

Enphase Energy

The long road to recovery winds on – Reiterate Underperform

Reiterate Rating: UNDERPERFORM | PO: 69.00 USD | Price: 100.51 USD

Sell-through demand remains elusive: recovery protracted

We reiterate our Underperform rating on shares of Enphase Energy (ENPH) coming out of the 4Q23 update as microinverter shipments continue to underwhelm, with more pain still ahead. Volumes for the quarter were down ~60% sequentially as mgmt. under-shipped to sell-through demand by \$150Mn as it aims to starve a bloated channel. Guidance for 1Q24 calls for yet more under-shipping to the tune of \$130Mn, while 2Q24 is expected to see further right-sizing efforts, albeit at a lower amount. While prudent, considering the challenges wrought by an oversupplied channel, mgmt.'s estimate of underlying demand of \$400-500Mn is still well-below the prior peaks of \$700Mn+. With limited visibility to a full recovery, we remain cautious on the outlook. While signs of a recovery in Europe looks better than what we had thought, the US appears worse off, with California particularly strained by net metering (NEM 3.0) overhang. On balance, we bring down our revenue estimates for 1Q24 and FY24 by 10% and 5%, respectively. Reiterate Underperform on a still challenged outlook.

Revenue miss plus guiding to lower Q1 revs & shipments

ENPH reported its 4Q23 earnings with quarterly revenue totaling \$302.6mn, which fell at the lower end of guidance and below our estimates of \$392mn. The gross margin of 50.3%, including a net IRA benefit, aligned with the mid-point of the guidance range of 48-51% and was consistent with expectations. Looking ahead, Enphase offered revenue guidance for 1Q24, in the range of \$260-\$300mn. While our numbers are at the mid-range of guidance, this is 14% below consensus estimates (\$318mn). Company guidance includes the shipment of 500,000 microinverters to customers from US manufacturing facilities, with an expectation of undershooting end-market demand by \$130mn in the first quarter. However, ENPH pointed to higher shipments in 2H.

Lowering PO on negative estimate revisions

We reduce our PO from \$72 to \$69 as we take down estimates to reflect the challenged outlook. We bring down our revenue estimates for 1Q24 and FY24 by 10% and 5%, respectively. We also reduce our expectations for tax credit benefits for 1Q24 and FY24 by 60% and 23% as the outlook for US-manufactured shipments comes in below our expectations.

Estimates (Dec) (US\$)	2022A	2023A	2024E	2025E	2026E
EPS	4.37	4.26	3.75	5.83	6.95
GAAP EPS	2.68	3.06	1.97	3.92	5.06
EPS Change (YoY)	113.2%	-2.5%	-12.0%	55.5%	19.2%
Consensus EPS (Bloomberg)			3.75	5.54	6.14
DPS	0	0	0	0	0
Valuation (Dec)					
P/E	23.0x	23.6x	26.8x	17.2x	14.5x
GAAP P/E	37.5x	32.8x	51.0x	25.6x	19.9x
EV / EBITDA*	19.8x	19.2x	25.1x	15.0x	12.4x
Free Cash Flow Yield*	5.4%	4.5%	4.3%	5.5%	6.6%

* For full definitions of *IQmethod*SM measures, see page 10.

07 February 2024

Equity

Key Changes

(US\$)	Previous	Current
Price Obj.	72.00	69.00
2024E Rev (m)	1,705.6	1,620.6
2025E Rev (m)	2,146.0	2,097.2
2026E Rev (m)	2,848.4	2,883.4
2024E EPS	4.29	3.75
2025E EPS	5.81	5.83
2026E EPS	6.69	6.95

Julien Dumoulin-Smith

Research Analyst

BofAS

+1 646 855 5855

julien.dumoulin-smith@bofa.com

Cameron Lochridge

Research Analyst

BofAS

+1 337 962 0696

cameron.lochridge@bofa.com

Stock Data

Price	100.51 USD
Price Objective	69.00 USD
Date Established	7-Feb-2024
Investment Opinion	C-3-9
52-Week Range	73.49 USD - 247.00 USD
Mrkt Val (mn) / Shares Out (mn)	13,725 USD / 136.6
Free Float	96.7%
Average Daily Value (mn)	416.06 USD
BofA Ticker / Exchange	ENPH / NAS
Bloomberg / Reuters	ENPH US / ENPH.QQ
ROE (2024E)	42.6%
Net Dbt to Eqty (Dec-2023A)	102.2%
ESGMeter TM	Medium

ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating. ESGMeter is independent of BofA Global Research's equity investment rating, volatility risk rating, income rating, and price objective for that company. For full details, refer to ["BofA ESGMeter Methodology"](#).

BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Refer to important disclosures on page 11 to 13. Analyst Certification on page 8. Price Objective Basis/Risk on page 8.

12656385

Timestamp: 07 February 2024 06:00AM EST

iQprofileSM Enphase Energy

iQmethodSM – Bus Performance*

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Return on Capital Employed	28.3%	24.4%	16.3%	21.6%	21.1%
Return on Equity	101.1%	67.7%	42.6%	43.8%	36.0%
Operating Margin	29.3%	32.2%	31.3%	43.3%	39.1%
Free Cash Flow	742	616	592	757	908

iQmethodSM – Quality of Earnings*

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash Realization Ratio	1.2x	1.2x	1.2x	1.0x	0.9x
Asset Replacement Ratio	0.8x	1.3x	0.6x	0.7x	0.9x
Tax Rate	12.3%	14.5%	13.4%	10.6%	13.0%
Net Debt-to-Equity Ratio	99.0%	102.2%	27.6%	-14.9%	-37.8%
Interest Cover	NM	NM	39.2x	NM	NM

Income Statement Data (Dec)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Sales	2,346	2,291	1,621	2,097	2,883
% Change	69.6%	-2.4%	-29.3%	29.4%	37.5%
Gross Profit	975	1,100	812	1,233	1,546
% Change	77.8%	12.9%	-26.1%	51.7%	25.4%
EBITDA	743	764	587	984	1,187
% Change	94.5%	2.9%	-23.3%	67.7%	20.6%
Net Interest & Other Income	(7)	66	63	(7)	(5)
Net Income (Adjusted)	635	612	528	834	1,013
% Change	116.9%	-3.6%	-13.8%	58.0%	21.5%

Free Cash Flow Data (Dec)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Net Income from Cont Operations (GAAP)	389	439	277	562	738
Depreciation & Amortization	56	67	79	77	58
Change in Working Capital	123	64	50	(88)	(98)
Deferred Taxation Charge	0	(86)	0	0	0
Other Adjustments, Net	221	220	236	257	260
Capital Expenditure	(46)	(88)	(50)	(50)	(50)
Free Cash Flow	742	616	592	757	908
% Change	147.4%	-16.9%	-4.0%	28.0%	19.9%
Share / Issue Repurchase	0	0	0	0	0
Cost of Dividends Paid	0	0	0	0	0
Change in Debt	253	3	0	0	0

Balance Sheet Data (Dec)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash & Equivalents	473	289	881	1,638	2,546
Trade Receivables	441	446	333	431	592
Other Current Assets	1,350	1,709	1,648	1,656	1,742
Property, Plant & Equipment	111	168	139	112	104
Other Non-Current Assets	709	771	771	771	771
Total Assets	3,084	3,383	3,772	4,608	5,755
Short-Term Debt	91	0	0	0	0
Other Current Liabilities	547	532	409	427	576
Long-Term Debt	1,199	1,294	1,294	1,294	1,294
Other Non-Current Liabilities	421	573	573	573	573
Total Liabilities	2,259	2,399	2,276	2,294	2,443
Total Equity	826	984	1,496	2,315	3,312
Total Equity & Liabilities	3,084	3,383	3,772	4,608	5,755

* For full definitions of iQmethodSM measures, see page 10.

Company Sector

Alternative Energy

Company Description

Enphase Energy sells micro-inverters, energy storage, and software solutions catered to residential (rooftop) solar applications.

Investment Rationale

We are Underperform rated on ENPH as the core business growth is uncertain and at risk of deceleration over the next two years. ENPH is a profitable, FCF-generating engine with a strong financial position, but we argue fundamentals are strained while shares face significant multiple compression risk. We look for further growth from international expansion and new strategic initiatives, but gradual materialization does not offset further negative re-rating catalysts in the near term.

Stock Data

Average Daily Volume 4,139,478

Quarterly Earnings Estimates

	2023	2024
Q1	1.32A	0.06E
Q2	1.42A	0.33E
Q3	0.99A	0.73E
Q4	0.53A	0.84E

Channel inventory bottoms in Q2?

During the Q4 earning call Enphase management identified two main challenges: a channel inventory problem and a near-term demand issue. Mgmt. acknowledged a reduction in demand of approximately 30-35% compared to their overall expectation of end-customer demand, estimating it to be in the range of \$450 to \$500 million. In Q4, the company reported end-customer demand of around \$450 million but under shipped by approximately \$147 million, resulting in reported revenue of \$303 million. ENPH management outlined plans to under-ship by \$130 million in Q1, expecting a seasonal downturn of around 10%. However, they expressed optimism for Q2, anticipating improved sell-through numbers as they approach the seasonally better period. Additionally, there are positive developments in Europe, with countries like France showing signs of recovery, and the introduction of new products in various European markets.

Despite uncertainties, including the wildcard of California, Enphase expects sequential growth in revenue numbers in Q2, based on typical seasonality patterns and improving market conditions.

Consumer demand is projected to approach \$500 million in the second half of 2023, translating to around \$3.3 million microinverters. The company envisions potential growth, with a return to a \$700 million run-rate by 2045, expecting consumer demand to reach \$4.5 to \$5 million microinverters.

NEM 3.0 transition & microinverter challenges

In terms of pricing, Enphase is undergoing a supply chain transformation that may impact future microinverter pricing. Still mgmt. stresses it has maintained flat pricing and has no plans to reduce pricing in the near-term. ENPH anticipates a slight premium for US assembly, aligning with its strategy for manufacturing localization. Addressing the NEM 3.0 transition in California, Enphase noted a 7% overall sell-through decrease in Q4 compared to Q3, primarily attributed to the NEM 3.0 shift. While microinverter sell-through declined by 27%, battery sell-through increased by 58%, driven by the high attach rate of NEM 3.0 dose systems. Enphase expects a gradual transition for installers to NEM 3.0, which will affect sales normalization over the next few quarters.

ENPH is strategically transforming its operations, aiming to manufacture microinverters in the US and assemble batteries in China to capitalize on IRA benefits and reduce costs. The company highlighted two cell pack suppliers in China with sufficient capacity to support its ramp-up in 2024, underscoring its commitment to an efficient and reliable supply chain. In terms of capital allocation, Enphase (ENPH) disclosed that its Q4 Capex amounted to \$20.1 million, a decrease from the \$23.8 million reported for Q3. This reduction was attributed to a decline in US manufacturing spending.

Expanding into more markets

Management discussed expanding its market presence by introducing its IQ8 microinverters and IQ Batteries in several European countries. In India, the company is shipping high-power IQ8HC and IQ8P microinverters, with the latter supporting up to 480 Watts DC. Enphase is also launching new products, including the IQ8P microinverter with a 650 Watts DC capacity, for specific countries, and a variant with a three-phase cabling system suitable for small commercial solar installations.



Estimates lower following 4Q update

Coming into earnings, we were already well below Consensus for shipments and revenue as we expected a muted recovery in both US and international volumes amid an oversupplied channel. Following the update, we reduce our forecast for shipments, revenue, and EBITDA through 2025 as the outlook for microinverter volumes appears more challenged than even we had anticipated. See below for a full view of our updated forecast vs. guidance and vs. Consensus. For 1Q24 mgmt. expects to under-ship to sell-through demand by \$130Mn (down from \$150Mn in 4Q23). Under-shipments are expected to be weighted 60%/40% US/International in 1Q24, compared to 50%/50% in 4Q23. For 2Q24, mgmt. again expects to under-ship to demand, though at a lower (undisclosed) figure than 1Q24. Guidance implied sell-through demand of ~\$410Mn in 1Q24, which is down from ~\$450Mn in 4Q23 on seasonality and NEM 3.0 pressures. Guidance for tax-credit eligible shipments from US manufacturing facilities are expected at ~500Mn units in 1Q24, which is down ~50% from 4Q23 levels. Recall, ENPH has indicated its US manufacturing footprint can produce up to 5Mn microinverters per quarter. The outlook for US-manufactured shipments is below our prior expectations for >1Mn units, and thus our forecast for IRA credits is reduced.

Exhibit 1: ENPH earnings dashboard - BofAe

US shipments look to take another step down in 1Q24 while European volumes finally show life

	2022	1Q23	2Q23	3Q23	4Q23	2023	1Q24E	2Q24E	3Q24E	4Q24E	2024E	2025E
Key Metrics												
Shipments & ASPs												
Microinverter Shipments (MWdc)	5,903.4	1,957.0	2,121.3	1,585.6	660.1	6,334.0	662.6	968.2	1,328.2	1,405.6	4,364.5	5,786.5
Resi US	4,288.9	1,223.1	1,230.4	983.1	481.9	3,918.4	433.7	520.4	832.7	874.3	2,661.1	3,392.9
Resi International	1,614.2	733.9	890.9	602.5	178.2	2,405.6	213.9	427.7	470.5	495.3	1,607.4	2,049.5
Commercial	0.4	0.1	0.1	0.1	0.1	10.0	15.0	20.0	25.0	36.0	96.0	344.2
Storage Shipments (MWh)	509.6	97.4	83.9	86.5	83.3	351.1	86.9	95.3	128.3	134.4	444.8	688.2
Microinverter Blended ASP (\$/W)	\$0.33	\$0.331	\$0.304	\$0.310	\$0.371	\$0.32	\$0.302	\$0.301	\$0.296	\$0.295	\$0.30	\$0.28
VA Consensus	\$0.33	\$0.33	\$0.31	\$0.30	\$0.30	\$0.31	\$0.29	\$0.29	\$0.29	\$0.29	\$0.29	\$0.29
Storage ASP (\$/kWh)	\$738	\$738	\$738	\$627	\$627	\$684	\$650	\$650	\$650	\$650	\$650	\$618
Income Statement												
Resi US Revenue	1,422.7	399.6	376.6	311.0	182.9	1,270.1	134.4	161.3	254.0	266.7	816.4	988.9
Resi International Revenue	516.9	229.0	268.0	180.8	61.7	739.5	63.1	126.2	134.1	141.2	464.5	562.7
Commercial Revenue	0.1	0.0	0.0	0.0	0.0	0.1	2.7	3.6	4.5	6.5	17.3	58.9
Storage Revenue	376.3	71.9	61.9	54.3	52.3	240.3	56.5	62.0	83.4	87.4	289.3	425.1
EV Charging Revenue	30.0	6.1	4.7	5.0	5.7	21.5	6.8	7.4	8.8	10.2	31.4	61.7
Total Revenue (\$mn)	\$2,346.0	\$726.0	\$711.1	\$551.1	\$302.6	\$2,290.8	\$263.5	\$360.6	\$484.8	\$511.8	\$1,620.6	\$2,097.2
YoY	69.6%	64.5%	34.1%	-13.2%	-58.2%	-2.4%	-63.7%	-49.3%	-12.0%	69.2%	-29.3%	29.4%
Prior	\$2,346.0	\$726.0	\$711.1	\$551.1	\$329.2	\$2,317.4	\$291.5	\$353.3	\$502.8	\$558.1	\$1,705.6	\$2,146.0
Guidance		\$700-740	\$700-750	\$550-600	\$300-350		\$260-300					
VA Consensus	2,331	726	711	551	326	2,314	318	407	502	557	1,801	2,463
Non-GAAP Gross Profit	\$991.9	\$331.9	\$328.6	\$266.6	\$152.1	\$1,120.8	\$123.5	\$175.9	\$257.0	\$277.3	\$833.7	\$1,255.9
VA Consensus	993.8	\$332.0	\$328.7	\$266.7	\$159.2	1,086.3	\$154.3	\$197.3	\$251.9	\$281.9	889.1	1,254.2
% Margin	42.3%	45.7%	46.2%	48.4%	50.3%	48.9%	46.9%	48.8%	53.0%	54.2%	51.4%	59.9%
VA Consensus (Implied)	42.6%	45.7%	46.2%	48.4%	48.8%	46.9%	48.6%	48.5%	50.1%	50.6%	49.4%	50.9%
Guidance (w/ IRA)					48-51%		44-47%					
Guidance (w/o IRA)		41-44%	42-45%	42-45%	40-43%		40-43%					
Baseline Target: 35%												
IRA Credits		-	\$1.2	\$14.5	\$25.8	\$41.5	\$12.4	\$18.6	\$43.3	\$50.1	\$124.4	\$326.7
Prior		-	1.2	14.5	24.8	40.5	30.9	37.1	43.3	50.1	161.5	326.7
Non-GAAP OpEx	305.5	98.4	98.2	99.0	86.6	382.2	81.2	80.4	81.1	81.7	326.3	348.6
VA Consensus	305.0	98.4	98.0	98.8	88.1	383.3	78.0	82.1	83.4	84.1	327.6	373.1
% Revenue	13%	13.5%	14%	18%	29%	17%	31%	22%	17%	16%	20%	17%
Guidance		\$100-104	\$98-102	\$101-105	\$85-89		\$80-84					
Guidance Post 1H24 Restructuring								\$75-80				
Baseline Target: 15% of Rev.												
Non-GAAP Operating Income	\$686.4	\$233.6	\$230.5	\$167.6	\$65.6	\$697.2	\$42.3	\$95.6	\$175.9	\$195.5	\$507.3	\$907.3

Exhibit 1: ENPH earnings dashboard - BofAe

US shipments look to take another step down in 1Q24 while European volumes finally show life

	2022	1Q23	2Q23	3Q23	4Q23	2023	1Q24E	2Q24E	3Q24E	4Q24E	2024E	2025E
VA Consensus	688.8	233.5	230.2	167.4	70.2	701.0	73.9	113.1	164.8	194.3	546.0	880.3
% Margin	29%	32%	32%	30%	22%	30%	16%	27%	36%	38%	31%	43%
Baseline Target: >20%												
Adj. EBITDA (w/ IRA Credits)	\$742.5	242.6	248.3	187.0	86.4	\$764.4	62.1	115.4	195.7	215.4	\$586.6	\$984.0
Prior	\$736.4	\$242.6	\$248.3	\$187.0	\$81.5	\$759.5	\$80.0	\$128.1	\$203.4	\$231.6	\$654.9	\$1,001.3
Adj. EBITDA (w/o IRA Credits)	\$742.5	242.6	247.1	172.6	60.6	\$722.9	49.8	96.8	152.4	165.2	\$462.3	\$657.3
Prior	\$736.4	\$242.6	\$247.1	\$172.6	\$56.8	\$719.0	\$49.1	\$91.0	\$160.1	\$181.5	\$493.4	\$674.6
Margin, % (w/ IRA Credits)	32%	33%	35%	34%	29%	33%	24%	32%	40%	42%	36%	47%
Margin, % (w/o IRA Credits)	32%	33%	35%	31%	20%	32%	19%	27%	31%	32%	29%	31%
Non-GAAP EPS, Diluted (w/ IRA Credits)	\$4.37	\$1.32	\$1.42	\$0.99	\$0.53	\$4.26	\$0.44	\$0.75	\$1.26	\$1.37	\$3.75	\$5.83
Prior	\$4.37	\$1.32	\$1.42	\$0.99	\$0.67	\$4.41	\$0.69	\$0.88	\$1.31	\$1.47	\$4.29	\$5.81
VA Consensus	\$4.58	\$1.36	\$1.46	\$1.02	\$0.54	\$4.42	\$0.56	\$0.80	\$1.10	\$1.28	\$3.81	\$5.66

Source: Company filings, Visible Alpha, BofA Global Research estimates

BofA GLOBAL RESEARCH

We are reducing top-line further, with mgmt's target \$700mn of quarterly run-rate guidance pushed out into the '26 timeframe (vs aspirations of '25 potentially). We appreciate that organic growth is indeed there for the sector and indeed we may well be setting the low bar. The risk at this point however is that competitive dynamics on the landscape could very well weigh on this outlook intermediating the sector recovery from ENPH specific factors. We continue to see competitive threats from Tesla Energy's Powerwall 3 and Hoymiles in a recovery scenario considering the acute backdrop from many dealers to find additional margin in the cost stack. While product quality, performance and efficiency issues will linger, we expect ramp to prove more meaningful on both of these products in the coming year. Expect adoption of competitors to prove obfuscated by elevated inventory in '24. We are increasingly confident in mgmt's decision to hold price through this downturn (given how far we are already into this cycle). This is the upshot to the backdrop with both SEDG and ENPH holding the line.

Exhibit 2: ENPH forecast – BofA vs. Consensus

We again reduce estimates and move further below Consensus on pressured microinverter shipments

	2022	1Q23	2Q23	3Q23	4Q23	2023	1Q24E	2Q24E	3Q24E	4Q24E	2024E	2025E
BofA vs. Consensus Forecast												
Microinverter Shipments (MWdc)												
BofAe	5,903.4	1,957	2,121	1,586	660	6,334.0	663	968	1,328	1,406	4,364.5	5,786.5
Visible Alpha	5,859.1	1,957	2,116	1,611	910	6,569.6	898	1,174	1,452	1,588	5,211.9	7,212.1
% Delta	1%	0%	0%	-2%	-27%	-4%	-26%	-18%	-9%	-11%	-16%	-20%
Revenue												
BofAe	2,346.0	726.0	711.1	551.1	302.6	2,290.8	263.5	360.6	484.8	511.8	1,620.6	2,097.2
Bloomberg	2,315.4	723.0	725.5	565.7	327.7	2,316.9	318.4	408.3	497.5	555.4	1,812.2	2,470.7
% Delta	1%	0%	-2%	-3%	-8%	-1%	-17%	-12%	-3%	-8%	-11%	-15%
Solar Revenue - BofAe	1,939.7	648.03	644.52	491.84	244.59	2,029.0	200.23	291.12	392.56	414.30	1,300.0	1,610.4
Solar Revenue - VA	1,920.1	641.69	647.11	490.57	260.46	2,042.6	255.90	340.60	419.95	457.24	1,489.8	2,020.8
% Delta	1%	1%	0%	0%	-6%	-1%	-22%	-15%	-7%	-9%	-13%	-20%
Storage Revenue - BofAe	376.3	71.86	61.90	54.25	52.28	240.3	56.47	61.99	83.40	87.39	289.3	425.1
Storage Revenue - VA	376.7	75.49	56.52	57.57	57.87	247.8	59.08	69.57	80.84	93.55	303.1	412.8
% Delta	0%	-5%	10%	-6%	-10%	-3%	-4%	-11%	3%	-7%	-5%	3%
Adj. EBITDA												
BofAe	742.5	242.6	248.3	187.0	86.4	764.4	62.1	115.4	195.7	215.4	586.6	984.0
Bloomberg	718.5	220.0	231.4	168.7	81.5	747.5	87.7	129.0	178.2	208.9	600.5	929.6
% Delta	3%	10%	7%	11%	6%	2%	-29%	-11%	10%	3%	-2%	6%

Source: Company filings, Bloomberg, Visible Alpha, BofA Global Research estimates

BofA GLOBAL RESEARCH



PO to \$69 on estimate revisions

We reduce our PO to \$69 which reflects our reduced estimates through our forecast period. Our EV/EBITDA valuation moves to \$62/sh (weighted 75%) while our DCF valuation is unchanged at \$53/sh (weighted 25%). We roll forward our DCF one year following the close of 2023. Our IRA credit value moves down slightly as we reduce our expectations for FY24 US-manufactured shipments. See below for a complete summary of our valuation.

Exhibit 3: ENPH valuation summary

We arrive at a \$69 PO

ENPH Valuation

	<i>Value/Sh</i>	<i>Weight</i>	<i>Weighted Value</i>
EV/EBITDA	\$62.00	75%	\$46.50
DCF	\$53.00	25%	\$13.25
NPV: IRA Credit Value	\$9.64		
ENPH Value/Share			\$69.00
Share Price (As of 02/06/24)			\$100.51
Premium (Discount) to Unit Price			(31.4%)
2023E Dividend Yield			0.0%
Total Potential Return			-31.35%

Source: Company filings, Bloomberg, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 4: ENPH EV/EBITDA valuation

We arrive at a \$62/sh EV/EBITDA valuation

Enphase EV/EBITDA Valuation	2024E	2025E
Revenues		
Microinverters	\$1,331	\$1,672
Storage	\$289	\$425
Gross Margin	\$812	\$1,233
EBITDA Ex-IRA Credits	\$462	\$657
BOS Peer Group (A)	10.5x	9.0x
Previous BOS Peer Group	11.0x	9.5x
Relative Premium to BOS (B) - Base on 1-Yr Trailing EV/EBITDA vs Peers	6.0x	4.0x
EV/EBITDA (BOS Peer + BOS Premium, A+B)	16.5x	13.0x
Previous EV/EBITDA	16.0x	13.0x
Consensus EV/EBITDA	22.0x	14.0x
Enterprise Value	\$7,627	\$8,545
Net (Debt) Cash (Adj for Converts)	\$401	\$401
Equity Value	\$8,029	\$8,946
Shares Outstanding	137	137
Valuation	\$59	\$65
EV/EBITDA Value vs. Current Share Px	-42%	-35%
EPS	\$4.26	\$3.75
Implied P/E (excl. Net Cash)	13.0x	16.5x
ENPH Share Price	\$101	\$101
Average Valuation	\$62	

Source: Company filings, Bloomberg, BofA Global Research estimates

BofA GLOBAL RESEARCH

Exhibit 5: ENPH DCF valuation

We arrive at a \$53/sh DCF valuation

ENPH - DCF Methodology	2020	2024E	2025E	2026E	2027E	2028E	2029E	2030E
DCF - less Stock Based Compensation and Debt Amortization								
Free Cash Flows (\$Mn)		\$467	\$431	\$561	\$708	\$930	\$1,041	\$1,232
Less: Stock Based Compensation		\$236	\$257	\$260	\$255	\$262	\$267	\$271
Less Tax Credit Value		\$124	\$327	\$346	\$429	\$396	\$363	\$247
Adjusted Free Cash Flows (\$Mn)		\$107	(\$153)	(\$45)	\$23	\$272	\$411	\$714
Free Cash Flows to Equity (\$Mn)		\$107	(\$153)	(\$45)	\$23	\$272	\$411	\$714
<i>Discount Rate- Cost of Equity</i>		13%	13%	13%	13%	13%	13%	13%
<i>Discount Factor</i>		0.89	0.79	0.70	0.62	0.55	0.49	0.44
Discounted Free Cash Flows		\$95	(\$121)	(\$31)	\$14	\$150	\$201	\$311
DCF Value through '30	\$620							
Terminal Value								
<i>Terminal Multiple</i>		20.00						
<i>Discount Factor</i>		0.44						
<i>Terminal Value</i>		\$14,273						
<i>Implied Exit Multiple off 2030</i>		20.0x						
<i>Terminal FCF Yield</i>		5.0%						
PV of Terminal FCFE Value	\$6,214							
Net Cash	\$401							
Total FCFE	\$7,236							
DCF Value/Share	\$53.00							
<i>Shares O/S (Fully Diluted)</i>	139,205							
<i>Debt Included Convertible Note Dilution</i>	2,018							
<i>Adjusted Diluted Share Count</i>	137,187							
<i>Price as of close 02/06/2024</i>	\$100.51							
DCF Value vs. Current Share Px	-47%							
Discount Rate	12.6%							

Source: Company filings, Bloomberg, BofA Global Research estimates

BofA GLOBAL RESEARCH



Price objective basis & risk

Enphase Energy (ENPH)

Our \$69/share PO is based on an 75/25 weighted avg of EV/EBITDA and discounted cash flow (DCF) methodologies - DCF embedded at 25% to keep the valuation anchored to the intrinsic valuation and EV / EBITDA at 75% to reflect the investor sentiment on the Cleantech space and ENPH. Weighted EV/EBITDA/share value is \$62 and weighted DCF/share is \$53. We add an incremental \$10/share of NPV value from IRA credits (12.5% discount rate through 2033).

EV/EBITDA approach:

- Comps based on solar Balance of System (BOS) universe given more tech differentiation and somewhat similar margin profiles
- ENPH at a premium multiple using relative premium observed to the rest of the BOS comp universe
- Average value between '24 and '25 implied EV/EBITDA valuation of '24 at 16.5x and '25 at 13.0x respectively vs our EBITDA est.

DCF approach:

- Derive FCFE by removing the contribution from stock-based compensation to FCF through 2030
- FCFE discounted by 12.5% given rising risk free rate expectations
- Given high growth and expanding opportunity set, we attribute a 20x terminal multiple

Downside risks: (1) execution risks around financial/growth targets, (2) product risks around performance, (3) competitive risk and ability to maintain share, (4) partner risk around reliance on contract manufacturers, (5) policy risk around shifts in subsidy and incentives for resi solar. Upside risks: (1) policy implementation supporting acceleration in solar adoption, (2) increase in organic US/Europe demand.

Analyst Certification

I, Julien Dumoulin-Smith, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

North America - Utilities and Alt Energy Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Alliant Energy Corporation	LNT	LNT US	Julien Dumoulin-Smith
	Array Technologies	ARRY	ARRY US	Julien Dumoulin-Smith
	Atlantica Sustainable Infrastructure	AY	AY US	Julien Dumoulin-Smith
	Atmos Energy Corporation	ATO	ATO US	Julien Dumoulin-Smith
	CenterPoint Energy	CNP	CNP US	Julien Dumoulin-Smith
	Cheniere Energy Inc	LNG	LNG US	Julien Dumoulin-Smith
	Clearway Energy	CWENA	CWEN/A US	Julien Dumoulin-Smith
	Clearway Energy	CWEN	CWEN US	Julien Dumoulin-Smith
	CMS Energy	CMS	CMS US	Julien Dumoulin-Smith
	Consolidated Edison	ED	ED US	Julien Dumoulin-Smith
	DTE Energy	DTE	DTE US	Julien Dumoulin-Smith
	Duke Energy	DUK	DUK US	Julien Dumoulin-Smith
	Enlight Renewable Energy Ltd	ENLT	ENLT US	Julien Dumoulin-Smith
	Enlight Renewable Energy Ltd	XENLF	ENLT IT	Julien Dumoulin-Smith
	Entergy	ETR	ETR US	Paul Zimbardo
	First Solar, Inc.	FSLR	FSLR US	Julien Dumoulin-Smith
	Fluence Energy	FLNC	FLNC US	Julien Dumoulin-Smith
	Hannon Armstrong	HASI	HASI US	Julien Dumoulin-Smith
	Hydro One	YH	H CN	Julien Dumoulin-Smith

North America - Utilities and Alt Energy Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	MDU Resources Group, Inc.	MDU	MDU US	Julien Dumoulin-Smith
	Nextracker Inc	NXT	NXT US	Julien Dumoulin-Smith
	NiSource Inc	NI	NI US	Julien Dumoulin-Smith
	NorthWestern Energy Group	NWE	NWE US	Julien Dumoulin-Smith
	NRG Energy	NRG	NRG US	Julien Dumoulin-Smith
	PG&E Corporation	PCG	PCG US	Julien Dumoulin-Smith
	PNM Resources Inc.	PNM	PNM US	Julien Dumoulin-Smith
	PPL Corporation	PPL	PPL US	Paul Zimbardo
	Public Service Enterprise Group	PEG	PEG US	Julien Dumoulin-Smith
	Sempra	SRE	SRE US	Julien Dumoulin-Smith
	Sunnova Energy	NOVA	NOVA US	Julien Dumoulin-Smith
	SunRun	RUN	RUN US	Julien Dumoulin-Smith
	TPI Composites	TPIC	TPIC US	Julien Dumoulin-Smith
	Vistra Corp	VST	VST US	Julien Dumoulin-Smith
	Xcel Energy Inc	XEL	XEL US	Julien Dumoulin-Smith

NEUTRAL

	AES	AES	AES US	Julien Dumoulin-Smith
	Algonquin Power & Utilities Corp	AQN	AQN US	Paul Zimbardo
	Algonquin Power & Utilities Corp	YAQN	AQN CN	Paul Zimbardo
	AltaGas	YALA	ALA CN	Cameron Lochridge
	Ameren Corporation	AEE	AEE US	Julien Dumoulin-Smith
	Ameresco	AMRC	AMRC US	Julien Dumoulin-Smith
	American Electric Power	AEP	AEP US	Julien Dumoulin-Smith
	ChargePoint Holdings	CHPT	CHPT US	Cameron Lochridge
	Constellation Energy Corp	CEG	CEG US	Paul Zimbardo
	Emera Inc	YEMA	EMA CN	Julien Dumoulin-Smith
	Essential Utilities	WTRG	WTRG US	Julien Dumoulin-Smith
	Evergy, Inc	EVRG	EVRG US	Julien Dumoulin-Smith
	Exelon	EXC	EXC US	Paul Zimbardo
	Generac Holdings Inc.	GNRC	GNRC US	Julien Dumoulin-Smith
	Idacorp	IDA	IDA US	Paul Zimbardo
	Maxon Solar Technologies	MAXN	MAXN US	Julien Dumoulin-Smith
	New Fortress Energy	NFE	NFE US	Cameron Lochridge
	NextEra Energy	NEE	NEE US	Julien Dumoulin-Smith
	NextEra Energy Partners	NEP	NEP US	Julien Dumoulin-Smith
	OGE Energy Corp	OGE	OGE US	Julien Dumoulin-Smith
	Ormat Technologies	ORA	ORA US	Julien Dumoulin-Smith
	Pinnacle West	PNW	PNW US	Julien Dumoulin-Smith
	Portland General Electric Company	POR	POR US	Julien Dumoulin-Smith
	Southern Company	SO	SO US	Julien Dumoulin-Smith
	Southwest Gas Holdings	SWX	SWX US	Julien Dumoulin-Smith
	TransAlta Corp	TAC	TAC US	Julien Dumoulin-Smith
	TransAlta Corporation	YTA	TA CN	Julien Dumoulin-Smith

UNDERPERFORM

	Allete Inc	ALE	ALE US	Julien Dumoulin-Smith
	American Water Works	AWK	AWK US	Julien Dumoulin-Smith
	Avangrid	AGR	AGR US	Paul Zimbardo
	Avista	AVA	AVA US	Julien Dumoulin-Smith
	Black Hills Corporation	BKH	BKH US	Julien Dumoulin-Smith
	Bloom Energy	BE	BE US	Julien Dumoulin-Smith
	Dominion Energy	D	D US	Paul Zimbardo
	Edison International	EIX	EIX US	Paul Zimbardo
	Enphase Energy	ENPH	ENPH US	Julien Dumoulin-Smith
	Eversource Energy	ES	ES US	Paul Zimbardo
	FirstEnergy	FE	FE US	Julien Dumoulin-Smith
	Fortis	YFTS	FTS CN	Julien Dumoulin-Smith
	Fortis Inc	FTS	FTS US	Julien Dumoulin-Smith
	FREYR Battery	FREY	FREY US	Julien Dumoulin-Smith
	FTC Solar	FTCI	FTCI US	Julien Dumoulin-Smith
	Hawaiian Electric Industries	HE	HE US	Julien Dumoulin-Smith
	MGE Energy	MGEE	MGEE US	Julien Dumoulin-Smith
	New Jersey Resources Corp	NJR	NJR US	Julien Dumoulin-Smith
	ONE Gas, Inc.	OGS	OGS US	Julien Dumoulin-Smith
	SolarEdge Technologies	SEDG	SEDG US	Julien Dumoulin-Smith



North America - Utilities and Alt Energy Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Spire	SR	SR US	Julien Dumoulin-Smith
	Stem, Inc.	STEM	STEM US	Julien Dumoulin-Smith
	SunPower Corp.	SPWR	SPWR US	Julien Dumoulin-Smith
	UGI Corp.	UGI	UGI US	Julien Dumoulin-Smith
	WEC Energy Group Inc	WEC	WEC US	Julien Dumoulin-Smith

iQmethodSM Measures Definitions**Business Performance**

Return On Capital Employed

Return On Equity

Operating Margin

Earnings Growth

Free Cash Flow

Quality of Earnings

Cash Realization Ratio

Asset Replacement Ratio

Tax Rate

Net Debt-To-Equity Ratio

Interest Cover

Valuation Toolkit

Price / Earnings Ratio

Price / Book Value

Dividend Yield

Free Cash Flow Yield

Enterprise Value / Sales

EV / EBITDA

Numerator

NOPAT = (EBIT + Interest Income) × (1 – Tax Rate) + Goodwill Amortization

Net Income

Operating Profit

Expected 5 Year CAGR From Latest Actual

Cash Flow From Operations – Total Capex

Numerator

Cash Flow From Operations

Capex

Tax Charge

Net Debt = Total Debt – Cash & Equivalents

EBIT

Numerator

Current Share Price

Current Share Price

Annualised Declared Cash Dividend

Cash Flow From Operations – Total Capex

EV = Current Share Price × Current Shares + Minority Equity + Net Debt +

Other LT Liabilities

Enterprise Value

Denominator

Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill

Amortization

Shareholders' Equity

Sales

N/A

N/A

Denominator

Net Income

Depreciation

Pre-Tax Income

Total Equity

Interest Expense

Denominator

Diluted Earnings Per Share (Basis As Specified)

Shareholders' Equity / Current Basic Shares

Current Share Price

Market Cap = Current Share Price × Current Basic Shares

Sales

Basic EBIT + Depreciation + Amortization

iQmethodSM is the set of BofA Global Research standard measures that serve to maintain global consistency under three broad headings: Business Performance, Quality of Earnings, and validations. The key features of iQmethod are: A consistently structured, detailed, and transparent methodology. Guidelines to maximize the effectiveness of the comparative valuation process, and to identify some common pitfalls.

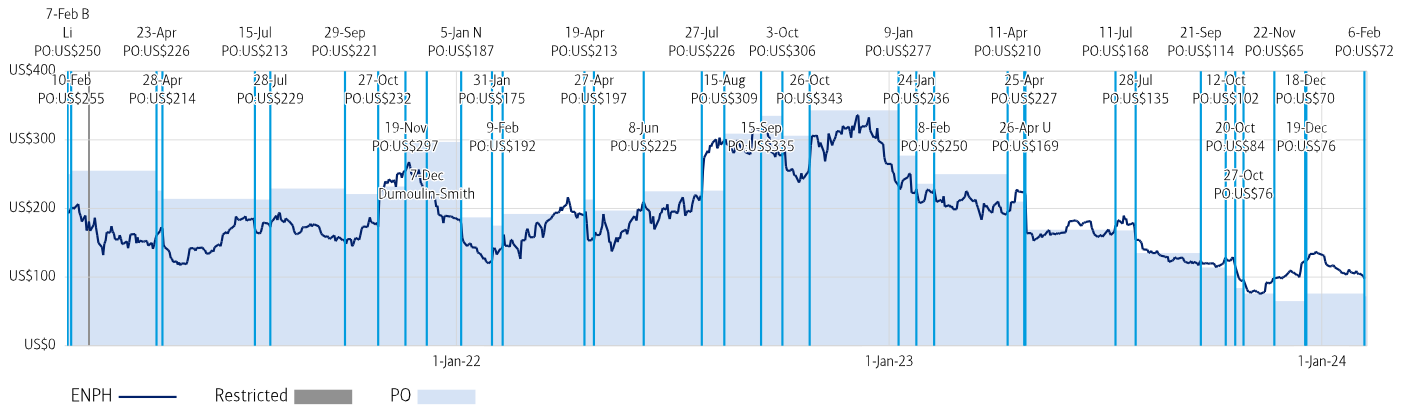
iQdatabase[®] is our real-time global research database that is sourced directly from our equity analysts' earnings models and includes forecasted as well as historical data for income statements, balance sheets, and cash flow statements for companies covered by BofA Global Research.

iQprofileSM, **iQmethodSM** are service marks of Bank of America Corporation. **iQdatabase[®]** is a registered service mark of Bank of America Corporation.

Disclosures

Important Disclosures

Enphase Energy (ENPH) Price Chart



The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Equity Investment Rating Distribution: Alternative Energy Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	8	47.06%	Buy	8	100.00%
Hold	5	29.41%	Hold	3	60.00%
Sell	4	23.53%	Sell	1	25.00%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

^{R1} Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

FUNDAMENTAL EQUITY OPINION KEY: Opinions include a Volatility Risk Rating, an Investment Rating and an Income Rating. **VOLATILITY RISK RATINGS**, indicators of potential price fluctuation, are: A - Low, B - Medium and C - High. **INVESTMENT RATINGS** reflect the analyst's assessment of both a stock's absolute total return potential as well as its attractiveness for investment relative to other stocks within its Coverage Cluster (defined below). Our investment ratings are: 1 - Buy stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; 2 - Neutral stocks are expected to remain flat or increase in value and are less attractive than Buy rated stocks and 3 - Underperform stocks are the least attractive stocks in a coverage cluster. An investment rating of 6 (No Rating) indicates that a stock is no longer trading on the basis of fundamentals. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm's guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster ^{R2}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

^{R2} Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

INCOME RATINGS, indicators of potential cash dividends, are: 7 - same/higher (dividend considered to be secure), 8 - same/lower (dividend not considered to be secure) and 9 - pays no cash dividend. **Coverage Cluster** is comprised of stocks covered by a single analyst or two or more analysts sharing a common industry, sector, region or other classification(s). A stock's coverage cluster is included in the most recent BofA Global Research report referencing the stock.

Price Charts for the securities referenced in this research report are available on the [Price Charts website](#), or call 1-800-MERRILL to have them mailed.

BofAS or one of its affiliates acts as a market maker for the equity securities recommended in the report: Enphase Energy.

BofAS or an affiliate has received compensation from the issuer for non-investment banking services or products within the past 12 months: Enphase Energy.

The issuer is or was, within the last 12 months, a non-securities business client of BofAS and/or one of its affiliates: Enphase Energy.

BofAS or one of its affiliates is willing to sell to, or buy from, clients the common equity of the issuer on a principal basis: Enphase Energy.

The issuer is or was, within the last 12 months, a securities business client (non-investment banking) of BofAS and/or one of its affiliates: Enphase Energy.

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.



Other Important Disclosures

From time to time research analysts conduct site visits of covered issuers. BofA Global Research policies prohibit research analysts from accepting payment or reimbursement for travel expenses from the issuer for such visits.

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

Officers of BofA or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

Refer to [BofA Global Research policies relating to conflicts of interest](#).

'BofA Securities' includes BofA Securities, Inc. ('BofAS') and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. 'BofA Securities' is a global brand for BofA Global Research.

Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at www.bofam.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSCF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSCF; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider.

Please refer to the [Electronic Communications Disclaimers](#) for further information.

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities.

This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such

securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

This report may contain a short-term trading idea or recommendation, which highlights a specific near-term catalyst or event impacting the issuer or the market that is anticipated to have a short-term price impact on the equity securities of the issuer. Short-term trading ideas and recommendations are different from and do not affect a stock's fundamental equity rating, which reflects both a longer term total return expectation and attractiveness for investment relative to other stocks within its Coverage Cluster. Short-term trading ideas and recommendations may be more or less positive than a stock's fundamental equity rating.

BoFA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned herein. Investors in such securities and instruments, including ADRs, effectively assume currency risk.

BoFA or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BoFA or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BoFA Securities, through business units other than BoFA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BoFA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BoFA for the provision of research services for a separate fee, and in connection therewith BoFA may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BoFA has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BoFA). If such recipient uses the services of BoFA in connection with the sale or purchase of a security referred to herein, BoFA may act as principal for its own account or as agent for another person. BoFA is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

BoFA ESGMeter Methodology:

ESGMeter is a proprietary metric based on quantitative analysis and fundamental analyst inputs that reflects our assessment of a company's Environmental, Social and Governance-related attributes. The ESGMeter is intended to indicate a company's likelihood of experiencing stronger financial stability (higher return on equity and lower earnings and price volatility) over the next three years relative to peer group. There are three ESGMeter levels - Low, Medium, and High - which indicate whether a company has attributes most likely to translate into superior financial stability (in the case of a High level) or weaker financial stability (in the case of a Low level) over the next three years relative to its peer group. A Medium level suggests that a company exhibits ESG characteristics that are likely associated with financial stability results in line with its peer group over the next three years. Full details of our methodology, financial stability definition and disclaimers are available at [BoFA ESGMeter methodology](#). ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating.

ESGMeter is independent of the BoFA Global Research fundamental equity analyst's investment rating, volatility risk rating, income rating or price objective for that company.

Copyright and General Information:

Copyright 2024 Bank of America Corporation. All rights reserved. iQdatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BoFA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BoFA Securities. BoFA Global Research information is distributed simultaneously to internal and client websites and other portals by BoFA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BoFA Securities.

Materials prepared by BoFA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BoFA Securities, including investment banking personnel. BoFA Securities has established information barriers between BoFA Global Research and certain business groups. As a result, BoFA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BoFA Global Research personnel's knowledge of legal proceedings in which any BoFA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BoFA Securities in connection with the legal proceedings or matters relevant to such proceedings.

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BoFA or any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BoFA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

The information herein (other than disclosure information relating to BoFA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BoFA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BoFA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BoFA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.

All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BoFA Securities is under no obligation to update this information and BoFA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BoFA Securities will not update any fact, circumstance or opinion contained herein.

Subject to the quiet period applicable under laws of the various jurisdictions in which we distribute research reports and other legal and BoFA Securities policy-related restrictions on the publication of research reports, fundamental equity reports are produced on a regular basis as necessary to keep the investment recommendation current.

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BoFA or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BoFA Securities nor any officer or employee of BoFA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.