

Alternative Energy Market Update – Q2'23

May 2023

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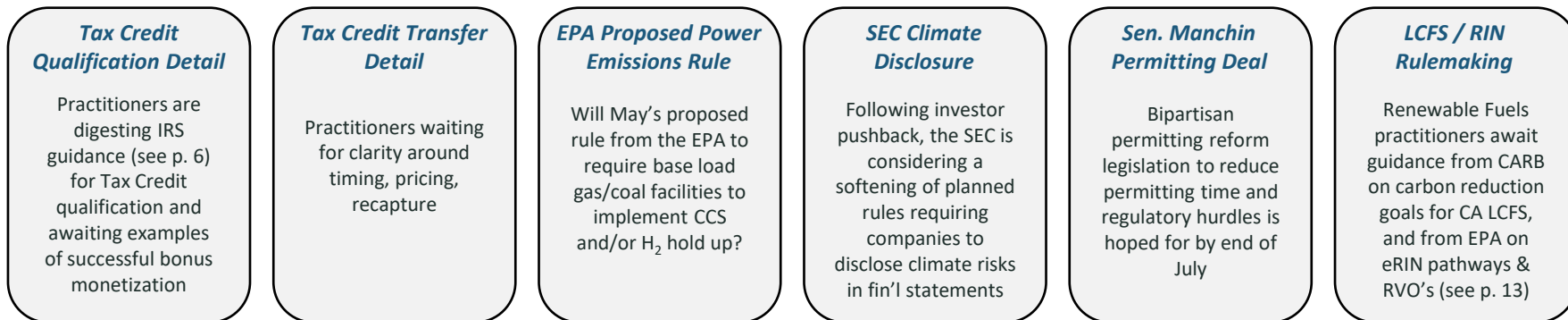
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Macro Environment | Short-Term Developments

Capital markets and valuations pertaining to Energy Transition have softened as investors and LP's digest periodic guidance from Treasury and IRS around IRA details

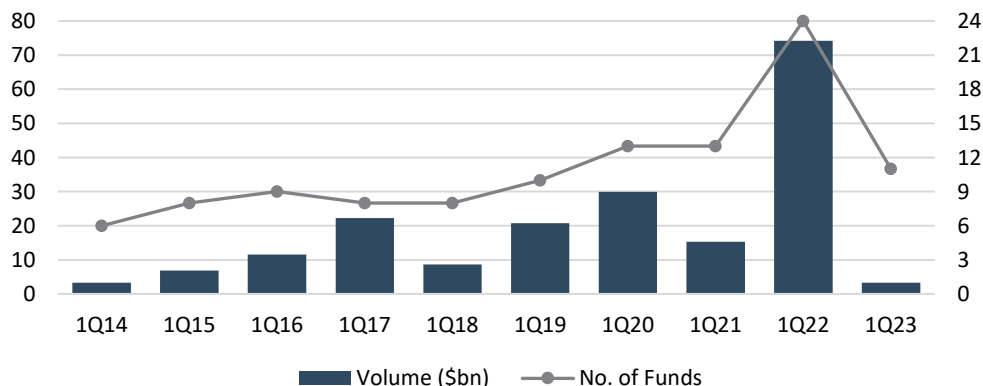
Regulatory

Numerous regulatory items, while ultimately positive, remain unclear, causing investors to take a wait-and-see approach

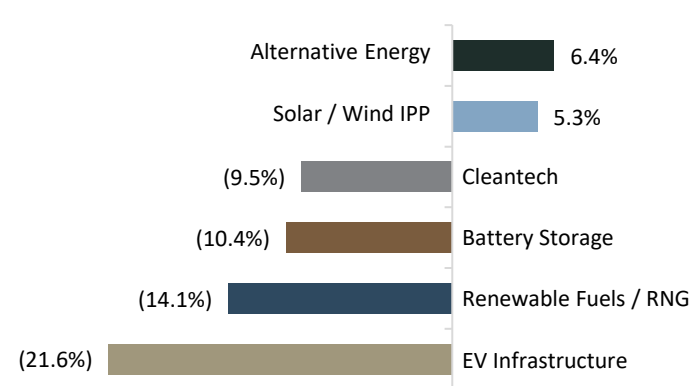


Capital Markets

1Q fund flow volumes for Infrastructure softened considerably in 2023, driven by the "denominator effect" and a more selective/cautious stance by LP's



Stock price action for Energy Transition sub-sectors since our last 1Q'23 Quarterly Market Update (see p. 4)



Source(s): BNEF, Inframation, Canary Media, Equity Research, S&P Market Intelligence

Alternative Energy | Public Market Overview

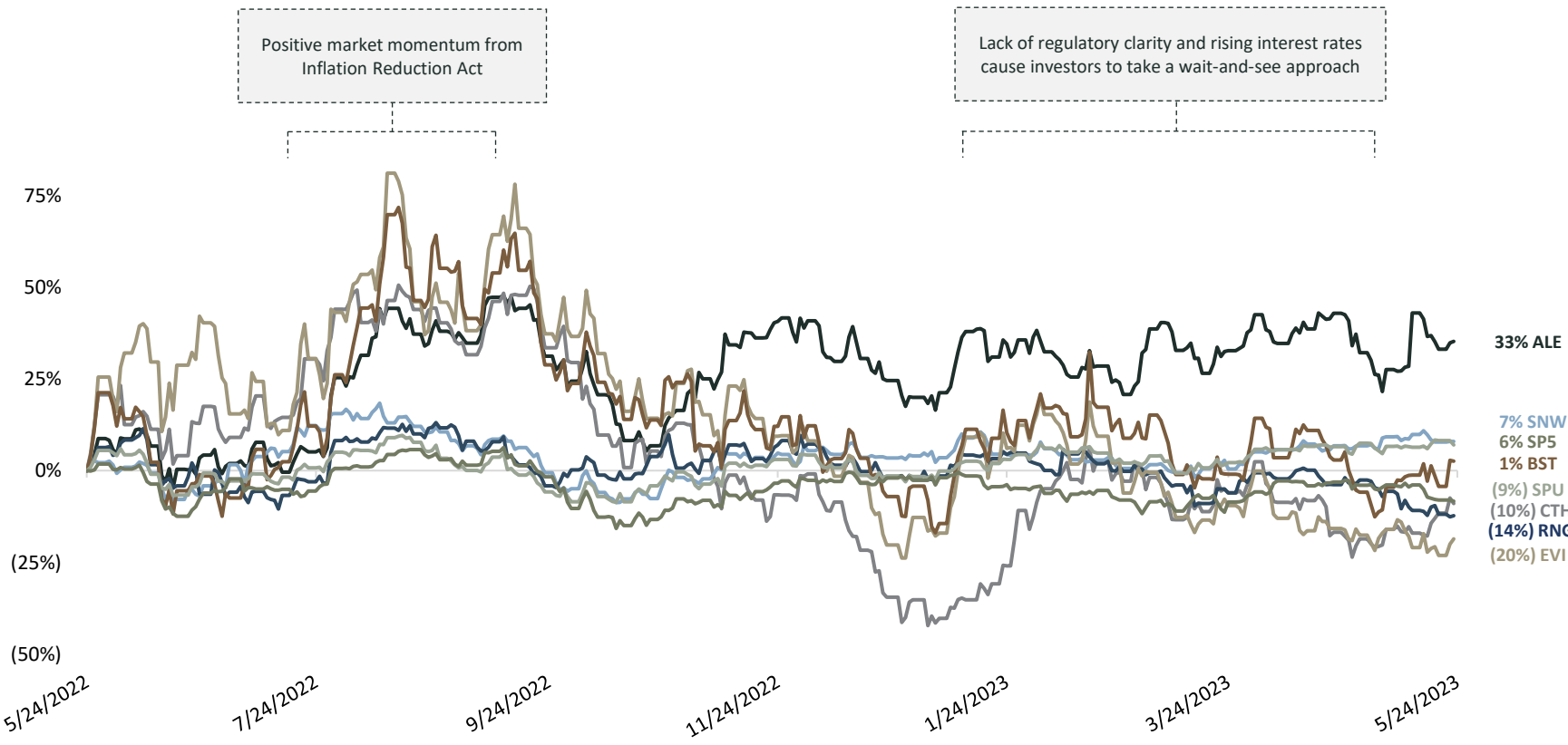
Ticker	Price 5/24/2023	Market Cap (\$mm)	Enterprise Value (\$mm)	YTD Total Returns (%)	Valuation		Debt / Total Cap (%)	Credit		
					2023E EV / EBITDA (x)	2024E EV / EBITDA (x)		2023 Net Debt / EBITDA (x)	S&P Credit Rating	
Alternative Energy										
Array Technologies	ARRY	\$23.67	\$3,571	\$4,500	22.5%	17.2x	13.2x	59.5%	2.4x	B
Brookfield Renewable Corporation	BEPC	33.79	12,225	36,310	24.7%	15.0x	14.3x	47.0%	5.5x	BBB+
First Solar	FSLR	198.55	21,210	19,307	32.6%	16.6x	10.0x	5.9%	NA	NA
Hannon Armstrong	HASI	24.06	4,168	7,447	(15.8%)	46.6x	29.5x	67.1%	20.3x	BB+
Ormat Technologies	ORA	85.20	5,087	6,938	(1.2%)	14.2x	12.6x	47.3%	3.5x	NA
Sunnova Energy International	NOVA	16.14	1,877	8,176	(10.4%)	34.5x	23.7x	75.0%	23.8x	NA
SunPower Corporation	SPWR	10.31	1,804	2,019	(42.8%)	15.3x	10.5x	39.8%	1.6x	NA
Sunrun	RUN	16.51	3,560	13,967	(31.3%)	NA	NA	53.3%	NA	NA
Cleantech										
Bloom Energy Corporation	BE	\$13.80	\$2,878	\$3,608	(27.8%)	52.4x	17.8x	70.1%	10.1x	NA
Enphase Energy	ENPH	164.05	22,482	22,021	(38.1%)	22.1x	16.8x	57.6%	NA	NA
FuelCell Energy	FCEL	2.15	870	652	(22.8%)	NA	NA	12.5%	3.7x	NA
Plug Power	PLUG	8.46	5,081	4,359	(31.6%)	NA	26.2x	19.0%	2.9x	NA
SolarEdge Technologies	SEDG	288.20	16,239	15,837	1.7%	17.8x	15.0x	23.9%	NA	NA
Tesla	TSLA	182.90	579,702	564,055	48.5%	31.1x	21.7x	10.2%	NA	BBB
Solar / Wind IPP										
Clearway Energy	CWEN.A	\$28.50	\$3,334	\$12,459	(3.5%)	10.8x	10.7x	64.5%	6.2x	BB
EDF	EDF	12.91	51,658	103,332	0.0%	5.8x	5.7x	67.3%	2.2x	BBB
EDP Renováveis	EDPR	20.88	21,124	29,269	(4.4%)	12.7x	11.2x	37.7%	2.8x	BBB
NextEra Energy Partners	NEP	59.49	5,289	21,568	(12.8%)	10.7x	9.7x	26.8%	2.5x	BB
Ørsted	ORSTED	91.13	38,290	44,096	2.2%	13.3x	11.3x	45.5%	1.6x	BBB+
Alternative Fuels / RNG										
Ameresco	AMRC	\$44.34	\$2,311	\$3,756	(22.4%)	17.7x	13.3x	61.6%	6.3x	NA
Clean Energy Fuels Corp.	CLNE	4.31	961	958	(17.1%)	19.3x	8.5x	22.9%	NA	NA
Darling Ingredients	DAR	64.46	10,286	15,109	3.0%	7.9x	7.6x	54.1%	2.5x	BB+
Montauk Renewables	MNTK	6.73	953	949	(39.0%)	29.8x	12.3x	24.8%	NA	NA
Neste	NESTE	39.45	30,308	32,201	(14.3%)	8.6x	8.3x	31.5%	0.5x	NA
OPAL Fuels	OPAL	6.07	1,032	2,305	(16.6%)	34.9x	14.3x	30.7%	1.4x	NA
Electric Vehicle Infrastructure										
ChargePoint Holdings	CHPT	\$8.36	\$2,952	\$2,903	(12.3%)	NA	NA	47.4%	0.2x	NA
Evgo, Inc	EVGO	3.88	396	1,812	(13.2%)	NA	NA	10.2%	1.5x	NA
Blink Charging Co.	BLNK	7.10	434	338	(35.3%)	NA	NA	1.9%	1.4x	NA
Battery Storage										
Enovix Corporation	ENVX	\$11.99	\$1,896	\$1,611	(3.6%)	NA	NA	2.8%	3.6x	NA
Eos Energy Enterprises	EOSE	1.99	243	442	34.5%	NA	NA	548.4%	NA	NA
Fluence	FLNC	22.54	2,636	2,539	31.4%	NA	42.5x	0.6%	1.4x	NA
Li-Cycle	LICY	4.72	835	761	(0.8%)	NA	NA	42.0%	NA	NA
QuantumScape Corporation	QS	6.45	2,862	1,986	13.8%	NA	NA	7.7%	3.2x	NA
Stem Inc.	STEM	4.85	754	1,089	(45.7%)	NA	32.1x	51.1%	NA	NA

Source(s): S&P CapIQ Pro. Note: Prices as of 5/24/2023

Alternative Energy | Stock Market Performance

Alternative Energy (ALE)		Cleantech (CTH)		Solar/Wind (SNW)		Renewable Fuels/RNG (RNG)		EV Infrastructure (EVI)		Battery Storage (BST)		S&P Utilities Index (SPU)	S&P 500 (SP5)
ARRY	ORA	BE	PLUG	CWEN.A	NEP	AMRC	MNTK	CHPT	BLNK	ENVX	LICY		
BEPG	NOVA	ENPH	SEDG	EDF	ORSTED	CLNE	NEST	EVGO		EOSE	QS		
FSLR	SPWR	FCEL	TSLA	EDPR		DAR	OPAL			FLNC	STEM		
HASI	RUN												

Indices Total Return (LTM)



Source(s): S&P CapiQ Pro. Note: Prices as of 5/24/2023

Alternative Energy | Legislative Update

Treasury and IRS continue rolling out guidance to the enhanced tax credit features of the IRA

Prevailing Wage and Apprenticeship Requirements¹

- Guidance released on 10/29/22
- Prevailing wage and apprenticeship is now required to receive most of the baseline historical ITC and PTC value, making it a de facto imperative on all new construction
- Requirements in-line with published General Service Administration (GSA) determinations
- “Good Faith” exemption from apprenticeship requirement if usual and customary business practices are utilized
- “Sufficient Records” must be maintained for work performed by contractors and subcontractors

Takeaways:

- Request process for GSA determinations is viewed by the market as inadequately resourced and meaningful delays are expected
- Administrative burden of documentation and current profile or workforce are expected to create major challenges, especially for smaller EPCs and ones without self-performance capabilities

Energy Community Requirements²

- Guidance released on 4/4/2023
- Qualifying ITC moves from 30% to 40% and PTC value receives a 1.1x multiplier
- ITC qualification is tested once on the placed-in-service date whereas PTC is tested each year unless it has a safe harbor
- Census tracts, and adjacent tracts, with abandoned coal mines (since '99 as defined by MSHA) or retired coal generation (since '99 as determined by EIA) qualify as an Energy Community
- Statistical areas that meet historical high mining/drilling economic reliance and have high current unemployment can qualify as well

Takeaways:

- IRS went to great lengths to clarify brownfield, coal mining, and coal generation qualifications, giving the market conviction
- Developers and financiers have less conviction around statistical area standards, particularly for PTC qualifications, which will require annual certification

Domestic Content Requirements³

- Guidance released on 5/12/2023
- Qualifying ITC moves from 30% to 40% and PTC value receives a 1.1x multiplier
- Structural steel and iron must be manufactured in the U.S., though raw materials can be imported
- Non-structural steel and iron components (e.g., fasteners or buckets) are exempt
- Manufactured Product requirements follow Buy American standards with deviation
- Direct labor and materials costs of a product must be at least 40% domestic through 2024, increasing thereafter

Takeaways:

- Steel and iron qualifications appear relatively straightforward and have reasonably accommodative exemptions
- An increased level of cost accounting transparency, including profit margin in some cases, will be required on manufactured products
- Complicated calculations for manufactured products risk some project qualification

Source(s): ¹ Department of Labor, ² Norton Rose Fulbright, ³ Akin Gump Strauss Hauer & Feld (see [here](#))

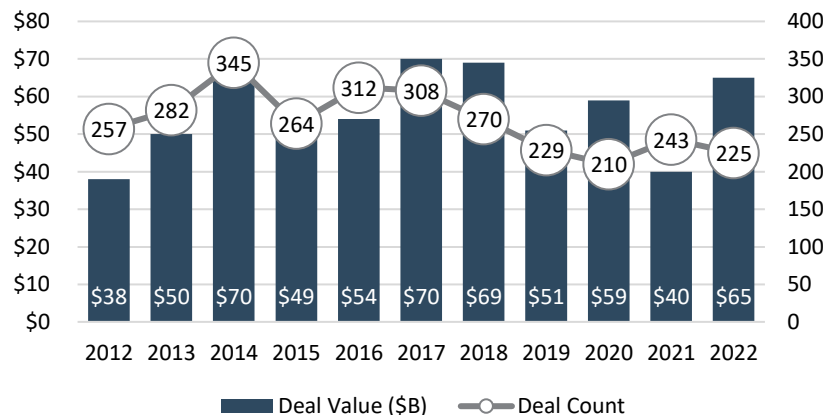
Alternative Energy | Solar Market Overview

Capital continues to flow into the US solar market despite all the noise surrounding those markets

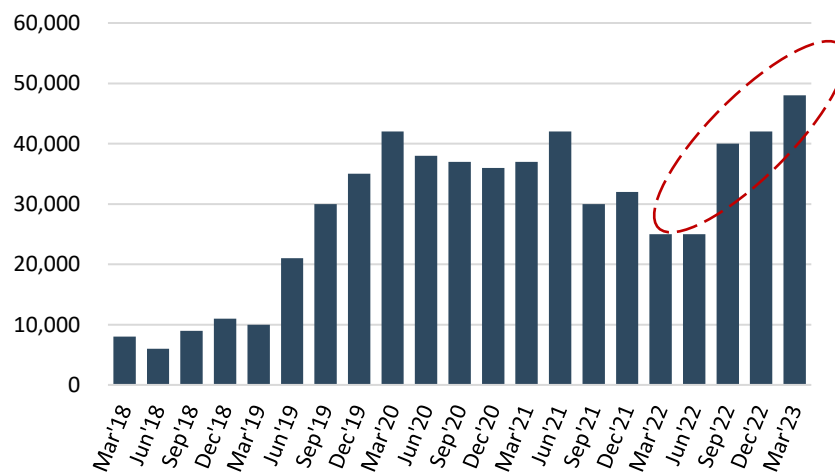
Market Commentary

- PE invested \$26 billion in the US renewable energy sector in 2022, up significantly from 2021
 - Firms like Brookfield and Blackstone were major contributors to this total through large platform and operating portfolio acquisitions
- M&A remains active across all solar asset classes
 - Most of the largest platforms have found homes and there's still plenty of capital seeking investment opportunities
 - Newly capitalized platforms are less interested in bringing on new teams, instead seeking project and portfolio adds
 - With more developers electing to hold projects and pursue an IPP model, corporate M&A is becoming more prevalent
- House lawmakers attempted, but failed, to rescind Biden's two-year moratorium on import tariffs for solar equipment
 - Biden's May 16 veto was upheld after the House fell short of the 2/3 majority required to override
 - This is a positive outcome to build upon the growing volume of solar imports – up nearly 2x YoY in 1Q'23, the third consecutive quarterly rise
- The Texas legislature is evaluating seven proposed bills designed to spur development of new dispatchable power resources at the expense of renewables
 - Lawmakers are seeking to “level the playing field”, which has been tipped in favor of renewables by the IRA
 - Targets include new state approvals for wind and solar and capacity credits for dispatchable generation, among others

Private Equity Deal Activity¹











US Solar Panel Imports (TEU)²



















Source(s): S&P Market Intelligence. ¹S&P Global 2023, ²S&P Global 2023; TEU = 20-foot equivalent unit

Alternative Energy | Utility-Scale Solar Transactions

Date	Investor(s)	Target	Commentary
May'23			Encore Renewable Energy announced that it secured an equity investment from SUSI Partners. With the support of SUSI, Encore aims to develop over 500 MW of community solar and energy storage projects, in addition to a portfolio of utility-scale systems, over the next five years
Apr'23			Greenwood Sustainable Infrastructure acquired Saturn Power's solar and battery development portfolios, which includes a ~1.4 GW pipeline of early to late-stage solar and energy storage projects in five U.S. states and two Canadian provinces. The acquired pipeline includes 72 solar projects, 90% of which are community solar projects, and six battery storage projects
Mar'23			Birch Creek Energy, a St. Louis based renewable energy company, has acquired Foundation Solar Partners, a Washington, DC-based solar developer focused on greenfield development of solar projects primarily in MISO and PJM
Mar'23			Generate Capital is increasing its stake in Pine Gate Renewables' portfolio. Generate requested with the FERC to increase its ownership interest in Pine Gate Renewables' portfolio from 12.5% to up to 66.67% by the end of 2025
Feb'23			Industrial Sun, a solar developer serving the industrial sector and backed by Modern Energy, received a \$90mm investment from EIG and Modern Energy. Modern Energy was an early investor and 100% owner of Industrial Sun. The firm committed \$30mm to launch the company in November 2021
Feb'23			American Electric Power (AEP) agreed to the sale of its 1.4 GW unregulated renewable portfolio for approximately \$1.5bn to IRG Acquisition Holdings, a partnership owned by Invenergy, CDPQ and funds managed by Blackstone Infrastructure
Feb'23			Spain's Grenergy has acquired full ownership of Sofos Harbert Renewable Energy, a developer of utility-scale solar and battery projects in Alabama. Grenergy already owned a 40% stake and has succeeded in taking over Sofos' entire shareholding by acquiring the remaining 60% for an undetermined amount
Jan'23			Nashville-based solar and battery storage company Silicon Ranch closed a \$600mm equity raise, with an initial funding of \$375mm led by Manulife, TD Greystone, and Mountain Group Partners. Silicon Ranch, which boasts 5 GW of contracted solar and battery storage across the US and Canada, plans to add more personnel, support EPC of its contracted pipeline and accelerate growth of new project development
Dec'22			Macquarie's Green Investment Group has acquired Treaty Oak Clean Energy, an Austin-based utility-scale solar plus storage developer. The firms did not disclose the purchase price. Treaty Oak's management team has collectively developed 2 GW+ of utility-scale solar projects

Source(s): Company Press Releases

Alternative Energy | Distributed Generation Solar Transactions

Date	Investor(s)	Target	Commentary
May'23			True Green Capital Management announced the acquisition of a majority stake in CleanChoice. TGC will maintain the CleanChoice brand and team and committed to invest an additional \$100mm to develop, acquire, own, and operate projects. CleanChoice currently has a development portfolio of over 300 MW in various stages of development
Apr'22			DIF Capital Partners closed a deal, for an undisclosed amount, to acquire a majority stake in Green Street Power Partners, a US DG solar platform that has developed more than 300 MW of operating projects. Green Street currently has more than 2 GW of solar projects in its pipeline
Apr'23			C&I solar and storage developer ForeFront Power and Maryland-based climate investor HASI entered into a follow-on equity investment agreement for a roughly 50 MW California distributed solar and solar-plus-storage portfolio. The portfolio includes 48.5 MW of ground-mounted, carport, and rooftop C&I solar paired with 3.7 MW of storage
Mar'23			TPG Climate made a \$150mm equity investment in residential solar system provider Palmetto. Palmetto offers services to install solar systems on homes, including services such as design, engineering and project execution, as well as the technology to manage the installation
Feb'23			Fiera Infrastructure and Palisade Infrastructure have agreed to jointly acquire 100% of the equity interests in Amp US, a US-based renewable energy generation and battery storage business. Headquartered in Colorado, Amp US has built a portfolio with a generating capacity of ~200 MW across 39 operating or under construction projects
Feb'23			Denham Capital announced it has acquired Solops, a developer, financier and owner/operator of PV solar projects in the commercial and industrial (C&I) sector. Under the agreement Denham will support the execution of Solops 800 MW+ pipeline of project investments with an initial commitment of \$200mm
Dec'22			EQT has reached an agreement to acquire Madison Energy Investments (MEI), a developer and operator of DG solar and energy storage projects in the US, from affiliates of Stonepeak Partners. MEI's projects are for commercial, industrial, and community customers. Since its founding in 2019, the company has built a portfolio of more than 386 MW across the county
Nov'22			Bravo Infrastructure Group announced it acquired Radiance Solar, a C&I solar engineering, procurement and construction contractor in the southeastern United States, through a capital partnership with Orion Infrastructure Capital (OIC)

Source(s): Company Press Releases

Alternative Energy | Battery Storage Activity

Date	Category	Involved Parties	Commentary
May'23	Investment		Leyline announced \$30mm in financing for Texas-based solar and storage developer Accelergen Energy. With the funding, Accelergen is planning to develop a multi-gigawatt pipeline of utility-scale solar and storage projects across multiple U.S. markets over the next four years
Apr'23	Investment		Leyline announced financing for energy storage developer EIP Storage. With the support of Leyline's capital, EIP Storage will fund the planned development of more than 2 GWs of utility-scale energy storage projects over the next five years
Mar'23	Project M&A		Agilitas Energy has agreed to acquire a portfolio of six standalone battery storage systems in Texas for \$75mm. The acquisition is Agilitas Energy's largest acquisition since raising \$350mm from CarVal Investors last year. The acquisition and new market entry will add 60 MW to Agilitas Energy's renewable energy and battery storage project pipeline of more than 1 GW
Mar'23	Project M&A		Spearmint Energy has acquired a 900 MW portfolio of grid battery projects, collectively known as Nomadic, in Texas. Located in Cooke, Galveston and Brazoria counties, the Nomadic portfolio consists of three projects each with a target capacity of 300 MW
Jan'23	Platform Launch		Castlelake and Peregrine Energy Management have partnered to form a new renewables development platform called Peregrine Energy Solutions LLC. The new platform will seek to source, develop, build, and manage standalone utility-scale standalone battery energy storage and renewable assets across North America
Dec'22	Corporate Collaboration		JERA Americas has entered into an agreement with UK-based Zenobé to develop battery storage projects. The companies will work together to develop utility-scale, grid-connected, standalone and hybrid battery storage projects in both New York and New England
Dec'22	JV Formation		GreenGo Energy and global renewable energy investment manager Glenmont Partners announced a JV to develop, build and operate over 1 GW of solar and storage projects in the U.S. with first projects expected online in 2025
Nov'22	Corporate M&A		BlackRock has agreed to acquire Jupiter Power from EnCap for an undisclosed amount. Jupiter focuses on developing large-scale, stand-alone energy storage projects. Jupiter has 655 MWh of operating assets and 340 MWh of new projects under construction or about to be built
Oct'22	Investment		SYSO Technologies, a market operator for renewable energy and battery storage developers and asset owners, announced it closed a \$10 million Series A round led by Lacuna Sustainable Investments. SYSO plans to use the funding to expand into new markets and grow its team

Source(s): Company Press Releases

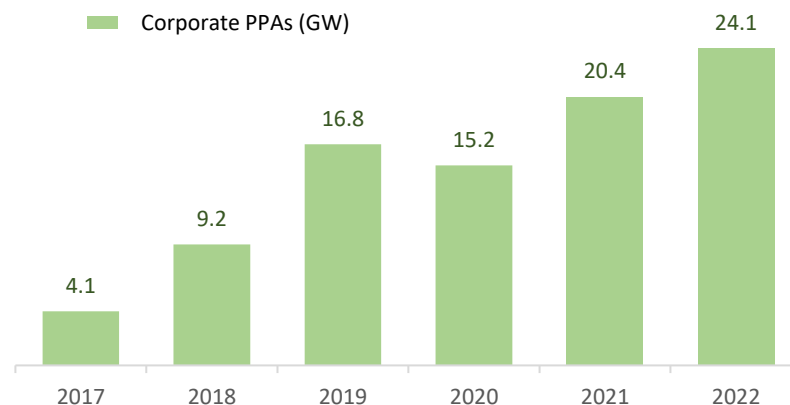
Alternative Energy | Corporate PPA Market Overview

PPA signings hit a new record in 2022, thanks to strong buying from Amazon – new buyers continue to enter the market, even as supply struggles to meet demand

PPA Market Dynamics

- Amazon accounted for approximately ½ of all corporate PPA volume in 2022, which would have otherwise been a down year in corporate procurement
- Corporate demand continues to grow, despite persistent PPA price increases across the country. The tepid market was caused by a lack of contract-ready projects
- GreenFront has observed that, in the absence of mature projects, developers and corporates are signing an increasing number of early-stage projects with ‘offramps’ and price adjustors, knowing that some meaningful portion will not ever be constructed. Reservation value for corporates and elevated PPA prices (versus 2+ years ago) incent both parties to participate in this speculative behavior
- Struggling with higher input costs on both the labor and metals sides, the cost of wind turbines has increased 38% in the past two years. The oligopolistic nature of the turbine manufacturing industry, with only three major OEMs, means these costs are passed directly through to developers
- Solar EPC costs have stabilized a bit in recent quarters, albeit at a much higher level. Tight supply of skilled electrical labor, new prevailing wage/apprenticeship requirements, and a continued constrained environment for transformers and major electrical equipment lead GreenFront to view this EPC cost environment as the new normal
- Anti-circumvention and Uyghur Forced Labor Prevention Act (UFLPA) disruptions to the solar module market appear to be moderating, though the risk of adverse rulings and an expiration of the new tariff moratorium in 13 months should be carefully considered

Americas Corporate PPA Volume (2017 – 2022)



Noteworthy Recent PPA Announcements

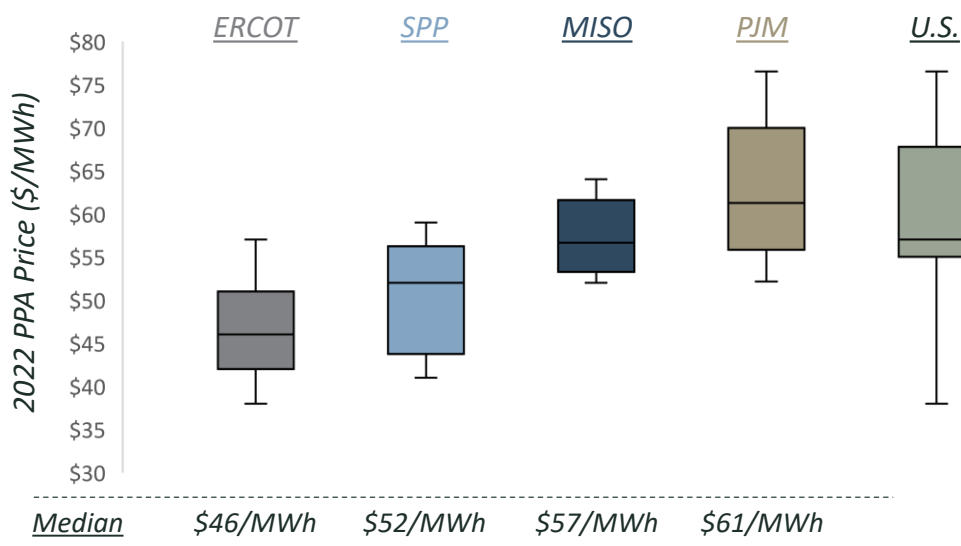
Corporate	Seller	Size (MW)	Fuel Source	Location
Google	Ørsted	150	Wind	ERCOT
Meta	lightsourcebp	134	Solar	PJM
RIVIAN	APEX CLEAN ENERGY	50	Wind	MISO
verizon	enel Green Power	100	Wind	SPP
BASF	X-ELI	48	Solar	ERCOT
Cargill	APEX CLEAN ENERGY	50	Wind	MISO

Source(s): American Clean Power, Infralogic, S&P Market Intelligence, BNEF

Alternative Energy | Corporate PPA Market Overview

PPA prices were up significantly in 2022 across all major RTO markets

U.S. Corporate Solar PPA Pricing Trends



ERCOT Commentary

ERCOT has historically been one of the most developer-friendly places to site new renewables, mostly due to ease of interconnection and inexpensive land and permitting. However, the overhang of potential ERCOT market reform, which has the potential to ‘tax’ intermittent renewable generation in favor of dispatchable gas-fired generation has made contracting for PPAs in ERCOT more difficult and time-consuming

SPP Commentary

SPP interconnection has become one of the lengthiest processes in the country due to a five-fold increase in new generation in the queue over the past decade. The current queue is 109 GW, which is more than the entire generating capacity of SPP. Wind, once prolific in SPP due to the strong resource there, had slowed in recent years, but may resume in response to a renewed generous PTC from the Inflation Reduction Act. Solar development in SPP is growing in response to the hourly price shape resulting from overbuilt wind in portion of the grid

MISO Commentary

The pace of renewable development in MISO is accelerating quickly, particularly in Indiana and Louisiana. Interconnection study delays and expensive network upgrade charges have historically plagued MISO and restrained renewable development to a moderate pace, though there are signs that these bottlenecks are loosening a bit. GreenFront has observed a 57% PPA offer price increase in MISO for the 24 months ending 12/31/22, largely in-line with other wholesale markets. With PJM reform slowing renewable development (see below), MISO has caught the attention of corporate buyers seeking to diversify their earlier ERCOT PPAs

PJM Commentary

PJM has seen the largest PPA price increase in the country, with an observed 76% price increase in the past 2 years. This is mainly driven by the limited supply of near-term contractable projects resulting from interconnection queue reform. Additionally, more corporates are seeking to contract closer to their load centers, creating a mid-Atlantic bias for PPA demand, especially from data center technology companies. An easing of the interconnection reform logjam is unlikely to be sufficient as land, permitting, and siting are also difficult in many parts of PJM, particularly the areas where demand is highest

Source(s): GreenFront data based on offers received for corporate procurements, ¹MISO 2022 Regional Resource Assessment

Alternative Energy | RNG Update

Two key issues are occupying RNG practitioners' focus

1

LCFS/RIN Market Structure: what is the pricing outlook for these environmental attributes?

LCFS

- CARB plans to release an updated regulatory package in mid-2023, ahead of a CARB board hearing in late-summer or early-fall
- Market expectation is that CARB will ratchet up its 2030 CO₂ emissions reduction target from 20% to 30% or 35% off of 2010 baseline figures
 - More aggressive reduction standards for obligated parties in California should support LCFS credit price recovery
- CARB said in a February 2023 workshop that it is "moving quickly" in its latest rulemaking process, with a goal of establishing revised carbon intensity targets for the LCFS by 2024

RIN's

- EPA proposed large increase in the cellulosic biofuel (D3) RVO mandate in 2024 and 2025 to accommodate a growing amount of eRINs pathway approvals and RIN generation in those years
 - Increased RVO boosts obligated parties' demand for RIN's and supports D3 RIN pricing
- Biden administration has reduced Small Refinery Exemptions ("SRE's"), increasing the number of obligated parties who must meet RVO standards

2

Tax Credit Financing: how will ITC's and PTC's be executed on for project finance?

ITC & PTC

- RNG developers and project owners have quickly ascended the learning curve with regard to tax equity/credit financing
- Many projects are qualifying for ITC bonuses in excess of the 30% base case
 - GreenFront has seen more Energy Community bonus qualification than Domestic Content
- Conventional wisdom is that significant value from a PTC (derived from production in 2025 – 2027) can be stacked on top of ITC



Credit Transfer Provisions

- While many RNG developers and owners are still exploring the potential of traditional tax equity partnerships, similar to solar & wind, the majority of GreenFront contacts plan to monetize tax credits through the IRA tax credit transfer provision
- Tax Opinions and Cost Allocation Reports are being commissioned to support indemnifications and insurance policies on Tax Credit Transfer Agreements

Source(s): California Air Resources Board (CARB), BNEF, EcoEngineers

Alternative Energy | Renewable Fuels – Recent Announcements & Transactions














Renewable Fuels sector has seen high velocity of deals and corporate collaborations

Date	Category	Involved Parties	Commentary
May '23	Noteworthy Announcement	 DENHAM CAPITAL 	Denham Capital has put up for sale its ownership of Greenleaf Power, a Sacramento-based biomass generation company with facilities in California and Canada. BNP Paribas is running the process
Apr '23	Noteworthy Announcement		HIF Global announced receipt of the Texas Commission on Environmental Quality Air Quality Permit authorizing the construction and operation of the HIF Matagorda eFuels facility in Matagorda County, Texas. When operational, the HIF Matagorda eFuels Facility will produce approximately 200 million gallons per year of shipping fuel and eGasoline, the equivalent of decarbonizing over 400,000 cars
Apr '23	M&A	 QUINBROOK INFRASTRUCTURE PARTNERS 	Quinbrook announced the acquisition of PurposeEnergy, a U.S. based renewable fuels and biogas specialist focused on waste solutions for the food and beverage industry. PurposeEnergy currently has one project in construction, two starting construction later this year, and additional growth projected from existing and new customers
Apr '23	M&A	 COVANTA 	EQT Infrastructure-backed Covanta has closed a deal to acquire Circon Holdings, which manages more than 20 waste facilities in the Midwest, Southeast and Gulf Coast. Circon's services doubles Covanta's wastewater footprint and grows its engineered fuels business five-fold. The acquisition will add more than 600 new employees and 2,500 customers to Covanta
Mar '23	Noteworthy Investment	 ONTARIO TEACHERS' PENSION PLAN 	Ontario Teachers' Pension Plan Board announced it has entered into a strategic partnership with Sevana Bioenergy that will see it acquire a majority stake in the business and make a capital commitment of \$250mm to develop RNG projects across North America
Feb '23	Noteworthy Investment	 CIP Copenhagen Infrastructure Partners 	Copenhagen Infrastructure Partners has acquired a majority stake in a blue ammonia project, which will be developed alongside U.S.-based Sustainable Fuels Group. Located along the Gulf Coast, the project has commenced detailed engineering and will initially consist of two phases, each with a production capacity of 4,000 tons per day (~3mm tons of annual production from both phases) once operational in 2027
Feb '23	M&A	 ifm investors 	IFM Investors has agreed to acquire a majority of GreenGasUSA, a Charleston, SC-based RNG developer. GreenGas has a near-term pipeline of about 7,000 MMBtu/day and a CNG transportation opportunity of roughly 14,500 MMBtu/day by 2025

Source(s): Company Press Releases

Alternative Energy | Hydrogen – Clean H₂ Pathways Are Taking Shape

Clean H₂ investment and partnership announcements have accelerated

H ₂ Profile	Date	Company	Noteworthy Activity
Green	May '23	 Ambient Fuels  GENERATE	Ambient Fuels received a commitment from Generate Capital to fund up to \$250mm of Ambient Fuels' green hydrogen infrastructure. Ambient Fuels offers custom-engineered green hydrogen solutions—from project development and design to financing and construction
	Apr '23	 ohmium  TPG RISE CLIMATE	Ohmium, a company that designs, manufactures, and deploys advanced PEM electrolyzers for green hydrogen production, announced it raised \$250mm in a Series C round led by TPG Rise Climate. The funding will support Ohmium's expansion to 2 GW in annual manufacturing capacity and the deployment of projects in the U.S., Europe, India, and the Middle East
	Apr '23	 CF  NEXTera ENERGY	CF Industries and NextEra announced a MOU for a JV to develop a green hydrogen project at CF Industries' Verdigris Complex in Oklahoma. The proposed project envisions a jointly owned 100 MW electrolysis plant that would be powered by a dedicated 450 MW renewable energy facility developed by NextEra. CF Industries would be the sole offtaker of the green hydrogen, which would be used to produce up to 100,000 tons per year of green ammonia
	Apr '23	 HAWAII GAS <small>THE CLEAN ENERGY COMPANY</small>	Hawai'i Gas, the state's only regulated gas utility, has issued a RFP to purchase RNG and renewable hydrogen. The company is seeking proposals from local and national suppliers who can provide up to 65,000 therms of RNG or up to 2,300 kg per day of renewable hydrogen
	Mar '23	 HIF  SIEMENS energy	HIF Global and Siemens Energy announced an agreement which would allow Siemens Energy to supply PEM electrolyzers for the proposed HIF Global Matagorda eFuels Facility in Texas. The electrolyzers will aggregate an expected capacity of approximately 1.8 GW to support approximately 300,000 tonnes per year of green hydrogen production
Blue	Mar '23	 YARA  ENBRIDGE	Norway-based chemical firm Yara has agreed to develop an up to \$2.9bn blue ammonia production facility with Canadian developer Enbridge. The proposed facility, which will be owned equally by the two firms, will be located at the Enbridge Ingleside Energy Center near Corpus Christi, Texas. Once operational the facility will have an expected capacity of 1.2-1.4 million tonnes a year
	Mar '23	 CF  LOTTE CHEMICAL	CF Industries announced it has entered into a MOU with Lotte Chemical for the joint exploration of clean ammonia production and long-term ammonia offtake into South Korea. The prospective ammonia facility would leverage CCS technology to reduce CO ₂ emissions to a level that meets or exceeds South Korea's clean ammonia requirements

Source(s): Company Press Releases, S&P Market Intelligence

GreenFront Energy Partners - Overview



GreenFront Energy Partners | Founding Partners and Service Offering

Track record of execution for developers, investors, and corporate clients

GreenFront Founding Partners



Robert Birdsey – Managing Director

- Head of GFEP renewable fuels
- Head of BB&T Energy IB 2013-2020
- J.P. Morgan Energy IB 2007-2013
- MBA, University of Virginia; BA, Sewanee
- Board Member, Virginia Solar Energy Development & Battery Storage Authority



Adam Hahn – Managing Director

- Head of corporate renewable advisory
- Led BB&T's Utility Investment Banking coverage 2015-2020
- Prior to BB&T, worked in the CFO's group at Dominion Energy
- MBA, University of Richmond; BBA, James Madison University



Whit Wall – Managing Director

- Head of GFEP traditional renewables
- Led BB&T's Infrastructure Investment Banking coverage 2015-2020
- Environmental consultant for JJ Blake & Associates prior to BB&T
- MBA, University of Virginia; BS, James Madison University

Service Offering – Exclusively Focused on Renewable Energy



Capital Formation

Raising capital for projects and platform growth initiatives



M&A Advisory

Advising on purchase/sale of alternative energy assets + equity



Corporate Renewable Advisory

Representing corporates in renewable energy procurement efforts

GreenFront Energy Partners | Coverage Universe

GreenFront's go-to market strategy enables significant synergies

Closely-Linked Coverage Universe



Traditional Renewables

Solar, Wind, Storage



Renewable Fuels

Renewable Natural Gas, Carbon Capture, Hydrogen



Corporate Renewable Advisory

Corporate procurement of renewable energy & products

GreenFront Differentiation

- **Regional Market Intelligence:** Our experience negotiating PPAs gives us on-the-ground information specific to different RTO/ISOs across the country
- **Corporate Finance:** As solar/wind/storage move from alternatives to incumbent resources, financing structures are evolving. GreenFront's deep experience in traditional corporate finance helps our clients evolve beyond project financing strategies

GreenFront Differentiation

- **Experience:** Prior O&G background has enabled GreenFront to already transact in very early-stage markets (RNG, CCUS, H₂, LFG, GTL)
- **Environmental Attributes:** Deep knowledge around revenue pathways for LCFS, 45Q, voluntary CO₂ credits
- **Corporate Network:** PPA advisory assignments keep us in regular dialogue with corporate sustainability decision-makers

GreenFront Differentiation

- **Risk Management:** GreenFront provides clients with proprietary analytics around correlation/covariance between weather, resource production, and market pricing
- **Negotiating Edge:** GreenFront builds project models to understand seller economics, identifying leverage points that benefit our corporate clients. We know where developers can bend on certain terms and where they can't

GreenFront Energy Partners | Credentials

Prolific deal execution in the last 24 months



Has closed on a private placement to advance its biogas monitoring technology

Undisclosed

Financial Advisor
2022



Has closed an equity investment to support its low-carbon hydrogen production technology

Undisclosed

Financial Advisor
2022



Has closed on a JV and funding commitment from



Financial Advisor
2022



ENERGY ASSURANCE

Has been acquired by



Sell-side M&A Advisor
2022

Fortune 500 Corporate

Has signed an onsite renewable energy procurement agreement from



Renewable Procurement Advisor
2022



Has secured a structured equity private placement from



Financial Advisor
2021



Has secured a \$50 million equity commitment from

Hartz Capital

Financial Advisor
2021



Has signed a wind PPA totaling 100 MW of procurement with



PPA Advisor
2021



Has secured a private placement for development capital with



Placement Agent
2021

Fortune 500 Corporate

Has signed an exclusive solar PPA totaling 250 MW of procurement with



PPA Advisor
2021



Has signed an exclusive solar PPA totaling 250 MW of procurement with



PPA Advisor
2020



Was advised on the market entry of SaaS Application into the utility end market

Strategic Advisor
2020