

Tesla Inc. (TSLA)

Updated FSD thoughts; breaking out robotaxi revenue in our model

Neutral

TSLA	12m Price Target: \$345.00	Price: \$428.22	Downside: 19.4%
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In this note we update our views on FSD, add 2027 estimates into our model, and break out a robotaxi business in our revenue build (which we expect to begin operations in 2H26 and reach ~\$115 mn of revenue in 2027).

On FSD, we believe that the performance of Tesla's FSD (full self driving) software has meaningfully improved with V13 compared to V12 based on our own recent ride in a FSD V13 enabled Tesla vehicle, crowdsourced data, and third party reviews. This reinforces our view that Tesla is one the leaders in autonomous technology. Specifically, crowdsourced data shows FSD V13 achieving ~400-450 miles between critical interventions, and 97% of drives not requiring a critical intervention (and based on company commentary, Tesla believes that FSD V13 can approach ~10K miles per critical intervention). Importantly, we still believe there is meaningful progress needed for FSD to become a situationally eyes off product (e.g. on a highway in good weather, or L3 autonomy) or a consumer AV (L4). For comparison, Waymo's historical data for [California](#) shows ~85K miles between critical disengagements (which was generally in urban environments), and [Tesla's safety report](#) based on US government accident data shows the typical car getting into an accident every ~600-700K miles. We do not expect FSD to be safer than a human in 2Q of this year, as Tesla targets. However, we believe FSD attach rates/monetization could pick up from what we believe are relatively low levels currently as performance improves, and we assume some increase in Tesla's automotive gross margin in 2026/2027 in part as a result of higher FSD revenue. We believe long-term FSD monetization potential will not only depend on technical progress, but the degree to which Tesla's software is differentiated vs. other alternatives (and the degree of competition and typical industry business models in China may make

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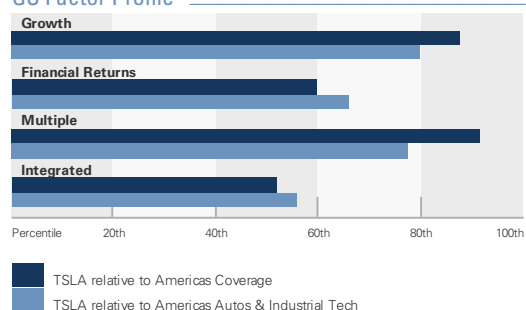
Key Data

Market cap: \$1.5tr
Enterprise value: \$1.5tr
3m ADTV: \$32.5bn
United States
Americas Autos & Industrial Tech
M&A Rank: 3

GS Forecast

	12/23	12/24E	12/25E	12/26E
Revenue (\$ mn)	96,773.0	98,877.3	112,170.9	133,017.4
EBITDA (\$ mn)	16,633.0	16,027.8	21,564.5	28,763.5
EBIT (\$ mn)	8,891.0	7,895.2	10,943.5	15,976.3
EPS (\$)	2.60	2.00	2.80	3.95
P/E (X)	83.5	NM	153.1	108.4
EV/EBITDA (X)	40.6	84.5	63.1	47.2
FCF yield (%)	0.6	0.2	0.4	0.7
Dividend yield (%)	0.0	0.0	0.0	0.0
Net debt/EBITDA (X)	(0.9)	(0.9)	(1.0)	(1.1)
	9/24	12/24E	3/25E	6/25E
EPS (\$)	0.62	0.62	0.51	0.63

GS Factor Profile



Source: Company data, Goldman Sachs Research estimates.
See disclosures for details.

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Neutral

Tesla Inc. (TSLA)

Rating since Jun 25, 2023

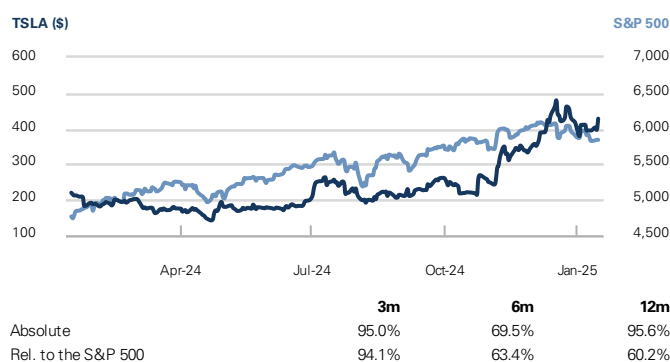
Ratios & Valuation

	12/23	12/24E	12/25E	12/26E
P/E (X)	83.5	NM	153.1	108.4
EV/EBITDA (X)	40.6	84.5	63.1	47.2
EV/sales (X)	7.0	13.7	12.1	10.2
FCF yield (%)	0.6	0.2	0.4	0.7
EV/DACF (X)	46.2	97.1	78.3	58.4
CROCI (%)	33.2	22.8	23.1	26.0
ROE (%)	16.9	10.3	12.7	15.3
Net debt/EBITDA (X)	(0.9)	(0.9)	(1.0)	(1.1)
Net debt/equity (%)	(22.5)	(20.4)	(24.2)	(30.4)
Interest cover (X)	57.0	23.3	32.2	47.0
Inventory days	61.1	62.5	61.0	64.7
Receivable days	12.2	14.1	15.4	15.6
Days payable outstanding	68.5	67.3	62.2	57.1

Growth & Margins (%)

	12/23	12/24E	12/25E	12/26E
Total revenue growth	18.8	2.2	13.4	18.6
EBITDA growth	(22.1)	(2.8)	37.7	38.2
EPS growth	(28.2)	(23.3)	40.0	41.2
DPS growth	NM	NM	NM	NM
Gross margin	18.2	18.3	18.1	19.3
EBIT margin	9.2	8.0	9.8	12.0

Price Performance



Source: FactSet. Price as of 15 Jan 2025 close.

Income Statement (\$ mn)

	12/23	12/24E	12/25E	12/26E
Total revenue	96,773.0	98,877.3	112,170.9	133,017.4
Cost of goods sold	(79,113.0)	(80,832.0)	(91,872.7)	(107,289.9)
SG&A	(4,800.0)	(5,761.9)	(4,810.9)	(4,941.4)
R&D	(3,969.0)	(4,388.2)	(4,543.8)	(4,809.9)
Other operating inc./exp.)	—	—	—	—
EBITDA	13,558.0	13,181.8	18,147.5	25,083.5
Depreciation & amortization	(4,667.0)	(5,286.6)	(7,204.0)	(9,107.3)
EBIT	8,891.0	7,895.2	10,943.5	15,976.3
Net interest inc./exp.)	910.0	1,233.0	1,710.0	1,990.0
Income/(loss) from associates	—	—	—	—
Pre-tax profit	9,975.0	9,028.2	12,653.5	17,966.3
Provision for taxes	(926.0)	(1,983.1)	(2,657.2)	(3,772.9)
Minority interest	23.0	(65.0)	(73.0)	(90.0)
Preferred dividends	—	—	—	—
Net inc. (pre-exceptionals)	9,072.0	6,980.1	9,923.3	14,103.3
Net inc. (post-exceptionals)	9,072.0	6,980.1	9,923.3	14,103.3
EPS (basic, pre-exception) (\$)	2.86	2.18	3.08	4.35
EPS (diluted, pre-exception) (\$)	2.60	2.00	2.80	3.95
EPS (ex-ESO exp., dil.) (\$)	--	--	--	--
DPS (\$)	—	—	—	—
Div. payout ratio (%)	0.0	0.0	0.0	0.0
Wtd avg shares out. (basic) (mn)	3,173.5	3,196.9	3,225.1	3,245.1
Wtd avg shares out. (diluted) (mn)	3,482.8	3,493.4	3,546.8	3,570.1

Balance Sheet (\$ mn)

	12/23	12/24E	12/25E	12/26E
Cash & cash equivalents	17,189.0	20,359.1	25,961.4	36,064.4
Accounts receivable	3,508.0	4,137.6	5,322.8	6,071.6
Inventory	13,626.0	14,038.2	16,678.1	21,355.3
Other current assets	15,541.0	19,907.0	19,907.0	19,907.0
Total current assets	49,864.0	58,441.9	67,869.4	83,398.3
Net PP&E	33,905.0	42,584.4	45,444.4	47,401.1
Net intangibles	431.0	395.0	331.0	267.0
Total investments	0.0	0.0	0.0	0.0
Other long-term assets	22,666.0	22,104.0	22,204.0	22,304.0
Total assets	106,618.0	123,180.3	135,503.8	153,025.4
Accounts payable	14,431.0	15,368.2	15,968.4	17,586.7
Short-term debt	—	—	—	—
Current lease liabilities	2,373.0	2,291.0	2,291.0	2,291.0
Other current liabilities	11,944.0	13,632.0	13,632.0	13,632.0
Total current liabilities	28,748.0	31,291.2	31,891.4	33,509.7
Long-term debt	2,857.0	5,405.0	5,405.0	5,405.0
Non-current lease liabilities	—	—	—	—
Other long-term liabilities	11,404.0	13,160.0	13,160.0	13,160.0
Total long-term liabilities	14,261.0	18,565.0	18,565.0	18,565.0
Total liabilities	43,009.0	49,856.2	50,456.4	52,074.7
Preferred shares	—	—	—	—
Total common equity	62,634.0	72,545.1	84,268.4	100,171.7
Minority interest	975.0	779.0	779.0	779.0
Total liabilities & equity	106,618.0	123,180.3	135,503.8	153,025.4
BVPS (\$)	17.98	20.77	23.76	28.06

Cash Flow (\$ mn)

	12/23	12/24E	12/25E	12/26E
Net income	14,974.0	6,985.1	9,923.3	14,103.3
D&A add-back	4,667.0	5,286.6	7,204.0	9,107.3
Minority interest add-back	—	—	—	—
Net (inc)/dec working capital	(2,248.0)	(567.6)	(3,224.9)	(3,807.7)
Others	(4,137.0)	2,815.0	1,800.0	1,800.0
Cash flow from operations	13,256.0	14,519.1	15,702.4	21,202.9
Capital expenditures	(8,898.0)	(11,556.0)	(10,000.0)	(11,000.0)
Acquisitions	(6,686.0)	(2,622.0)	—	—
Divestitures	—	—	—	—
Others	0.0	(31.0)	(100.0)	(100.0)
Cash flow from investing	(15,584.0)	(14,209.0)	(10,100.0)	(11,100.0)
Dividends paid	—	—	—	—
Share issuance/(repurchase)	—	—	—	—
Inc/(dec) in debt	2,580.0	2,577.0	—	—
Others	477.0	574.0	—	—
Cash flow from financing	2,593.0	2,860.0	0.0	0.0
Total cash flow	265.0	3,170.1	5,602.4	10,102.9
Free cash flow	4,358.0	2,963.1	5,702.4	10,202.9
Free cash flow per share (basic) (\$)	1.23	0.84	1.77	3.14

Source: Company data, Goldman Sachs Research estimates.

monetization more difficult in that region, as we detailed post [our China field trip last year](#)).

On robotaxis, we assume that Tesla's robotaxi business will begin commercial operations in 2H26 and reach ~\$115 mn of revenue in 2027 (and be relatively neutral to consolidated EPS). We expect Tesla to use remote assistance and geofencing to launch this service (neither of which it uses for FSD in consumer vehicles), directionally similar to the approaches used by robotaxis on the road currently from Waymo, Baidu and Pony AI. We believe that the use of remote assistance and a narrow geographic environment could help to improve performance compared to Tesla's full self driving (FSD) software on consumer vehicles.

We also highlight the continued progress of various other AV/ADAS efforts in this note, including Waymo, Pony AI and Mobileye. Finally, we provide some thoughts on the refreshed Model Y unveiled on 1/10/25.

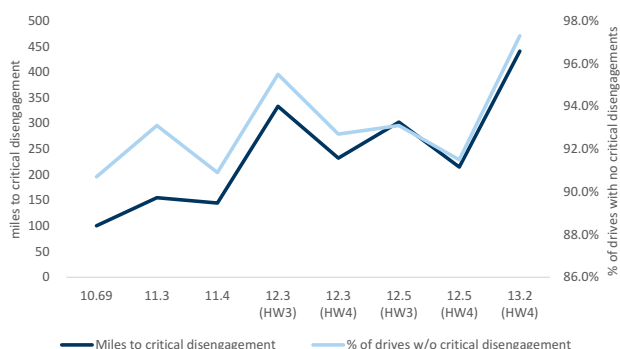
Overall we maintain our Neutral rating on Tesla, and our 12-month price target of \$345.

Tesla's progress on FSD; breaking out robotaxi revenue in our model

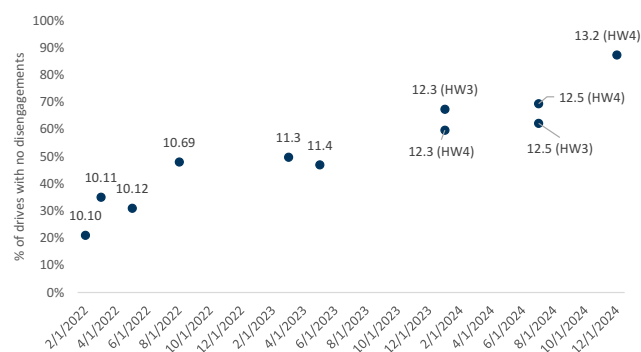
Tesla continues to roll out updates to its FSD software, with the latest version being V13 for vehicles with Hardware/AI 4.

Based on crowdsourced data from TeslaFSDtracker, V13.2 on Hardware 4 achieves between 400 and 450 miles between critical interventions (with the range depending on whether one looks at all data, or only data from users with a minimum number of miles submitted), with 97% of drives not requiring a critical intervention. This is a meaningful improvement from 12.5 ([Exhibit 1-Exhibit 3](#)). We note that this dataset is relatively limited (~9k miles of data for V13 vs. >35k for v12.5 on HW4). Based on company commentary and posts on X, Tesla has implied that it is targeting ~10K miles between critical interventions with V13, and its test fleet could be seeing better results than the crowdsourced data.

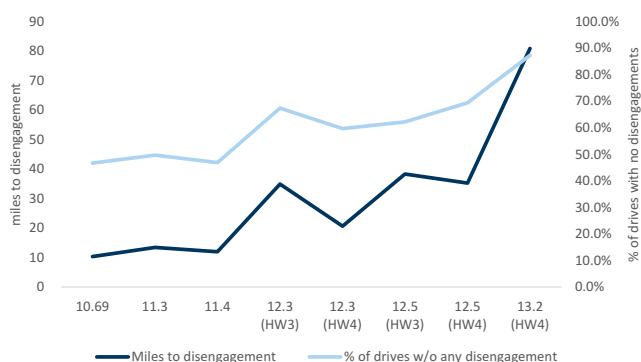
Third party reviews of V13 have also pointed to improvement (such as [Barron's](#)), and our own recent demo ride suggested meaningful improvement compared to V12 especially with drive smoothness (albeit with some non safety critical navigational challenges).

Exhibit 1: Tesla FSD miles until and % of drives without critical disengagement by version

Source: TeslaFSDtracker

Exhibit 2: Tesla FSD % of drives with no disengagements by version

Source: TeslaFSDtracker

Exhibit 3: Tesla FSD miles until and % of drives without any disengagement

Source: TeslaFSDtracker

We note that TeslaFSDtracker recently updated the methodology for how the listed miles to critical intervention is calculated, moving from a trimmed mean dataset to an untrimmed mean dataset (e.g. outliers were historically excluded but no longer are, but the main display adjusts out submissions from drivers with less than 50 total miles of data).

While we are encouraged by the improvement, recall that Tesla aims to be safer than a human driver in 2025 (and [Tesla's safety report](#) based on US government data shows an accident occurs every 600-700k miles), and FSD would need significant improvement to reach this level.

However, we believe FSD monetization could pick up from what we believe are relatively low levels currently as performance improves, and we assume some increase in Tesla's automotive gross margin in 2026/2027 in part as a result of higher FSD revenue. We show a scenario analysis for potential FSD revenue in [Exhibit 4](#). Note that each \$1 bn of incremental revenue from FSD would add roughly 75-100 bps to Tesla's automotive gross margin excluding regulatory credits, all else equal.

We believe long-term FSD monetization potential will not only depend on technical

progress, but the degree to which Tesla's software is differentiated vs. other alternatives. For example, there could be upside scenarios if Tesla is able to license FSD to other OEMs, and downside if consumer willingness to pay/competition limits ASPs (and we believe monetization could be more challenging in China in general based on our industry discussions on typical business models in that geography).

Exhibit 4: Potential FSD TAM sizing

Annual revenue in mns from monthly FSD subscriptions										
Monthly ASP	Attach Rate	Installed Base (mn)								
		25	30	35	40	45	50	75	100	125
\$25.0	10%	750	900	1,050	1,200	1,350	1,500	2,250	3,000	3,750
	25%	1,875	2,250	2,625	3,000	3,375	3,750	5,625	7,500	9,375
	40%	3,000	3,600	4,200	4,800	5,400	6,000	9,000	12,000	15,000
	50%	3,750	4,500	5,250	6,000	6,750	7,500	11,250	15,000	18,750
	75%	5,625	6,750	7,875	9,000	10,125	11,250	16,875	22,500	28,125
\$50.0	10%	1,500	1,800	2,100	2,400	2,700	3,000	4,500	6,000	7,500
	25%	3,750	4,500	5,250	6,000	6,750	7,500	11,250	15,000	18,750
	40%	6,000	7,200	8,400	9,600	10,800	12,000	18,000	24,000	30,000
	50%	7,500	9,000	10,500	12,000	13,500	15,000	22,500	30,000	37,500
	75%	11,250	13,500	15,750	18,000	20,250	22,500	33,750	45,000	56,250
\$100.0	10%	3,000	3,600	4,200	4,800	5,400	6,000	9,000	12,000	15,000
	25%	7,500	9,000	10,500	12,000	13,500	15,000	22,500	30,000	37,500
	40%	12,000	14,400	16,800	19,200	21,600	24,000	36,000	48,000	60,000
	50%	15,000	18,000	21,000	24,000	27,000	30,000	45,000	60,000	75,000
	75%	22,500	27,000	31,500	36,000	40,500	45,000	67,500	90,000	112,500
\$150.0	10%	4,500	5,400	6,300	7,200	8,100	9,000	13,500	18,000	22,500
	25%	11,250	13,500	15,750	18,000	20,250	22,500	33,750	45,000	56,250
	40%	18,000	21,600	25,200	28,800	32,400	36,000	54,000	72,000	90,000
	50%	22,500	27,000	31,500	36,000	40,500	45,000	67,500	90,000	112,500
	75%	33,750	40,500	47,250	54,000	60,750	67,500	101,250	135,000	168,750
\$200.0	10%	6,000	7,200	8,400	9,600	10,800	12,000	18,000	24,000	30,000
	25%	15,000	18,000	21,000	24,000	27,000	30,000	45,000	60,000	75,000
	40%	24,000	28,800	33,600	38,400	43,200	48,000	72,000	96,000	120,000
	50%	30,000	36,000	42,000	48,000	54,000	60,000	90,000	120,000	150,000
	75%	45,000	54,000	63,000	72,000	81,000	90,000	135,000	180,000	225,000
\$300.0	10%	9,000	10,800	12,600	14,400	16,200	18,000	27,000	36,000	45,000
	25%	22,500	27,000	31,500	36,000	40,500	45,000	67,500	90,000	112,500
	40%	36,000	43,200	50,400	57,600	64,800	72,000	108,000	144,000	180,000
	50%	45,000	54,000	63,000	72,000	81,000	90,000	135,000	180,000	225,000
	75%	67,500	81,000	94,500	108,000	121,500	135,000	202,500	270,000	337,500

Source: Goldman Sachs Global Investment Research

Breaking out robotaxi revenue in our model

Tesla plans to launch a robotaxi service in 2025, with possible launch cities in Texas and California per the company. The company expects to use Model 3/Y initially, before starting production of its Cybercab robotaxi in 2026 (although we note that the company has historically been optimistic on its timelines). Robotaxis have permitting requirements determined at the state/local level and these requirements are more

detailed in some states (e.g. California) compared to others (e.g. Texas and Arizona). For Cybercab, we note that larger scale deployments would require FMVSS changes (e.g. allowing a vehicle to not have a steering wheel or rear-view mirror), and a [NHTSA exemption](#) would be required to deploy up to 2.5k vehicles. The Trump administration could streamline the federal standards, per [media reports](#).

As we wrote in our July 2024 report, "[Can new AI technology help accelerate AV deployments? Updating our global ADAS and AV forecast](#)", a robotaxi business could range from a few million dollars to a few hundred million dollars in revenue at a smaller scale depending on trips per day and number of robotaxis deployed. For that report, we assumed an average of 9 miles driven per trip (similar to the current rideshare market), revenue per mile of ~\$2-\$2.25 (in line with current market pricing in the US on average for ride sharing), and 50-1,000 vehicles deployed (similar to the scale of early AV deployments from Waymo and Baidu). Globally, the market for robotaxis could reach billions of dollars in TAM at a higher number of deployments and across operators.

Exhibit 5: Annual revenue opportunity (\$ mn) from initial deployment of robotaxis

Trips per robotaxi per day	Annual revenue in mns from robotaxis				
	Robotaxis in operation				
	50	100	250	500	1,000
5	\$2	\$3	\$9	\$17	\$35
8	\$3	\$6	\$14	\$28	\$56
10	\$3	\$7	\$17	\$35	\$70
12	\$4	\$8	\$21	\$42	\$84
15	\$5	\$10	\$26	\$52	\$105
18	\$6	\$13	\$31	\$63	\$126
20	\$7	\$14	\$35	\$70	\$140

Source: Goldman Sachs Global Investment Research, Company data

Exhibit 6: Analysis of the annual revenue opportunity (\$mn) from a larger fleet of robotaxis deployed globally in a range of scenarios

Annual revenue in mns from robotaxis									
Revenue per trip	Trips per robotaxi per day	Robotaxis in operation							
		5,000	10,000	25,000	50,000	100,000	250,000	500,000	1,000,000
\$5	2	\$18	\$37	\$91	\$183	\$365	\$913	\$1,825	\$3,650
	4	\$37	\$73	\$183	\$365	\$730	\$1,825	\$3,650	\$7,300
	6	\$55	\$110	\$274	\$548	\$1,095	\$2,738	\$5,475	\$10,950
	8	\$73	\$146	\$365	\$730	\$1,460	\$3,650	\$7,300	\$14,600
	10	\$91	\$183	\$456	\$913	\$1,825	\$4,563	\$9,125	\$18,250
	12	\$110	\$219	\$548	\$1,095	\$2,190	\$5,475	\$10,950	\$21,900
	14	\$128	\$256	\$639	\$1,278	\$2,555	\$6,388	\$12,775	\$25,550
\$10	2	\$37	\$73	\$183	\$365	\$730	\$1,825	\$3,650	\$7,300
	4	\$73	\$146	\$365	\$730	\$1,460	\$3,650	\$7,300	\$14,600
	6	\$110	\$219	\$548	\$1,095	\$2,190	\$5,475	\$10,950	\$21,900
	8	\$146	\$292	\$730	\$1,460	\$2,920	\$7,300	\$14,600	\$29,200
	10	\$183	\$365	\$913	\$1,825	\$3,650	\$9,125	\$18,250	\$36,500
	12	\$219	\$438	\$1,095	\$2,190	\$4,380	\$10,950	\$21,900	\$43,800
	14	\$256	\$511	\$1,278	\$2,555	\$5,110	\$12,775	\$25,550	\$51,100
\$15	5	\$137	\$274	\$684	\$1,369	\$2,738	\$6,844	\$13,688	\$27,375
	8	\$219	\$438	\$1,095	\$2,190	\$4,380	\$10,950	\$21,900	\$43,800
	10	\$274	\$548	\$1,369	\$2,738	\$5,475	\$13,688	\$27,375	\$54,750
	12	\$329	\$657	\$1,643	\$3,285	\$6,570	\$16,425	\$32,850	\$65,700
	15	\$411	\$821	\$2,053	\$4,106	\$8,213	\$20,531	\$41,063	\$82,125
	18	\$493	\$986	\$2,464	\$4,928	\$9,855	\$24,638	\$49,275	\$98,550
	20	\$548	\$1,095	\$2,738	\$5,475	\$10,950	\$27,375	\$54,750	\$109,500
\$25	5	\$228	\$456	\$1,141	\$2,281	\$4,563	\$11,406	\$22,813	\$45,625
	8	\$365	\$730	\$1,825	\$3,650	\$7,300	\$18,250	\$36,500	\$73,000
	10	\$456	\$913	\$2,281	\$4,563	\$9,125	\$22,813	\$45,625	\$91,250
	12	\$548	\$1,095	\$2,738	\$5,475	\$10,950	\$27,375	\$54,750	\$109,500
	15	\$684	\$1,369	\$3,422	\$6,844	\$13,688	\$34,219	\$68,438	\$136,875
	18	\$821	\$1,643	\$4,106	\$8,213	\$16,425	\$41,063	\$82,125	\$164,250
	20	\$913	\$1,825	\$4,563	\$9,125	\$18,250	\$45,625	\$91,250	\$182,500
\$35	5	\$319	\$639	\$1,597	\$3,194	\$6,388	\$15,969	\$31,938	\$63,875
	8	\$511	\$1,022	\$2,555	\$5,110	\$10,220	\$25,550	\$51,100	\$102,200
	10	\$639	\$1,278	\$3,194	\$6,388	\$12,775	\$31,938	\$63,875	\$127,750
	12	\$767	\$1,533	\$3,833	\$7,665	\$15,330	\$38,325	\$76,650	\$153,300
	15	\$958	\$1,916	\$4,791	\$9,581	\$19,163	\$47,906	\$95,813	\$191,625
	18	\$1,150	\$2,300	\$5,749	\$11,498	\$22,995	\$57,488	\$114,975	\$229,950
	20	\$1,278	\$2,555	\$6,388	\$12,775	\$25,550	\$63,875	\$127,750	\$255,500

Source: Company data, Goldman Sachs Global Investment Research

We assume that Tesla's robotaxi business will begin commercial operations in 2H26 and reach ~\$115 mn of revenue in 2027 (and be relatively neutral to consolidated EPS). This assumes Tesla's fleet reaches 300 by the end of 2026 and 1,500 vehicles by the end of 2027, trips per day per vehicle moves from 15 at the end of 2026 to 20 by the end of 2027, and pricing per mile of a little over \$2.50 on average for 2027.

We believe Texas is the most likely place for Tesla to begin operations given company commentary that it would begin operations in Texas or California, [recent news articles](#) commenting that Tesla is in talks with the city of Austin over self driving technology, and because Texas has less permitting requirements than CA. We expect Tesla to use remote assistance and geofencing to launch this service (which is different than FSD in consumer vehicles), and this is directionally similar to the approaches used by robotaxis on the road currently from Waymo, Baidu and Pony AI. We believe that the use of remote assistance and a narrow geographic environment (with more knowledge of local roads) could help to improve performance compared to Tesla's full self driving (FSD)

software on consumer vehicles, although limit the rate of scaling for the next few years.

Importantly, Tesla could have an attractive cost structure at scale driven by its vertical integration with the auto business, especially if it can provide lower cost vehicles (with Tesla designing its own silicon and using fewer sensors than AV competitors). That said, we believe that Tesla could eventually add radar to its robotaxis for redundancy, especially for adverse weather conditions where camera performance degrades (or FSD needs be disengaged). To the extent that Tesla's safety and repair costs are lower, its insurance operation could also be a source of savings.

Note that we think it will take at least a few more years for Tesla to offer an L4 consumer vehicle (e.g. FSD is eyes-off in a wide operating domain) given the high bar for system performance.

State of other select ADAS/AV efforts

Waymo: Waymo offers robotaxi services to consumers in Phoenix, San Francisco, and Los Angeles with operational domains having expanded in all three cities. The company has a partnership with Uber Eats for robotaxi delivery in Phoenix and plans to expand to Austin and Atlanta through the Uber app early this year. Additionally, the company plans to offer rides in Miami starting in 2026 with another partner, Moove, that will perform fleet operations, facilities, and charging and will take over operations for Waymo in Phoenix this year. Through September 2024, Waymo had 33 mn driverless miles across its markets and, per its [safety report](#), is safer than a human driver. Data provided by the [California DMV](#) on Waymo shows 14 disengagements in ~1.2 mn miles or 1 disengagement every ~85k miles for the 12-month period from Dec 2022 to Nov 2023 (when excluding test vehicles). Waymo is currently providing over 175k trips per week and has completed over 5 mn rides total. Internationally, Waymo [announced a partnership](#) with Nihon Kotsu and GO to start training and testing its robotaxis in Tokyo, with its partners driving vehicles around key areas for mapping and to adapt to left-hand driving conditions starting in early 2025.

Pony AI: As written by our global colleagues in their [report](#), Pony AI operates fully driverless robotaxis in Beijing, Shanghai, Guangzhou, and Shenzhen and is licensed for commercial operations in 3 of these cities. The company has 250 robotaxis as of 1H24 with 124 of them in operation. The company has over 3.4 mn km of driverless miles with over 2.3 mn of them from public robotaxi services. As of August 2024, Pony AI had over 220k registrations for its PonyPilot+ app. Pony AI expects to have large scale commercialization start in 2H25. Pony AI has several partners including OEMs (Toyota, SAIC, FAW, GAC, and SANY), transportation network company platforms (Amap, OnTime, and Alipay), and logistics platforms (Sinotrans).

Zoox: Zoox has been operating its purpose-built robotaxis in San Francisco and Las Vegas without a driver since 2023, but does not currently offer rides to the public. The company has stated it plans to have its first public riders in Las Vegas in 2025. Based on California DMV data, Zoox drove ~11k miles between December 2022 and November 2023 and had no disengagements.

Mobileye: At CES 2025, Mobileye commented that the current version of its L2 hands-off SuperVision product (SV52) has about ~5 hours of mean time between failure (MTBF), which would imply ~200 miles between critical intervention. The company expects to begin shipping the next version (SV62) in the market in late 2026 with Porsche, and Mobileye expects this to achieve 500-1000 hours between critical intervention (or roughly 20K-40K miles). SV62 would use the next-generation chipset (EyeQ6), and we believe Porsche also plans to use a radar sensor on this system based on our industry discussions. EyeQ6 with an additional sensor array of radar/lidar can support partial or full autonomy with awards scheduled to be deployed in 2026/2027 (e.g. Mobileye expects to ship systems for commercially operating robotaxis in late 2026/2027 in small volumes, and the first level 3 consumer system from Mobileye is scheduled to ship in early 2027 with Audi).

Aurora: Aurora continues to haul commercial loads for customers in its autonomous trucks with safety drivers, with the company noting it is scheduling nearly 160 loads per week on its 3Q24 earnings call. Cumulative to-date through 10/27/24, Aurora has autonomously delivered (under the supervision of vehicle operators) 8,200+ loads, driving 2.2 mn+ commercial miles, with nearly 100% on-time performance for its pilot customers, including Werner, Schneider, and Uber Freight. Aurora expects to launch commercially (with no safety driver) in April 2025, starting with 1 truck and scaling to up to 10, with capacity increasing to tens of trucks by the end of 2025.

Per a September press release, Aurora is launching its Partner Success Program, slated to begin in 4Q24. Additionally, Aurora said that it plans to extend its Fort Worth to El Paso lane by opening operations to Phoenix. The company expects to begin commercial pilots for customers between Fort Worth and Phoenix in the first half of 2025 with the intent to go driverless on that route later in the year.

Model Y refresh unveiled for China/APAC

On 1/10/25, Tesla unveiled a refreshed version of the Model Y in China and other APAC countries, and Tesla expects to begin deliveries in March 2025. The refresh is currently being offered in a launch edition available in a Standard Range RWD and a Long Range AWD variant (with no Performance variant to start, similar to what the company did for the Model 3 refresh). The new Model Y has 4% and 7% more CLTC range depending on the variant, relative to its predecessor. We note that the pricing relative to the predecessors has increased by 4-5% for the launch edition but pricing could decline once the company shifts to regular model production.

Some of the changes made in the refresh, beyond the extended range, include faster acceleration (0-100 kph), updated exterior lighting, an added screen for the back seat, ambient lighting and improvements to interior noise. In addition, the company added a front bumper camera, which may assist with parking (recall Tesla removed the ultrasonic sensors it had previously used to aid in parking) and could provide an additional data point for Autopilot/FSD.

We believe the new version offers several good enhancements. We also believe the

refresh is relatively in line with investor expectations, as the upgrades are generally similar to what Tesla did with the Model 3.

Rating, price target, and key risks

We maintain our 2024/25/26 EPS estimates including SBC of \$2.00/\$2.80/\$3.95. We also introduce our 2027 EPS estimate including SBC of \$4.50. Excluding SBC, we now model 2024/25/26/27 EPS of \$2.41/\$3.20/\$4.35/\$4.95.

We maintain our Neutral rating on Tesla shares and our \$345, 12-month price target, which is still based on 95X Q5-8E EPS including SBC.

We believe Tesla remains well positioned for long-term growth, given its leadership position in EVs; the breadth/depth of its technical capabilities in AI, software, and hardware; and its ability to benefit from a full set of solutions including in charging and storage. However, we see a handful of offsetting factors. These include: 1) We expect the ramp in FSD to take longer than Tesla currently targets; 2) We believe auto fundamentals could remain volatile in the near-term (with lower pricing/incentives a headwind, and we expect delivery volumes to be somewhat lower than Tesla's outlook for 2025); 3) We see valuation as full.

Key downside risks to our view relate to potentially larger vehicle price reductions than we expect, increased competition in EVs, slower EV demand, delays with products/capabilities like FSD/4680, key person risk, the internal control environment, margins, and operational risks associated with Tesla's high degree of vertical integration. Upside risks include faster EV adoption and/or share gain by Tesla, a stronger macroeconomic environment for new vehicle sales more generally, earlier new product launches than we expect, and an earlier/larger impact from AI enabled products (e.g., FSD, Optimus and robotaxis) than we currently anticipate.

Disclosure Appendix

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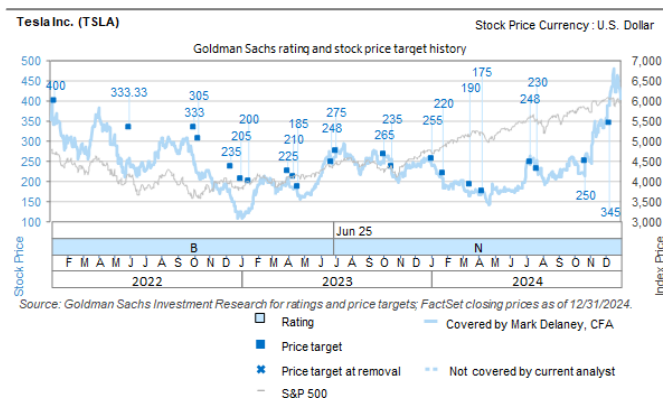
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