing vehicles. Two million miles may seem material, but merits perspective – over the past four years, Tesla claims to have generated close to three billion miles of test data with its data analytics and AI package[2]. For the hybrid system, users can select their fuel of choice, such as natural gas or hydrogen. A generator then converts this fuel to electricity to power the truck. In contrast, for the Hypertruck ERX system, the existing diesel powertrain is replaced entirely.

[1] https://www.transportdive.com/news/trucking-climate-crosshairs/584512/
[2] https://electrek.co/2020/04/22/tesla-autopilot-data-3-billion-miles/

The Hypertruck ERX system is in the development, with vehicles being built for testing and validation. It features batteries that are charged by a generator powered by natural gas, and is expected to offer commercial vehicle owners and operators a net carbon negative electrified powertrain option for Class 8 commercial vehicles, when using certain Renewable Natural Gas (RNG).

The Hybrid and Hypertruck ERX systems are designed to be installed on most major Class 8 commercial vehicles, which gives Hyliion's customers the flexibility to continue using their preferred vehicle brands and maintain their existing fleet maintenance and operations strategies. Therefore, Hyliion is offering potential customers to either take a large step, by converting to renewable natural gas, or a less transformative, yet 'a step in the right direction' by converting existing vehicles to its hybrid platform. The Hyliion Hybrid expected price is approximately $29,000 per retrofitted vehicle, while the more extensive Hypertruck ERX system appears to have a price of around $90,000 per retrofitted unit.[3]

Hybrid Electric Powertrain Systems

Hyliion's hybrid system can be installed on most major Class 8 commercial vehicles and are designed to reduce fuel usage, decrease GHG emissions, improve performance and/or reduce operating costs. The company's Demonstrator Hybrid system is comprised of its proprietary battery system and an associated software management solution, a control module running proprietary software and data analytics, high and low voltage power distribution and a thermal management system. These components are attached to the frame rails of existing Class 8 commercial vehicles. The solution also includes an axle with an electric motor, which replaces the third axle on the vehicle, and Hyliion's CoPilot in-cab driver display. This system is charged by regenerative braking and downhill deceleration and discharged to provide additional horsepower and torque when called upon, thereby reducing fuel usage and related GHG emissions or applying additional power to improve vehicle performance.

According to Hyliion's CEO, Thomas Healy, the system can raise trucks' fuel efficiency by between 7.3 miles per gallon and 8.3 miles per gallon. This would allow trucking companies to reach breakeven on their investments in the system in under two years. It should be noted that the average useful life range for this type of vehicle is usually estimated to between five and ten years and they generally have a range of around 1,000 to 2,000 miles (although a diesel semi-truck is limited more by the allowable driving hours for the driver). Whether such forecasts materialize in real-world deployments remains to be seen, but if they do, the return on investment relative to buying a new battery-electric or hydrogen truck would generate some interest.

In November 2020, Hyliion announced that it had installed eight of its retrofit hybrid drive trains across four fleet operators for testing purposes. It was a clear opportunity for the company to prove that its product offering really served a market need. Since that time there has been no mention of the results from the fleet retrofits. In May 2021, it announced that it installed its hybrid electric product on an additional 10 trucks during the first quarter. Since the company reported no revenue for the first quarter of 2021, it seems all of these deployments are paid for by Hyliion as part of its R&D expenses, and not by the fleet operators. Thus, since the fleet operators are given these trucks

[3] Based on Hyliion's investor presentation

for free, the fact that Hyliion has put approximately 14 retrofit hybrid drive trains into fleet operators for testing purposes over the past two quarters is not necessarily an indication of demand for this solution on behalf of fleet operators. The company has not announced how the testing has been going, other than to say that a considerable amount of additional winter testing and cold adaptation is required.

Hypertruck ERX

The Hypertruck ERX powertrain is expected to begin production at Dana Inc.'s Monterrey, Mexico plant in 2022. It can be added to the truck at any of the five major U.S. OEMs' manufacturing facilities. Potential customers would be any fleet that operates outside of the approximately 150-mile radius that is currently well-served by battery-electric trucks, and by fleet operators who do not want to wait several years for hydrogen-powered options and related infrastructure currently being developed. The paradoxical challenge for Hyliion, though, is that for the Hypertruck ERX system to be successful requires full cooperation by the large OEMs—they have to be willing to integrate the installation of the powertrain system into their commercial vehicle production lines— even though Hyliion's success is ultimately contingent upon taking market share from the very same OEMs.

Through this truck model, Hyliion is preparing to deliver lower operating costs, reductions (or even net-negativity) in emissions, quick refueling and superior performance to commercial fleets. Early indications suggest that the ERX may have some advantages over the future Tesla semi, including in the areas of payload capacity (53,000 lbs vs. 43,000 lbs) and refuel/recharge time (10 minutes vs. more than 30 minutes). In addition, Hyliion's batteries are expected to last longer than the trucks in which they are installed, and they have a far longer range (more than 1,000 miles, compared to around 150 miles for the current electric trucks and an estimated 620-mile range for the Tesla truck). The small size of its batteries, which are anticipated to be as little as 5% the size of those used by battery-electric trucks, are another factor. This is possible because Hyliion's trucks carry fuel to constantly recharge the battery, unlike battery-electric trucks, so if the weight of the fuel is factored in and compared with the weight of the battery of a fully electric truck, the Hyliion all-in weight will be considerably lower.

Compared to the Compressed Natural Gas (CNG) trucks already on the market, the Hyliion trucks are reportedly more powerful, since the trucks used by Wegmans' can pull tandem sets, which could previously only be done with diesel trucks. Additionally, the ERX is expected to work with not just natural gas but also hydrogen, using its existing drivetrain. As a result, those operators that buy the system can use natural gas in the near term, which is more easily obtained now than hydrogen, and then switch to hydrogen over the longer term as more hydrogen refueling stations are built.

The initial deliveries of Hypertruck ERX systems are expected to be to customers that have their batteries recharged with CNG. CNG fueled recharging is preferable because of the current comparable cost of fuels and existing availability of CNG refueling infrastructure. There were 892 stations in the U.S. and Canada that can provide vehicles with natural gas, as of the end of June 2021.[4] Compressed natural gas is the cleanest burning transportation fuel on the market and the only sustainable, near-zero emission fuel currently available. Compared with their diesel counterparts, natural gas vehicles produce significantly lower carbon monoxide, nitrogen oxide, and other toxic emissions, as well as greenhouse gas emissions. This existing and accessible refueling infrastructure

[4] https://afdc.energy.gov/fuels/natural_gas_locations.html#/find/nearest?fuel=CNG

will significantly reduce the buildout time and cost required to utilize the Hypertruck ERX system as compared to other proposed potential electrified solutions.

Hyliion's Hypertruck ERX system is equipped with data analytics software that enables the company to offer fleets insight into how to decrease fuel and operating expenses while integrating with their existing fleet operations. Hyliion has plans to offer this data analytics product as a subscription model, since it might help companies spot patterns, optimize performance, and reduce downtime.

RNG – Negative Emissions

Hyliion's hybrid solution anticipates using, at some point in the future, renewable natural gas (RNG) made from methane captured from landfills, farm waste and other biogas. Because the methane is used for fuel instead of being released into the atmosphere, it mathematically creates negative net-zero emissions when paired with a natural gas fuel system and engine. Hyliion's Hypertruck ERG would use RNG to make electricity on board the truck. That would allow 100% electric driving in pollution-sensitive urban areas while using RNG as fuel for highway motoring. Customers would then be able to achieve a negative carbon intensity score which, in turn, may provide governmental benefits such as renewable Identification Numbers (RIN) credits which may be sold or traded, for using RNG. However, it is yet to be determined how scalable the RNG supply is, at what cost it can be acquired and, ultimately, if it will be profitable to offer it as a fuel.

Pre-Orders

Hyliion has announced that it has a pre-order for 1,000 units from a single customer. While this is material, it is also ambiguous. The pioneer customer will be Hyliion's launch partner Agility Logistics USA – the Kuwaiti-owned global logistics firm more focused on airfreight than trucking. More importantly, Agility is an equity holder in Hyliion. Therefore, the pre-order is not really a manifestation of Hyliion's ability to bring the product to market and it does not necessarily provide an indication of the odds of future commercial success. Agility's carbon emissions for its trucking division are minimal compared to both air and sea freight divisions, so the question must be asked as to the purpose of Agility's investment – is it fundamentally used to change its carbon footprint or is this more about generating marketing and publicity for Hyliion?

In its 10-K filing, Hyliion indicates that the 1,000-truck pre-order appears far from firm:

> "Our initial customer and launch partner for its Hypertruck ERX system is Agility Transport, from which we have received a pre-launch order of up to 1,000 trucks equipped with our Hypertruck ERX system in one or more future purchase orders, subject to certain testing and performance requirements and termination rights (including a right to terminate the Agility Pre-Launch Agreement prior to purchasing all or any portion of Agility Transport's pre-order)."

Therefore, it is questionable whether this could be regarded as a bona fide pre-order, or more of a publicity stunt. High-profile short-selling firm Hindenburg Research has done some research into pre-orders for other major EV SPACs such as Lordstown Motors, and their findings were not good. Hindenburg claims other companies brought public via SPAC have falsified or listed large pre-orders that are essentially impossible to fill. Thus, there is considerable skepticism with respect to such preorders today. Indeed, in prior investor presentations, Hyliion outlined expectations of 30 sales in 2020 (totaling $1 million). Additionally, expectations were that 2021 would see 300 sales totaling

$8 million. Little in the way of progress appears to have been made on this front, since no revenue was generated in 2020, and Wall Street expects just $1 million in 2021.

Wegmans

Wegmans, which has 103 grocery stores and two distribution centers across seven states, has evaluated two trucks with Hyliion's Hybrid system. In 2008, Wegmans began rolling out a new fleet of 101 trucks that ran cleaner and more efficiently, reducing emissions by 90 percent compared to the prior generation of trucks. At that point, it used Cummins ISX engines with cooled-EGR technology, VG turbo and Cummins after-treatment. Wegmans began using CNG trucks after entering into a leasing agreement with Penske Truck Leasing in 2014 for three Cummins Westport 12-liter engines. Consequently, while the possibility of a diesel-free fleet is now a reality, it takes a long time to achieve. As proactive as Wegmans has been, starting 13 years ago, it has only 19 CNG trucks in its fleet of approximately 175 trucks, and only two of those are equipped with the Hyliion system (provided at Hyliion's expense). Thus, the fact that Wegmans is evaluating a Hyliion product does not necessarily mean that it will ever place an actual order.

Asset-Light Model

To manufacture the ERX, Hyliion will use its "asset-light" model that relies on its partnerships with original equipment manufacturers (OEMs). While it is a cost-effective approach —the company has spent less than $600,000 in capital expenditures in the past year – it is difficult to see how Hyliion will revolutionize the heavy trucking market with relatively modest investments in capital expenditures and R&D. This prompts reservations about barriers to entry, product substitution, and even the long-term technological viability. After all, if the potential odds of success for this product were deemed to be as great as Hyliion portrays, original equipment manufacturers (OEMs) would probably be designing, installing and marketing their own proprietary systems. Yet, they do not. But in the event that the market for these retrofit systems develop, OEMs can probably develop such systems, since it seems to require relatively modest investments. Hyliion survived for five years on just $50 million in initial capital, so the large OEMs such as Daimler, Volvo, Mack, Paccar and Navistar might catch up rapidly if they have to. Or they can hire Dana to help them develop such drivetrains.

Dana Inc. provides Hyliion's drivetrain, axle, and electrified propulsion components (and received an equity stake in the company for doing so), while Toshiba provides the battery technology. Hyliion has an obligation to purchase powertrain components from Dana– similar to the deal between General Motors and Nikola. The partnership with Dana possibly allows it to test the market for product success in a very cost-effective manner.

Drawbacks with Retrofitting

At first glance, it seems Hyliion's offer to retrofit existing trucks with electric drivetrains to make them more environmentally-friendly makes sense. However, if it were in fact such a competitively positioned pitch, questions arise about the competition. Why would this not already be developed by large drivetrain and powertrain parts suppliers such as Dana, Ricardo and ThyssenKrupp. Perhaps one of the key factors that could easily dissuade fleet operators from buying Hyliion's solutions is

that doing so could void vehicle warranties. Vehicle manufacturers do not let truck buyers make transformative changes to their vehicles' powertrains and expect that the truck maker will continue to honor the warranty. Most fleet owners are well aware that there are strict rules about that issue. Yet Hyliion's key business is inserting its electric powertrain into Class 8 internal combustion trucks. Consequently, for its business to be successful, given that fleet operators are unlikely to jeopardize voiding warranties, Hyliion must come to some sort of agreement with the truck manufacturers or end-customers in order to have its retrofit solutions approved and the warranty left intact.

Hyliion's most recent 10-K filing states:

"The installation of our solutions may also void the warranty of a vehicle or a vehicle's components, such as our engine and transmission, which may reduce customer demand for our solutions."

Of course, OEMs are unlikely to agree to that without proper compensation, and what that compensation should be is unknown until a sufficient number of trials have been done so that the truck makers can quantify the potential risks and liabilities they would accept by not voiding warranties for Hyliion retrofits.

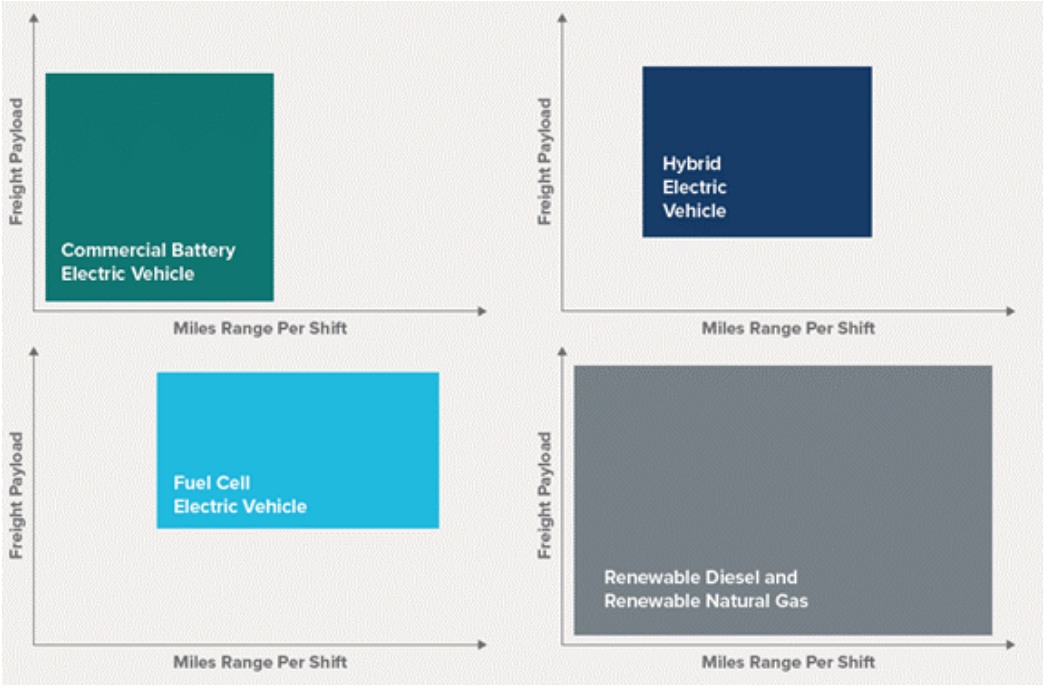
Competing Technologies

Competing Technologies

While electric trucks are starting to enter the market, most market observers expect diesel's dominance to continue for the foreseeable future, especially in long-haul, irregular-route trucking operations that require the range and flexibility currently provided by internal combustion engines. That said, battery-electric and fuel cell electric trucks appear to be the leading contenders to eventually overtake diesel engines and power the next era of commercial trucking.

Currently, with 97% of heavy trucks using diesel[5], no alternative technology has been successful yet. Renewable diesel and natural gas power trains encompass the full spectrum of freight payloads, whereas commercial battery electric vehicles, hybrid vehicles and fuel cell electric vehicles cover more specific ranges. These technological focus areas are documented by the North American Council for Freight Efficiency:

[5] As of 2019



Source: North American Council for Freight Efficiency – Guidance Report Viable Class 7/8 Electric, Hybrid and Alternative Fuel Tractors

Each technology has dissimilar traits, benefits, and drawbacks. Presently, the "after-market auxiliary" solution offered by Hyliion has the advantage of versatility, but the market itself presents risk, as no technology has, as of yet, emerged as the future standard by all stakeholders. Yet, a growing number of major trucking and transportation companies have begun testing electric vehicles. Fleets such as NFI Industries, Penske Truck Leasing and Dependable Highway Express have been among the first to deploy heavy-duty electric trucks in their operations, and an expanding list of trucking companies has been joining them. Knight-Swift Transportation Holdings has deployed its first battery-electric vehicle, a Freightliner eCascadia tractor, in the Los Angeles area.

Government Policy Might Favor Electric

Government incentives and new regulation, particularly in California, are playing a significant role in jump-starting this new segment of the commercial vehicle market. Together, these developments make it increasingly likely that the future of trucking will be powered by electric vehicles. Remaining challenges include the higher upfront cost of electric trucks, limited vehicle range and payload capacity, validating how these vehicles perform in real-world fleet applications, and building out the charging infrastructure.

A regulatory framework for electric-powered trucks has begun to emerge, primarily at the state level. California's Air Resources Board mandates that 5% of all Classes 7-8 tractors sold be zero-emission vehicles starting in 2024. That percentage increases with each new model year, rising to 40% by 2032. The rule also includes rising zero-emission sales mandates for light-duty commercial vehicles and medium- and heavy-duty straight trucks. By 2045, every new truck sold in California is required to be zero-emission. California also is one of 15 states, plus the District of Columbia, that has signed

an agreement to work together to advance the electric truck market, with a goal of achieving 100% zero-emission medium- and heavy-duty truck sales by 2050. Those states account for about 50% of the U.S. economy and nearly 40% of the value of goods moved by truck, according to the American Trucking Associations (ATA). ATA also anticipates that the push for electric trucks also will accelerate at the federal level under President Biden's administration, either through the U.S. Environmental Protection Agency or via the "climate czar" position at the White House.

Also, President Biden is prioritizing a national EV charging network, but it will take time and effort to get the infrastructure built. Whether financing for such a network will be included in a forthcoming infrastructure package remains to be seen, although if sufficient capital is secured the charging network can probably be built relatively fast. Consulting firm AlixPartners estimates that approximately $300 billion would have to be spent—on a global basis—to build a charging network to support the EV growth projected by 2030, with $50 billion needed for the U.S. alone.

While it is possible that the US government will finance the buildout of such a network relatively imminently, should it not – if the charging infrastructure is not deemed to be ready for many years – then a hybrid option such as offered by Hyliion might be considered a more sensible choice. It is also possible that the hybrid solution will be seen as a bridge technology that only has a few years of viability and, therefore, might be passed up in favor of the future (EV) technologies or existing (considerably cleaner than they used to be) diesel engines. Fleet operators might rather make this investment one time, as opposed to using a patchwork of technologies that each have serious shortcomings. If they can wait a few years to have a unified fleet of battery-powered electric trucks or even to have their fleets fueled by hydrogen, that might be a more attractive option even though they could get Hyliion technology somewhat sooner.

Amazon plans to deploy 100,000 fully electric delivery vans by 2030 in partnership with vehicle manufacturer Rivian, a zero-emission vehicle manufacturer. The first of these customized vehicles will begin making deliveries to Amazon customers in 2021. Amazon plans to have 10,000 of the electric vans operating in the United States and Europe by early 2022. In addition, Walmart has announced that it intends to electrify all of its vehicles, including long-haul trucks, by 2040. For companies with long-term goals such as that, they might be less interested in a short-term hybrid approach in favor of transitioning directly to electric, even if it takes many years. Consequently, the industry seems to be moving towards zero-emissions technology, which means Hyliion's hybrid solution might be overlooked.

Long haul semi-trucks average approximately 600 miles a day.[6] Diesel engines provide a range of approximately 1,300 miles, while Hyliion's solutions offer just over a 1,000 mile range. Electric semi-trucks, on the other hand, appear to max out around 300 to 620 miles on a single charge, at the current time. While that can be used as an argument in favor of Hyliion's longer range, it can also be argued that the 300-620 mile range of electric trucks is good enough, since if the average semi-truck logs 600 miles per day, a large part of the fleet might be at less than 500 miles (while others are above 700 miles), which indicates that some portion of trucking fleets might be substituted for electric trucks without any consequences as far as range is concerned. It is also an indication that battery packs just need to expand perhaps another 20% in size, or the efficiency has to improve by

[6] Source: Hyliion's CEO Thomas Healy in a company presentation

such a percentage, before the required 600-mile range can become a reality, and such a belief might convince fleet operators to focus on the fully electric solution.

Every Competitor Will Shortly Market Environmentally-Friendly Trucks

At this point, every major OEM either has trucks available for order or in development. Some of these are highlighted below:

- Kenworth and Peterbilt, the operating companies of truck and engine maker Paccar Inc., are accepting orders for several battery-electric models. Peterbilt began taking customer orders for its all-electric Model 579EV tractor and Model 520EV (Class 6 or 7) electric refuse truck last fall and the company just began deliveries. Peterbilt also has been taking orders since August 2020 for its medium-duty Model 220EV, designed for local pickup and delivery and short regional-haul operations. Kenworth, meanwhile, has launched its battery-electric T680E Class 8 truck, which will enter production in 2021. Kenworth also is taking orders for its K270E Class 6 and K370E Class 7 battery-electric vehicles, with initial customer deliveries expected to begin by the end of the year.

- Tesla has substantial orders for its future Semi, including 130 units for Walmart and 150 for leasing company Pride Group Enterprises. As more battery-electric trucks begin to reach the market, manufacturers also are ramping up investments in fuel cell technology. Fuel cells, which use hydrogen gas to generate electricity, offer another potential pathway to zero emissions, especially for trucks that travel longer distances and haul heavy loads. Tesla fully electric semis, which promise a range of between 310 miles to 620 miles with a single charge, have also attracted grocers such as Albertsons, which ordered 10 to its Southern California fleet.

- Nikola expects to bring its Class 8 long haul BEVs (battery electric vehicles) and FCEVs (fuel cell electric vehicles) to the market over the coming years, although it seems initial expectations have been tempered as far as the time frame to actual deliveries of these vehicles are concerned. General Motor's has a deal to provide fuel cells for some of these vehicles.

- General Motors is also developing hydrogen fuel cells for installation in Navistar's electric heavy trucks, which are expected to go into production in late-2023.[7]

- Daimler and Volvo have a joint venture to make hydrogen fuel cells for heavy-duty trucks. Volvo and Daimler's shared goal is to begin customer tests of fuel cell trucks in about three years and to begin series production during the second half of this decade. That is in addition to the separate efforts those two manufacturers are involved with (below).

- Daimler Trucks North America announced in November 2020 that its fleet of 38 battery-electric Freightliner eCascadia and eM2 pre-production models has logged more than

[7] https://www.freep.com/story/money/cars/general-motors/2021/01/27/gm-navistar-hydrogen-fuel-cell-trucks/4263376001/

500,000 miles in customers' real-world freight operations. Volume production for the heavy-duty eCascacia and medium-duty eM2 is slated to begin in 2022.

- Volvo began selling its Volvo VNR Electric regional-haul model in December 2020 (although that model is limited by its 150-mile range) and started producing the battery-electric truck at its manufacturing plant in Dublin, Virginia in early 2021. Sister company Mack Trucks has delivered a pre-production LR Electric model to Republic Services for use in real-world refuse operations ahead of production slated to begin imminently.

- Cummins Inc., debuted a 14.9-liter natural gas engine in China last year to meet the country's strict emissions standards. It is capable of up to 530 horsepower and 1,850-pound feet of torque. A Class 8-capable natural gas engine running full time on RNG could match the power and torque of the ERX hybrid — and its negative net-zero carbon emissions. Cummins is gauging the market before deciding whether to manufacture the engine in the U.S.

- In October 2020, Hino Trucks and Toyota announced agreement to jointly develop a Class 8 fuel cell electric truck for the North American market by combining the Hino XL Series chassis with Toyota's fuel cell technology.

- Toyota also has collaborated with Kenworth to develop 10 zero-emission T680s powered by Toyota hydrogen fuel cell electric powertrains. Meanwhile, Navistar and engine maker Cummins Inc. have agreed to work together to develop their own Class 8 truck powered by hydrogen fuel cells in a project partially funded by a grant from the U.S. Department of Energy. The prototype Class 8 fuel cell truck will be integrated into truckload carrier Werner Enterprises' fleet for use in local and regional delivery operations out of Fontana, California.

Given these developments—and this list is far from conclusive—it seems fleet operators looking to 'go green' will have many choices, including a multitude from OEMs that have long operating histories, trusted brands and with which they have existing customer relationships. Hyliion is, therefore, fighting an uphill battle to gain market share from the incumbents.

Additional Financing Probably Needed

Hyliion is forecasting revenue of $344 million in 2022, $1.019 billion in 2023 and $2.091 billion in 2024. Notably, its 2024 estimate assumes that it will capture 2.2% of the $94 billion total addressable market:

($ in millions)	2020E	2021E	2022E	2023E	2024E
Hybrid Electric Units Sold	20	300	4,100	8,000	15,500
Hypertruck ERX Units Sold	-	-	2,500	8,500	19,000
Total Units Sold	**20**	**300**	**6,600**	**16,500**	**34,500**
Revenue	**$1**	**$8**	**$344**	**$1,019**	**$2,091**
% Growth	-	1307.1%	4268.4%	196.1%	105.1%
Cost of Goods Sold	(1)	(6)	(248)	(698)	(1,353)
Gross Profit	**($0)**	**$2**	**$96**	**$321**	**$737**
% Margin	NM	21.9%	28.0%	31.5%	35.3%
EBITDA	**($56)**	**($135)**	**$8**	**$214**	**$602**
% Margin	NM	NM	2.3%	21.0%	28.8%

Source: Hyliion Holdings Corp. Investor presentation

Wall Street analysts are less enthusiastic and, on average, forecast 2022 revenues of $88 million, and $603 million in 2023. Clearly, there is an enormous amount of uncertainty in all such forecasts, given that the company does not generate any revenues at the current time. Consequently, the valuation is largely based on the perceived probability that Hyliion can deliver on its promises. That said, investors in the renewable/EV industry have had some recent setbacks, which might have reduced their enthusiasm. For example, these investors previously believed that Workhorse Group would win a multi-billion-dollar contract with the U.S. postal service to supply EV trucks, which it did not—conceivably because the government did not believe that the technology was ready for deployment yet. Furthermore, investors believed that Nikola Corp. had an electric truck in the latter stages of development, only to learn later that it had only developed a prototype design. Therefore, investor enthusiasm for renewable/EV companies appears to have dimmed somewhat.

With no revenues, Hyliion's net loss grew from $14.1 million in 2019 to $39.2 million in 2020. In the first quarter of 2021, the losses exceeded $16 million. Naturally, escalating losses are attributable to increasing operational expenses. The company's selling, general and administrative expenses increased almost 10-fold year-over-year to $7.4 million, while research and development expenses grew 250% to $9.3 million. Even sequentially, operating expenses escalated 62% in the first quarter:

(in millions)	Q4-2020	Q1-2021	%-change
SG&A	$5.9	$7.4	26%
R&D	$4.5	$9.3	109%
Operating Loss	$10.3	$16.7	62%

By comparison, in the *first nine months* of 2020, the company spent $8.1 million on R&D and $3.7 million on SG&A, or $11.8 million in total. Thus, the fourth quarter alone represented close to the amount spent in the prior three quarters. Of course, the reason was the cash infusion associated with the merger, which allowed the company to speed up its plans, but even so, operating losses of more than $100 million on an annual run-rate basis will be a reality if the second quarter spending were to increase by the same percentage compared to the first quarter.

On an earnings basis, Wall Street projects losses of $0.86 per share and $0.81 per share in 2021 and 2022, respectively. With 172 million shares outstanding, and assuming no additional equity being issued, such estimates, if realized, indicate that the company would lose $288 million in the two-year period. Given the $479.5 million in cash on hand on March 31st, the company could burn through more than half of its cash before year-end 2022. Since profitability is unlikely to be achieved for many years beyond that point, Hyliion will most likely be forced to access the capital markets within the next two years.

Competition from Diesel

According to Hyliion's CEO, Thomas Healy, over the last five years, the amount of renewable natural gas in transportation has increased 267%. Of course, that is from a very low base. Diesel remains the dominant technology in long-haul trucking, powering an estimated 97% of Class 8 trucks in the US, as of 2019.[8] In addition, diesel engine manufacturers are not oblivious to the trend towards reduced environmental impact and, as a result, there has been significant progress in improving these engines over the past decade. In fact, beginning in 2011, all-new heavy-duty diesel trucks have been equipped with selective catalytic reduction (SCR) and particulate control technologies. These combine to achieve stringent new EPA emissions requirements for NOx emissions of no more than 0.20 grams per brake horsepower hour (g/BHP-hr).

This is in addition to PM (particulate matter) emissions levels of no more than 0.01 g/BHP-hr. Put into context, the emissions and fuel savings attributable to new-generation diesel engines in commercial trucks equate to making 26 million cars all-electric, eliminating the PM emissions from all U.S. cars for 33 years, achieving carbon sequestration in a forest roughly the size of Texas, or creating a 27,000-turbine wind farm on land four times the size of Washington, D.C.[9] Alternatively, the new trucks are so clean that it would take 60 new-generation diesel trucks to equal the emissions from one truck sold in 1988.[10]

According to the Diesel Technology Forum's analysis of 2018-2019 U.S. vehicles in operation data (Class 3-8) provided by IHS Markit, 43% of the nearly 11 million diesel-powered commercial vehicles on U.S, roads – from box delivery trucks to 18-wheelers – were powered by the newest generation of diesel technologies (MY 2010 and newer). Over just four years, the percentage of new-generation diesel trucks on America's roads has nearly doubled – up from just 25.7% of the fleet in 2015. Consequently, while Hyliion's technologies are competing against diesel, the technology behind diesel is a moving target, and it is possible that it will move fast enough to make large fleet operators think twice about the need to transition to hybrid or electric, given the tradeoffs.

Diesel's dominance as the technology of choice for commercial vehicles reflects the technology's record of continuous improvement, low-cost operation and the convenience of a fully built-out refueling system with quick refueling time. Especially for the largest of trucks, no other fuel can, as of yet, match what the newest generation of diesel technology offers: efficient performance,

[8] https://www.dieselforum.org/news/new-generation-of-diesel-power-in-commercial-trucks-and-buses-delivering-major-climate-and-clean-air-benefits
[9] https://www.mhlnews.com/transportation-distribution/article/22055876/43-of-us-commercial-trucks-powered-by-diesel
[10] https://www.dieselforum.org/news/new-generation-of-diesel-power-in-commercial-trucks-and-buses-delivering-major-climate-and-clean-air-benefits

relatively low emissions, reliability, durability, low-cost operation, and maximum flexibility in utilization, routing and fueling. In fact, IHS Markit predicts that, by 2030, the use of the latest-generation diesel engines, compared to the prior generation, will result in savings of around 1.3 billion tons of CO_2, 73 million tons of NOx, 4 million tons of PM, 130 billion gallons of diesel and 33.1 billion barrels of crude oil.

By 2040 the newest-generation diesel technologies is expected to retain the majority share of Class 8 vehicle sales, according to IHS Markit, which expects diesel to account for 66% of all new US truck sales in 2040, while electric trucks are expected to reach a 15% market share at that point.[11] The remaining 19%, which includes hydrogen, CNG and other alternative fuels, would be the market in which Hyliion would compete. Since that entire market is just 19%, it seems far-fetched that the company can reach unit sales of 34,500 in 2024, as its financial projections outline, since this would represent approximately 18% of the total Class 8 truck sales of 192,000 in the U.S. in 2020, according to Statista.[12] That is, reviewing its market opportunity in this way, the company would have to achieve near 100% market saturation.

SPACs Have Poor Track Records

SPACs (special purpose acquisition companies) raise cash in an IPO and then have two years to search for a private company with which to merge and thereby bring public. Their shares are redeemable at the time a merger is proposed, so if SPAC investors do not like a proposed merger, they repatriate their full investment, plus a very high return. Companies such as Fisker and DraftKings have already come public via SPACs. WeWork, SoFi, TalkSpace, and 23AndMe could join them this year. SPACs are attractive to the companies because they have less stringent vetting requirements than the traditional IPO process does.

SPACs experienced a frenzy of activity and attention in 2020 in particular. In fact, during that year, SPACs raised as much capital as they did over the entire preceding decade. While some market observers perceive SPACs to be a clever financial innovation that provide a cheaper, faster, and more certain path to becoming a public company than does an IPO, reality appears to be very much at odds with this sentiment. A study by Harvard[13] where of all the 47 SPACs that merged between January 2019 and June 2020 found that:

- Although SPACs issue shares for roughly $10 and value their shares at $10 when they merge, by the time of the merger the median SPAC holds cash of just $6.67 per share.

- The dilution embedded in SPACs constitutes a cost roughly twice as high as the cost generally attributed to SPACs, even by SPAC skeptics.

- When commentators say SPACs are a cheap way to go public, they are right, but only because SPAC investors are bearing the cost.

[11] https://www.fleetowner.com/running-green/blue-fleets/article/21703746/crossing-the-bridge-to-zeroemissions
[12] https://www.statista.com/statistics/261416/class-3-8-truck-sales-in-the-united-states/
[13] https://corpgov.law.harvard.edu/2020/11/19/a-sober-look-at-spacs/

- Although some SPACs with high-quality sponsors do better than others, SPAC investors that hold shares at the time of a SPAC's merger see post-merger share prices drop on average by a third or more.

The primary source of SPACs' high cost and poor post-merger performance is dilution built into the route they take to bringing a company public. Along the way, SPACs give shares, warrants, and rights to parties that do not contribute cash to the eventual merger. The SPAC organizers are very highly compensated, in the form of equity, for consummating an acquisition; this is typically around 20% of a SPACs market value at the time of the deal. Those essentially free securities dilute the value of shares that SPAC investors purchase.

In the specific case of Hyliion, not only has the share count increased greatly since the company merged with the SPAC, but there are also a substantial number of restricted shares and stock options that are excluded from the diluted share count. But they are excluded only because the company is not yet profitable, since including them would then be anti-dilutive and, with a greater diluted share count, would reduce the loss per share. If the company *were* to become profitable, those extra shares would be included in the share count, and would significantly reduce per-share results.

As of December 31, 2020, Hyliion had 156.4 million shares outstanding. This was an 80% increase compared to 86.7 million at the end of 2019[14]. At the time of the filing of the most recent 10-Q (May 14, 2021), that had expanded to 172.3 million shares—mainly because of the 12.5 million warrants being exercised— and there were a potentially dilutive 4.4 million future shares in the form of stock options and 3.2 million shares of unvested restricted stock. Technically, as referred to above, those items are not presently considered to be dilutive, but in the event that one expects Hyliion to eventually be profitable, the current share count should be considered to be approximately 180 million.

In addition, share-based compensation expense for the first quarter of 2021 amounted to $1.5 million, which was a 15x increase from just $100,000 in the same period last year. In other words, the company is now able to improve its gross cash flow by issuing shares and stock options rather than to pay employees in cash, although this serves to dilute existing investors on a per-share basis.

Hyliion is valued at more than $2.0 billion, even though it has never generated revenues and it is impossible to estimate the probability of success for its solutions. From that backdrop, the benefits of merging with a SPAC appear obvious, since it preempted Hyliion from pitching its forecasts to institutional investors and follow the traditional IPO route. If that were a significant factor in the decision to merge with the SPAC, then it is fair to question the conviction of the management team and the board of directors in its own products.

Valuation

At the time the merger was announced, in June 2020, Hyliion was valued at approximately $4.6 billion. That said, prior to the merger, the company was rapidly running out of capital, with $8 million

[14] This represent Tortoise Acquisition Corp. (the SPAC), which is the predecessor company

in cash on its balance sheet, $36 million in debt, and an annual burn rate of approximately $16 million. Yet, the infusion of $560 million from the SPAC elevated its valuation to briefly approach $10 billion during the August-September 2020 bull market in the renewable energy/transportation sector. Part of the reason that so many renewable/EV companies came public via the SPAC route was that the timing was ideal – the stock market had bid up such companies shares to record high valuations. Yet, Hyliion was not profitable then. Indeed, it had no revenues then, and still does not have any revenues. Thus, the valuation is mainly based on its vision for the future, besides the cash and investment balance, which had dwindled to $639 million as of the end of March as compared to the $704 million raised from the merger and subsequent warrant conversion.

That Hyliion came public at a time when renewable energy/transportation stocks were in high demand is evidenced by the approximately 400% gain in Tesla's shares in the first eight months of 2020. Such optimistic sentiment propelled most renewable energy companies' shares to new highs, including Hyliion's, but its shares subsequently declined 87% to pre-merger levels when the market corrected.

The table below compares Hyliion to some of its peers in the renewable energy transportation market:

Company	Symbol	Price	2022 EV/Sales	P/Tan. Book	Market Cap. (mil)
Ayro	AYRO	$4.97	0.7x	1.7	$159
Ballard Power	BLDP	$17.80	27.6x	3.9	$5,304
Blink Charging	BLNK	$40.10	59.4x	7.0	$1,684
Bloom Energy	BE	$28.09	4.1x	795	$4,775
Clean Energy	CLNE	$11.00	6.8x	5.5	$2,453
FuelCell Energy	FCEL	$9.30	33.6x	501	$3,004
Hyliion	HYLN	$12.10	18.3x	3.3x	$2,085
Lordstown Motors	RIDE	$11.28	1.2x	2.9x	$1,997
Nikola	NKLA	$18.30	29.9x	7.7x	$7,210
Plug Power	PLUG	$33.69	25.0x	14.1x	$19,136
Westport Fuel Systems	WPRT	$5.61	2.1x	9.5x	$948
Workhorse	WKHS	$15.75	8.5x	4.9x	$1,937
		Average:	18.1x		

It should be noted that only three of the companies above are projected to be profitable in 2022, based on Wall Street's consensus, and only marginally so. Therefore, earnings comparisons are not meaningful. Furthermore, trading premiums to tangible book values for the companies range from 2x to 795x, which perhaps indicates that this measure is largely meaningless as well. While the only remaining valuation measure is enterprise value-to- revenues, this measure is also difficult to apply, since Hyliion has no revenues and the future projections are uncertain and in a wide range. For 2022, Wall Street projects revenues of $63 million on the low end and $123 million on the high end, while Hyliion itself has projected $344 million.

Collectively, the 12 companies in the table above have a market capitalization of $51 billion, which means that they are trading at 20x the expected aggregate revenue of $2.57 billion in 2021, based on Wall Street's consensus. Out of that revenue amount, renewable energy/fuel cell company Bloom Energy contributes almost 40% of the aggregate amount. Bloom Energy was founded in 2001 and, although it has yet to turn profitable, has steadily increased its revenues. Since it is more mature than Hyliion and has successfully scaled its revenues, perhaps it can serve as a fair comparison to the potential future valuation of Hyliion.

From 2016 to 2020, Bloom Energy almost quadrupled its revenues and it is expected to grow further, by 23% in 2021 and by 24% in 2022, when it is expected to record revenues of $1.12 billion. Furthermore, the company is also expected to reach profitability in 2022 for the first time. Yet, this has not resulted in a particularly ebullient valuation. The company trades at an enterprise value of 4.1x Wall Street's 2022 revenue forecast. Even the current market capitalization of $4.7 billion represents a doubling from where the shares traded in November 2020, when it was valued at just 2.5x its actual 2020 revenues. At such a valuation, Hyliion would need to have revenues of approximately $800 million just to justify its current market value.

While Bloom Energy's shares have doubled since November, they are essentially unchanged since the company's July 2018 IPO, despite the strong revenue growth. Consequently, if Hyliion were to reach revenues of $600 million in 2023, which is in line with Wall Street's forecasts, and if it has to raise an additional $500 million in debt or equity over the next 2.5 years to get there, then it trades at the same, 4x revenue valuation as Bloom Energy, at the current time. That assumes that Hyliion executes flawlessly and goes from zero to $600 million in revenues within two years, which would be quite an achievement. Also, unlike Bloom Energy, which is expected to be profitable next year, Hyliion has not had a chance to make any progress towards profitability, and likely will not for many years. Thus, unless investors see a path to profitability, even if the revenues materialize, the shares might not increase in price.

Another comparison could be made to Paccar (which owns the Kenworth, Peterbilt, and DAF brands), a large truck manufacturer with expected sales of $23 billion this year. It has a market value of $30 billion and trades at 14.9x expected 2021 earnings and at an enterprise value of 1.5x sales. Similarly, Volvo, at a $49 billion market capitalization, trades at almost exactly the same valuation multiples. Thus, perhaps after its initial growth-phase is over, Hyliion might trade at 1.5x revenues as well. A case can be made that even such a valuation is optimistic since OEMs have a long history of dealing with sub-contractors, and never really let them have wide profit margins – they control terms of trade. Even so, assuming Hyliion will reach revenues of $2.0 billion in 2025 (but with revenue growth expectations moderating at that point), it would have a market capitalization of just around $3.0 billion at that time. However, the company would have to raise substantial amounts of capital to scale its business to that level. If Hyliion had to sell another 90 million shares to finance this expansion, the actual return would be close to zero. Consequently, either the company will have to generate higher revenues than that, or carry a higher EV/revenue multiple than Paccar and Volvo (even though it most likely will not have similar profit margins) to justify its current market capitalization. On the other hand, there are a multitude of potential roadblocks that have to be navigated to increase its revenues from zero to $2.0 billion over the next five years and should that not be done successfully, the shares will probably decline precipitously.

On the other hand, should Hyliion fail to reach its revenue targets, perhaps because of the intense competition, delays in resolving technological issues, fleet operators' reluctance to invest in what they consider a "bridge" technology, or because of price increases or lost sales related to the manufacturer's potential voidance of the warranty in response to Hyliion's retrofits, then the stock market will likely not pay much of a premium above tangible book value for the company's shares. At that time, book value could be significantly lower compared to today (approximately $3.50 per share), given that its cash burn rate is approaching $100 million on an annualized basis and is predicted by Wall Street to widen to approach $150 million next year. Presently, the probability that the positive scenario will materialize, rather than the negative, appears to be low.

Investment Summary

Presently, it appears that the leading technologies for environmentally-friendly trucks are hydrogen and battery-electric, since those are being backed by governments, and most of the leading truck manufacturers are in various stages of developing and introducing such vehicles. Some are already available, such as the VNR Electric by Volvo. Consequently, Hyliion's hybrid and natural gas-powered solutions are out of the mainstream, which might make them more difficult to sell to large fleet operators that might prefer to select an established truck manufacturer's electric or hydrogen-powered solutions. Fleet operators already have a relationship with such OEMs and those companies have long histories of successful operations and customer service, unlike Hyliion. Moreover, if there is substantial demand for Hyliion's solutions, the OEM's can offer similar solutions relatively quickly. After all, Hyliion only raised, and spent, approximately $50 million from 2015-2020, so a relatively modest investment in R&D might suffice to create a competing solution. By comparison, Volvo Trucks (which is separate from Volvo Cars) spends $2 billion per year on R&D.

Consequently, while Hyliion's solutions promise to provide prompt advantages, such as retrofit options to immediately reduce carbon footprint without too many tradeoffs– many fleet operators might adopt a wait-and-see strategy to see which technology ultimately becomes widely adopted. Perhaps more importantly to fleet operators is the risk of potentially voiding the manufacturer's warranty by retrofitting their existing trucks with Hyliion's powertrains. That is a risk that they are unwilling to take and any solution to such a problem will be expensive.

Therefore, the probability of success for Hyliion's solutions is impossible to quantify. So far, the company has a handful of trials with actual fleets, but that represents vehicles that Hyliion has paid for, not the fleet operator, which does not necessarily indicate a significant degree of conviction from the fleet operators. Also, the company's main preorder of 1,000 ERX trucks is placed by Agility Logistics USA, which has an equity interest in the company, and Agility seems to have the right to terminate its contract before accepting any deliveries. Consequently, that preorder does not necessarily represent a real verdict of the product line's commercial viability. Finally, Hyliion's supply chain game plan relies on a myriad of technological partnerships, commercial agreements, and reliance on third parties, which results in diminishing barriers to entry and potential future competition from some of these partners should the technology prove to be a commercial success.

Even if Hyliion generates revenues that are largely in line with Wall Street's consensus estimates for the next few years, the question becomes at which multiple the market will value such revenues. Bloom Energy, despite a relatively strong track record lately, and a path to profitability next year, recently traded at just 2.5x revenues. Considering that Hyliion probably has to raise additional capital, given its annual burn rate of around $140 million per year in 2021 and 2020[15], the company will not only have to be successful commercially and generate the expected amount of revenues, but it also needs to be valued at around 5x consensus 2023 revenues in order to justify the current market capitalization. On the other hand, if there are production delays, or if competition is too intense to reach the projected sales figures, the market will probably not pay a premium to the diminishing tangible book value. Given the seemingly low probability of success, shares of Hyliion Holdings Corp. are recommended for sale and short sale.

[15] Based on Wall Street's consensus

HYLIION HOLDINGS CORP. - CONDENSED CONSOLIDATED BALANCE SHEETS
(Dollar amounts in thousands, except share and per share data, unaudited)

Current assets:	March 31, 2021	December 31, 2020
Cash and cash equivalents	$ 334,718	$ 389,705
Accounts receivable	80	92
Prepaid expenses and other current assets	3,616	20,690
Short-term investments	144,829	201,881
Total current assets	483,243	612,368
Property and equipment, net	1,350	1,171
Operating lease right-of-use assets	4,833	5,055
Intangible assets, net	308	332
Other assets	193	193
Long-term investments	152,481	35,970
Total assets	$ 642,408	$ 655,089
Current liabilities:		
Accounts payable	$ 2,022	$ 1,890
Current portion of operating lease liabilities	790	734
Accrued expenses and other current liabilities	5,073	6,313
Total current liabilities	7,885	8,937
Operating lease liabilities, net of current portion	4,838	5,076
Debt, net of current portion	—	908
Total liabilities	12,723	14,921
Stockholders' Equity:		
Common stock, 171,519,81 issued and outstanding at March 31, 2021	19	19
Additional paid-in capital	371,077	364,998
Accumulated deficit	258,589	275,151
Total stockholders' equity	629,685	640,168
Total liabilities and stockholders' equity	$ 642,408	$ 655,089

HYLIION HOLDINGS CORP.
UNAUDITED CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(Dollar amounts in thousands, except share and per share data)

	Three Months Ended March 31,	
	2021	**2020**
Operating expenses:		
Research and development	(9,332)	(2,671)
Selling, general and administrative	$ (7,399)	$ (691)
Loss from operations	(16,731)	(3,362)
Other income (expense)		
Interest expense	—	(1,565)
Interest income	169	—
Change in fair value of convertible notes payable derivative liabilities	—	(635)
Total other income (expense)	169	(2,200)
Net loss	$ (16,562)	$ (5,562)
Weighted-average shares outstanding, basic and diluted	170,249,708	86,762,463
Net loss per share, basic and diluted	$ (0.10)	$ (0.06)

This report was produced by Horizon Kinetics ("HK"). The following persons employed by HK contributed to this report: Murray Stahl, Chairman, Steven Bregman, President, and Peter Doyle, Managing Director. HK is located at 470 Park Avenue South, New York, NY 10016. At the time of this report, there are no planned updates to the recommendations. To the extend HK has provided previous recommendations concerning the same issuer(s) during the preceding 12-month period, such recommendations do not differ from the recommendations contained here.

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