TESLA

SUMMARY ANALYSIS

PRESENTED BY:

HALTER FERGUSON FINANCIAL, INC.

Image Source : Tesla, Inc.

EXECUTIVE SUMMARY

Tesla is leading the transition from Internal Combustion Engine (ICE) vehicles to Electric Vehicles (EVs). The stock underwent a phenomenal run-up from late 2019 to late 2021 as the company experienced drastic growth in both revenues and margins. But as economic concerns mounted in 2022 and the Fed initiated a series of significant interest rate hikes, growth stocks like Tesla were hit hard.

Despite beating estimates for revenue growth and earnings in 2022, the focus shifted to the perception of weakening demand, and potential margin pressure in 2023 and beyond.

5 Year Stock Performance

Tesla Trading Metrics

FINANCIAL METRICS	
Revenue	$81.5
Adjusted EBITDA	$19.2
Operating Cash Flow	$14.7
Free Cash Flow	$7.6
Cash & Investments	$22.2
Gross Margin	29%
Operating Margin	17%
Net Margin	15%

Figures in $ billions. FY 2022 metrics shown.

VALUATION MULTIPLES	
P/E (Trailing)	46
EV / EBITDA	33x
PEG Ratio	1.3

Source: Company filings and Yahoo! Finance. Data as of 2/2/2023.

We believe that these issues are legitimate but are more than outweighed by emerging catalysts which have the potential to drastically change Tesla's addressable market and financial profile.

The core investment thesis, as well as potential risks to that thesis, are highlighted in the table on the next page.

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KEY RISKS

MACROECONOMIC HEADWINDS – Rising interest rates and a potential recession may hit the automotive industry particularly hard, creating demand or pricing pressures.

MULTIPLE COMPRESSION – Tesla's Price to Earnings (P/E) multiple has been re-rated down but is still significantly higher than other auto companies. In the short term it is possible that TSLA could trade closer to an auto company than a growth / tech company.

REGULATORY RISK – Pushback on Tesla's Full Self Driving and autopilot program could limit upside potential or cause legal and regulatory hurdles.

INVESTMENT THESIS

STRENGTH OF CORE BUSINESS – Tesla has been revalued lower amid demand concerns, but manufacturing prowess and the emergence of Full Self Driving as a financial contributor will ensure that Tesla maintains world class margins.

ENERGY BUSINESS RAMPING – Analysts have historically ignored the energy side of Tesla's business, but Tesla Energy is about to undergo a step-change in deployments and profits.

UPSIDE OPTIONALITY – Tesla's best-in-class real-world AI capabilities can create massive upside potential in Autonomy and Robotics.

Tesla Gigafactory Nevada. Image Source : Tesla, Inc.

FINANCIAL JUGGERNAUT

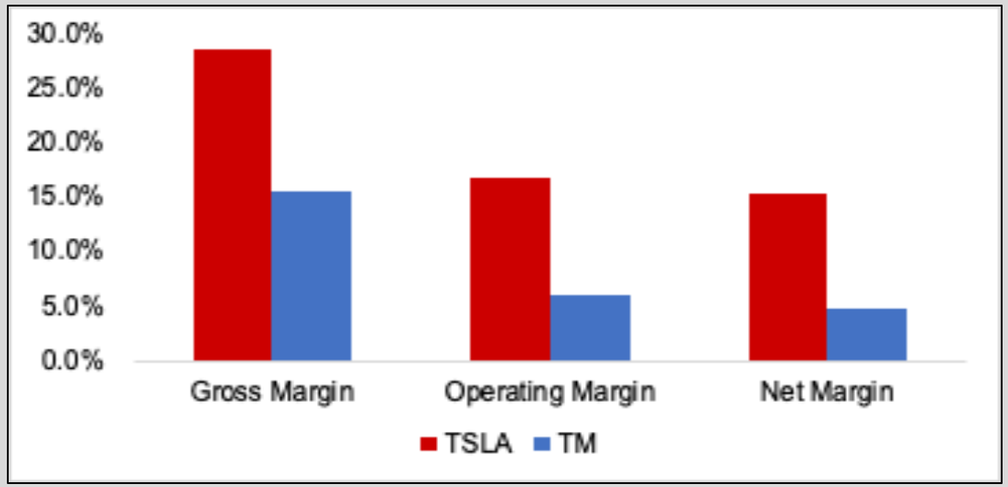
Tesla's financial results over the last three years have consistently surprised Wall Street. When Tesla released its Q4 2022 earnings report in late January, the company reported full year automotive gross margins of 28.5%. This level of profitability was unthinkable to most industry observers just a few years ago. Perhaps even more impressive has been Tesla's ability to stay lean as they grow and realize incredible Operating Leverage. Operating Margin in 2022 increased 464 basis points to reach 16.8%.

This is a figure which most manufacturers would salivate over if they could achieve it at the Gross Margin level, let alone as an Operating Margin! Tesla's financial metrics are truly astounding and give an indication of just how far the company's manufacturing prowess has come. To fully appreciate Tesla's accomplishments on manufacturing efficiency, it's informative to compare these figures to Toyota, a company which has long been considered the Gold Standard of automotive manufacturing.

Just a few years ago analysts were expressing incredulity at the notion that Tesla could reach, let alone surpass, the heights of Toyota's renowned "Toyota Production System". This efficient system of manufacturing has been a focus of case studies for decades. Many companies have implemented versions of this system and its lean concepts into their operations.

Industry-watchers believed that Toyota's profitability level represented a ceiling which a newcomer like Tesla could only hope to aspire towards. In comparing the two company's results however, it's clear that Tesla has not only met the level of profitability achieved by Toyota but has blown by this level. This is even more impressive when you consider the results were achieved with roughly half of production coming from Tesla's Fremont factory, which will ultimately prove to be the company's least cost-effective facility.

Best-in-class Manufacturing – Toyota or Tesla?



Source: company filings. Toyota figures represent LTM margins through Q3 2022.

The exchange between Elon Musk and a Barclays Analyst on the following page is from Tesla's Q4 2017 earnings call which took place in the middle of Tesla's struggle to ramp the Model 3. This time was so hard for Elon, that he called it "Production Hell." With the benefit of hindsight, we can see that Tesla was able to accomplish exactly what Musk said they would accomplish five years ago. Today, Tesla has become the new benchmark for manufacturing profitability.

We know Tesla is not done innovating. Numerous internal projects have yet flowed through to profits on the financials. These projects include the 4680 battery cell, structural battery packs, Project Highland, and completion of production efficiencies in Berlin and Austin. And as great as these improvements will be, we believe they will ultimately pale in comparison to the software margin potential of Full Self Driving and Robotaxis.

Wall Street's History of Ignoring Tesla's Plans

BRIAN JOHNSON - BARCLAYS: I'd like to follow up around some of the manufacturing roadblocks as well as about building a "machine to build the machine," which I believe was the title of a 1990 MIT book about Toyota. Could you give us some more discussion on the managerial culture, the process level? How would you benchmark yourself against a Toyota factory which seems to be able to launch a new product in about three or four months to ramp up? Or at the other extreme, because I know Mr. Field came from there, kind of what Foxconn does in its goal to replace humans? But in particular, you talk about the managerial processes, not so much the robots you're putting into place.

Elon Musk
Image Source: Wikimedia Commons

ELON MUSK: Well, I'm pretty sure Toyota cannot ramp up a new product in three months. In fact, I'm 100% certain about that.

BRIAN JOHNSON: Okay. But within that then what are the differences though in the way you're going to be managing the factory?

Brian Johnson
Image Source: CNBC

ELON MUSK: The most fundamental difference is thinking about the factory really as a product, as a quite vertically integrated product.

BRIAN JOHNSON: Right, which is the Toyota Production System.

Elon Musk: [Long pause] Yeah, we don't think so.

Excerpt from Q4 2017 Earnings Call. Edited for clarity and conciseness.

FINANCIAL JUGGERNAUT cont…

The market's disbelief at Tesla's goals to leapfrog Toyota's manufacturing efficiency have parallels with today's skepticism of Full Self Driving. The current state of the technology is analogous to the profitability of Tesla during the Model 3 ramp. Yet investors should not be looking backward at historical financial statements, but forwards to the likely future position of a company.

After experiencing first-hand the rapid rate of improvement in the technology, we believe that uptake of Full Self Driving (FSD) is likely to increase substantially in the coming years. This has the potential to offer a further step-change in profitability which will make the current figures look rather quaint by comparison. Indeed, Tesla even appears to be guiding to this outcome, as evidenced by wording in the Outlook section of their last several earnings reports.

Software's Increasing Role in Driving Profitability

> "While we continue to execute on innovations to reduce the cost of manufacturing and operations, over time, we expect our hardware-related profits to be accompanied with an acceleration of software-related profits. We continue to believe that our operating margin will remain the highest among volume OEMs."

Source: Tesla Q4 2022 Shareholder Deck

This software is a potential source of margin on cars Tesla has already sold. Tesla has approximately 3 million vehicles with Hardware 3 on the road today, the vast majority of which did not come with FSD purchased. The owner of a Tesla can at any time opt to buy or subscribe to enable the self-driving functionality on their cars. As the software continues to improve, it is likely that some percentage of these initial non-adopters will opt to upgrade to FSD. If just 10% of the ~3,000,000 opted to upgrade, that would be nearly $5 billion of extra profit on vehicles which Tesla has already sold.

TESLA ENERGY

While Tesla has historically been viewed as an automotive manufacturer, the company has a long history in the Energy sector. This part of the business is generally overlooked by most analysts and investors because the revenues and margins have been small when compared to Tesla's car business. The history of Tesla Energy is rooted in Solar City, which Tesla acquired in 2016.

Since its founding in 2006, SolarCity has provided solar panel installation services for homeowners, and later expanded to offer solar leases and power purchase agreements. Today, Tesla Energy is responsible for the development and production of Tesla's battery energy storage systems, including the Powerwall and Megapack. The company also provides energy management software and services to help customers optimize the performance of their solar and energy storage systems.

Tesla does not break out the split of its revenues and margins between solar and energy storage. We estimate that storage revenues are roughly ten times larger than those of the solar business. Furthermore, the margins are likely much higher on storage than on solar. For purposes of this report, we will focus primarily on the opportunities around battery storage.

Tesla Megapack. Image Source : Tesla, Inc.

MEGAPACK OPPORTUNITY

What is a Megapack? Tesla Megapack is a giant battery system the size of a semi-trailer. Dozens of Megapacks can be grouped together to smooth out the electricity generated from a solar or wind farm. Tesla has had a substantial order backlog of Megapack orders for about as long as the product has existed.

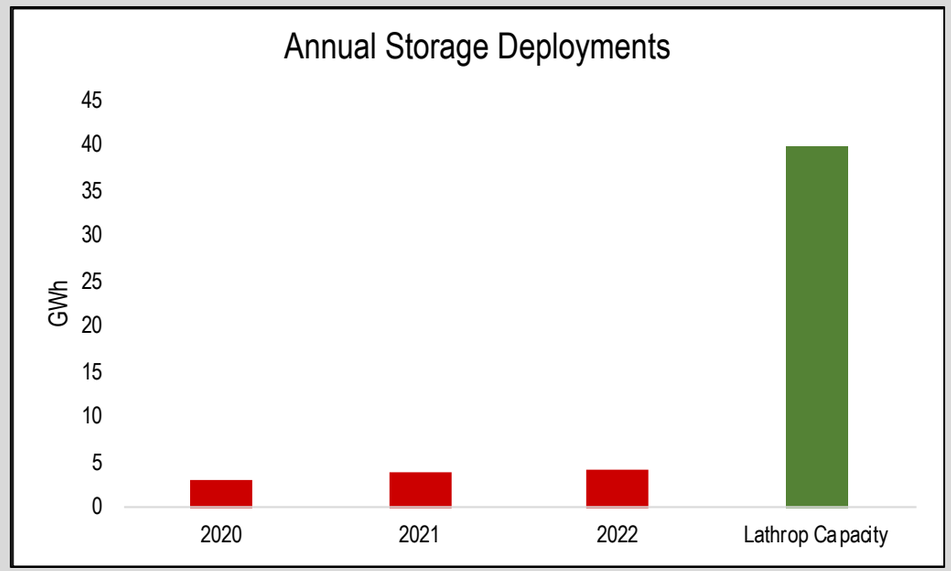
The entire company was initially battery cell-starved, and automotive applications were given priority over Tesla Energy. The lumpiness of battery supply translated directly into the lumpiness of Energy revenues. These "fits and starts" led many to believe Tesla Energy did not contribute to the valuation of Tesla. Furthermore, the lack of consistent supply or a dedicated manufacturing facility meant that margins were far from optimal.

But for the first time in its history, Tesla is no longer constrained by access to battery cells. Tesla's megapack manufacturing process is ramping up with a dedicated facility in Lathrop, California, capable of manufacturing 40 GWh of megapacks per year once production hits capacity.

As shown in the chart to the right, the 40-gigawatt hours (GWh) of stated capacity at Tesla's Lathrop factory is roughly an order of magnitude more than Tesla has ever delivered in any year. In fact, it's roughly on par with total worldwide deployments of energy storage, which, according to Rho Motion were 38 GWh worldwide in 2022.

When looking at these numbers, it appears demand is limited. One might be logical to conclude Tesla has either built too much capacity or they will face significant pricing pressure. However, we believe demand is spiking to extreme levels soon and historic deployment levels are more reflective of available supply than inherent demand. After all, the world was starved of battery supply in the past.

Tesla's Historic Deployments vs Lathrop Capacity



Source: company filings

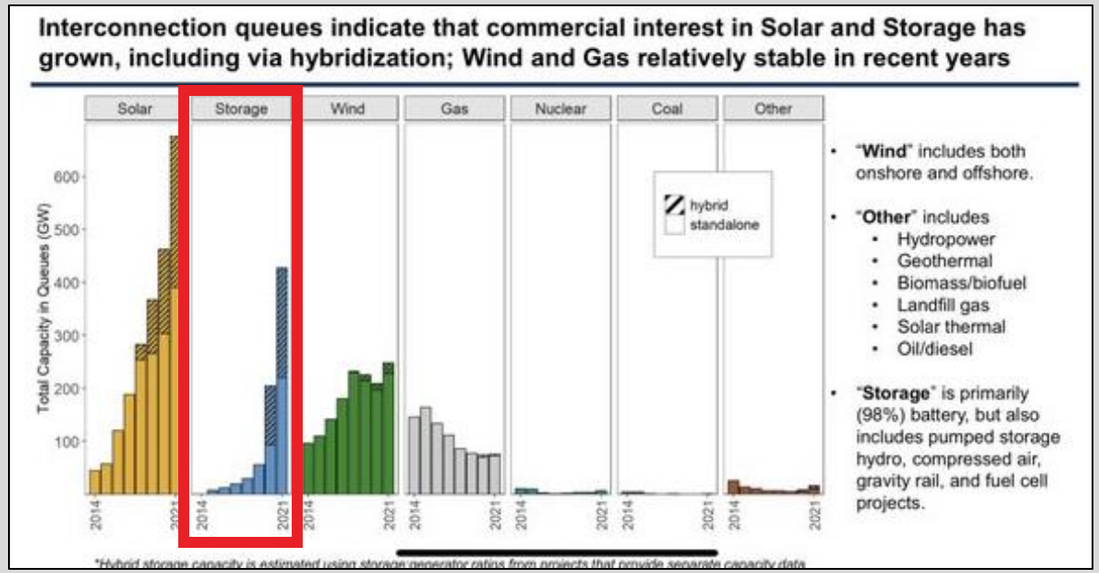
Tesla clearly believes this to be the case, as their goal is not to stop at 40 GWh. At their Battery Day event in 2020, Tesla outlined a path to reach a staggering 3-terawatt hours (TWh) of total capacity between automotive and energy storage by 2030. 3 TWh is seventy-five times bigger than 40 GWh! While we don't believe it's prudent to give Tesla full valuation credit for this audacious goal, they intend to be leaders in the global battery market. Their recent announcement of 100 new GWh of capacity at Gigafactory Nevada is evidence that they are putting their plan into action.

DEMAND OUTLOOK

It is also important to note that Tesla is not alone in thinking the energy storage market is poised to undergo explosive growth. Bloomberg New Energy Finance (BNEF) estimates cumulative storage deployments will grow 15x between 2021 and 2030. This total figure is lower than Tesla's stated goal, and the BNEF forecast for 2030 increased by 13% in just one year. We believe industry watchers will continue to raise forecasts for future demand, and the ultimate winners will be those who can quickly ramp up capacity.

A leading indicator for near-term growth in the energy storage market is to look at Battery Interconnection requests. Before a new energy asset is added to the grid, such as a solar plant or a battery, the local grid operator conducts a Grid Interconnection Study (GIS) to confirm the grid can maintain proper working order in a variety of conditions with the new assets. Companies wishing to add new assets will submit an Interconnection Request to the grid operator, which will then conduct the GIS over the course of several years. The process concludes with many companies withdrawing the Interconnection Request, and some obtaining an Interconnection Agreement which will allow the asset to operate on the grid.

Extreme Growth of Battery Interconnection Requests



Source: Lawrence Berkley National Labs

Given the length of this process, examining the top of the funnel is a good way to see trends in future grid asset deployments. When looking at the data presented in the chart above, it's clear that there is a staggering increase in storage requests. Indeed, in 2021, storage requests roughly doubled relative to 2020, and were up ~10x from 2019 levels. And this data predates the demand surge which is likely to be incentivized as a result from the Inflation Reduction Act.

INFLATION REDUCTION ACT

The Inflation Reduction Act of 2022 contained various benefits to incentivize clean energy within the United States. This was a truly sweeping piece of legislation, with incentives aimed at nearly all levels of the supply chain.

It's hard to imagine a bigger winner from this legislation than Tesla who will realize benefits on both their EV and Energy businesses. The table below highlights some of the most significant provisions of the new law and describes the potential impact to Tesla.

This list is not exhaustive and does not include solar investment tax credit nor alternative fuel refueling property tax credit. Both will benefit Tesla.

PROVISION	DESCRIPTION AND IMPACT TO TESLA
EV TAX CREDIT	Tax credits of up to $7,500 per vehicle, subject to EV pricing and buyer income limits. This credit will significantly lower the cost of ownership for most Tesla models in the US, thereby boosting demand.
COMMERICAL EV TAX CREDIT	Tax credits of up to $40,000 for commercial vehicles like the Tesla Semi, giving Tesla increased demand and pricing power.
INVESTMENT TAX CREDIT - STORAGE	Energy storage projects will receive a credit of 30% of the upfront capital cost, but this can reach up to 70% if requirements are met for additional incentives. Additionally, the credit previously required that batteries be charged directly from renewable sources like wind and solar. This new credit eliminates that requirement, further improving the potential economic use cases for energy storage. The combined impact of these changes is likely to be a drastic step-change in demand for storage, and improved pricing power for companies Tesla which have scaled domestic manufacturing.
ADVANCED MANUFACTURING TAX CREDIT	Provides for a credit of $35 / kWh for domestic cell manufacturing and $10 / kWh for domestic pack manufacturing. Tesla will split this benefit with Panasonic for 2170 cells produced at Giga Nevada and will get the full benefit for in-house 4680 cells made in Austin and Nevada. For a 75 kWh Model Y built with domestic 4680 cells, this could translate to $3,375 in credits per vehicle.
INTERSTATE CHARGING	Grants to fund interstate charging stations, as long as the stations are open to all vehicles. Tesla has recently indicated they will be opening up their stations to non-Tesla vehicles, which will enable qualification for this funding mechanism as well as a new revenue opportunity for billing non-Teslas to charge.
CORPORATE ALTERNATIVE MINIMUM TAX	While all of the above provisions of the IRA help Tesla either directly or indirectly, there is also a new Corporate Alternative Minimum Tax (CAMT) which could offset these benefits. Tesla currently does not pay US Federal Income Tax, primarily due to their large balance of Net Operating Loss carry forwards and other Deferred Tax Assets. Under this new law, many tax loss methods no longer offset pre-tax earnings, and a 15% minimum tax is imposed. However, it is important to note that Section 38 credits including the Advanced Manufacturing Tax Credit can be used to offset 75% of the CAMT.

HARDWARE MARGIN POTENTIAL

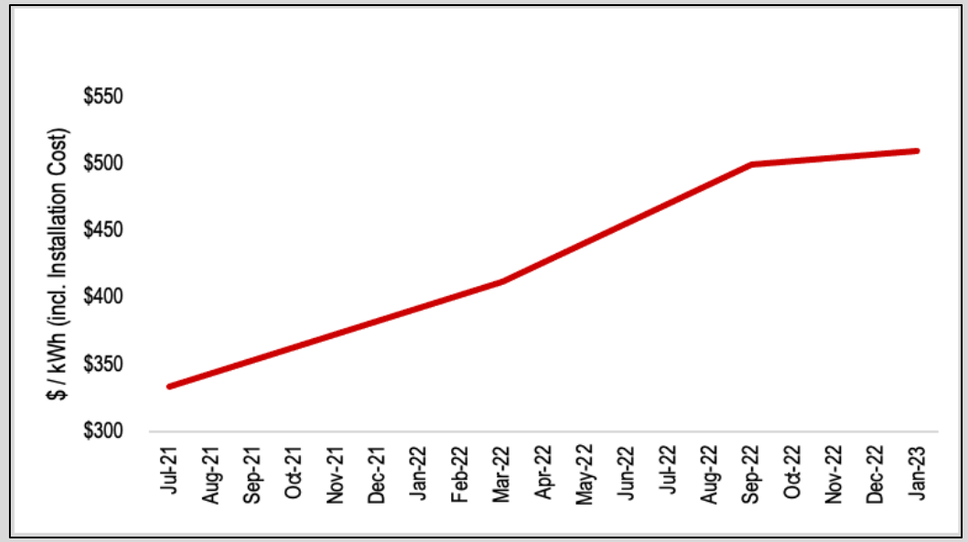
Gross margins on the Tesla Energy business have historically been negligible, leading many analysts to ignore the potential of this part of the business. However, there is reason to believe this may be changing.

As noted previously, Tesla has had a backlog of more than one year since the product was launched in 2019. Back then, the product was priced at roughly $300 per kilowatt hour (kWh) depending on the order quantity. Elon Musk noted in a comment to Clean Technica in 2020 that Tesla's cost to manufacture Megapacks was approximately $300 / kWh, with cells being 2/3 of that cost and the balance of systems being the final 1/3. Given that the cost was roughly equivalent to the price, it's understandable that the product was not a significant driver of value.

Furthermore, Tesla's pricing was essentially fixed at the time of the order, leading Tesla to bear the raw material price risk well into the future when the Megapacks would be manufactured and delivered. In the intervening years, lithium carbonate prices skyrocketed, leading to a significant increase in Cost of Goods Sold (COGS) relative to the amounts contemplated when the pricing was first established.

This has led Tesla to take three steps to increase margin. Most significantly, Tesla has pushed through several price increases which raised the price nearly 70% to ~$500 / kWh today. Second, Tesla's contract for Megapacks now includes commodity cost pass-through language which allows for the sharing of lithium price fluctuations. Finally, Tesla introduced a new product, the Megapack 2 XL, and a dedicated 40 GWh manufacturing facility in Lathrop California.

Megapack Pricing History



Source: Halter Ferguson Analysis and various Electrek articles with historical pricing. $/kWh figures are indicative of the trend only, since pricing varies based on order quantity, configuration, location, and other factors which are not always directly comparable over time.

The increased size and implementation of a dedicated facility should allow for a streamlined manufacturing process. Gross margins of 50% are theoretically possible assuming Tesla's improved efficiencies have resulted in cost in the $250 / kWh range. Retail analysts have done detailed work justifying the potential for 50% gross margins or even higher by using Tesla's own data as well as third party cost build-ups. While 50% sounds far-fetched, we believe it is possible for Tesla to generate these margins once they work through the lower-priced backlog and fully ramp Lathrop.

HARDWARE MARGIN POTENTIAL cont…

For purposes of valuation in this report, we will focus on Earnings Before Interest Taxes Depreciation & Amortization (EBITDA) and Net Margins. In 2022, Tesla posted a 23.6% Adjusted EBITDA margin, which was only marginally lower than it's 25.6% Gross Margin. This was clearly a much lower figure for the Energy portion of the business, but we believe this will change as Energy scales and the higher priced contracts are deployed.

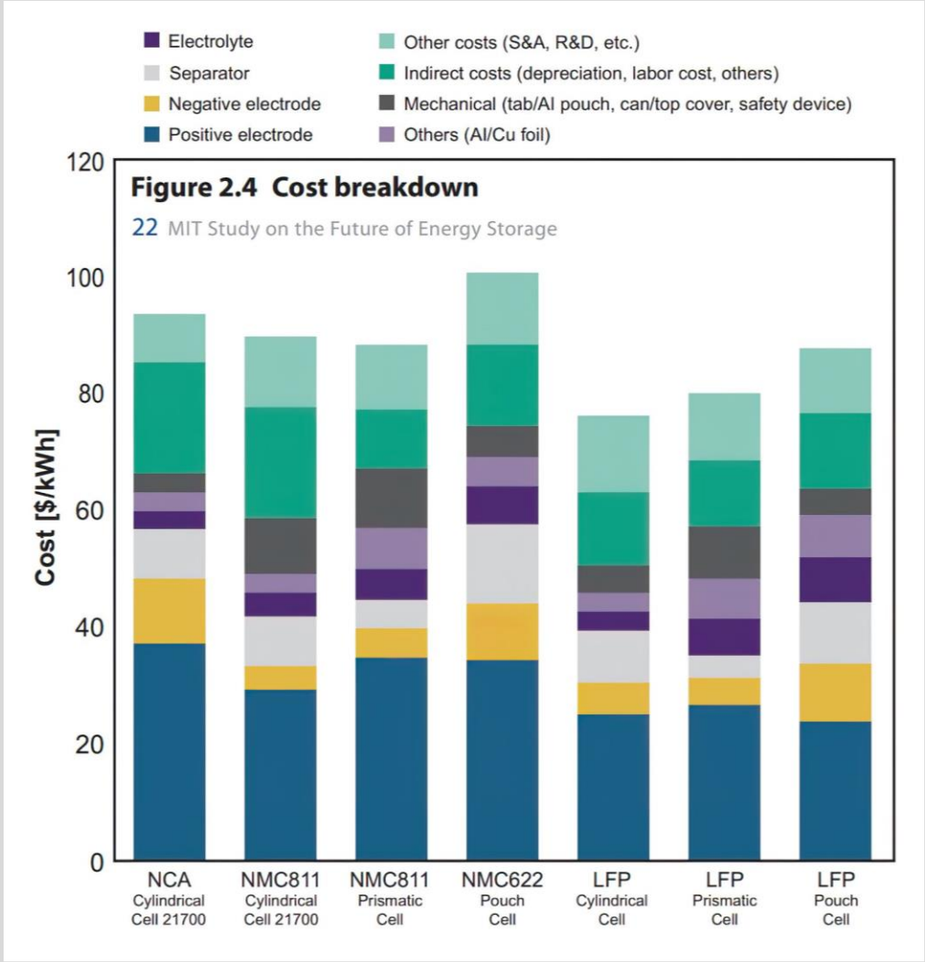
We also believe the pricing and margin dynamics are likely to change significantly over the course of this decade. Currently, demand far outweighs supply and Tesla has a tremendous amount of pricing power. We believe this will lead to Energy EBITDA margins peaking at around 40% in 2025. However, as the industry scales up, there will be both supply chain pressures especially around mining the raw materials which could lead to cost increases. Additionally, scaling up total deployments by 10-30x over the course of a decade could very naturally change the payback economics for end customers.

Just as scaling up Tesla's automotive volumes by 50% per year requires selling price decreases to sustain the Total Addressable Market, the Energy business will similarly need to reduce pricing to reach Tesla's TWh scale ambitions. Given these dynamics, we have assumed pricing for storage products will decrease by 8% per year after 2023, reaching $270 / kWh by 2030. We further assume EBITDA margins will decline because of this lower price, settling at 30% by 2030.

In addition to the hardware margin, there is also a significant Advanced Manufacturing credit of up to $45 / kWh for cells and packs manufactured in the United States. Tesla is drastically ramping up its in-house cell production capacity, as evidenced by its recent announcement of 100 GWh of new 4680 cell manufacturing at Gigafactory Nevada. As can be seen in the adjacent table, LFP cylindrical cells are the lowest cost option for battery cells, coming in at just under $80 / kWh according to an MIT study. Tesla's cost may well be even lower than this, and with the $35 / kWh credit at the cell level, the margin potential for Megapacks made with domestic 4680 cells from Giga Nevada will be truly staggering.

The credits from these cells alone will be worth $4.5B annually once Tesla reaches 100 GWh of scale, and there is little reason to believe Tesla will stop ramping domestically once that facility is built out. Gigafactory Austin is ramping 4680 production already, and it will also qualify for these credits. These credits are pure margin and are likely to be a significant driver of earnings growth in this decade.

Cell Cost by Form Factor and Chemistry



Source: MIT Study on the Future of Energy Storage

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ENERGY SERVICES & SOFTWARE

While the bulk of the revenue opportunity for Tesla in the short term is in the hardware sales, Services and Software sales will play an increasing role in the longer term. As Tesla's hardware sales accelerate in the next decade, the company will have a stream of recurring revenue on the cumulative deployed base of assets. We believe the recurring, low risk, and high growth rate of this revenue stream of this revenue stream warrants a high multiple.

The following sections discuss Tesla's various software and services revenue services in more detail.

MAINTENANCE CONTRACTS: Tesla's Megapacks come bundled with a maintenance contract which equates to approximately 0.2% of the upfront capital cost on an annual basis, escalating at 2% per year. This service includes annual inspections on each megapack to identify potential areas of concern as well as cleaning the ventilation system and cabinet to ensure optimal performance. It also covers coolant refilling and replacement of gaskets, pumps and fans once every ten years.

This service is analogous to Long Term Service Agreements (LTSAs) offered by OEMs like GE and Siemens on their power equipment. According to conversations with industry participants, these companies typically sell their hardware at close to break-even but make their margins on the LTSAs which their customers are obligated to enter if they wish to maintain the manufacturer's warranty on the equipment. Tesla not only has high margins on their hardware but is also able to require annual maintenance payments for the life of the assets.

Without a doubt, these payments are undoubtedly small today. When Tesla achieves scale, they will become more meaningful. For example, when Tesla has cumulatively deployed 1 TWh of Megapacks, the maintenance fees will be over $1 billion per year.

AUTOBIDDER: Autobidder is a real-time energy trading and control platform that provides asset management and portfolio optimization. Autobidder connects data from real-time energy markets with the operational data from a utility site's energy assets. Using Machine Learning and other techniques, Autobidder optimizes the financial performance of a battery storage site. While many providers offer this type of service, the decision logic of batteries is much more complicated than that of a typical power generating asset like a wind farm or natural gas power plant. In those cases, the cost of production is known and does not change throughout the day. If the market price for electricity is greater than the cost of production, the decision to "sell" is made.

With batteries however, the optimal behavior is much more difficult to determine. Unlike power plants, batteries have a limited duration of discharge. Determining the optimal time to sell in a market where electricity prices can move 100% or more in a matter of minutes can be very difficult. The same types of tradeoffs occur when determining the optimal time to charge the batteries. Further complicating matters, for the battery to qualify for ancillary services payments there may need to be some reserve amount of charge remaining at all or most times.

These types of uncertainties are not well equipped to be managed by the traditional systems which have basic economic logic. If Tesla's in-house AI team creates a better energy marketing platform than its competitors, then this functionality alone could be a factor for Tesla winning bids for large energy storage projects. In addition, Tesla will be paid at least annually on the autobidder software.

POWERHUB: Powerhub is an advanced monitoring and control platform for managing distributed energy resources, renewable power plants and microgrids. Powerhub is Tesla's version of a Supervisory Control and Data Acquisition (SCADA) system, which is common for controlling all large-scale energy assets.

ENERGY SERVICES & SOFTWARE cont…

MICROGRID CONTROLLER: Microgrid controller provides real-time control of paralleled grid-forming sources and variable renewable generation, in addition to intelligent load and solar forecasting. This will be applicable to a small subset of projects which primarily operate in remote areas, disconnected from the larger grid.

OPTICASTER: Similar to Autobidder, Opticaster forecasts and optimizes energy resources in real time. While Autobidder is for larger industrial projects with access to wholesale power markets, Opticaster provides similar benefits for Distributed Energy Resources within the retail and virtual power plant market structures.

VIRTUAL MACHINE MODE: One of the grid ancillary services traditionally only available to large turbines is spinning reserves, which are available due to the mechanical inertia of a spinning generator. Megapacks in Virtual Machine Mode can emulate the grid stability benefits, and thereby qualify for payments in grids which compensate for this capability.

ENERGY SERVICES MARGIN POTENTIAL

The dollar value of services and software will be smaller than hardware sales. They nevertheless provide a key role in helping customers to realize the objectives of their investment in a battery system.

The value proposition for batteries can be difficult to quantify for an end user. The use cases will vary drastically between behind-the-meter (BTM) customer applications and grid-scale utility applications. Behind the meter applications are installed on a customer's premises typically to support the load or generation on that site. BTM energy storage systems are typically used to manage the customer's energy usage, reduce their energy costs, and improve the reliability and resilience of their power supply. Grid-facing applications for energy storage are used to support grid stability, manage renewable energy integration, and provide various ancillary services to the grid. The customers are typically utilities which get the cost approved by their regulators and are therefore sensitive to criteria beyond simply the price of the system.

The graphic on the next page helps to visualize the different value streams available to different customer types. In making an investment case for the purchase of a battery system, customers develop a "value stacking" approach to their returns. This can be an incredibly complicated endeavor, and one that is better suited to automated software decision making than for human intervention. For example, imagine a customer who wants to have a battery on-site to optimize their time of use pricing. If they discharge their battery completely during a time of peak rates in order to lower their electricity bill, they run the risk of losing backup power capability. Therefore, having an integrated suite of software services which can optimize the value stacking trade offs and decision making is a significant driver of customer value. Tesla's world class AI capabilities are very well suited to this data-heavy problem.

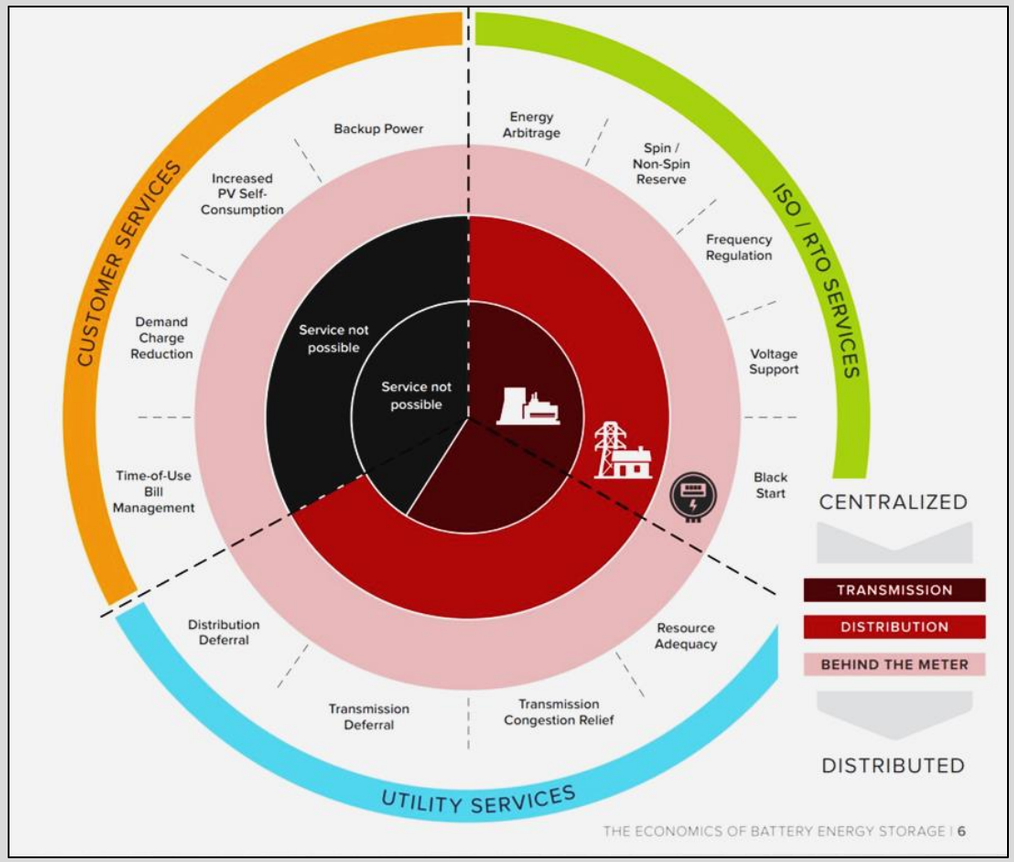
SERVICES MARGIN POTENTIAL cont…

Tesla does not disclose the details of its pricing for these services nor their effective "take rate" among customers who buy their hardware. It is reasonable to assume that sales of Powerhub and the Maintenance contracts are sold with the vast majority of Megapack hardware sales. Services like Microgrid controller would only be available within certain use cases. We don't have great visibility into either the price or take rate for this service. Nevertheless, we can make some reasonable estimates by looking at the offerings of their competitors.

Fluence, a provider of grid scale storage solutions, provides a breakdown of their revenues and contracted assets. In FY 2022, they reported contracted assets of 2 GW, and reported revenue $16M. This gives an indicated Services price of $8.2M / GW of assets. Using this as a figure as a baseline we can estimate that Tesla's Energy Services revenue for 2023 is approximately $500M, or roughly 5% of the Energy Hardware sales. This seems like an appropriate ratio, though it will undoubtedly increase over time with fast growth of the cumulative deployed fleet of assets using contracted services.

Battery Value Streams

BATTERIES CAN PROVIDE UP TO 13 SERVICES TO THREE STAKEHOLDER GROUPS



Source: Rocky Mountain Institute.

VALUATION AND SENSITIVITY ANALYSIS

In determining the value of $TSLA stock, we think it most prudent to develop separate build-ups for the Energy and Automotive business segments. As CFO Zach Kirkhorn said on the Q4 2022 earnings call, Tesla's focus is on operating margins. Earnings Before Interest Taxes Depreciation & Amortization (EBITDA) is a way to measure a company's operating performance, operating profits and thus operating margins. For our valuation purposes therefore, our projections will focus on EBITDA margins and Enterprise Value to EBITDA multiples.

Note that this approach is neutral to a company's capital structure, and given that Tesla's net debt is negative, the implied Enterprise Value is a proxy for market cap. A key assumption in this methodology is that Tesla's cumulative Operating Cash Flow may be used entirely to finance its capital expenditures over the projection period. Therefore, there is no accumulation of either debt nor cash during this period. It's possible that stock buybacks will be another use of cash, and buybacks may mute the dilution of share count over time.

We've also included EPS projections and future P/E ratios to provide a check of our calculated share price estimates. What follows is a description of our base case assumptions.

ENERGY

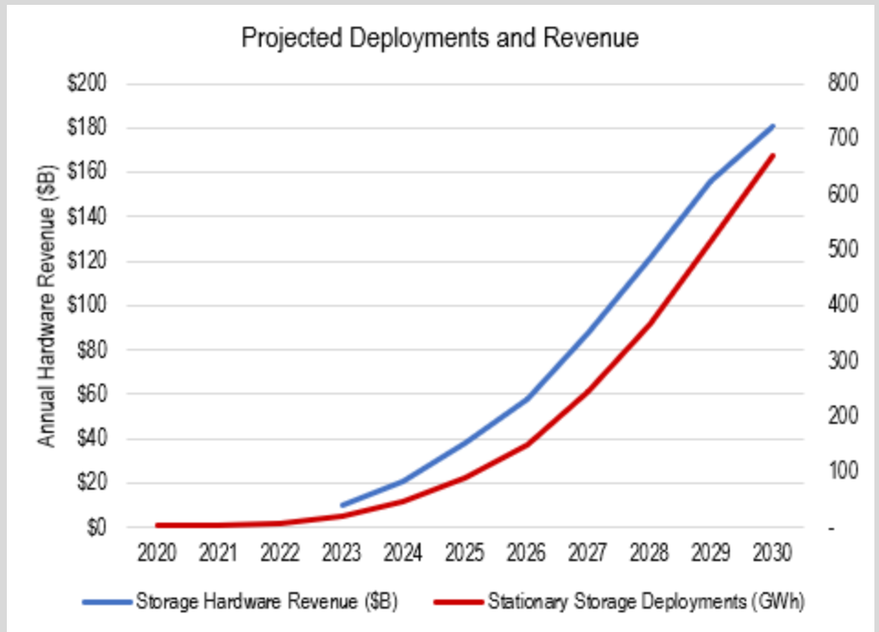
As noted earlier, Megapack deployments are likely to be a significant driver of growth and profitability for Tesla. However, in addition to Megapack, Tesla will continue to grow it's Powerwall products. We believe Tesla's Solar Roof will continue to ramp. Yet, the impact of Tesla Solar is likely to be rounding error compared to our energy storage assumptions. Therefore, we have chosen to omit solar from the analysis, and focus the Energy valuation on the ramp of the company's energy storage revenue and margin potential.

At Tesla's Battery Day event, the company laid out a plan to reach 3 TWh of battery capacity by 2030, with at least 1 TWh being devoted to energy storage applications. We believe it is unlikely that Tesla will quite reach this target, as lithium mining capacity is a significant bottleneck. Our projection assumes Tesla uses 1.5 TWh of battery capacity by 2030. That number of batteries would need a lot of lithium! As we gain more confidence around the lithium mining or the use of sodium ion batteries, we will adjust estimates provided Tesla continues to show strong execution.

As can be seen in the graph, we assume that Tesla will deploy 90 GWh in 2025 and 669 GWh in 2030. We further estimate that pricing on a $ / kWh basis is will decline by 39% over this timeline, and as noted previously, EBITDA margins are projected to peak at 40% in 2025 before normalizing at 30% in 2030.

When adding in Services margin as described previously, we calculate total Energy EBITDA of $15.8B in 2025 and $61.2B in 2030. We use these figures in determining a valuation as described at the end of this report.

Energy Storage Deployment and Revenue Forecasts



Halter Ferguson Financial Estimates.

HALTER FERGUSON FINANCIAL, INC.

AUTOMOTIVE

Tesla's stated goal is 50% annual volume growth, leading to 20 million units sold by 2030. We think it's prudent to take a significant haircut to this target for our base case valuation. Tesla is significantly broadening its Total Addressable Market (TAM) with new models. The Cybertruck provides a pickup truck option, and a yet-unannounced model may be a compact hatchback which may carry a much lower price point. Further scaling the Model Y and these new models give the company access to continued strong growth throughout the decade.

For valuation purposes, we assumed Tesla would reach 4 million vehicles in 2025 and 12 million by 2030. We believe that Tesla's manufacturing margins will decline modestly from the 2022 levels. This decline is a product of the recent price cuts and continued price decreases over time. Manufacturing process improvements and Tesla's massive scale offset part of the margin decline. We assume EBITDA margins on the Automotive Hardware side of the business will decline to 20% in 2025 and 18% in 2030.

However, it also seems probable that Full Self Driving (FSD) sales will become a material component of Tesla's overall financial results. The rate of improvement in the software is likely to accelerate, creating a significant value proposition to drivers even as an Advanced Driver Assistance System (ADAS) rather than a full autonomy application. In addition to higher take rate, we believe pricing will increase, and the percentage of revenue which is deferred will be minimal by 2025. Assuming price increases of $5K in 2025 and another $5K by 2030, and take rate increases to 20% in 2025 and 30% in 2030, we estimate FSD revenues of $16B in 2025 and $90B in 2030. The costs associated with supporting these revenues are minimal, so we assume that 95% of the revenues will flow to EBITDA.

Advanced Manufacturing Credits

> "So the value the credits this year will not be gigantic [in 2023] but I think it could be gigantic and we think it probably will be very significant in the future."
>
> Elon Musk, comments on Tesla Q4 2022 Earnings Call.

ADVANCED MANUFACTURING CREDITS

While it may seem strange to model out tax credits as a significant driver of value, the sheer magnitude of this benefit when calculated against Tesla's plans for storage warrant a separate calculation. The benefits available to Tesla include multiple direct credits, including for manufacturing inverters and various solar components.

However, for purposes of our valuation we are only contemplating the combined $45 / kWh credit for domestically-manufactured cells and modules. This credit is eligible for direct-pay, meaning it is not subject to caps or limitations based on a corporate taxpayer's earnings profile. CFO Zach Kirkhorn indicated that for 2023, Tesla anticipates earning $150-$250M per quarter with that amount increasing over time. As can be seen from the quote in the lower left corner, Tesla expects this relatively small figure will drastically increase in the future as the company expands its US battery cell manufacturing.

This credit applies to cells used in both energy storage and automotive applications. To estimate their value, we developed projections based on Tesla's combined battery needs with adjustments for indirect cell purchases and offshore Tesla production. Our projections indicate 47% of Tesla's need for 1.5 TWh of batteries will be fulfilled by in-house US manufacturing which qualifies for the credit.

The credit begins to phase down in 2030 and is phased out entirely in 2032. Since the cash flows from the credit don't last indefinitely, a Discounted Cash Flow (DCF) approach is more prudent than multiple valuation techniques. Discounting these cash flows, we calculate a present value for the credits of $35B, or $10 of value per share. While the total present value is relatively small, it is possible that these benefits could be extended. This was the case for the solar and wind credits which were renewed beyond their expiration.

Tesla can have an effective US Federal Tax rate as low as 3.75% because of these benefits. This is because the advanced manufacturing credits credits directly offset the Corporate Alternative Minimum Tax (CAMT). Furthermore, we ignored the other credits for inverters and solar components which Tesla will benefit from directly.

BASE CASE VALUATION

The projections described above result in in EBITDA of $63.1B in 2025 and $222.3B in 2030. EPS is $11.71 in 2025 and $31.51 in 2030. As can be seen in the table to the right, **this results in a base case valuation ranging from $305-$383**. This is not a "one-year price target." Between $305-$383 is what we feel the business is worth today counting automotive, FSD, & energy storage.

This scenario represents our best estimate at the financial results Tesla is likely to achieve. We believe there is room to miss both higher and lower than these figures. We do not believe the stock market will suddenly agree with us.

ALTERNATIVE SCENARIOS

It is important to note that the scenario above leaves out upside optionality from new products which could drastically alter the share price of Tesla. Tesla's Full Self Driving software has been developed with the goal of enabling true autonomy, which would drastically alter the economic value of Tesla's vehicles. Tesla's humanoid robot named Optimus, which is currently in the early stages of development, could also drastically increase the utility offered to its customers. Robotaxis would free up additional time for commuters, while the bot's TAM is the entirety of the worldwide labor market.

Under the scenario in which Tesla truly solves autonomy, we believe they could price the software at around $50,000 while achieving effectively a 100% take rate on FSD. While this would increase the total ASP of the vehicle to levels that may appear unachievable at first glance, these vehicles would have a drastically higher utilization than personal car ownership, effectively lowering the cost per mile driven. Just making these two changes to the base case outlined above for the year 2030 **results in a present value for TSLA stock of $1,184**.

Base Case Valuation Summary

VALUATION SUMMARY	2025	2030
Adjusted EBITDA	$ 63.1	$ 222.3
EV / EBITDA	25x	20x
Enterprise Value	$ 1,577	$ 4,445
(Less) Plus: Net Debt	$ 20	$ 20
Market Cap ($B)	$ 1,597	$ 4,465
Shares Outstanding (B)	3.68	4.27
Future Share Price	$ 434	$ 1046
Present Value @13.7%	$ 294.9	$ 374.4
Plus: Present Value of Credits	$ 9.6	$ 8.3
Present Value of TSLA	**$ 304.5**	**$ 382.7**
Net Income	$ 43.14	$ 134.53
EPS	$ 11.71	$ 31.51
P/E	37x	30x
Future Share Price	$ 433	$ 945
Present Value @13.7%	$ 295	$ 338
Plus: Present Value of Credits	$ 10	$ 8
Present Value of TSLA	**$ 305**	**$ 347**

ALTERNATIVE SCENARIOS cont…

This $1,184/share value excludes the potential of Tesla to earn recurring revenue as part of Tesla Network. Yet as drastic as this share price increase would be, **we believe it could be dwarfed by the potential of Optimus.** While Optimus and Robotaxis are the most significant potential value drivers, Tesla has teased many other products including home HVAC systems, new vehicle types and large-scale Virtual Power Plants which could provide incremental value not captured in any scenario presented here.

On the other hand, there are significant risks associated with Tesla's aggressive ramp. Tesla is one of the fastest growing large manufacturer in human history. It is possible that they will not scale to the levels we've assumed in our base case. If Tesla's energy storage deployments only reach 300 GWH by 2030, and that car sales only reach 8M units with no increase in FSD take rate or price, we calculate a present value for TSLA stock of $159. This figure could potentially be even lower if the margin assumptions are revised downward.

Given the difference between our base case and the share price today and the high upside return potential of the AI and Bot scenarios, we rate TSLA as our highest conviction investment now.

Base Case Financial Summary

PRO FORMA FINANCIAL SUMMARY	2025	2030
Vehicle Sales (M)	4	12
ASP (Hardware Only)	$ 40,000	$ 35,000
Automotive Hardware Revenue ($B)	$ 160	$ 420
Automotive Hardware EBITDA Margin	20%	18%
Automotive Hardware EBITDA ($B)	$ 32.0	$ 75.6
FSD Price	$ 20,000	$ 25,000
FSD Take Rate	20%	30%
FSD Revenue ($B)	$ 16.0	$ 90.0
FSD EBITDA Margin	95%	95%
FSD EBITDA ($B)	$ 15.2	$ 85.5
Energy Storage Deployed	90 GWh	669 GWh
Energy Storage Pricing	$ 423 / kWh	$ 270 / kWh
Energy Hardware Revenue Recognized ($B)	$ 38.1	$ 180.6
Energy Hardware EBITDA Margin	40%	30%
Energy Hardware EBITDA ($B)	$ 15.2	$ 54.2
Energy Software & Services Revenue ($B)	$ 1.6	$ 17.5
Energy Software & Services EBITDA Margin	40%	40%
Energy Software & Services EBITDA ($B)	$ 0.6	$ 7.0
Tesla Consolidated Revenue ($B)	$ 215.7	$ 708.1
Tesla Consolidated EBITDA ($B)	$ 63.1	$ 222.3
EBITDA Margin	29.2%	31.4%