HarbourVest Partners

Investing in power markets during the transition from hydrocarbon to renewables

Recently, **Chase McWhorter,** Institutional Real Estate, Inc.'s managing director, *Institutional Investing in Infrastructure,* spoke with **Michael Dean,** managing director for HarbourVest Partners. Following is an excerpt of that conversation.

Power markets globally are going through a rapid transformation. In 2019, U.S. annual energy consumption from renewable energy even surpassed coal, for the first time in more than 130 years. How do these changes affect the investment landscape for infrastructure investors?

The power market is certainly going through significant change. The first generation of infrastructure investments in the power sector were traditional, thermal-powered assets — typically natural-gas projects. Around 2010, natural gas started to accelerate in replacing coal as a more efficient, more cost-effective and more environmentally friendly opportunity. Since then, we have seen power prices and natural-gas prices come down and the attractiveness of the opportunity set diminish. Infrastructure investors are now seeing growth and expansion in renewables that are backed by supportive financing, strong power-purchase agreements, and government incentives around decarbonization efforts. While most of those original gas assets will still play a critical role in the power landscape, not all will. If you are invested in those assets, it is important to make sure you have strategic advantages, as well as identify impacts from growth in the renewables market. We have seen recent headlines in Europe and Asia that, if you are phasing out conventional assets too quickly, it can contribute to poor outcomes, brownouts or other challenges. Today, as the power markets are rapidly transforming, investors want to have flexible assets and capital structures. They may need to own these assets for an unspecified period of time, but if the assets are well located with strategic advantages, there is likely to be flexibility for positive, long-term performance.

With cost declines for renewable energy, a sea change in societal demands, and supportive government policy, there's an unprecedented focus on renewable-energy and energy-transition assets. With increasing capital flowing into renewable energy, however, valuations are increasing and returns are coming down. How does HarbourVest think about sourcing and underwriting renewable-energy deals in this landscape?

We are certainly active in renewables, and are positive on the secular growth and transformation in the market. We still see some deal-pricing pressure, particularly on long-dated power-purchase agreements (PPAs) that are 10 or more years in duration. We are pricing equities here, not bonds, so we first try to look at the risk throughout a deal to make sure we are not taking bond-like returns for equity risk. If you are pricing aggressively, the risk can be around your assumptions on post-PPA economics, as well as operations and maintenance, which are areas where the renewables market is still finding its way. Another consideration for renewables involves the localized-market factor risks. If you are taking single-resource risk, whether on a wind corridor or investing in an area that has a lot of resource volatility, you would have a certain average of high- and low-period volatility. Some of those assets are more difficult to underwrite in the market today. We step back from those high-volatility opportunities and focus on investments where we can get comfortable with the risks. The renewables market has become much more bifurcated, where that classic value-add piece in the middle is harder to find. There is a lot of money being deployed and deals being done on fully contracted, core-like deals, and then there is a fair amount of speculative greenfield development, but we are not seeing as much in the middle.

Another trend in the power market is the rise of distributed generation, which provides users resilient and reliable sources of power. How does HarbourVest think about the role distributed generation will play in the future, and what opportunities do you plan to pursue?

This is an exciting part of the market. Distributed power is decentralized, micro-grid power, so you are talking about a localized power system that can incorporate multiple energy sources. Most often that is solar and natural gas working together in a smaller market capacity — it can be used to supplement grid power and optimize costs and load. It can also function independently when grid power is either not available or is cost-prohibitive. One of the efficiency themes in the market is the increased focus on utilizing power that is already available, rather than just thinking about new builds for different types of renewables. Micro grids provide a solution for squeezing more out of what we already have, so we have made meaningful investments in this area. They are enabled by the growth of renewables and natural gas, in most cases, and are a good complement to larger power investments when you can find the right opportunities.

Power markets are very much local, with each market having different supply-and-demand dynamics. How does HarbourVest think about underwriting power investments in different markets?

In developing markets, the big-picture demand forecast for electricity is a little more than double the rate of OECD growth. This is because of the natural growth of those markets where new capacity is based on new demand, and the opportunity is obvious. As technology has improved, we have seen wind and solar costs drop 50 percent to 80 percent over the past 10 years. That is really helping to drive a lot of that opportunity. In developing markets, you are trying to provide new, stable capacity to markets that may have unreliable power or other types of power-supply issues. In those deals, you aren't investing in what this market will look like in five or 10 years. You may have risk on the back end around who is going to buy this, but you are investing less in the dynamic nature of the grid and more in providing a solution that someone is willing to pay for today via a long-term contract.

The main difference is, in more-developed markets like the United States, we look at existing assets that have exposure to the grid — assets that will be resilient and strategically important as the grid and the market continue to evolve.

The United States also has its own set of regulatory issues for power markets, where the dynamics are changing faster than regulations. We have friction in incentives and regulations between the states, the independent system operators or ISOs, and then at the federal level. The ISOs need to maintain a functioning power grid for all the market players; the states have renewable portfolio incentives at their level, and they have job or employment objectives. At the federal level, there are incentives and objectives, as well. It is a stable market in the United States, overall, but these are important considerations for investors to evaluate. But in the developing markets, given the potential variability in the expected range of returns and potential geopolitical risk, investors still do expect a premium return — even though you are typically getting U.S. dollar contracts and corporate PPAs with high-credit counterparties.

What role do you expect storage to play in the U.S. energy market? How should investors think about the opportunities and challenges of investing in storage assets?

Storage is still a relatively new area of activity and is largely tied to existing, operating renewables. The real challenge is that, in some markets, adding more renewables on the grid is a difficult goal to achieve and has limited benefit without more storage. When solar power is being collected is not when people need to be using it, so storage needs to be considered to match demand. Without shifting to more dynamic storage — in other words, to shift supply and demand — we are not going to get renewable growth that is as impactful as we are expecting.

Increasingly, there are ancillary revenue opportunities to arbitrage market inefficiencies in use and storage. That opportunity won't be there forever. Importantly, location will be a big driver of value in terms of where your storage assets are located long term. But that location can be hard to identify today as the market is growing so quickly. People tend to look at technology as the frontline risk, when in fact, these batteries will be changed out over time and the technology will evolve. That is why it is key to have strategically located assets that will outlive your current wave of technology.

Is the opportunity primarily in battery storage?

Largely it is battery storage, but we do see some others, such as pumped storage hydro. The market will speak over time on the pros and cons of building giant battery systems as power storage. We try to focus on the arbitration opportunities, the PPAs or the capacity payments available on certain deals, and take out some of the risk of the long-term technology.

How do you look at the transition? Is natural gas considered transitional?

Natural gas continues to grow, but at a much slower rate of the overall power mix. The growth going forward will be from renewables. Even in the most optimistic renewable scenarios, natural gas will have to be a part of the future solution. It is the best anchor solution for on-demand power. The way we think about it conceptually is to acknowledge it is a hydrocarbon, but that it is significantly cleaner than any other hydrocarbon, and it is an important enabler or foundational piece for renewables to work.

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Michael Dean joined HarbourVest in 2014 and focuses on real assets investments, including energy, infrastructure, real estate and natural resources. He currently serves on a number of boards and advisory boards of companies and partnerships, including those managed by 1901 Partners, Arroyo Energy, The Blackstone Group, BP Energy Partners, The Carlyle Group, Crestline, LS Power and W&T Offshore.

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CORPORATE OVERVIEW

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