Citi Global Wealth Investments


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# Renewed Interest in Renewable Energy

## Key Takeaways

- **It will get easier being green**: Due to its heavy use of leverage, the Renewable Energy sector is especially rate sensitive. It also could have a higher level of intrinsic growth than other equity bond proxies. As central banks around the world normalize rates, financing cost reductions will boost the profitability of many renewable energy companies. We expect as rates normalize and governments improve their policies, the industry can enter a more sustainably profitable phase beginning in the second half of 2024[1].
- **Solar powers ahead:** Solar and wind power are in a phase of exponential growth where the likelihood of disruption is real. Solar installations in 2022 accounted for 56% of all new electricity generation worldwide, despite only accounting for 5% of the installed base.
- **Renewables could threaten fossil fuels in the decade ahead:** Asset risk has already become a reality for coal-powered electricity production in the developed world. As prices for new renewable power continue to fall, that threat will likely grow for other fossil fuels.

## Alignment Ahead of the Fed

The Federal Open Market Committee (FOMC) meets this coming week (March 20) and while markets are not pricing in cuts until July, we are likely to glean more about its thinking from an update to the Fed's quarterly "dot plot". Chair Powell may also provide additional color around progress towards the Fed's goals following slightly higher inflation and mixed employment indicators so far this year. We believe the Fed will cut rates once disinflation resumes, though easing could be more modest than in previous cutting cycles. Despite a shallower path for the Fed Funds rate, and while always susceptible to short-term volatility, the stock market should continue to grind higher over the next 12-18 months on the back of nearly 15% EPS growth in 2024 and 2025.

## Potential Portfolio Implications

Renewable energy investments are more impacted by interest rates and debt levels than market cycles. We believe this sector is poised to grow – and become a potential portfolio opportunity – as interest rates and inflation normalize. Over time, this will present a competitive challenge for fossil fuel energy production. Policy support from governments, scalability and unsubsidized price advantages are all firmly in the renewables' corner.

For the sector to mount a sustainable recovery in markets, however, evidence of profitability improvements across the solar, wind, and battery landscape will also be necessary.

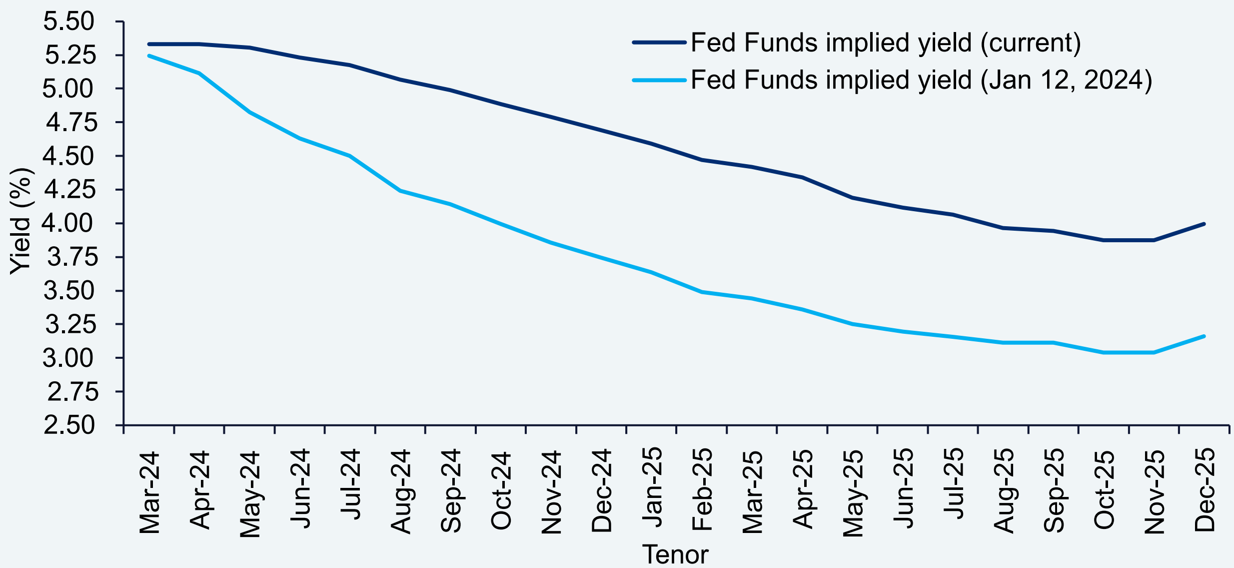
[1] Source: Bloomberg New Energy Finance as of March 14, 2024

# “Alignment” Ahead of the Fed

After this week’s slew of data releases, market expectations are, at least for this moment, aligned to the Fed’s own forecast. In its December dot plot, the Federal Reserve penciled in three 25bp rate cuts by the end of 2024.

For much of 2023 and the beginning of 2024, investors were expecting and pricing in a much more aggressive easing cycle. In mid-January 2024, for example, Fed Funds futures were implying as much as 1.75% in cuts this year (**FIGURE A**). Expectations for lower rates were at odds with Chairman Powell and most Fed speakers who repeatedly indicated that the central bank would not cut rates until inflation had moved sustainably lower, a process which would take time.

**FIGURE A**: Implied path for Fed Funds (current vs mid-January)




Source: Factset as of March 15, 2024.

## Inflation Hotter (as we expected)

The latest inflation data has reinforced the Fed’s messaging. In January and February, monthly Consumer Price Index (CPI) readings have come in above market expectations – primarily due to lagging indicators in real estate – indicating that disinflation will be a slower process lasting to the end of 2024. A slower pace of disinflation is likely to forestall any rate cuts until the summer. The market is currently pricing July 31st for the first rate cut and is now fully consistent with the Fed’s December dot plot for both 2024 and 2025.

We believe that the Fed will cut rates as soon as evidence of disinflation resumes, especially as unemployment rates tick higher. Chairman Powell indicated in congressional testimony last week that the Fed does not intend to wait until inflation actually reaches its 2% target before cutting.

The FOMC meets this week and will release a new dot plot at that time. Chairman Powell may also provide more color around the Fed’s expected reaction function given these slightly higher inflation and mixed employment indications these past few months.

## Why is the Stock Market Higher Given the Fed’s Actions?

We think the answer is simple: Earnings. Economic growth continues to surprise to the upside. While US large cap valuations are unlikely rise in the absence of Fed easing, our expectation for combined 15% EPS growth over 2024 and 2025 should enable the broader market to move higher, even if Fed cuts are more modest.

# Renewed Interest in Renewable Energy

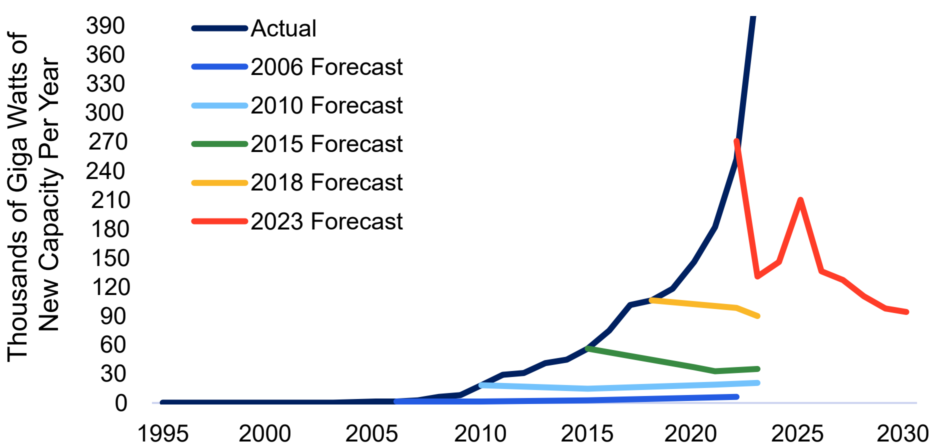
We believe that green assets, including renewable energy, are preparing to recover from 2023's setbacks. In Wealth Outlook 2024, we highlighted the attractiveness of renewables and the headwinds they faced due to a business model that is dependent on debt. High interest rates have crushed renewable energy valuations bringing down forward price-to-earnings (PE) 70x to and estimated 22x[2].

Lower rates will create an opportunity for renewables. For the sector to mount a sustainable recovery, however, a rebound in profitability along with sustained government support will be essential.

## Seeing is Believing: Exponential Growth

For investors to potentially benefit from the exponential growth of renewables, they need to stay invested. This requires that the growth story be understood. Every year the International Energy Agency (IEA) makes a forecast for the growth rate of new annual solar photovoltaic (PV) additions, and they typically assume linear growth from the prior year. Yet, the actual history of additions has shown exponential growth. And this puts the world's targets for renewable electricity within reach (see **FIGURE 1**).

**FIGURE 1**: IEA Forecasts for Solar Build Out Have Failed to Encompass Exponentials




Source: Bloomberg New Energy Finance and International Energy Agency (IEA) as of March 13, 2024.

## Where is Demand Coming From?

The renewables sector is experiencing exponential growth in size as the world's electricity system is undergoing an accelerated rate of transformation. While PV power accounted for 56% of new global electricity installations, it still only accounted for 5% of total power production in 2023[3].

Over the last 10 years solar power production has grown at a 30% annual rate, while wind has grown at a 15% rate. While the increases in renewable capacity in Europe, the United States and Brazil reached record levels, China added as much new solar PV in 2023 as the entire world did in 2022, while its wind capacity grew by 66% year-on year[2].

Demand for energy is on the rise, too. Greater onshoring of manufacturing capacity and Artificial Intelligence server farms, coupled with the electrification of heat and transportation, have dramatically increased forecasts for electricity demand in the developed world after years of stagnation (**FIGURE 2**).

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[2] Source: Bloomberg as of March 13, 2024, S&P Global Clean energy index forward price-to-earnings (PE). The P/E ratio is calculated by dividing the market value price per share by the company's earnings per share.

[3] N. M. Haegel and S. R. Kurtz, "Global Progress Toward Renewable Electricity: Tracking the Role of Solar (Version 3)," in IEEE Journal of Photovoltaics, vol. 13, no. 6, pp. 768-776, Nov. 2023, doi: 10.1109/JPHOTOV.2023.3309922.

**FIGURE 2**: Global Electricity Sources in 2023 by Production Method Share and Average Annual Growth Rate

| | Market Share | 10-Year Average Growth Rate |
|---|---|---|
| **Biomass & Waste** | 2% | 5% |
| **Fossil - Coal** | 35% | 1% |
| **Fossil - Gas** | 23% | 2% |
| **Fossil – Oil** | 2% | -3% |
| **Fossil - Other** | 0% | 2% |
| **Geothermal** | 0% | 3% |
| **Hydro - Large** | 13% | 1% |
| **Hydro - Small** | 2% | 4% |
| **Marine** | 0% | 0% |
| **Nuclear** | 9% | 1% |
| **Solar PV** | 5% | 30% |
| **Solar Thermal** | 0% | 10% |
| **Wind** | 8% | 15% |

Source: Bloomberg New Energy Finance as of March 12, 2024.

## Extreme Competition

Renewables is an extremely competitive industry. While total unit sales have grown sharply, profitability is always challenging. Manufacturers of solar panels, electric vehicles and batteries are engaged in a fierce and often cutthroat competition. Ironically, the nature of their fixed-price contracts has created further headwinds. For example, given surging commodity costs and supply chain issues, wind turbine manufacturers struggled to deliver projects under budget and on time. Selling more at lower margins has been the mantra of many industry participants, but that is not likely to be a winning formula for stocks.

## Government Policy Remains a Key Driver of Returns

Government policy support is essential for a sustained recovery in renewables.

Government policies create financial incentives that will power the growth of renewable energy. These incentives take multiple forms, including subsidies, direct research and development funding, tax benefits associated with R+D, faster grid integrations and net metering (allowing customers to sell excess electricity back to the grid).

In developed markets, for fiscal years 2016 through 2022, the Energy Information Administration (EIA), an independent agency of the U.S. Department of Energy, found that traditional fuels (coal, natural gas, oil and nuclear) received 15% of all subsidies, while renewables, conservation and end use received 85%.[4] Policies including the US Inflation Reduction Act (IRA) and EU Green Deal have also increased the rate of adoption of renewable energy. In addition, Power Purchase Agreements (PPAs) can boost renewable energy deployment by providing renewable energy producers with a predictable revenue stream by securing a pre agreed price for the consumer.

## New Policies Likely

In response to the market impact of higher interest rates, interest rate guarantees and subsidies may be added to the list of renewable policies. Giving manufacturers and producers access to lower cost financing can create wide benefits relative to direct subsidies.

## Negative Market Action Hurts Renewables

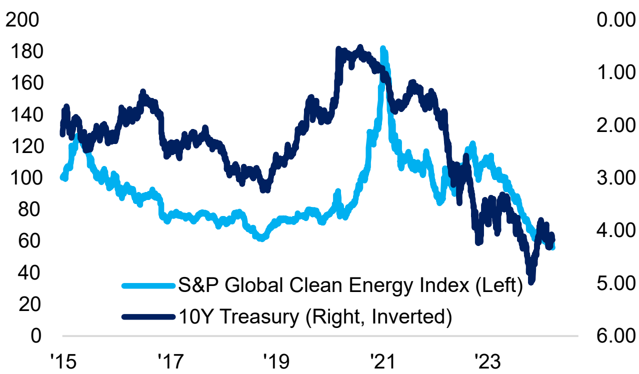
Over the past decade, enthusiasm in markets for renewables has evolved from curiosity to exuberance to skepticism. Equity performance is essential to the growth of renewables for the long term. As the energy transition unfolds, the boom-and-bust cycle experienced by the sector during the pandemic need to give way to more predictable earnings.

[4] IER. (2023, August 9). Renewable energy still dominates energy subsidies in FY 2022. Institute for Energy Research (IER).

The substantial recent drawdown (see **FIGURE 3**) underscores the sector's reliance on a capital-intensive debt heavy business model (see **FIGURE 4**).

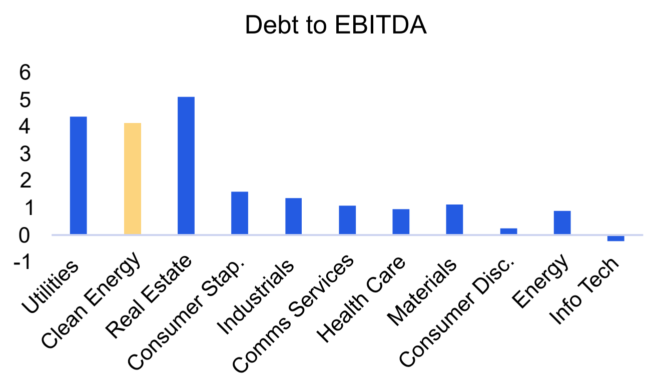
A rotation from traditional energy (which tends to outperform around global economic peaks) towards renewables as economies transition to lower rates and inflation, is especially important given the long run trajectory of many fossil fuel dependent equities, which run substantial risk of having significant stranded assets as the energy transformation unfolds.

**FIGURE 3**: Renewable Energy Relative to the S&P 500 and Ten-Year Treasuries




Source: Bloomberg as of March 12, 2024.

**FIGURE 4**: Clean Energy debt burdens resemble other highly rate sensitive sectors such as utilities and real estate




Source: Factset as of March 12, 2024. S&P 500 sectors as proxy.

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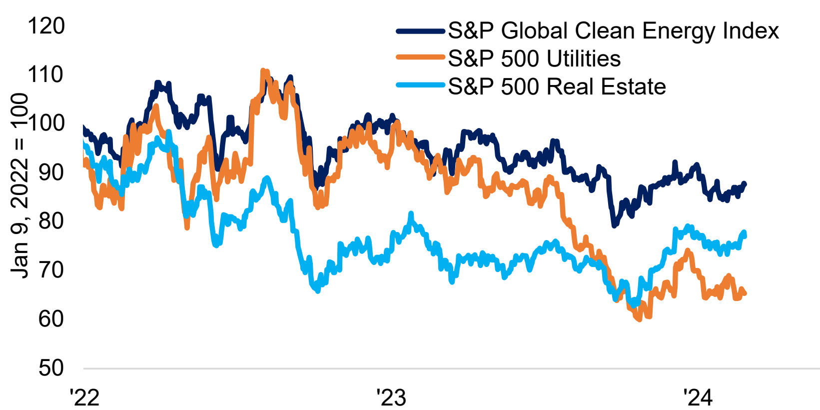
## Renewables Trade like Utilities, But Have an Exponential Tailwind

Daily moves in renewables have correlated with other rate-sensitive sectors like Utilities and REITs (see **FIGURE 5**). However, over these challenging two years of record rate increases they have still dramatically outperformed those sectors recent global rate cycle. The S&P Global Clean index has had daily moves with a n early 90% correlation to utilities but has outperformed utilities by 20%, not surprising when new installations of solar and wind continue to shatter records year after year. Utilities face aggressive regulation and the reality and costs of modernizing distribution to cope with more extreme global weather events to continue business as usual. Real estate, is fundamentally linked to population growth, limiting its secular growth rate in a rapidly graying world.

**FIGURE 5:** Clean energy has become highly correlated with rate sensitive sectors in the S&P 500




Source: Bloomberg as of March 13, 2024. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees, or sales charges, which would lower performance. **Past performance is no guarantee of future results**. Real results may vary.

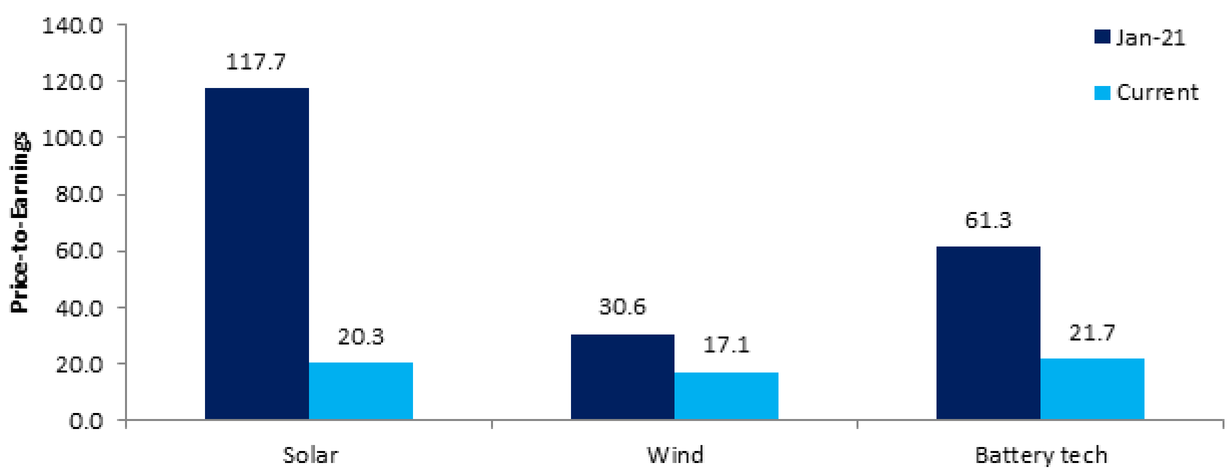
## Implications for Portfolios

While the greening of the global electricity grid continues to be an unstoppable trend, brutal competition and rate sensitivity have weighed on renewable energy shares. We see value being restored in this sector (see **FIGURE 6**). We continue to see output growth for this sector beyond what is typical in the rest of the market, with solar installations having grown for example at 30% annually on average for the last ten years.

In Wealth Outlook 2024, we did not include renewables as an unstoppable trend for portfolios, but highlighted how a turn to lower rates would drive a reversal of fate for the beleaguered segment. As we move closer to a start of easing by both the Fed and the ECB, entry points for this highly rate sensitive segment look increasingly attractive and have the potential to drive value in portfolios. Of course, we will have to see some margin improvements, too, as the companies adjust contract terms and utilize government programs and subsidies wisely.

If we are right, renewables may become a more attractive way to exploit a turn in rates than other classic "bond-proxy" sectors, as the growth rate of the segment should drive long term equity gains even as fierce competition keeps EBITDA margins constrained.

**FIGURE 6:** Prices have reset creating more value in the renewable sector




Source: Factset as of March 13, 2024. MAC Global Solar Energy Index Net Total Return proxy for Solar. ISE Clean Edge Global Wind Energy Index proxy for Wind. Solactive Global Lithium Index proxy for Battery Tech. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees, or sales charges, which would lower performance. **Past performance is no guarantee of future results**. Real results may vary.

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|---|---|---|---|
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| Highest quality | Aaa | AAA | AAA |
| High quality (very strong) | Aa | AA | AA |
| Upper medium grade (Strong) | A | A | A |
| Medium grade | Baa | BBB | BBB |
| **Not Investment Grade** | | | |
| Lower medium grade (somewhat speculative) | Ba | BB | BB |
| Low grade (speculative) | B | B | B |
| Poor quality (may default) | Caa | CCC | CCC |
| Most speculative | Ca | CC | CC |
| No interest being paid or bankruptcy petition filed | C | D | C |
| In default | C | D | D |

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- restrictions on transferring interests in the Fund;
- potential lack of diversification and resulting higher risk due to concentration of trading authority when a single advisor is utilized;
- absence of information regarding valuations and pricing;
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- less regulation and higher fees than mutual funds; and
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