

June 15, 2023 10:00 AM GMT

Tesla Inc | North America

The Real Reason Tesla's Sharing its Charging Network?

✔ Stock Rating | ◉ Industry View | ◎ Price Target
Overweight | In-Line | \$200.00

Today's gas stations pay a market price for their petroleum supply. What if Tesla 'made' its own electricity at a near zero marginal cost (and stable), stored on site with stationary batteries? It's not hard to see logic of achieving dominance in the 'filling station' of the future.

I'd greatly appreciate your support for the Morgan Stanley Auto & Auto Parts team in this year's All-America Institutional Investor survey. Respectfully, AJ:

How to vote: To request a ballot, please go to <https://voting.institutionalinvestor.com> and select "All-American Research Team".



The recent announcements from both F and GM joining the TSLA Supercharger Network have spurred questions from investors trying to size the opportunity from both the angles of the legacy OEMs as well as what it could mean for TSLA.

To help further the market's understanding, we have created a simple model/framework to test a range of inputs and sensitivity analyses and potential impact on TSLA earnings and valuation.

A few thoughts and concepts to consider:

- What could the economics to Tesla be in 10 years if the company had a dominant share of charging infrastructure and the majority of the power used is acquired at/near zero cost either from renewable generation (i.e. solar) or at night when combined with on-site storage (megapacks) and discharged in the middle of the day during peak demand when drivers have fewer alternatives?
- We think the consideration of Tesla supercharging stations should be seen in concert with the company's vertically integrated capabilities in renewable energy and storage at scale. *This is where things can get very interesting.*

MORGAN STANLEY & CO. LLC

Adam Jonas, CFA
EQUITY ANALYST
Adam.Jonas@morganstanley.com +1 212 761-1726

Evan Silverberg, CFA, CPA
EQUITY ANALYST
Evan.Silverberg@morganstanley.com +1 212 761-4376

Daniela M Haigian
RESEARCH ASSOCIATE
Daniela.Haigian@morganstanley.com +1 212 761-6071

Diego Ortega Laya
RESEARCH ASSOCIATE
Diego.Ortega.Laya@morganstanley.com +1 212 761-9835



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Tesla Inc (TSLA.O, TSLA US)

Autos & Shared Mobility / United States of America

Stock Rating	Overweight
Industry View	In-Line
Price target	\$200.00
Shr price, close (Jun 14, 2023)	\$256.79
Mkt cap, curr (mm)	\$890,548
52-Week Range	\$314.67-101.81

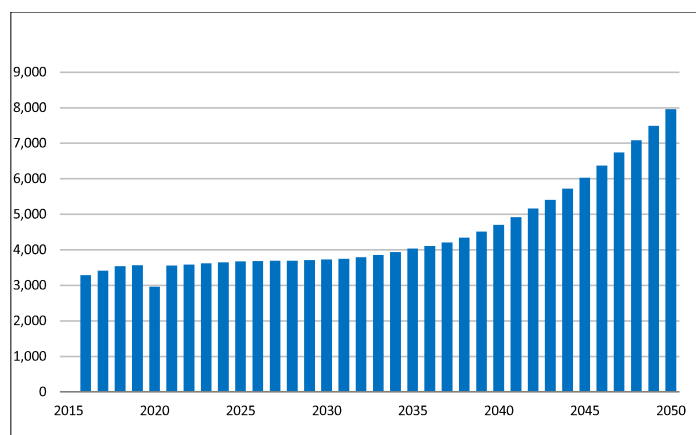
Fiscal Year Ending	12/22	12/23e	12/24e	12/25e
EPS (\$)**	4.07	3.02	3.44	4.53
Prior EPS (\$)**	-	-	-	-
ModelWare EPS (\$)	3.62	2.57	2.98	4.05

Unless otherwise noted, all metrics are based on Morgan Stanley ModelWare framework
 ** = Based on consensus methodology
 e = Morgan Stanley Research estimates

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- EVs account for ~7% of new car sales in the US YTD. By 2030, we estimate that US EV penetration will hit 25%. By 2040 we forecast 75% penetration.
- We also forecast EV miles driven, a fundamental underpinning of any EV infrastructure model (available upon request). We forecast EVs account for less than 1% of US miles travelled today, rising to 8% by 2030, 22% by 2035, 50% by 2040 and nearly 90% by 2050.

Exhibit 1: US Total EV Miles Traveled

Source: Morgan Stanley Research

For our NOPAT model, we make key assumptions around items such as: % of charging done at home, TSLA's share of the commercial charging opportunity, efficiency of the average battery, revenue/kWh, and NOPAT margin. For our multiple-based approach, we flex the same assumptions, placing a 20x multiple on 2030 NOPAT and discount it back to the present at a 9% WACC.

Some sensitivity/case observations from our model (available upon request).

The following cases based on 2030 miles traveled (US only), 20% Supercharging 'share', 4 miles/KWh efficiency and revenue charged at \$0.32/KWh. All scenarios valued at 20x FY30 NOPAT discounted at a 9.0% WACC.

- **The 'reasonable' case:** Assumes 10% EV miles penetration, 50% Tesla share of Supercharging and 30% NOPAT margin. **Potential NPV of \$3/share.**
- **The 'plausible' case:** Assumes 20% EV miles penetration, 70% Tesla share of Supercharging and 50% NOPAT margin. **Potential NPV of \$14/share.**
- **The 'dominant' case:** Assumes 30% EV miles penetration, 80% Tesla share of Supercharging and 70% NOPAT margin. **Potential NPV of \$33/share.**
- **The 'monopoly' case:** Assumes 50% EV miles penetration, 100% Tesla share of Supercharging and 80% NOPAT margin. **Potential NPV of \$78/share.**

As we have written about previously, we view the charging network as an 'extension of the battery itself.' Ubiquity of charging will impact design, chemistry, and size of an EV's battery, which is where we believe investors may find room to add incremental lines to their TSLA model. We have long believed TSLA would supply batteries to other OEMs and of our \$200 price target, \$28 is

related to 3rd party battery supply. When can the market come around to this?

Exhibit 2: TSLA Supercharging NOPAT Valuation

Miles (bn)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
BEV	37	52	70	91	122	164	219	288	371	471	588	732	903
ICE	3,581	3,598	3,602	3,594	3,569	3,528	3,488	3,439	3,372	3,319	3,264	3,202	3,130
Total	3,618	3,650	3,672	3,685	3,691	3,691	3,707	3,728	3,744	3,790	3,852	3,934	4,033
Charging Location (%)													
Charged at Home	90.0%	89.6%	89.1%	88.2%	87.3%	86.5%	85.6%	84.7%	83.5%	82.2%	81.0%	79.8%	78.6%
Commercial	10.0%	10.5%	10.9%	11.8%	12.7%	13.5%	14.4%	15.3%	16.5%	17.8%	19.0%	20.2%	21.4%
Tesla share of Commercial (%)	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%	75.0%
Tesla Supercharging Miles (bn)	3	4	6	8	12	17	24	33	46	63	84	111	145
Miles/KWh	4.0	4.0	4.1	4.1	4.2	4.2	4.2	4.3	4.3	4.4	4.4	4.5	4.5
% Change		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
TWh to Tesla	0.7	1.0	1.4	2.0	2.8	4.0	5.6	7.7	10.6	14.4	19.0	24.9	32.2
Revenue/KWh (\$)	0.30	0.30	0.31	0.31	0.31	0.32	0.32	0.32	0.32	0.33	0.33	0.33	0.34
% Change		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Revenue to Tesla (\$bn)	0.2	0.3	0.4	0.6	0.9	1.2	1.8	2.5	3.5	4.7	6.3	8.3	10.9
NOPAT Margin (%)	10.0%	11.0%	12.0%	15.0%	17.0%	18.0%	19.0%	20.0%	22.0%	23.0%	24.0%	25.0%	26.0%
Tesla Charging NOPAT (\$bn)	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.5	0.8	1.1	1.5	2.1	2.8
NPV (\$bn)	\$59.1												
Per Share (\$)	\$ 16												

Source: Morgan Stanley Research. Note: Full model goes until 2050 and is available upon request.

Exhibit 3: TSLA Supercharging Multiple Valuation: The 'Plausible' Case Inputs

Sensitivity Analysis

2030 US Miles (bn)	3,728
% EV	20%
EV Miles (bn)	746
% Supercharged	20%
% Tesla	70%
Tesla Miles (bn)	104
Efficiency (miles/KWh)	4.0
Price/KWh (\$)	0.32
Tesla Revenue (\$bn)	8.4
NOPAT Margin (%)	50%
NOPAT (\$bn)	4.2
Multiple (x)	20.0
Value (\$bn)	83.5
Discount rate (%)	9.0%
NPV (\$bn)	49.79
Share Count (mn)	3,655
Per Share (\$)	13.6

Source: Morgan Stanley Research

Exhibit 4: TSLA Supercharging Sensitivity Analysis

	EV Share (2030)									
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
10%	1	3	4	5	7	8	10	11	12	14
20%	3	5	8	11	14	16	19	22	25	27
30%	4	8	12	16	20	25	29	33	37	41
40%	5	11	16	22	27	33	38	44	49	54
50%	7	14	20	27	34	41	48	54	61	68
60%	8	16	25	33	41	49	57	65	74	82
70%	10	19	29	38	48	57	67	76	86	95
80%	11	22	33	44	54	65	76	87	98	109
90%	12	25	37	49	61	74	86	98	110	123
100%	14	27	41	54	68	82	95	109	123	136

Source: Morgan Stanley Research

For further reading, please see:

- [Tesla Inc: TSLA Up 13 Straight Days: What's Going On? \(13 Jun 2023\)](#)
- [Tesla Inc: Sergio's Prophecy Put to the Test? \(12 Jun 2023\)](#)
- [Podcast | Morgan Stanley Tech Talk: Adam Jonas on TSLA AI story, GM & Ford charging deals, EV price cuts | Episode 122 \(13 Jun 2023\)](#)
- [Tesla Inc: Tesla Financial Services: It's Time \(12 Jun 2023\)](#)
- [General Motors Company: GM Joins Tesla Supercharger Network, Stock Rises \(9 Jun 2023\)](#)
- [Tesla Inc: Tesla's AI Rally, Apple's Headset Battery, and My Truck \(7 Jun 2023\)](#)
- [Tesla Inc: Is Tesla Doing Detroit a Favor? Part 2 \(31 May 2023\)](#)
- [Autos & Shared Mobility: What Can Detroit Do? \(30 May 2023\)](#)
- [Tesla Inc: Trade, Build, Settle: Elon Musk Plays Electric Catan \(25 May 2023\)](#)

Valuation Methodology and Risks

Tesla Inc (TSLA.O)

Our PT of \$200 is comprised of 6 components: **(1)** \$88/share for core Tesla Auto business on 7.9mm units in 2030, 9.0% WACC, 12x 2030 exit EBITDA multiple, exit EBITDA margin of 15.2%. **(2)** Tesla Mobility at \$9 on DCF with ~425k cars at \$1.7/mile by 2030. **(3)** Tesla as a 3rd party supplier at \$28/share. **(4)** Energy at \$33/share, **(5)** Insurance at \$8/share, & **(6)** Network Services at \$33, 20.5mm MAUs, \$80 ARPU by 2030, 50% discount.

Risks to Upside

- Disclosure on service revs
- Increased FSD attach rate
- Cost milestones on new battery
- New model intro (Cybertruck, multivan, Semi)
- 3rd party battery win
- Geographic penetration& new capacity

Risks to Downside

- Competition: legacy OEMs/Chinese domestics/mega-tech
- Execution risk with multiple factory ramps
- Failure for market to recognize services op & lower than expected attach rate & RPU
- China risks
- Dilution
- Valuation

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(as of May 31, 2023)

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STOCK RATING CATEGORY	COVERAGE UNIVERSE		INVESTMENT BANKING CLIENTS (IBC)			OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC)	
	COUNT	% OF TOTAL	COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	COUNT	% OF TOTAL OTHER MISC
Overweight/Buy	1357	37%	274	43%	20%	603	39%
Equal-weight/Hold	1661	46%	298	47%	18%	720	47%
Not-Rated/Hold	2	0%	0	0%	0%	0	0%
Underweight/Sell	612	17%	66	10%	11%	223	14%
TOTAL	3,632		638			1546	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

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Stock Price, Price Target and Rating History (See Rating Definitions)

Tesla Inc (TSLA.O) - As of 6/13/23 in USD
Industry : Autos & Shared Mobility



Stock Rating History: 6/1/18 : E/C; 1/16/20 : U/C; 3/19/20 : E/C; 3/24/20 : E/I; 6/12/20 : U/I; 8/13/20 : E/I; 11/18/20 : O/I
 Price Target History: 5/15/18 : 19.4; 2/5/19 : 18.87; 3/12/19 : 17.33; 4/8/19 : 16; 4/30/19 : 15.33; 10/31/19 : 16.67; 1/16/20 : 24;
 2/18/20 : 33.33; 3/12/20 : 32; 3/19/20 : 30.67; 3/24/20 : 29.33; 5/4/20 : 45.33; 6/12/20 : 43.33; 7/7/20 : 49.33; 7/29/20 : 70;
 8/13/20 : 90.67; 10/15/20 : 111; 10/22/20 : 120; 11/18/20 : 180; 1/5/21 : 270; 2/1/21 : 293.33; 4/22/21 : 300; 10/24/21 : 400;
 1/10/22 : 433.33; 6/22/22 : 400; 7/14/22 : 383.33; 8/25/22 : 383; 10/10/22 : 350; 10/24/22 : 330; 12/28/22 : 250; 1/25/23 : 220;
 4/20/23 : 200

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -- No Price Target Assigned (NA)
 Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) ■
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INDUSTRY COVERAGE: Autos & Shared Mobility

COMPANY (TICKER)	RATING (AS OF)	PRICE* (06/14/2023)
Adam Jonas, CFA		
Aptiv Plc (APTV.N)	E (11/28/2022)	\$101.01
Asbury Automotive Group Inc (ABG.N)	U (05/20/2022)	\$221.84
AutoNation Inc. (AN.N)	U (01/17/2023)	\$148.49
Avis Budget Group Inc (CAR.O)	E (05/05/2023)	\$202.56
Carmax Inc (KMX.N)	O (07/10/2018)	\$79.70
Carvana Co (CVNA.N)	E (05/15/2023)	\$23.40
Ferrari NV (RACE.N)	O (05/09/2019)	\$302.79
Fisker Inc (FSR.N)	U (01/25/2023)	\$5.96
Ford Motor Company (F.N)	O (10/05/2022)	\$14.20
FREYR Battery SA (FREY.N)	E (01/25/2023)	\$7.58
General Motors Company (GM.N)	O (05/01/2023)	\$37.36
Group 1 Automotive, Inc (GPI.N)	U (05/20/2022)	\$238.18
Harley-Davidson Inc (HOG.N)	O (03/21/2023)	\$34.30
Hertz Global Holdings Inc (HTZ.O)	E (12/06/2021)	\$17.78
Li-Cycle Holdings Corp. (LICY.N)	U (01/25/2023)	\$5.65
Lithia Motors Inc. (LAD.N)	U (02/09/2021)	\$269.41
Lucid Group Inc (LCID.O)	U (09/13/2021)	\$6.40
Mobileye Global Inc (MBLY.O)		\$40.76
Penske Automotive Group, Inc (PAG.N)	U (11/17/2021)	\$154.00
QuantumScape Corp (QS.N)	U (11/09/2022)	\$7.49
Rivian Automotive, Inc. (RIVN.O)	O (12/05/2021)	\$14.74
Sonic Automotive Inc (SAH.N)	U (11/17/2021)	\$44.85
Tesla Inc (TSLA.O)	O (11/18/2020)	\$256.79
Evan Silverberg, CFA, CPA		
Adient PLC (ADNT.N)	U (03/17/2021)	\$39.44
American Axle & Manufacturing Holdings Inc (AXL.N)	O (02/28/2022)	\$8.06
BorgWarner Inc. (BWA.N)	O (05/15/2023)	\$47.80
Lear Corporation (LEA.N)	E (02/28/2022)	\$144.66
Magna International Inc. (MGAN)	O (10/14/2021)	\$56.22
Visteon Corporation (VC.O)	E (06/01/2022)	\$151.94

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* Historical prices are not split adjusted.