PRIVATE CAPITAL

Buying into the Energy Future

February 2021

Investment in storage will be a critical step in the evolution of renewable energy infrastructure as an asset class, say MetLife Investment Management's head of infrastructure and project finance, John Tanyeri, and director Stuart Ashton

One of the hallmarks of the U.S. electricity grid is its dependability – we fully expect the light to turn on when we flip the switch. Along with the proliferation of solar and wind projects comes the need to build consistency of supply into the system, so customers can continue to rely on the grid's dependable performance.

MetLife Investment Management

Infrastructure Investor

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Due to the inherent intermittent nature of wind and solar resources, and the increasing frequency and severity of natural events such as floods and wildfires, utilities and other power providers seek new ways to counter fluctuations in the expanding output of renewable generation. The increased availability and cost-effectiveness of storage solutions should make renewable assets more cost- and performance-competitive with traditional energy sources, thereby further bolstering adoption of renewables.

Furthermore, as the impacts of covid-19 spread amid substantially reduced economic activity, one outcome is cleaner water in the canals of Venice and reduced smog over cities like New York. People have noticed this environmental progress and are now eager to maintain these long-term improvements. Renewables will be a key component in responding to those demands, and also an effective tool to ad.dress and mitigate the risks of climate change.

The essential role of power production, lightly cyclical demand, and the fact that many market participants are highly regulated or even monopolies, provide good credit characteristics in our view. We feel this credit strength can continue to be the case as power production shifts to renewable power, particularly with energy storage capacity.

We believe investors focused on infrastructure increasingly will seek to allocate capital to financing renewable energy and systems to store such power generation.

A Growing Market

To understand the market for energy storage, it's helpful to examine the growth in demand. Between 2013 and 2018, energy storage deployments in the U.S. alone grew at a compound annual growth rate of 74 percent, according to a 2019 Wood Mackenzie report.

The pace of growth is projected to increase exponentially in the next five years, driven by continued technological innovation, decreasing costs and rising demand for cleaner power generation.

A major demand driver for storage has been the declining cost of renewable infrastructure generally. Particularly with respect to wind and solar assets, there has been a significant drop in the cost of the physical infrastructure and construction costs.

As wind and solar installations become more cost-competitive with traditional fossil-fueled plants, the concept of 'grid parity' has become a reality in many regions domestically and internationally. Grid parity is a shorthand way of describing when clean energy is generated and delivered at the same or lower cost as the regional utility and is typically closely correlated to the cost of fossil-fuel generation.

Yet, 'cost' for comparison purposes should include common expenses (revenue) such as transmission, tax and other government incentives and, increasingly, environmental emissions and societal impacts.

> "The continued expansion of renewable infrastructure will fuel investors' interest in and appetite for project financings that incorporate or rely on storage."

At the same time, storage costs also are falling, with predicted cost reductions of 48 percent to 64 percent by 2030, according to the International Renewable Energy Agency. As technology increases the efficiency of batteries, and declining costs enhance the economics of both renewable projects and storage, investors' interest in financing storage is likely to grow.

For investors, an important implication of this trend is that the market for energy storage is expected to reach nearly $7 billion in the U.S. within five years. Our firm is also seeing a slow but steady increase in the number of renewable projects that incorporate storage.

Battery Storage and Project Financing

The rising demand for battery storage reflects expanding demand for solar and wind generation, including offshore wind. Concerns about resiliency and grid stability impact the conventional power supply system, spurred by the effect on the grid of increased severe weather, wildfires and other climate-related phenomena. We believe balancing the grid and the continued expansion of renewable infrastructure will fuel investors' interest in and appetite for project financings that incorporate or rely on storage.

The inclusion of battery storage as a project infrastructure component was noted by Moody's Investors Service's 2018 report, which stated that battery storage technology was "emerging as a tool to boost electric grid reliability, which is credit positive for owners of intermittent renewable energy generation and grid operators". The U.S. Congress also recognised investors' interest in storage financing. The Energy Storage Tax Incentive and Deployment Act of 2019 (H.R.2096) was introduced to expand the tax credit for investments in energy property to include storage equipment including, but not limited to, batteries.

Revenue Models and Financing Considerations

One of the more significant factors for project and infrastructure investors is the pro forma financial model, which forecasts a project's financial performance to support a given financing transaction. In a contracted model, revenues are subject to a long-term contractual arrangement between the project and power offtaker, usually a utility or corporation. Alternatively, in a merchant model there is no set contract, and revenues are dependent on supply and demand conditions in the market over time. A hybrid approach, combining aspects of both the contracted and merchant models, is becoming more common.

Thus, investors in all renewable projects need to understand the contractual nature of each transaction. Until a few years ago, most renewable energy transactions had long-term contracts with utilities. More recently, contracts have been signed directly with corporations that are large energy users. The market also has seen hedge agreements replace long-term contracts, where instead of having a definitive counterparty, a project owner might enter into a contract with an investment bank that agrees to a minimum price for power. And then, as noted above, there are partially or even entirely merchant projects.

Since financings for projects involving renewable infrastructure often have terms of 10 to 20 years, investors need to understand the predictability of the long-term revenue and expense stream over the debt term. The long-term contract model clearly provides the most revenue visibility. However, more capital providers have grown comfortable with hedged and/or merchant deals. As more sponsors invest in merchant structures, we expect to see a broader mix of revenue models. This should encourage debt investors to look more closely at merchant transactions and whether they can gain comfort with the risk-reward profile.

Expansion of Financing Vehicles

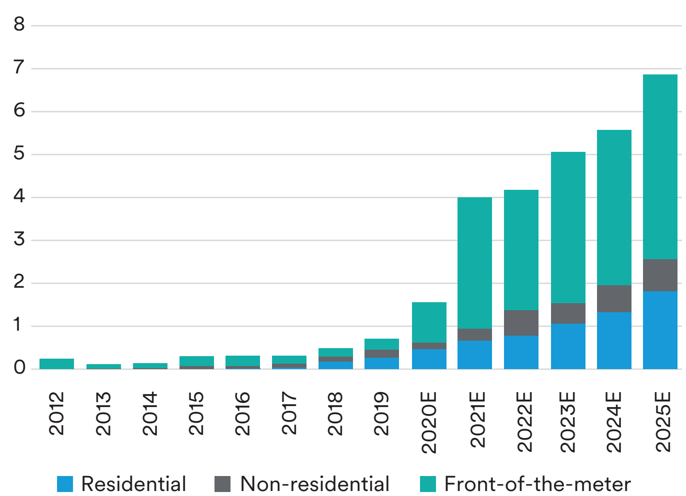
As the market for renewable infrastructure and storage evolves, we expect investors to accept a wider range of financing vehicles. In addition to infrastructure project financing using conventional long-term debt, there's room in the marketplace for asset-based lending such as private ABS transactions and other structures such as Energy Savings Performance Contracts.

At MetLife Investment Management, we are increasingly willing to explore different points in the capital structure, such as financing a holding company versus traditional project financing done at the asset level. There's also the potential to add leverage or even back-leverage to tax equity transactions, which historically were financed with sponsor cash equity and tax equity alone.

Regardless of the appeal of renewable infrastructure and storage, and the emergence of different financing vehicles, what has not changed is the defining characteristic that all underlying transactions must be sound and must show potential to generate appropriate risk-adjusted returns.

In that regard, it is worth noting that larger investors, with investment track records in renewable infrastructure, often advocate for tighter transaction terms and conditions and better pricing. We believe the best practices for measuring infrastructure portfolio performance often favour privately placed debt versus public debt: better covenants, collateral and/or higher yield potential.

U.S. energy storage will be a $6.9bn annual market in 2025 ($bn)



Source: Wood Mackenzie

Investing in Our Energy Future

As society continues its march toward an energy future with both resiliency and lower carbon emissions, the availability of wind and solar generation, increasingly coupled with storage, will be critical to pursuing and achieving these goals. The growth of projects using intermittent resources poses a particular challenge for grid stability. We believe advances in technology and declining cost curves point to a strengthening case for storage investments and the willingness to finance them.

With this challenge comes an opportunity to invest in projects that use a wider range of financing models across the capital structure. Investing in renewable power is likely to continue to evolve from financing standalone plants to providing capital to larger portfolios of projects. Integration of renewable power into the overall power system is likely to be a recurring theme.

We believe that the continued evolution of these investment solutions will be essential for the future growth and evolution of the power industry. Wind, solar and battery storage will be no exception.

JOHN TANYERI

Head of Infrastructure and Project Finance
MetLife Investment Management

John Tanyeri is Head of Infrastructure and Project Finance for MetLife Investment Management (MIM). In this capacity, he oversees a team of 20 credit analysts in the US and UK.

Mr. Tanyeri spent three years in the UK from December 2013 to 2016 in an effort to build out the infrastructure origination platform. In 2016, Mr Tanyeri repatriated back to the U.S. and under his leadership, MIM is recognised as a leading lender.

Prior to joining MetLife in 1996, Mr. Tanyeri worked in a variety of investing and finance functions at Salomon, Incorporated.

Tanyeri holds a BS degree in Finance from the College of New Jersey and an MBA in Finance from the University of Tennessee.

STUART ASHTON

Director
MetLife Investment Management

Stuart Ashton is a Director responsible for the origination and execution of new transactions, as well as the ongoing management of existing fixed income, lease equity and tax equity investments. His nearly 17 years with MetLife have focused on Project Finance, Renewables and Tax-Oriented Equity Investments in the wind and solar power arenas.

Ashton has 30 years of experience investing in corporate, power-related and infrastructure debt.

Prior to joining MetLife, Ashton was at New York Life Investment Management where he led their tax equity and utility lending teams. Prior to this, he spent seven years in investment and commercial banking at Smith Barney, Swiss Bank and Sumitomo Bank.

Ashton earned a BA degree in Engineering from Lafayette College and an MBA in Finance and Accounting from Cornell University's Graduate School of Business.

About MetLife Investment Management | Private Placement Debt

MetLife Investment Management's[1] Global Private Placement Debt Group manages over $98.9 billion[2] in assets and brings over 90 years of investing in the asset class. We offer **exceptional access to investment grade deals** due to our significant scale, long-standing market relationships, and sector expertise. Given our leadership in the infrastructure and corporate private placement markets we often fund an entire deal or become the cornerstone of the deal, which provides unique and larger allocations for our clients. Our investment decisions are informed by a team-based risk culture with a time-tested approach to managing risk, combined with proprietary research and layered independent oversight. We have more than 50 seasoned industry specialists working together to develop customized portfolio solutions to help meet your needs. We are institutional, but far from typical.

For more information, visit: **investments.metlife.com/private-placement-debt**

[1] MetLife Investment Management ("MIM") is MetLife, Inc.'s institutional management business and the marketing name for subsidiaries of MetLife that provide investment management services to MetLife's general account, separate accounts and/or unaffiliated/third party investors, including: Metropolitan Life Insurance Company, MetLife Investment Management, LLC, MetLife Investment Management Limited, MetLife Investments Limited, MetLife Investments Asia Limited, MetLife Latin America Asesorias e Inversiones Limitada, MetLife Asset Management Corp. (Japan), and MIM I LLC.

[2] As of December 31, 2020. At estimated fair value. Includes all corporate and infrastructure private placement debt managed by MIM.

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MetLife Investment Management

Appendix

This appendix contains details for the preceding charts and provides additional information for greater accessibility.

U.S. energy storage will be a $6.9bn annual market in 2025 ($bn)

Note:

- All values are approximate
- Source: Wood Mackenzie
- The bar graph totals for each year vary slightly from 2012 to 2019 and then rise sharply from 2020E to 2025E.

Year	Residential (Billions of Dollars)	Non-residential (Billions of Dollars)	Front-of-the-meter (Billions of Dollars)	Total
2012	0	0	0.25	0.25
2013	0	0	0.20	0.20
2014	0	0	0.21	0.21
2015	0.02	0.06	0.27	0.35
2016	0.02	0.07	0.26	0.35
2017	0.04	0.10	0.21	0.35
2018	0.19	0.14	0.22	0.55
2019	0.26	0.21	0.28	0.75
2020E	0.45	0.15	0.95	1.55
2021E	0.66	0.28	3.06	4.00
2022E	0.80	0.60	2.80	4.20
2023E	1.04	0.49	3.52	5.05
2024E	1.34	0.62	3.64	5.60
2025E	1.52	0.64	3.69	5.85