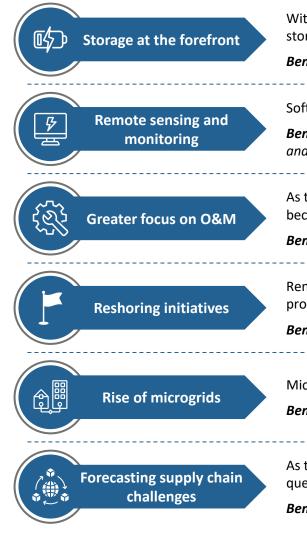
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Renewables & Distributed Energy SECTOR BRIEF I Q3 2023

Key Trends in the Renewables & Distributed Energy Sector

Rapid innovation, supported by a continuing influx of capital, is driving constant change in key areas across the energy transition



With renewables, electric vehicles, microgrids, and demand-side management all on the rise, energy storage is critical to ensuring consistent, reliable power

Beneficiaries: energy storage OEMs and service providers, metal producers, EV charging supply chain

Software and sensors for power generation are key to identifying issues and maximizing uptime

Beneficiaries: sensor and meter producers, monitoring software developers, renewable generation owners and operators

As the first wave of generation and storage infrastructure matures and EV charging infrastructure becomes more prevalent, demand is growing for reliable service providers

Beneficiaries: O&M service providers, renewable generation owners and operators, EV users

Renewable developers and manufacturers will likely be at the leading edge of a government push to bring production back to the U.S., driven by a combination of economic, environmental, and geopolitical factors

Beneficiaries: domestic manufacturers, domestic supply chain management and logistics providers

Microgrids are an increasingly common response to demand for reliable, resilient power **Beneficiaries:** microgrid operators, software developers, equipment OEMs

As the energy transition continues, demand for raw materials, components, and finished goods is raising questions around resource availability and supply chain vulnerabilities

Beneficiaries: domestic raw material production, energy consulting

Our Recent Content

Market Observations

Economic Outlook

- While the Fed has stated it remains committed to bringing down inflation, it risks hiking rates into a softening economic backdrop
- Ukraine / Russia conflict is creating heightened geopolitical risk

Buyer Sentiment

- Sponsors are reviewing new opportunities, but the bar is high, and they are increasingly cautious about aggressively pursuing platforms in the current environment
- There is a greater emphasis on small deals and tuck-ins
- Uncertainty in the debt market is acting as a driving force for lower deal activity
- Strategics have been disciplined but have continued to be aggressive for strategic assets

Debt Markets

- Debt markets have cooled with a heightened focus on quality and substantial increases to pricing as the rate environment continues to rise
- Given the challenging conditions in the broadly syndicated loan market, direct lenders continue to be active participants in financings

M&A Valuations

 The valuations for high-quality platforms have been less impacted, although leverage multiples are down from this time last year, driving larger equity checks from buyers and compressing the ability to underwrite high valuations

Our Latest Market Insights

(Click image for link to report)











Renewable Energy Operations & Maintenance

- Overview of renewable energy O&M
- Exploring key trends and sector innovation
- Sizing the O&M opportunity
- Key considerations for investors

EV Charging and Fueling Infrastructure

- EV and fueling infrastructure today
- Challenges to overcome for EV adoption
- Understanding the EV value chain
- Key considerations for investors

Transformers

- Opportunities in the transformer industry
- Transformers market dynamics
- Key demand drivers in the market
- Key considerations for investors

Nuclear Infrastructure

- Current state of the nuclear market
- Nuclear's role in a carbon-free future
- Closer look at small modular reactors
- Key considerations for investors

Circular Economy

- Overview of the circular economy
- Understanding the circular economy value chain
- Landscape of subsectors within the market
- Key considerations for investors



For access to the latest insights and perspectives from Harris Williams, visit https://www.harriswilliams.com/our-insights.

What We're Reading

Clean Energy's Latest Problem Is Creaky Wind Turbines Wall Street Journal - Read <u>here</u>	"The ill wind blowing for clean-energy windmills just got stronger. Siemens Energy shares fell 36% on the morning of 6/23/23 after the company withdrew its fiscal 2023 profit guidance late Thursday. Components in wind turbines made by its subsidiary Siemens Gamesa are wearing out faster than expected. The news isn't just a blow for the company's shareholders, but for all investors and policy makers betting on the rapid rollout of renewable power."	Component failure is driving up maintenance costs for wind turbine owners and operators, putting stress on production targets (and likely proving a boon for O&M businesses)
How Microgrids Can Help Communities Adapt to Wildfires Berkeley Lab - Read <u>here</u>	"Wildfires have become increasingly frequent due to climate change, with record occurrences in areas not historically prone to them. In California, wildfires and regional power shutoffs have cost billions and taken lives. An international team led by research scientists at the Department of Energy's Lawrence Berkeley National Laboratory has found that clean energy microgrids offer a better and cheaper solution for protecting California communities from wildfire-related outages, compared to conventional microgrids."	Microgrids provide critical security and resiliency benefits to remote communities, and renewable power and storage advancements may amplify those benefits
Will Reshoring Manufacturing of Advanced Electric Vehicle Batteries Support Renewable Energy Transition and Climate Targets? ScienceAdvances - Read <u>here</u>	"Recent global logistics and geopolitical challenges draw attention to the potential raw material shortages for electric vehicle (EV) batteries. Here, we analyze the long-term energy and sustainability prospects to ensure a secure and resilient midstream and downstream value chain for the U.S. EV battery market amid uncertain market expansion and evolving battery technologies."	Reshoring and ally-shoring the U.S. EV battery supply chain carries environmental benefits, but using less carbon-intensive metals may have an even greater impact
The Silent Rise of Solar Power <i>Contrary</i> - Read <u>here</u>	"The early 2020s have already been a period of many firsts for the solar industry. In 2022, the world surpassed one terawatt (i.e., 1,000 gigawatts) in total solar installations. Replacing coal-power plants with solar and wind plans became cheaper than continuing to run existing coal plans. And for the first time ever, more electricity was generated with solar power than with natural gas in Europe. The coming decade may prove to be the one that completely changes the global energy landscape away from fossil fuels for the first time since the dawn of the Industrial Revolution."	Solar power has enormous potential and has taken great strides in recent years, providing reason for optimism about its long-term outlook
What's Ahead for Ultrafast EV Charging Wall Street Journal - Read <u>here</u>	"The U.S. government is trying to spur the buildout of so-called fast chargers that can charge EVs in about 15 to 40 minutes. That's still slower than a traditional fill-up at a gas station, but faster than the hours-long experience at public chargers that deliver power at 7 to 19 kilowatts. There's much debate about just how fast charging will need to be and where the chargers should be located. How this debate plays out could shape life on the roads in coming years."	EV charging speed remains among the hottest debates in the sector, with differing views on how fast is fast enough, and the best way to get there

Select Renewables & Distributed Energy M&A Transactions

June 12, 2023	Brookfield to acquire Duke Energy's utility-scale Commercial Renewables business for \$2.8 billion Duke Energy announced 6/12/2023 it has reached an agreement to sell its unregulated utility scale Commercial Renewables business to 						
Brookfield CUKE ENERGY.	Brookfield Renewable, one of the world's largest owners and operators of renewable power and climate transition assets, at an enterprise value of approximately \$2.8 billion, including non-controlling tax equity interests and the assumption of debt						
May 19, 2023	Beard Energy Transition Acquisition Corp to acquire Suntuity Renewables						
BRD © Suntuity	 Suntuity Renewables, a leading provider of renewable energy solutions, and Beard Energy Transition Acquisition Corp., a special purpose acquisition company, have entered into a definitive agreement that would result in the combined company becoming publicly traded. Suntuity is one of the largest end-to-end residential solar companies in the country with over 9,500 residential systems installations across 25 states as of April 2023 						
April 28, 2023	True Green Capital Management agrees to acquire majority stake in CleanChoice Energy						
TRUE GREEN CAPITAL	 True Green Capital Management, a renewable energy infrastructure investment firm, and CleanChoice Energy, a cleantech company and direct-to-consumer clean energy provider, announced 4/28/2023 that they have signed definitive documentation for funds managed by TGC to acquire a majority ownership in CleanChoice and provide dedicated capital to fund CleanChoice's solar development pipeline 						
April 19, 2023	SunGrid announces acquisition of RA Electric, Inc.						
	SunGrid Holdings announced 4/19/2023 it has acquired RA Electric, Inc., an electrical services contractor based in southern California. The acquisition will enable SunGrid to provide services to projects scaling from 1 MW to 1 GW in support of California's aggressive decarbonization and energy storage goals to expand renewable energy, reduce carbon emissions, and bolster electric reliability across the state						
April 3, 2023	DIF Capital Partners agrees to acquire majority interest in U.Sbased solar platform Green Street Power Partners						
DIF CAPITAL PARTNERS OF POWER PARTNERS	 DIF Capital Partners announced 4/3/2023 that it has agreed to acquire a majority equity interest in U.Sbased Green Street Power Partners, a leading developer, financier, owner, and operator of distributed generation solar projects for various private and public clients across the U.S. Headquartered in Stamford, Connecticut, Green Street has developed a 300+ MW portfolio of operational and under- construction projects throughout the country 						

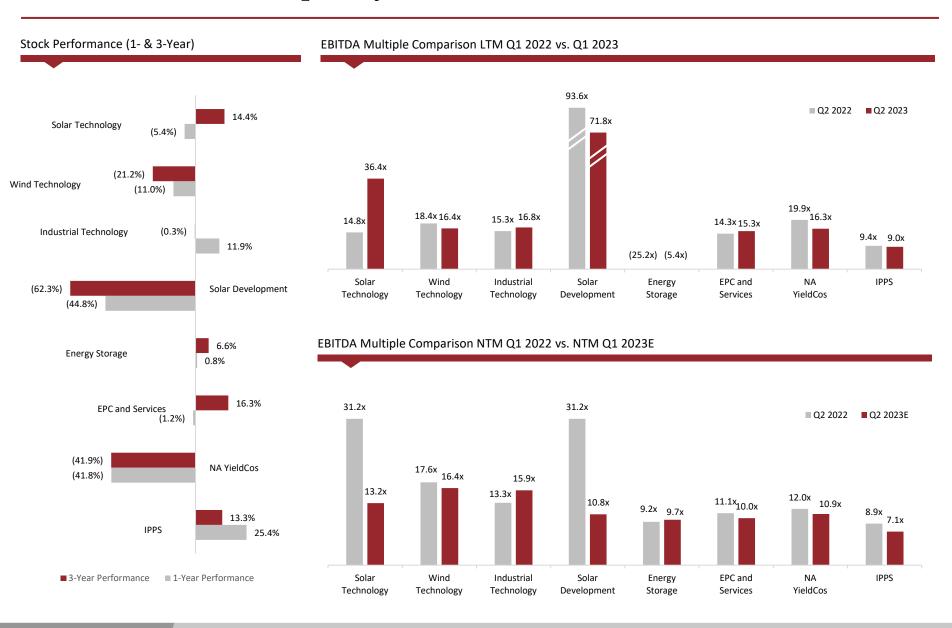
Select Renewables & Distributed Energy Capital Raises

May 1	8, 2023	 ChargeLab raises \$15 million, led by King River Capital, to expand its API-first EV charger management platform ChargeLab announced 5/18/2022 its \$15 million Series A financing. The round was led by King River Capital, with participation from ABB E-Mobility and existing investors including Construct Capital, Root Ventures, Highline Beta, Third Sphere, and Maple VC. ChargeLab builds software to operate and optimize electric vehicle charging equipment. ChargeLab's software runs at the edge and in the cloud, empowering fleets, building operators, and utilities to deploy large numbers of EV chargers and manage them as an intelligent network
May 1 Generate Capital	8, 2023 Ambient Fuels	 Generate Capital commits \$250 million to green hydrogen startup Ambient Fuels Sustainable infrastructure company Generate Capital announced 5/18/2023 an investment in green hydrogen development startup Ambient Fuels, with an agreement including a commitment of up to \$250 million to fund green hydrogen infrastructure. Founded in 2021, New York-based Ambient Fuels delivers custom-engineered solutions for green hydrogen projects aimed at supporting the decarbonization of heavy industry and transportation, with services from project development and design to financing and construction
April 2	6, 2023	 Green Hydrogen company Ohmium closes \$250 million Series C fundraise led by TPG Rise Climate Ohmium International, a leading green hydrogen company that designs, manufactures, and deploys advanced proton exchange membrane (PEM) electrolyzer systems, announced 4/26/2023 the close of a \$250 million Series C growth equity financing. The round was led by TPG Rise Climate, the dedicated climate investing strategy of TPG's global impact investing platform TPG Rise, and also included participation from Hanover Technology Investment Management and existing investors Energy Transition Ventures and Fenice Investment Group
April 2	5, 2023	 I Squared Capital completes a growth capital investment with RPower, a distributed energy resource platform I Squared Capital announced 4/25/2023 that, through its ISQ Global Infrastructure Fund III, it has completed a growth capital investment in RPower, LLC, a distributed energy resource platform. RPower's dispatchable energy solutions can provide the reliability necessary to support the continued integration of renewable resources and facilitate the transition to a more sustainable future
April 1	1, 2023 ENBRGYX	 GM leads \$50 million funding round in EnergyX to unlock U.Sbased Li Supply for rapidly scaling EV production Energy Exploration Technologies Inc. and General Motors Co. announced 4/11/2023 that GM Ventures is leading a \$50 million Series B financing round in EnergyX and has entered into a strategic agreement to develop EnergyX's lithium extraction and refinery technology. The collaboration is focused on unlocking the North American supply of lithium, a critical material for EV batteries, by using EnergyX's innovative process to maximize efficiency while improving sustainability for GM's rapidly scaling EV production

Public Valuation Indices¹



Public Valuation Multiples by Sector¹



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Additional Recent M&A Transactions

Date Closed	Acquirer	Target	Business Description
6/21/2023	Arcadia	Oregon Shines	Community solar provider with a subscription portfolio of nearly 84 MWdc
6/12/2023	Brookfield Renewable Partners	Duke Energy Renewables	Wind and solar energy solutions provider
6/5/2023	Power & Digital Infrastructure Acquisition II	Montana Technologies	Atmospheric energy and water harvesting technology company
5/19/2023	Rice Acquisition Corp. II	NET Power	Clean energy technology company
5/19/2023	Beard Energy Transition Acquisition Corp	Suntuity Renewables	Provider of renewable energy solutions
5/17/2023	Generate Capital	Ambient Fuels	Builds green hydrogen projects to support the decarbonization of heavy industries and transportation
5/15/2023	Dune Acquisition Corporation	Global Hydrogen Energy	Next-generation industrial gas supplier in the sustainable energy transition
5/2/2023	Blue Whale Partners	Eclipse Energy	Li-ion battery testing and evaluation lab
4/28/2023	True Green Capital Management	CleanChoice Energy	Direct-to-consumer clean energy provider
4/26/2023	TPG Rise Climate	Ohmium	Hydrogen energy equipment developer and manufacturer
4/25/2023	l Squared Capital	RPower	Distributed energy resource platform
4/19/2023	SunGrid	RA Electric	Electrical services contractor
4/19/2023	ESGEN Acquisition Corp	Sunergy Renewables	Provider of residential solar and energy efficiency solutions
4/12/2023	Quinbrook Infrastructure Partners	PurposeEnergy	Renewable energy and fertilizer company
4/4/2023	DIF Capital	Green Street Power Partners	Solar-focused developer and operator

Public Market Observations^{1,2}

							Multiples	Summary	
	Market Stock Price		Enterprise		Enterprise Value / Revenue		Enterprise Value / EBITDA		
Company	 Capitalization		Current		Value	Q2 2022	Q2 2023	Q2 2022	Q2 2023
			Solar To	echnol	ogy				
Canadian Solar Inc.	\$ 2,381,180	\$	36.84	\$	4,853,057	0.7x	0.6x	7.4x	6.2x
Enphase Energy, Inc.	22,772,557		166.17		22,311,290	22.2x	8.5x	129.8x	36.4x
First Solar, Inc.	20,205,007		189.14		18,301,981	3.6x	6.5x	23.0x	142.8x
Schneider Electric S.E.	96,075,637		171.84		110,301,438	2.7x	3.0x	14.8x	16.2x
SMA Solar Technology AG	3,699,129		106.60		3,442,028	1.7x	2.6x	-57.2x	38.0x
SolarEdge Technologies, Inc.	14,589,904		258.94		13,679,071	7.8x	4.0x	78.5x	32.1x
SunPower Corporation	1,590,409		9.09		1,805,721	2.3x	1.0x	-130.2x	113.4x
Median	\$ 14,589,904	\$	166.17	\$	13,679,071	2.7x	3.0x	14.8x	36.4x
			Wind T	echnol	ogy				
Ormat Technologies, Inc.	\$ 4,719,755	\$	79.05	\$	6,583,235	9.6x	8.9x	18.4x	16.4x
TPI Composites, Inc.	415,877		9.79		919,374	0.7x	0.6x	-32.3x	33.4x
Vestas Wind Systems A/S	26,158,292		26.00		27,507,183	1.6x	1.7x	53.6x	-44.7x
Median	\$ 4,719,755	\$	26.00	\$	6,583,235	1.6x	1.7x	18.4x	16.4x
			Industrial	l Techn	ology				
ABB Ltd	\$ 72,544,286	\$	37.73	\$	78,454,789	2.2x	2.6x	14.4x	16.5x
Caterpillar Inc.	126,354,898		245.18		157,146,898	2.5x	2.5x	13.0x	11.9x
Danaher Corporation	171,989,450		233.08		187,218,450	7.5x	6.0x	21.4x	17.7x
Eaton Corporation plc	79,106,156		198.46		87,880,156	3.5x	4.1x	19.1x	21.2x
Emerson Electric Co.	50,829,210		88.94		65,340,210	3.5x	3.2x	15.9x	13.3x
General Electric Company	117,901,702		108.27		121,164,702	1.4x	1.5x	14.3x	14.0x
Honeywell International Inc.	135,255,495		203.26		148,729,495	4.1x	4.1x	16.6x	17.7x
Johnson Controls International plc	45,900,012		66.90		56,933,012	1.9x	2.2x	14.2x	17.1x
Schneider Electric S.E.	96,075,637		171.84		110,301,438	2.7x	3.0x	14.8x	16.2x
Siemens Limited	15,906,614		44.67		15,199,504	5.6x	7.0x	53.7x	56.5x
Median	\$ 87,590,897	\$	140.05	\$	99,090,797	3.1x	3.1x	15.3x	16.8x

Public Market Observations (cont.)^{1,2}

							Multiples Summary			
		Market	St	ock Price		Enterprise	Enterprise Va	alue / Revenue	Enterprise V	alue / EBITDA
Company		apitalization		Current		Value	Q2 2022	Q2 2023	Q2 2022	Q2 2023
Solar Development										
unnova Energy International Inc.	\$	2,065,312	\$	17.76	\$	8,364,442	21.4x	12.8x	143.4x	168.8x
unPower Corporation		1,590,409		9.09		1,805,721	2.3x	1.0x	-130.2x	113.4x
unrun Inc.		3,622,279		16.80		14,029,419	7.8x	5.8x	-58.9x	-69.6x
N edian	\$	2,065,312	\$	16.80	\$	8,364,442	7.8x	5.8x	-58.9x	113.4x
				Energy	/ Stora	ze				
allard Power Systems Inc.	\$	1,217,093	\$	4.08	\$	351,241	13.1x	4.6x	-12.2x	-2.3x
loom Energy Corporation		3,480,534		16.69		4,521,889	4.7x	3.6x	-24.4x	-46.6x
inerSys		4,357,266		106.51		5,174,963	1.1x	1.4x	11.5x	13.4x
lug Power Inc.		6,371,695		10.61		5,650,468	16.2x	7.3x	-18.2x	-8.5x
esla, Inc.		869,807,065		274.43		854,160,065	13.7x	9.9x	65.1x	51.3x
N edian	\$	4,357,266	\$	16.69	\$	5,174,963	13.1x	4.6x	-12.2x	-2.3x
				EPC and	d Servio	ces				
acciona, S.A.	\$	8,276,494	\$	151.34	\$	15,602,382	1.6x	1.2x	11.0x	8.9x
ECOM		11,927,486		85.81		13,956,553	0.9x	1.0x	14.3x	15.3x
luor Corporation		4,215,475		29.43		3,086,475	0.2x	0.2x	8.4x	37.2x
acobs Solutions Inc.		15,378,026		121.23		19,062,490	1.5x	1.2x	14.4x	14.1x
Quanta Services, Inc.		28,105,988		193.60		32,279,437	1.5x	1.8x	18.4x	22.2x
kanska AB (publ)		5,879,208		14.31		6,359,736	0.5x	0.4x	9.3x	7.3x
Villdan Group, Inc.		257,372		19.08		358,006	1.3x	0.8x	52.6x	18.0x
N edian	\$	8,276,494	\$	85.81	\$	13,956,553	1.3x	1.0x	14.3x	15.3x

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Public Market Observations (cont.)^{1,2}

							Multiples Summary			
		Market	St	ock Price		Enterprise	Enterprise Va	lue / Revenue	Enterprise V	alue / EBITDA
Company	Capitalization Current Value		Value	Q2 2022	Q2 2023	Q2 2022	Q2 2023			
NA YieldCos										
Atlantica Sustainable Infrastructure plc	\$	2,648,295	\$	22.80	\$	7,811,251	8.3x	7.1x	14.5x	11.8x
Brookfield Renewable Partners L.P.		14,287,675		29.32		55,806,192	11.7x	11.3x	19.9x	17.9x
Clearway Energy, Inc.		3,070,073		26.24		12,309,589	11.0x	9.7x	15.6x	12.5x
Enviva Inc.		972,037		12.01		2,689,184	5.6x	2.4x	158.0x	41.7x
Innergex Renewable Energy Inc.		1,947,459		9.54		6,591,205	10.9x	10.1x	16.0x	16.3x
NextEra Energy Partners, LP		5,025,644		56.53		21,304,644	18.5x	17.3x	28.2x	29.9x
TransAlta Renewables Inc.		2,207,708		8.27		2,772,514	10.4x	7.0x	20.2x	14.6x
Median	\$	2,648,295	\$	22.80	\$	7,811,251	10.9x	9.7x	19.9x	16.3x
				I	PPS					
Enel SpA	\$	67,830,280	\$	6.68	\$	162,866,438	1.2x	1.2x	9.4x	9.0x
Engie SA		40,011,902		16.53		67,192,148	0.8x	0.7x	3.9x	7.5x
Iberdrola, S.A.		77,126,531		12.25		142,987,231	2.6x	2.3x	9.8x	9.8x
NRG Energy, Inc.		8,776,458		38.12		21,617,458	0.6x	0.7x	2.7x	-21.5x
The AES Corporation		14,116,290		21.09		40,906,290	3.2x	3.1x	11.2x	11.8x
Median	\$	40,011,902	\$	16.53	\$	67,192,148	1.2x	1.2x	9.4x	9.0x
Total Median	\$	11,927,486	\$	37.73	\$	15,602,382	2.7x	3.0x	14.4x	16.2x

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GLOBAL INVESTMENT BANK

Our Energy, Power & Infrastructure Group and Technology Group collaborate to advise companies leading the energy transition worldwide.



Learn more about our experience in the space.



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Acrospace, Defenses Business Services Business Services Organization Consumer Englistication Business Services Image: Consumer Image: Consumer	MERGERS & ACQUISITIONS PRIVATE CAPITAL SOLUTIONS PRIMARY FUND PLACEMENT	<image/>				

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