Newcastle University Investment Fund

Enphase Energy, Inc – (Nasdaq: ENPH)

Long: Target Price $52.65 – (67.4% Upside)

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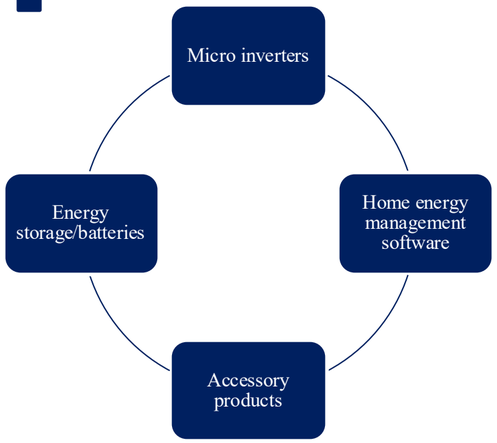
Executive Summary

- Enphase Energy, Inc. is a U.S.-based leader in residential solar solutions, specialising in microinverters, energy-storage batteries, and software for monitoring and energy management. Its business model combines hardware and digital platforms, creating an integrated ecosystem that enhances performance, customer retention, and recurring revenue potential. The company maintains strong margins (~45–50%) but faces challenges from tariffs, regulatory changes, and competitive pressures in solar and storage markets. Growth opportunities lie in expanding storage, software/services, and international markets.
- As at 29/10, Enphase trades at $31.46. Our Discounted Cash Flow Analysis implies a target price of $52.65 (base case), signalling 67.4% upside.
- We believe Enphase is undervalued because the market underestimates Enphase's ability to evolve from a pure-play microinverter company into an integrated energy operating system, where storage, load control, and grid-services software meaningfully increase ARPU and margins.

Company Overview

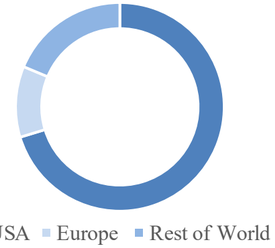
Leading the industry in renewable energy solutions within the solar energy sector

Product Mix within the solar industry



They operate with a significant level of operations being part of the micro inverter industry, with smaller focus yet growing interest in the energy storage industry as signalled by management. Then further backed with minority market interest in lines such as accessories and home management software

They make use of a widely diversified geographical market



- Increased exposure to growing solar renewable markets.
- Allows for lower susceptibility to market fluctuations.
- Allows firm to benefit from various national solar subsidy schemes.

Management

- Management continuously considers tariffs, supply chain constraints and inventory risks which signals strong awareness of operational risks
- Management also demonstrates strict prudence with regards to future sustainability through maintenance of a strong balance sheet, which contains significant cash reserves alongside marketable securities
- Management have also proven significant capability in recent quarters to maintain and improve margins while also providing strategic insight into future operations
- Consistent focus on their share repurchase program signals confidence within the near future

Key business components

Reliability with solar components with consistent innovative improvements. Partnered with significant R&D investment.

They offer an easily accessible service providing all necessary solar components, Acting as a one stop shop, for your home renewable solar infrastructure.

Experience with being one of the market leaders within the solar development industry.

Key operational insight

- They make significant use of outsourcing allowing for an asset-light structure. This allows the company to adapt to changing demand levels without implications of factory slowdown. This lowers exposure to risk with minimal capital expenditure
- Use of data programs with increasing focus on monitoring and detecting supply chain risks, limiting their overall exposure to negative implications
- They also signal future movement to more domestic operational solutions, indicating a potential for an improved asset portfolio and less risk to international trade regulations

Mergers and Acquisitions

Enphase have employed M&A as a strategy to provide rapid growth, further helping them expand. Although not acquiring a firm since GreenCom Networks AG (2022) they have a history of paying cash for acquisitions thus reinforcing their strong balance sheet position

Industry Overview

Leading the market within the Micro Inverter industry

Industry vertical

Inputs

Collection of raw minerals and components such as polysilicon on an international scale

Production

Completion of micro inverter devices through both in house and outsourcing methods

Distribution and retail

They will either distribute devices themselves to provide solar components or use selected and contracted distributors

Regulatory factors

- Subsidies for domestic manufacturing (e.g., domestic-content bonuses) strengthen local supply chains.
- Renewable Portfolio Standards (RPS) require utilities to source a set share of electricity from renewables, indirectly boosting demand for solar projects
- Grid access & interconnection reforms – including updated grid codes and distributed-generation rules– streamlining hook-ups and support higher solar penetration
- Tariffs and trade policies can hinder cross-border integration of solar markets, though they haven't stopped the industry's overall globalisation

Technological factors

Efficiency improvements

Advancements in technological capability increases efficiency in micro inverters, allowing for higher power output

Development of battery storage capabilities allows for elements such as dispatchable power – critical for grid stability and renewable penetration

Economies of scale

Global manufacturing scale has dramatically driven cost declines in solar modules, with higher levels of automation and better supply gain integration

Use of AI and cloud monitoring has drastically improved system performance with optimised predictive maintenance and grid coordination

Renewable energy comparison

Solar is the leading renewables industry due to the overall efficiency for energy output and level of compatibility, significantly outperforming other industries with a renewable market share upwards of 40%

Environmental & Energy transition factors

- Climate change and emission goals are part of both national and organisational targets making solar an essential pillar of the energy transition
- Energy security is backed up by the capability to provide domestic, renewable, and geographically secure energy supplies, reducing dependence on imported and finite fossil fuels
- Solar energy has fewer land and resource constraints compared to other renewables. Rooftop installations and floating solar on water bodies are highly location-compatible and avoid the use of agricultural land, unlike wind farms which often compete with such areas

Key Market Factors

Declining levelised cost of energy marking it as an increasingly cheap form of new power generation

Rising grid prices are encouraging households to adopt rooftop solar and batteries—typically as grid-connected systems

Financing capabilities are continuously growing with greater access to green bonds, solar leases, PPAs and community solar financing models

Corporate and industrial demand is growing as pledges are being adopted e.g. net zero

Thesis 1: Strong Fundamental Business

Enphase's closed-loop ecosystem drives customer retention & recurring revenue through platform integration

Solar set to supply largest share of new U.S. capacity by 2025-26…

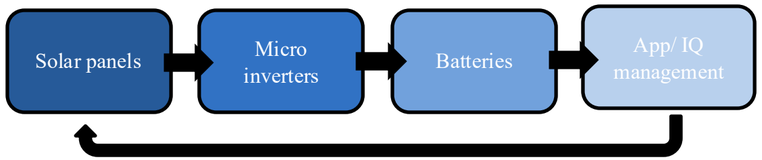
U.S. IEA report solar will account for 52% of all new U.S. generation capacity additions in 2025, totalling around 32.5 GW. Battery storage follows at 18.2 GW (29%), while natural gas and wind make up smaller shares at 7% and 12%

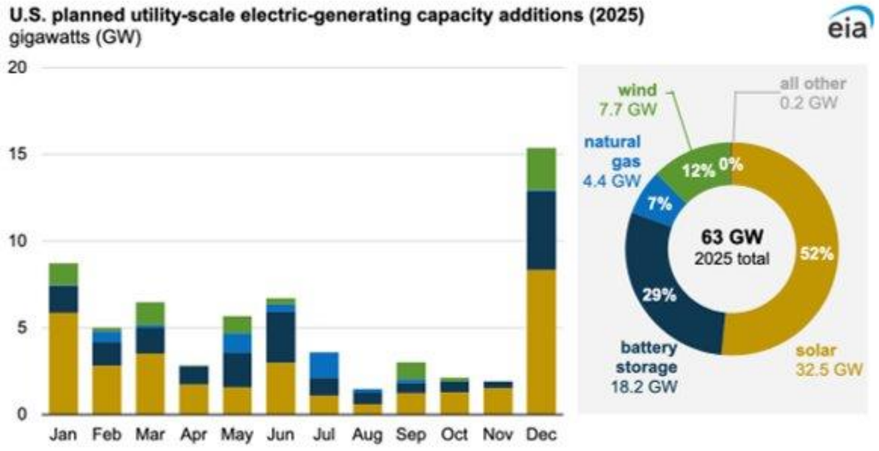
Key drivers behind Solar's growth include:

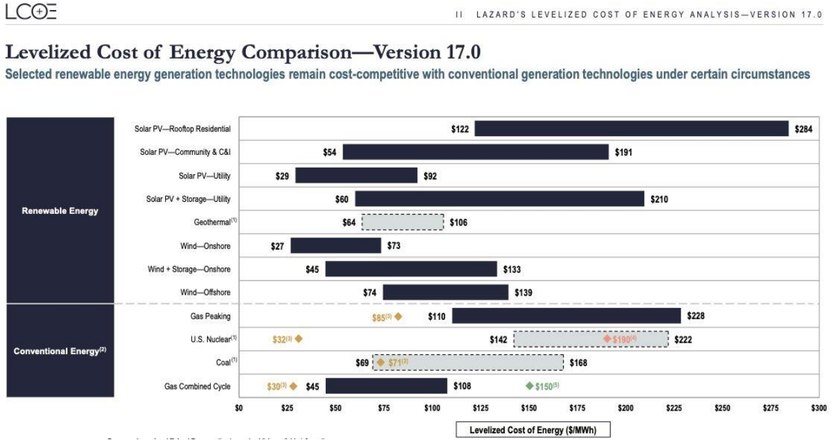
- **Falling installation costs:** Utility-scale solar costs have declined by over 70% in past decade, outpacing efficiency improvements in competing technologies
- **Federal incentives:** The inflation reduction act (IRA) extends long-term investment and production tax credits for both standalone solar and hybrid solar-plus-storage projects, driving sustained investment. However, this is due to be phased out at end of year 2025
- **Strong consumer demand:** Rising retail electricity prices & increasing adoption of electric vehicles & home electrification boost rooftop & distributed adoption

…as its cost advantage over gas and nuclear continues to widen…

- Levelised cost of energy (LCOE) data from Lazard & EIA shows that Solar's LCOE is now 40-60% lower than new-build natural gas/nuclear (even before subsidies)
- This sustained cost advantage positions solar (and integrated technology providers like Enphase) to capture the majority of new generation capacity in the coming decade
- Enphase is directly exposed to this growth through its integrated ecosystem (below). This aligns directly with the rapid expansion of solar-plus-storage capacity in the U.S







Thesis 1: Strong Fundamental Business

Enphase's closed-loop ecosystem drives customer retention & recurring revenue through platform integration

These factors create switching friction, recurring revenue, and margin stability

As evidenced in their 2025 Q2 earnings report (compared to Q1):

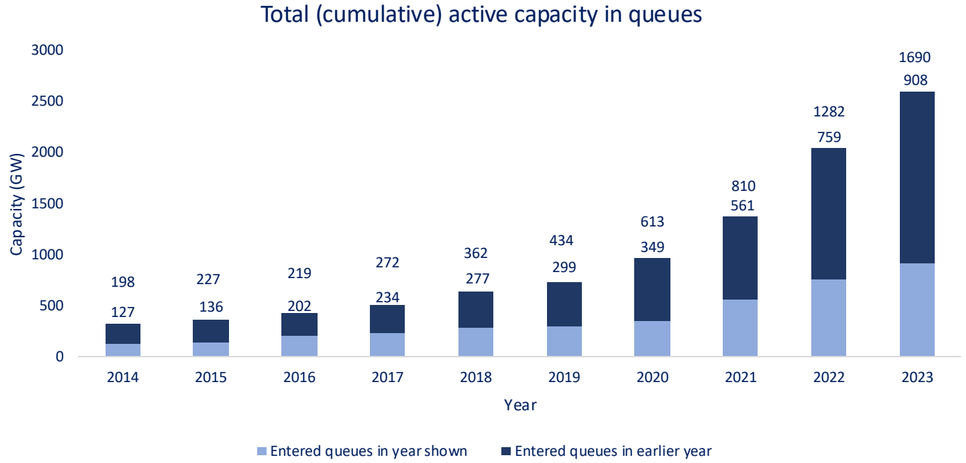
Switching Friction	Recurring Revenue	Margin Stability
1.53 M microinverters – of which 1.41M were U.S.-manufactured & eligible for IRA 45X credits, reinforcing domestic scale & integration	**210 MWh enrolled in VPP programmes** – generating recurring grid services income across the U.S., Europe, & Australia	**48.6% gross margin (non-GAAP)** – stable QoQ despite tariff headwinds; 37.2% excluding IRA benefits
190.9 MWh batteries (+12%) – record quarter for IQ Battery 5P, now launched in France, Spain, and the Nordics	**Solargraf AI platform** – enhanced with design automation & financing integrations; software subscriptions expanding installer stickiness	**+4% QoQ operating income** – driven by product mix improvement & cost discipline
11.7 K installers (+7%) – expanding network creates high switching costs & stronger customer retention	**IQ Energy Management rollout** – enables optimisation of energy use, creating long-term SaaS-like recurring revenue	**$1.53B cash + positive FCF** – supports continued buybacks & R&D spend without leverage risk

Together, Enphase's integrated product suite, expanding software ecosystem, and strong balance sheet reinforce its long-term structural moat – generating sticky customers, recurring platform income, and resilient margins

Thesis 2: Grid Modernisation & Integration

U.S. strength growing into Global Opportunity

Over 2,600 GW of generation + storage sit in U.S interconnection queues; 3x growth in 5 years



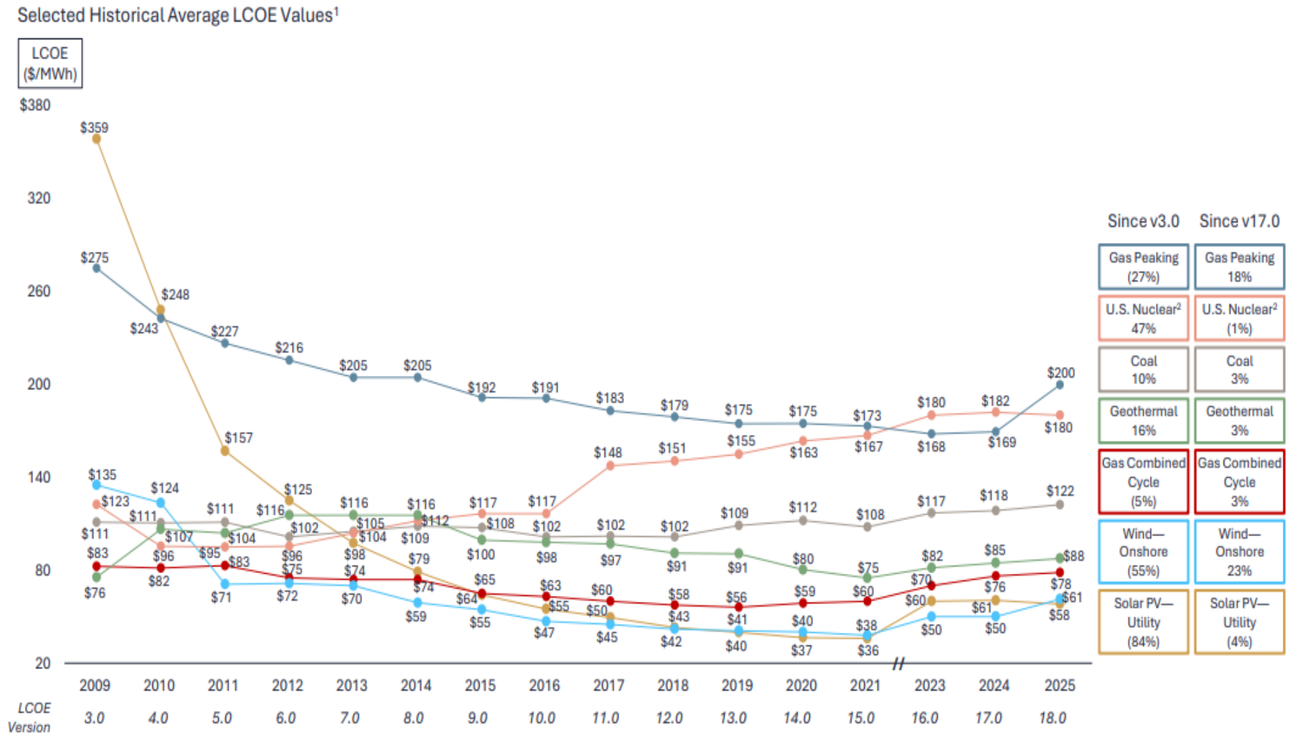
- This represents a **3x increase in 5** years, highlighting rapid renewable build-out potential
- **Solar & storage account for >80%** of this queued capacity
- This indicates that the **U.S. grid is testing ground** for next-generation distributed energy systems
- **Implication for Enphase:** positions in microinverters & storage systems are at the heart of this scaling trend, especially as utilities modernise interconnection & grid management

Utilities are investing heavily in grid flexibility & reliability to support decentralised systems

- **$62.8 Bn** requested in grid-modernisation & smart grid investments by the 50 largest U.S. investor –owned utilities (EEI, 2024)
- **Total utility CapEx projected at $1.4 Tn** (2025-2030) – nearly **double** the previous decade
- **Grid infrastructure spending up 220% since 2003**, with **$17.4 Bn** on overhead & **$11.3 Bn** on underground systems

- Why it matters: utilities' focus on flexibility, automation, & decentralisation aligns directly with Enphase's distributed energy model
  - Grid modernisation = increased interoperability with home batteries, VPPs, & smart inverters
  - Enphase's U.S. leadership gives it a proven blueprint

Thesis 2: Grid Modernisation & Integration



The U.S. grid's transition toward decentralisation is both a stress test & blueprint for the world. Enphase's proven integration of solar, storage, & grid-interactive technologies positions it to export its model globally – from regulatory partnerships to VPP-enabled smart energy systems

- **Solar + storage LCOE continues to decline**, widening its cost gap over gas and nuclear (even before incentives)
- **IRA-driven cost advantages** and domestic manufacturing scale created exportable cost leadership for U.S. companies like Enphase
- As a result, **distributed solar became the backbones of smart grids** globally (due to it being flexible, resilient, and low-cost)

Enphase's opportunity:

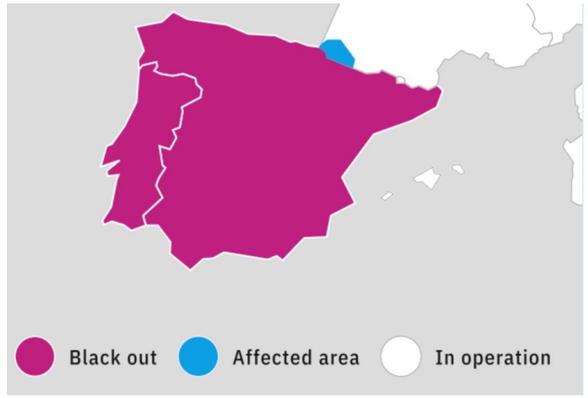
- **Leverage U.S. technology credibility** to expand into Europe (Germany, France, Spain) & Asia-Pacific (Australia, Japan)
- Localised product launches (IQ Battery 5P, IQ EV charger 2) demonstrate its ability to adapt to regional markets
- **Software & VPP capabilities** offer scalable recurring-revenue models as utilities worldwide adopt similar decentralised frameworks

Thesis 3: Shift toward European markets

Geopolitical tension & grid instability accelerate Europe's renewable self-sufficiency

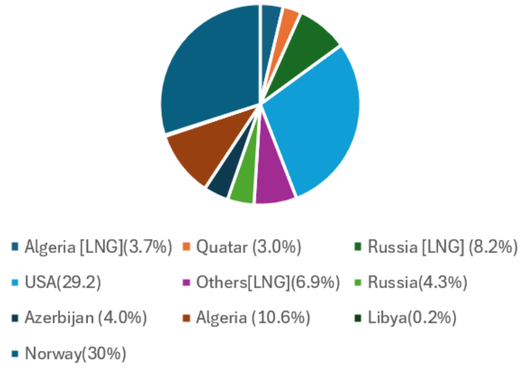
Spain's >40% renewable share & April 2025 blackout revealed weak storage & grid stability…

- This highlighted **Europe's lack of grid-balancing capacity** despite high renewable penetration
- With renewables now exceeding **40% of total generation**, Spain exemplifies a **continent-wide challenge**: integrating variable energy while maintaining reliability
- This has driven EU utilities & governments to **prioritise investment in Energy storage, distributed control systems, and smart grid software**



U.S./Qatar LNG tensions expose reliance on external energy supply

- The EU imports **~70% of its natural gas**, with **16% from the U.S. & 4% from Qatar**
- Ongoing geopolitical risk & LBG price volatility have pushed the EU to **fast-track domestic solar, battery, & hydrogen production**
- Reducing import dependence is now **both an energy security & industrial policy goal**, reinforcing EU demand for distributed, locally-produced energy
- This creates long-term structural demand for solar + storage systems at national & household levels



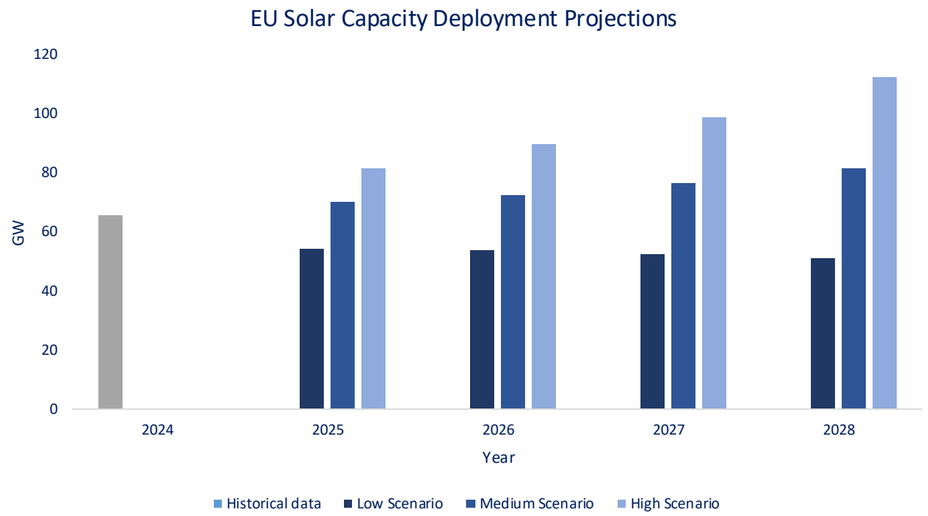
Thesis 3: Shift toward European markets

New EU regulations push for local, sustainable energy systems

- The **Corporate Sustainability Due Diligence Directive (CSDDD)** and complementary ESG rules now **tie energy sourcing to corporate compliance**
- Firms must demonstrate decarbonised supply chains, which is driving **on-site solar and behind-the-metre storage adoption** across industrial & commercial sectors
- EU Green Deal funding channels, REPowerEU, & state aid frameworks collectively support decentralised rollout
- This policy backdrop directly supports Enphase's distributed energy architecture

Enphase continues to expand across Europe

- Active presence in **Germany, France, Spain, Portugal, Sweden, & the Netherlands**, with product localisation to meet grid & regulatory standards
- **IQ Battery 5P & IQ EV charger 2** now shipping to multiple EU markets, enabling both **self-supply & flexible load management**
- **SolardGraf AI platform** and **IQ Energy Management** integrate with European feed-in & tariff systems, strengthening customer retention

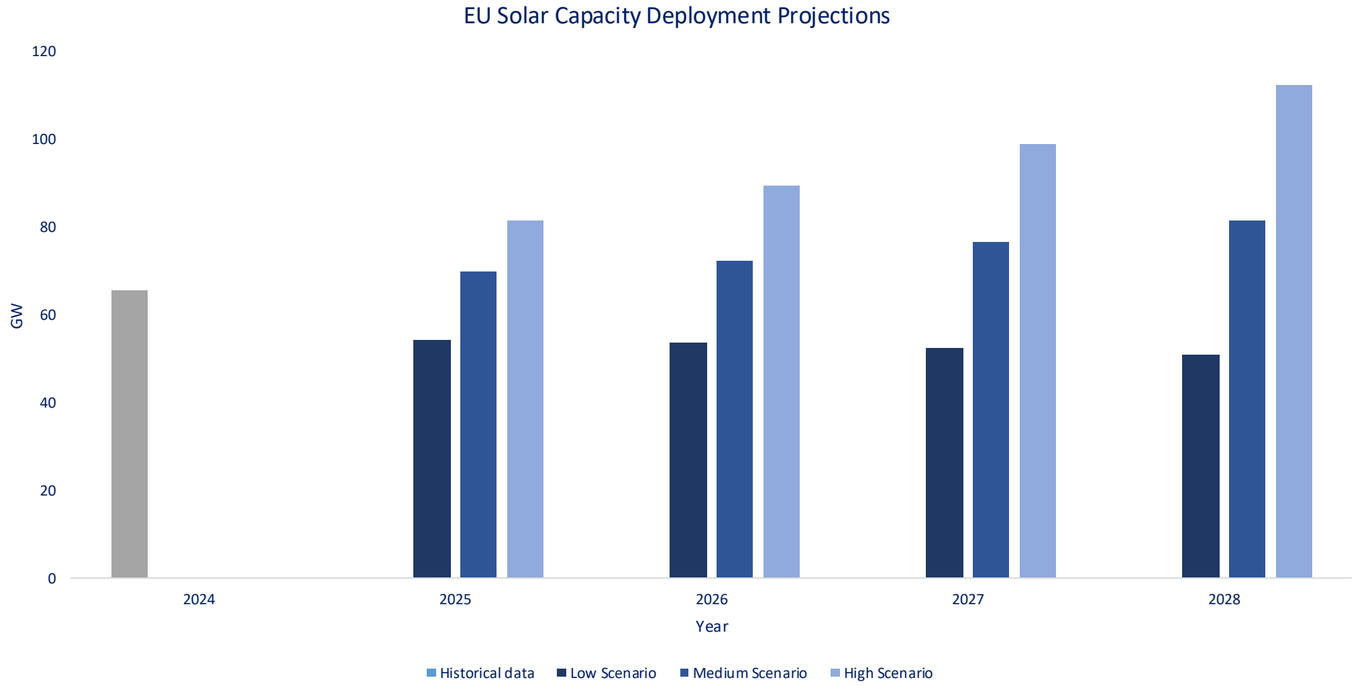


EU-27 annual solar PV market scenarios from 2024-2030 (based on SOlarPower Europe projections)

Thesis 3: Shift toward European markets

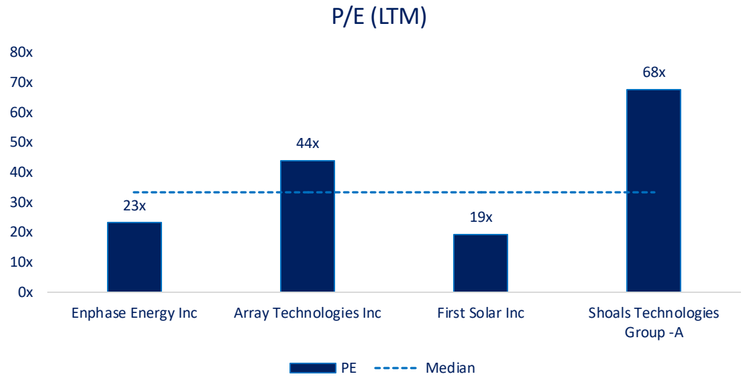
These forces together accelerate demand for smart, decentralised solar

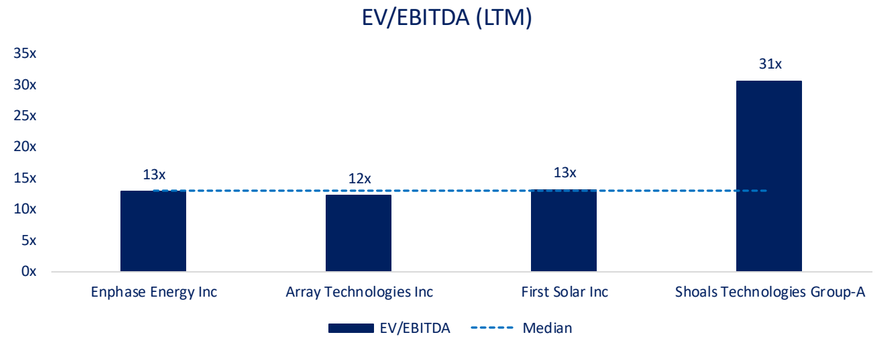
- **EU-27 solar installations expected to grow** 3x between 2024 & 2030
- Grid instability, energy independence, & policy incentives all converge to create a **structural tailwind** for integrated platforms like Enphase



EU-27 annual solar PV market scenarios from 2024-2030 (based on SolarPower Europe projections)

Comparables





		EV/EBITDA			P/E		
Company name	**Ticker**	**LTM 2025**	**FY1**	**FY2**	**LTM 2025**	**FY1**	**FY2**
Array Technologies Inc	ARRY	12x	11x	9x	46x	14x	10x
First Solar Inc	FSLR	13x	11x	8x	20x	16x	11x
Shoals Technologies Group-A	SHLS	31x	18x	15x	70x	27x	23x
Enphase Energy Inc	**ENPH**	**13x**	**9x**	**11x**	**20x**	**11x**	**14x**
Median		**13x**	**11x**	**9x**	**46x**	**16x**	**11x**

Discounted Cash Flow Analysis

Sensitivity Analysis

All numbers in USD thousands except per share data

Terminal Growth Rate	2.0%
WACC	8.3%
Enterprise Value	8,304,488
Net Debt	933,270

Shares Outstanding	*(FD 000)*	140,004
Current Price	*($/sh)*	31.46

ENTERPRISE VALUE

WACC \ Terminal Growth Rate	1.0%	1.5%	2.0%	2.5%	3.0%
6.3%	10,373,991	11,331,446	12,512,764	14,006,851	15,956,875
7.3%	8,603,571	9,244,686	10,007,294	10,929,544	12,067,427
8.3%	7,323,651	7,777,887	**8,304,488**	8,922,244	9,657,068
9.3%	6,356,281	6,691,722	7,073,258	7,511,094	8,018,682
10.3%	5,600,249	5,855,944	6,142,531	6,465,969	6,833,853

EQUITY VALUE PER SHARE

WACC \ Terminal Growth Rate	1.0%	1.5%	2.0%	2.5%	3.0%
6.3%	67.43	74.27	82.71	93.38	107.31
7.3%	54.79	59.37	64.81	71.40	79.53
8.3%	45.64	48.89	**52.65**	57.06	62.31
9.3%	38.73	41.13	43.86	46.98	50.61
10.3%	33.33	35.16	37.21	39.52	42.15

EQUITY VALUE

WACC \ Terminal Growth Rate	1.0%	1.5%	2.0%	2.5%	3.0%
6.3%	9,440,721	10,398,176	11,579,494	13,073,581	15,023,605
7.3%	7,670,301	8,311,416	9,074,024	9,996,274	11,134,157
8.3%	6,390,381	6,844,617	**7,371,218**	7,988,974	8,723,798
9.3%	5,423,011	5,758,452	6,139,988	6,577,824	7,085,412
10.3%	4,666,979	4,922,674	5,209,261	5,532,699	5,900,583

PREMIUM (DISCOUNT) TO CURRENT PRICE

WACC \ Terminal Growth Rate	1.0%	1.5%	2.0%	2.5%	3.0%
6.3%	114.3%	136.1%	162.9%	196.8%	241.1%
7.3%	74.1%	88.7%	106.0%	127.0%	152.8%
8.3%	45.1%	55.4%	**67.4%**	81.4%	98.1%
9.3%	23.1%	30.7%	39.4%	49.3%	60.9%
10.3%	6.0%	11.8%	18.3%	25.6%	34.0%

Risks and Mitigants

Prolonged Macro & Demand Slump	Persistent high interest rates and solar oversupply continue to suppress volume and margins, overshadowing ENPH's solid ecosystem strategy.	ENPH's focus is on preserving margin and pushing the higher-value solar-plus-storage bundle to increase revenue per customer.
Major Legal Overhang	The ongoing securities lawsuit and SEC investigation concerning past channel stuffing allegations create a significant credibility and financial overhang.	The company is defending itself vigorously and has operationally rectified the core issue by right-sizing European distributor inventory.
Geopolitical Trade Escalation	Current administration is likely to expand tariffs, directly impacting supply chain costs and complexity.	ENPH's diversified manufacturing footprint (U.S., Mexico, Romania, India) provides a crucial "local-for-local" buffer against regional trade disputes.
Execution in Saturated Markets	Core markets (Europe, California) are saturated and hyper-competitive, which risks damaging market share and pricing power.	Strategy hinges on increasing battery attachment rates in the U.S. and geographic expansion into less-penetrated European countries such as Italy and Spain.

Appendix

Unlevered Free Cash Flow Schedule

All numbers in USD thousands except per share data	2022	2023	2024	2025E	2026E	2027E	2028E	2029E
EBITDA Growth		1.3%	(71.2%)	5.3%	26.0%	51.3%	38.8%	28.9%
EBITDA	499,680	506,257	145,737	153,474	193,325	292,576	406,135	523,390
Tax Depreciation	51,419	60,516	68,445	63,545	62,896	55,780	56,793	58,341
Operating Profit	448,261	445,741	77,292	89,930	130,429	236,796	349,342	465,049
Tax Rate	(12%)	(14%)	(15%)	(15%)	(15%)	(15%)	(15%)	(15%)
Current Tax	(458)	(9,746)	(6,244)	(10,063)	(10,164)	(10,265)	(10,366)	(10,467)

UNLEVERED FREE CASH FLOW

	2025E	2026E	2027E	2028E	2029E
EBITDA	153,474	193,325	292,576	406,135	523,390
Current Tax	10,063	10,164	10,265	10,366	10,467
Capital Expenditure	47,772	50,161	52,669	55,303	58,068
Cash from Working Capital	77,223	17,026	31,580	29,459	23,878
Unlevered Free Cash Flow	**288,533**	**270,676**	**387,090**	**501,263**	**615,802**

Appendix

Discounted Cash Flow Schedule

All numbers in USD thousands except per share data

UNLEVERED FREE CASH FLOW

288,533	270,676	387,090	501,263	615,802	

CASH FLOW PROFILES

Period	1	2	3	4	5	TV
Forecast	288,533	270,676	387,090	501,263	615,802	10,006,714
PV	266,477	230,875	304,932	364,688	413,772	6,723,743

ASSUMPTIONS

First Year of Forecast	2025
Terminal Growth Rate	2.0%
WACC	8.3%

Risk free rate	4.00%
Equity risk premium	5.89%
Beta	0.947
Pre-tax cost of debt	3.96%
Effective tax rate	14.6%
Weight of equity	79.0%
Weight of debt	21.0%

Market cap	4,630,700
ST Debt	107,100
LT Debt	1,224,100

ENTERPRISE VALUE

PV of Discrete	1,580,745	*19%*
PV of Terminal	6,723,743	*81%*
Enterprise Value	8,304,488	*100%*

EQUITY VALUE PER SHARE

Equity Value		7,371,218
Shares Outstanding	*(FD 000)*	140,004
Equity Value	*(USD/sh)*	52.65

EQUITY VALUE

Enterprise Value	8,304,488
Less: Net Debt	(933,270)
Equity Value	7,371,218

PREMIUM (DISCOUNT)

Equity Value	*(USD/sh)*	52.65
Current Price	*(USD/sh)*	31.46
Premium (Discount)		67.4%

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