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Pension Funds Investing Indirectly in Ohio's Gavin Coal Plant Are at Risk as Financial, Environmental Disadvantages Mount

Plant Is Fourth-Largest CO_2 Emitter in U.S.

Executive Summary

The 2,680-megawatt (MW) Gen. J.M. Gavin coal plant in Ohio faces serious environmental, energy market and financial challenges that call its long-term viability into question. This report examines a series of potential problems that should concern community leaders, bankers, pension funds, private equity investors and credit agencies.

The starting point for this analysis is Gavin's significant carbon dioxide emissions: Since 2017 it has been the fourth-largest power plant CO_2 emitter in the country, according to Environmental Protection Agency monitoring data.[1] This is likely to continue in 2021 as well; the two-unit facility emitted just over 7.3 million tons of CO_2 during the first six months of the year, retaining its fourth-place status among U.S. coal plants.

Unlike the investor-owned utility plants that occupy the top three spots—Southern Company's 2,780MW James H. Miller plant, DTE Electric's 3,086MW Monroe plant and Ameren's 2,464MW Labadie plant—Gavin is owned by two major private equity firms, ArcLight Capital Holdings LLC and The Blackstone Group, which created Lightstone Generation LLC to purchase Gavin and three gas-fired power plants from American Electric Power (AEP). The sale, announced in September 2016, was finalized January 30, 2017.[2] These two firms collectively manage almost $700 billion in assets, which to date have largely been shielded from rising investor sentiment that fossil fuel investments in general, and coal-related assets in particular, are no longer financially viable. More than 100 institutions have placed restrictions on fossil fuel financing, and IEEFA is tracking a growing number of asset managers that are following suit.[3]

This shift in the financial sector could soon lead to a reckoning at Gavin, and perhaps at other fossil fuel-focused private equity assets, as the ArcLight and Blackstone

[1] Environmental Protection Agency. Air Markets Program Data. September 30, 2021.
[2] American Electric Power. AEP Completes Sale of Four Competitive Power Plants. January 30, 2017.
[3] IEEFA. Finance is leaving thermal coal. Also: Asset managers are leaving coal.

funds that own Lightstone include significant investments from some major pension and retirement funds that have aggressive coal exit policies. As pension funds move toward low carbon investment strategies, will private equity funds remain invested in large CO_2-emitting projects like Gavin?

The rapid change in the financial landscape for coal asset investments is highlighted by a series of specific risks that threaten Gavin's continued operation:

- The term loan taken out by Lightstone LLC to buy the four plants comes due in January 2024. The outstanding balance on the loan is $1.736 billion (current as of March 31, 2021). Growing public pressure already has prompted many banks to restrict lending to the coal sector, a trend that is likely to accelerate in the next couple years. Given that, what bank is going to want to lead this significant refinancing effort?

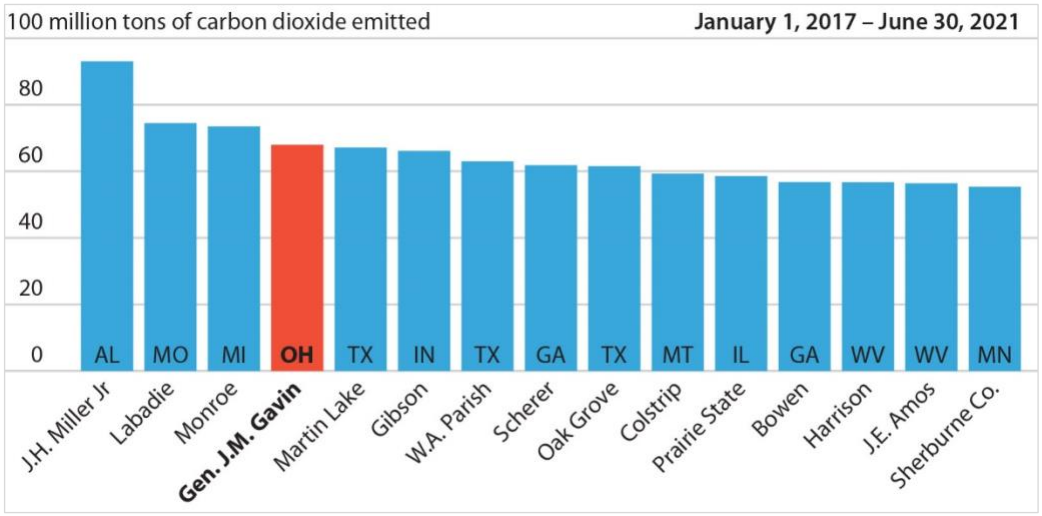
- The ratings firms that cover the debt issued by entities such as Lightstone, currently rated B2 with a negative outlook by Moody's, are increasingly worried about environmental, social and governance (ESG) issues and the credit threats confronting coal assets. How long can Lightstone expect to keep a rating that will enable it to borrow money from the market at affordable levels?

- Finally, it is clear from Lightstone's financials that the investment is likely underperforming. Blackstone and ArcLight have benefitted from distributions from the project (funded by adding to the original term loan), but Lightstone's revenues have declined significantly since the purchase, and revenue from the PJM capacity market will tumble next year and looks likely to remain constrained in the years ahead with new renewable energy resources entering the market.

The latest data from IEEFA shows that just since March, the generating capacity of coal plants slated to retire or convert to gas from 2021-2030 has risen by 10.5 gigawatts (GW), to a total of 81.3 GW—more than double the level of March 2020, when only 37.4GW of coal capacity was scheduled to close through 2030. Given these headwinds, refinancing the debt associated with Gavin would create significant stranded asset risks for its owners and serious financial and reputational risks for the pension and retirement funds currently backing the investment. A more economic and environmentally sensible option, and one that would allow time to draft a strategy for local transition needs, would entail developing plans now to close Gavin.

This paper issues a financial warning to all stakeholders in the private equity economic chain, including host communities. Communities need to plan for coal plant closures. Pension funds can stop any future investments and review their current holdings. Private equity managers need to offer investment portfolios that are fossil free if they are to meet the demand of a growing group of large investors. There are practical steps that can be taken now.

Figure 1: Top CO_2 Emitters in the U.S.[4]



Source: EPA continuous emissions monitoring data with IEEFA analysis.

[4] Environmental Protection Agency, *op. cit.*

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The Gavin Sale

American Electric Power (AEP) announced the sale of the 2,680 MW Gavin power plant on September 14, 2016. The deal also included three gas-fired power plants. Two are combined cycle units, the 960 MW Waterford plant in Ohio and the 1,288MW Lawrenceburg plant in Indiana, while the third, the 540MW Darby plant, is a peaking facility in Ohio.[5]

AEP received $2.17 billion in cash from the sale, part of its corporate effort to exit the competitive generation market. As AEP CEO Nicholas Akins noted in announcing the sale: "AEP's long-term strategy has been to become a fully regulated, premium energy company focused on investment in infrastructure and the energy innovations that our customers want and need. This transaction advances that strategy and reduces some of the business risks associated with operating competitive generating assets."[6]

The buyer of the properties was Lightstone Generation LLC. Lightstone was established by The Blackstone Group and ArcLight Capital Partners LLC with the sole purpose of buying the AEP facilities. It is equally owned by funds operated by the two private equity firms.

The debt raised by Lightstone to finance the purchase included:

- A $1.575 billion term loan, due in January 2024;
- A $150 million term loan C; and
- A $100 million credit revolver.[7]

At the time, Moody's Investors Service gave the debt package a Ba3 rating; S&P gave it a BB-. These are non-investment grade ratings reflecting major ongoing financial issues.[8]

Both agencies pointed to the key role the coal-fired Gavin plant played in their rating decisions, flagging the importance of the capacity payments Gavin and the other plants could earn by virtue of their location within the PJM service territory.

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[5] The capacity numbers presented here are from S&P Global.
[6] American Electric Power. AEP to Sell Four Competitive Power Plants to Blackstone and ArcLight Joint Venture. September 14, 2016.
[7] S&P Market Intelligence. S&P, Moody's see stable outlook on ArcLight/Blackstone generation buyout vehicle. December 1, 2016.
[8] Moody's. Rating Scale and Definitions. Moody's sees this as a non-investment grade instrument. Also see: S&P Global Ratings: A Credit Rating is an Informed Opinion. S&P sees it as speculative.

"This project benefits from approximately 40%-50% of its cash flows coming from capacity margins, which tend to be more stable and are cleared several years in advance," S&P Ratings said.[9]

Similarly, Moody's noted that Lightstone "benefit[s] from known forward PJM capacity auction prices until May 2020." (More detail on PJM and its capacity market is included in a subsequent section.)

Consistent with the speculative rating, both credit agencies also highlighted significant risks. Moody's pointed out that even with the capacity payments, more than 50% of its gross margin was expected to come from uncontracted energy sales and those sales were central to its debt repayment plans. As such, lower regional demand, flat or lower prices, and the entry of lower cost competitors all could work to reduce Gavin's and the other plants' annual energy sales.

Both ratings firms also warned about the uncertainty of future PJM capacity prices. "Over time, we expect some recovery in power prices as older assets (generally coal) retire, but an unexpected influx of renewables or dampened demand growth could keep power prices low or even weigh on capacity factors, resulting in weaker cash flows," S&P warned.[10]

Moody's was equally blunt: "The most recent decline in the capacity price for the 2019/2020 auction (capacity prices dropped to $100/megawatt-day that year) reflects a slight increase in cleared supply and a revision downwards by PJM of their peak load forecast, leading to less demand for capacity and therefore lower capacity prices. The decline also highlights the potential volatility in PJM capacity prices in subsequent auctions."[11]

These risks have materialized in the five years since the purchase.[12] Power prices have been largely flat, capacity prices fell significantly in the most recent capacity auction, renewable energy resources are beginning to make a real impact in the PJM market, and thousands of megawatts of new offshore wind generation are set to come online before 2030.[13]

These factors, along with growing concerns over environmental pollution and CO_2 emissions, combine to create a cumulative risk profile that suggests, like so many other coal plants in the United States, Gavin's future is increasingly uncertain. The purpose of this early warning can assist investors and residents to design better economic outcomes for southeast Ohio.

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[9] *Op. cit.*, S&P Market Intelligence.
[10] *Ibid*.
[11] Moody's Investors Service. Lightstone Generation LLC. December 9, 2016.
[12] Moody's Investors Service. Lightstone Generation LLC. June 28, 2021.
[13] Offshore wind projects are being developed in every coastal state in PJM, with New Jersey and Virginia having the most aggressive goals. By 2030, 6,300MW of new offshore wind capacity from those two states could be sending electricity into the PJM grid.

The Real Owners of Lightstone

Pension Fund Investors May Not Know What They Own

Private equity covers several investment approaches. One of the most straightforward, and the one relevant for this analysis, involves PE firms creating investment funds, soliciting outside investment in those funds, closing the funds once they reach a certain dollar level, and then investing the collected funds. In this structure, the PE firms are directing the investing strategy, with the outside investors playing a passive role. Another key attribute of PE investments is that they are largely opaque, with few of the disclosure rules that govern publicly traded entities.

This general structure holds for the Gavin deal, including the sparse number of details readily available about the transaction. But peel away a few layers of federal filings, and some key information comes to light.

The required Federal Power Act filing at the Federal Energy Regulatory Commission (FERC) for Lightstone to secure authorization to charge market-based rates shows each of the four generation entities has been turned into an LLC—Gavin Power LLC, for example. These four LLCs, collectively the Lightstone Generation Companies, are all wholly- owned subsidiaries of Lightstone Generation LLC. In turn, "Lightstone Generation is a special purpose entity formed by ArcLight Energy Partners Fund VI, L.P. ("ArcLight Fund VI"), Blackstone Energy Partners II NQ L.P. ("BEP II"), and Blackstone Capital Partners VII NQ L.P. ("BCP VII")."[14]

So, Gavin, one of the country's largest CO_2 emitters, is owned by three largely unknown private equity funds.

Each of the private equity funds has investors. Gavin is owned, at least indirectly, by the pension and retirement funds as well as other investors that have contributed to those three Blackstone and ArcLight entities. And a number of those investors have strong public policies calling for action to reduce carbon emissions and move to a more sustainable and less carbon intense energy future. For example, the New York State Common Retirement Fund is one of the largest investors in Blackstone Capital Partners VII (hereafter Blackstone VII). In total, the New York retirement fund has pledged $500 million to Blackstone VII; of that, $430.88 million has been invested. To date, the New York retirement fund has received $45.9 million in distributions from its investment in Blackstone VII.[15]

The New York retirement fund announced a sweeping plan in December 2020 to transition its $225 billion portfolio to net zero greenhouse gas emissions by 2040, with several shorter-term goals including a review of all its energy company investments by 2025. Already as part of that transition effort, the retirement fund

[14] Baker Botts. Application for Market-Based Rates with the Federal Energy Regulatory Commission. October 31, 2016.
[15] New York State Common Retirement Fund. Asset Listing as of March 31, 2020.

has divested from 22 thermal coal companies and banned future investments in six Canadian oil sands companies.

In making the oil sands announcement in April 2021, Thomas DiNapoli, the New York State Comptroller and sole trustee of the fund, said: "We have carefully reviewed [these] companies and are restricting investments in those that do not have viable plans to adapt to the low-carbon future. Companies responsible for large greenhouse gas emissions like those in this industry, pose significant risks for investors."[16]

Lightstone, a company responsible for significant CO_2 emissions, does not appear to have any plans for a "low-carbon future." Without such a plan, there is little if any reason for the New York fund to remain invested.

California's two major retirement funds, the California Public Employees Retirement System (CalPERS) and the California State Teachers Retirement System (CalSTRS), face similar investment dilemmas.

CalPERS, with a portfolio totalling $476.3 billion as of July 22, 2021, noted in its 2020 annual report that the book value of its Blackstone VII investment was $429 million, while the market value was $465 million.[17] Notwithstanding this investment, CalPERS' website points out that it has "a fiduciary duty to minimize risk in our portfolio."

CalSTRS, with a portfolio valued at $308.6 billion as of June 30, 2021, has pledged $450 million to the Blackstone VII fund, of which $433 million has been contributed. Since the fund launched in 2016, CalSTRS says it has received $40.9 million in distributions, equating to an internal rate of return of 12.3%.[18] At the same time, CalSTRS is part of the Climate Action 100+ collaborative engagement initiative,[19] and notes that this "has led to significant progress in portfolio companies advancing their transition to a low-carbon economy."[20]

Each pension or retirement fund that buys into a private equity fund like Blackstone VII is investing in a portfolio of companies and assets. The specific mix of investments is the responsibility of Blackstone and other private equity fund managers. Although, for example, CalSTRS has pledged $450 million into Blackstone VII, the Gavin plant is only one of several other investments that receive a portion of CalSTRS commitment.

No low-carbon transition has been announced at Lightstone or Gavin, and the climate change-related risks grow daily as Gavin's CO_2 emissions vent into the atmosphere. CalPERS and CalSTRS need to revisit their Blackstone VII investment.

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[16] Reuters. New York pension fund divests $7 mln from Canadian oil sands firms. April 12, 2021.
[17] California Public Employees Retirement System. 2019-2020 Annual Investment Report.
[18] CalSTRS. California State Teachers' Retirement System Private Equity Portfolio Performance. September 30, 2020.
[19] Climate Action 100+.
[20] CalSTRS. Green Task Force Initiative Interim Report. December 30, 2020.

Some of the largest investors in the three funds that own Lightstone, and thus Gavin, are listed in Table 1.

Table 1: Top Investors in Funds That Own Lightstone

Lightstone/Gavin Owners	Dollar Amount Invested (millions)	Fund(s)
Canada Pension Plan Investment Board	$720	BCP VII
California State Teachers' Retirement System	$588	BEP II/BCP VII
California Public Employees Retirement System	$556	BCP VII
New York State Common Retirement Fund	$500	BCP VII
Oregon Investment Council	$500	BCP VII
Oregon Public Employees Retiree System	$450	BCP VII
Massachusetts Pension Reserves Investment Trust	$250	BCP VII
Maine Public Employees Retirement System	$204	ArcLight EP VI/BCP VII
State Teachers Retirement System of Ohio	$200	ArcLight EP VI
Los Angeles County Employees' Retirement Association	$180	BCP VII
North Carolina Retirement Systems	$100	BEP II

Source: PitchBook and IEEFA research.

The pension funds with strong coal exit policies are now focused on scrubbing their equity and bond portfolios. Most of the pension funds have policies that demonstrate an intent to bring climate and fossil fuel strategies into alignment with fund policies across asset classes.[21] The Gavin example raises several issues related to the management of this aspect of pension fund policy (see Conclusion and Recommendations).

[21] New York State Comptroller, Progress Report on the New York State Common Retirement Fund's Climate Action Plan, April 2021, CalSTRS, Low Carbon Economy, last viewed October 10, 2021 and CalPERS, Private Equity Sustainable Investment Guidelines, last viewed October 10, 2021. CalSTRS, Private Equity Policy, last viewed October 10, 2021 and the companion policy CalSTRS, Investment Policy for Mitigating Environmental, Social and Governance Risks, last viewed October 10, 2021.

A Long List of Environmental Liabilities at Gavin

The retirement and investment entities behind the Blackstone and ArcLight funds that own Lightstone may be unaware of an infamous problem highlighting the extensive pollution problems at Gavin.

Serious issues related to chemical interactions at the plant's sulfur dioxide and nitrogen oxides (NOx) pollution control equipment in the late 1990s and early 2000s led to an unprecedented agreement between AEP and the town of Cheshire, OH, in which the utility bought the town for $20 million in 2002. Homeowners willing to move were paid $150,000 for their property while the few that wanted to stay were allowed to do so, with the provision that once they died their property would be bulldozed. The settlement also shielded AEP from future legal action.[1]

A subsequent settlement with the Environmental Protection Agency forced AEP to install selective catalytic reduction (SCR) controls at Gavin to cut ozone-forming NOx emissions.

Fast forward to 2017, and as part of the purchase agreement with AEP, Lightstone ended up owning the disappearing town of Cheshire.

The details are not public, but Lightstone is also almost certainly responsible for the post-sale additions to the plant's massive ash disposal facilities. An expansion that would almost double their capacity was permitted in 2014, with construction beginning in 2016.[2]

In short, Lightstone has significant environmental liabilities in addition to its CO_2 emissions that investors must factor into their decision-making process regarding future financial contributions.

1. BBC. The strange deal that created a ghost town. May 12, 2021.
2. Gavin Power, LLC. 2019 Annual Inspection Report.

Lightstone's Looming Refinancing Deadline

Lightstone's original term loan for the Gavin and gas plant purchase totalled $1.575 billion. ArcLight and Blackstone subsequently added about $300 million to that loan to fund sponsor distributions. The current amount due was approximately $1.736 billion as of March 31, 2021. All of that, plus a term loan for collateralized letters of credit of just under $100 million, comes due in January 2024.

Efforts to refinance that debt, particularly given Gavin's outsize role in the package of assets controlled by Lightstone, could be problematic given the steep increase in pressure on financial firms, particularly in the banking sector, to stop funding fossil fuels since the purchase closed in early 2017. The original lender, Deutsche Bank AG, adopted a new coal financing policy in 2020 that would appear to make it infeasible for it to negotiate a new loan with Lightstone.

As announced, Deutsche Bank's new policy prohibits the financing of new coal-fired power plants and "contains new guidelines for coal power that prescribe how the bank must treat business activities with energy companies that are more than 50 percent dependent on coal, measured either in terms of their energy generating capacity or the amount of energy they actually generate."[22]

In particular, the bank's policy says it "will only offer financing to these companies in future if they present credible diversification plans."

No diversification plan has been publicly announced by Lightstone.

While Deutsche Bank may not be able to continue its financial relationship with Lightstone, it is entirely possible that some other entity will step up and take the risk of underwriting a new term loan deal. However, the structure of any new deal almost certainly will be reflective of the rising financial risks for the coal sector and the decline in the industry's social license—that is, it is almost certainly going to cost Lightstone more. In turn, those higher debt costs will boost the cost of power from Gavin and the three gas plants, putting them at a competitive disadvantage in the PJM market.

[22] Deutsche Bank. Deutsche Bank to end global business activities in coal mining by 2025. July 27, 2020. Also see: IEEFA. Finance is leaving thermal coal.

Economic Headwinds Buffet Gavin, Lightstone

Another problem facing Lightstone in its looming refinancing effort is the reality that the economics have not panned out as projected, as made clear in a series of credit reports from Moody's.

In its initial rating on Lightstone and its four-plant generation package,[23] Moody's assigned the entity a Ba3 rating with a stable outlook, noting that Gavin and the two large combined-cycle gas plants appeared to be well situated to compete effectively in the competitive PJM market. "The portfolio provides scale across three natural gas-fired plants that are combined with a fully-scrubbed, environmentally compliant coal-fired generating facility. The benefits of this diverse mix," Moody's wrote, "should result in a more naturally hedged portfolio and the potential for stable earnings and cash flows under a variety of natural gas price environments, which makes Lightstone a stronger credit than other coal only assets."

Still, the rating itself pointed to potential trouble. As defined by the agency, a Ba rating is seen as speculative and "subject to substantial credit risk."[24] Moody's further differentiates its ratings by adding a 1, 2, or 3 to each rating (running from Aa to Caa). "The modifier … 3 indicates a ranking in the lower end of that generic rating category."[25]

In the analysis accompanying the initial rating, Moody's noted that Lightstone would be dependent on uncontracted energy sales for more than 50% of its gross margin and that this cash flow would be central to its debt repayment efforts—meaning that if PJM prices weakened and/or Lightstone's electricity sales didn't increase, its debt repayment efforts could be challenged.

Fast forward to Moody's latest review of Lightstone's debt and those problems (and several others) have materialized. PJM power prices have been lower than projected when the buyout occurred, and they are projected to stay below those earlier estimates at least through 2025. In addition, Lightstone's sales have not increased, despite consistent optimistic forecasts. Sales from all four plants have remained in a range from 26,325 gigawatt-hours (GWh) to 29,540 GWh from 2017-2020 despite expectations that sales would top 31,000 GWh in each of those years.[26] This year looks to be more of the same; through June, sales from Gavin totalled 6,595,739 megawatt-hours—the lowest level since the purchase save 2020's pandemic-depressed performance.[27]

Compounding this weakness, prices in the PJM capacity market fell sharply in the latest auction and could remain below previous years' levels going forward due to new resources coming into the market, including more efficient gas generation, renewables, and efficiency.

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[23] Moody's Investors Service. Lightstone Generation LLC. December 9, 2016.
[24] Moody's. Rating Symbols and Definitions.
[25] *Ibid*.
[26] Moody's Investors Service. Lightstone Generation LLC. August 2018 and May 2020.
[27] Data from S&P Global.

The result has been an erosion in Lightstone's earnings, which dropped from $484 million in 2018 to $226 million in 2020. There likely will be a slight uptick this year due to a one-year rise in capacity-related revenues, but earnings are expected to fall again in 2022-2023 when PJM's base capacity payments drop to just $50/megawatt-day—the lowest level since the 2013/2014 auction.

Together, Lightstone's poor performance and the latest PJM capacity results prompted Moody's to downgrade the company's credit on June 14, 2021, to B2 from B1—pushing the rating two notches below the initial 2017 level. "Today's rating action reflects the project's continued weaker than expected financial performance through the full year of 2020 and the expectation that Lightstone will continue to underperform original expectations, particularly in light of the recent PJM capacity auction results.

"The project's financial underperformance also raises refinancing risk at Lightstone as the term loan balance of about $1.736 billion at 3/31/21 is about $100 million higher than our original base case, owing to less excess cash flow generation. This risk, in our view, has increased owing in part to the impact that the most recent auction will have on future debt reduction and our sobering view that the December 2021 auction, while likely to be stronger than the May 2021 result, is not likely to bounce back to levels experienced in the auction for the 2021-2022 period, resulting in a 24-month period where RTO capacity results have underperformed. These considerations factor into today's rating action and continued negative outlook."[28]

[28] Moody's Investors Service. Moody's downgrades Lightstone Generation to B2 from B1; rating outlook remains negative. June 14, 2021.

The PJM Capacity Market

The Auction's Impact on Coal

The clearing price in the June capacity auction in the PJM Interconnection for 2022-2023 was $50 per megawatt-day—a 64% reduction from the $140/MW-day clearing price recorded in the prior auction.[29] This is going to have a significant impact across the region, putting pressure on merchant generators such as Lightstone.

According to PJM, the amount of coal-fired capacity clearing the market in the latest auction fell by 8,175 MW. These results had an immediate impact, with several PJM participants announcing shortly after the auction that they would be closing some of their coal capacity. Among these announcements were:

- GenOn Holdings, which said June 9 that it would retire 2,421MW of coal capacity in PJM, including the 1,299MW Morgantown plant in Maryland, the 627MW Avon Lake plant in Ohio, and the 565MW Cheswick plant in Pennsylvania.

- NRG, which said June 17 that it planned to close 1.6 gigawatts (GW) of coal capacity in PJM, including the 682MW Waukegan and 510MW Will County plants in Illinois, and the 410MW Indian River plant in Delaware.

- Vistra, which said in July it would be closing the 1,300MW Zimmer coal plant in Ohio by mid-2022, five years ahead of schedule.

Plant-specific results are not announced by PJM, so it is impossible to know for sure if Gavin cleared the market, although given past results that is likely. Still, as the market transitions toward more renewables and new gas-fired capacity, every coal plant is at risk, including Gavin.

Energy Transition Begins To Take Hold in PJM

PJM, which serves some 65 million customers across all or parts of 13 states and the District of Columbia, normally conducts an annual capacity auction to secure power supplies three years in the future. So, the auction for the 2022-2023 year normally would have been conducted in 2019. However, a lengthy dispute with FERC over minimum price rules prompted a series of delays. PJM is now playing catchup, with auctions scheduled every six months to return to the original three-year forward auction process. In July 2023 PJM will be back on target, holding a capacity auction for June 2026-June 2027 delivery.

The result is likely to be significantly more variability in capacity payments, which makes budgeting difficult. For the delivery year that began in June 2021, Lightstone will benefit from a one-year increase in the capacity market clearing price. But that

[29] PJM has different capacity clearing prices in different zones across its service territory, with the highest prices usually seen in transmission constrained regions. All of the Lightstone facilities are located in areas where the clearing price was $50/MW-day.

jump, to $270 million in capacity market payments from $148 million a year earlier, looks increasingly like a one-year windfall. When the 2022-2023 capacity year begins next June, Lightstone's guaranteed revenues will fall to roughly $96 million. More important, changes evident this year are likely to spread, keeping downward pressure on the region's capacity market.

Of note, a record 1,512 MW of solar capacity cleared in the auction this year, an increase of 942 MW from the prior auction. The amount of wind also rose 312MW, totalling 1,728MW. These are still small amounts of capacity in a system with more than 150,000MW of overall capacity, but the increases point to the growing cost-competitiveness of renewable resources. And, with the demise of PJM's controversial minimum offer price rule, which likely would have had a dampening impact on the development of new renewable capacity (particularly offshore wind), significant amounts of wind and solar are likely to be brought online throughout the PJM service territory in future auctions. Currently, there are almost 135,000MW of renewable capacity in the PJM interconnection queue. How quickly and how much of that capacity will be brought into commercial operation is uncertain, but the direction is clear—much more wind and solar is on the way.

In addition, a record 4,810MW of energy efficiency measures cleared the market for 2022-2023, up 70% from the prior auction. Another 8,812MW of demand response cleared the market this year.[30]

The substantial amount of energy efficiency and demand response in this year's auction points to another problem for Lightstone and the Gavin plant: Demand in the PJM region isn't growing. In 2010, PJM forecast that the system's summer peak would hit 174,724 MW in 2020 and 182,665 MW by 2025.[31] The actual summer peak in 2020 was 144,265 MW,[32] more than 30,000 MW below the 2010 forecast. The pandemic clearly depressed demand in 2020, but PJM's latest load forecast, issued in January 2021, projects only minimal growth in the coming 10 years, with the system's summer peak load forecast to hit 153,759 MW in 2031, an annual average increase of 0.3%.[33]

And even that forecast may be overstated. Platts Analytics issued a research note saying it was "significantly more bearish on outlooks for load" than PJM's latest forecast. Going forward, continued growth in energy efficiency and behind the meter generating is likely to cap end use demand, the group said. It added that "PJM's load forecast has repeatedly exhibited a propensity to overshoot realized loads with an outlook for indefinite load growth."[34]

This combination of no growth and increasing amounts of clean, no-fuel-cost wind and solar is going to put significant financial pressure on Lightstone, since it essentially caps energy sales from Gavin and the two affiliated combined cycle gas

[30] PJM. 2022/2023 RPM Base Residual Auction Results.
[31] PJM. PJM 2010 load forecast. January 2010.
[32] PJM. PJM Interconnection Summer 2020 Weather Normalized RTO Coincident Peaks.
[33] PJM. PJM Load Forecast Report. January 2021.
[34] S&P Global Platts. PJM's long-term power demand could be lower than forecast: Platt's Analytics. January 8, 2021.

plants. As Paul Patterson, a utility analyst at Glenrock Associates put it: "If you're an incumbent merchant that's not subsidized, it could be some pretty tough going. There's a huge amount of renewables coming, and there's not much demand growth, so someone's going to get pushed out."[35]

Issues for Ratings Agencies

The Gavin example demonstrates the strengths and weaknesses of credit ratings. The likelihood of the coal plant facing default is high. The plant's overreliance on PJM capacity payments is a credit weakness. Merchant reliance on this finance tool has been an important component that has led to a high number of closures and bankruptcies.[36] The facts in this case show that the upcoming auction rates will constrain the revenue outlook for the facility. The revenue drop will occur just as the owners face a $1.7 billion refinancing in early 2024.

A major factor influencing low auction prices is flat demand and the growth of low-priced competitive resources in the form of natural gas, energy efficiency and renewable energy. These structural factors create a negative revenue outlook.

Moody's has lowered the ratings twice within a six-month period, moving the credit rating more deeply into non-investment grade status at B2,[37] an indication of high credit risk.[38] The company has benefited from a recently renegotiated extension on its revolving credit line and a short-term cash infusion from capacity payments.

Moody's credit ratings policies on coal plants have evolved over the last decade and a half. In 2007 the credit agency was issuing supportive ratings opinions for coal and coal plants.[39] But the credit agency's assessment of coal and coal plants has changed, reflecting the deterioration of the sector. A recent Moody's analysis of the coal production sector highlighted the rapid decline in social license held by the industry: "Social factors are transforming the demand for coal, and therefore the credit quality of coal producers. The industry's exposure to socially driven policy agendas is intensifying worldwide with efforts to combat climate change and promote decarbonization. Thermal coal demand is in sharp secular decline in the U.S. and Europe, and recent political developments are unfavorable for coal producers generally."[40] The general problem for the industry, however, is mitigated

[35] E&E News. Biggest grid market sees cost plunge, nuclear rise. June 3, 2021.
[36] NS Energy. Charting a decade of US coal company bankruptcies and plant retirements. May 26, 2020.
[37] Moody's Investor Service. Moody's downgrades Lightstone Generation to B2 from B1. January 2020.
[38] Moody's. Rating Scale and Definitions.
[39] Moody's Investor Service, US Coal Industry Outlook – 2007, Industry Outlook, December 2006 (PBC # 100985) and Moody's Investor Service, US Coal Industry Outlook – 2008, Industry Outlook, October 2007, (PBC # 105372 (Proprietary)
[40] Moody's Investors Service. Social risks accelerate decline in developed markets as public, investor concerns mount. July 7, 2021.

somewhat in the instance of the Gavin plant by Moody's view that the owners have good local relations.[41]

Moody's provides a credit opinion regarding the likelihood of default. Default is not imminent. Two consecutive rating downgrades in a six-month period however are worrisome. The language Moody's uses in this opinion sends important warning signs to equity investors, and more importantly, to the public, especially in southeast Ohio.

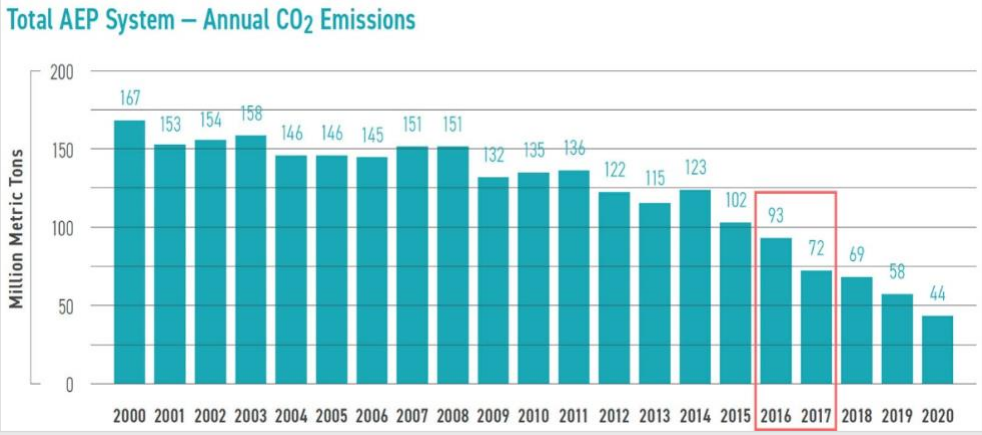
Moody's discusses the potential of default by Lightstone Generation. It notes that the limitation on a strong recovery is the presence of Gavin in the company portfolio. Its three natural gas assets demonstrates that the company has some value. Moody's acknowledges that coal assets are being treated unfavorably by investors in the market and Gavin is overleveraged. This is pulling the plant towards default and the general trend of coal plant retirement in PJM is pushing it towards retirement. Moody's overall negative outlook suggests additional downgrades are likely.

For the public and longer-term investors default may not be imminent, but it is likely. The red flags give investors a warning of potential loss. It also gives the communities involved a signal to start planning and to pursue strategies to protect jobs, local budgets and economic health.[42]

[41] Moody's. Moody's downgrades Lightstone Generation to B2 from B1 rating. June 2021.
[42] In early 2014 IEEFA published a report on the likelihood that the Huntley Coal Plant in Tonawanda, New York would close. The plant did close. The community used the time to plan and was successful in obtaining support from the state of New York to bridge the financial losses that occurred when the plant shut down. See: IEEFA. Report - Huntley Generating Station: Coal Plant's Weak Financial Outlook Calls For Corporate and Community Leadership. January 28, 2014. Also see: Yale Climate Connections. How Tonawanda, New York, protected its economy after its coal plant closed. July 24, 2020. The disposition of the plant remains an ongoing issue, but the budget problems were largely avoided by early action. Also see: Buffalo News. Local officials frustrated at NRG's process to sell 'eyesore' Huntley site. February 21, 2021.

AEP's CO_2 Emissions Accounting Problem

When AEP sold Gavin and the three gas-fired power plants in 2017, it took credit for reducing its CO_2 emissions by the total emitted by the four plants in the prior year—as if the plants had been retired and were no longer emitting any carbon. This can be seen in the figure below from AEP's 2021 corporate accountability report, which shows roughly a 21-million-ton reduction in the company's annual CO_2 emissions from 2016-2017. This "reduction" amounted to 22.6% of the system's prior year total and accounts for 12.6% of the company total "reductions" from its 2000 baseline. Of course, the emissions didn't go away; AEP just stopped counting them. Indeed, total CO_2 emissions from the four sold units in 2017 were 21.2 million tons, up roughly 600,000 tons from the prior year.



Source: AEP 2021 Corporate Accountability Report.

A more accurate approach in these circumstances is the one followed by Dominion Energy, which says it tracks the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD), a group established by the Financial Stability Board to develop more effective means of providing better climate-risk related disclosure information for the financial sector.

In its latest reporting, Dominion presented adjusted figures for its overall CO_2 emissions, removing emissions from merchant generation assets it sold in 2018 from its baseline. Following this approach prevented the company from counting those sold emissions as reductions, lowering the percentage of real emissions cuts it achieved during the period.

AEP and other utilities should follow suit. Taking credit for "reducing" your corporate emissions when they have simply been transferred to another operating entity is nothing more than corporate greenwashing.

Conclusion and Recommendations

The Gavin example shows clearly that pension fund investments in private equity can pose challenges for pension funds, managers and borrowers as they implement policies related to carbon emissions and climate change. It is also of vital importance to the state of Ohio and the residents and businesses in Gallia, County and surrounding communities.

The New York State Common Retirement Fund, CalPERS and CalSTRS—three large investors with positions in the funds that own Gavin—have adopted climate-friendly policies in recent years.

In particular, they have pushed companies in which they invest to move toward a low-carbon transition. New York State has divested from some coal and oils sands companies "responsible for large greenhouse gas emissions" because those emissions pose such large risks for investors and company responses to shareholder concerns have been inadequate.[43]

Each fund has pledged to apply these investment principles across all asset classes. Investment actions to change the direction of private equity investment must start with transparency. All stakeholders need to step up reporting in this area.

This paper offers a series of warnings to all the stakeholders. Implicit in those warnings are action steps:

1. The host communities in Ohio are facing the very real likelihood that the Gavin plant, like hundreds of coal plants before it, will close. There have been no formal announcements to this effect, but the handwriting is on the wall. Jobs, taxes and the economic vitality of the area are at stake. Other communities have used these early warning signs to mitigate the negative impacts from plant closures.

2. Pension funds with private equity portfolios need to actively align their private equity investments with their climate goals. The industry has operated for years with limited transparency. As the energy transition evolves, secrecy will prove counterproductive.

    a. A review should be conducted by each of the pension funds to determine how the Gavin plant was selected by the private equity managers. The facts should be reviewed against stated policy to determine if any change in policy is needed. Coal plants have been both a singularly poor investment choice for a decade and an environmental problem for longer. While it is inherent in private equity investing to take on higher risk projects, the combination of climate and financial factors, like in the case of Gavin, shows a downward trajectory.

[43] Office of the New York State Comptroller, New York State pension fund sets 2040 net zero carbon emissions target, December 2020.

b. The review should move beyond the initial decision to invest and include an up-to-date analysis of the plant's financial condition and the likelihood of it meeting its return targets. This should be considered in the context of the private equity fund's overall returns and an assessment as to the Gavin plant's positive or negative contribution to the total return.

c. Whether a pension or institutional fund supports divestment or not, policies should be established between institutional funds and private equity managers so that no new fossil fuel investments are allowed. If private equity funds do not have an explicit ban on all such investments, institutional funds should find others that do support these policies.

3. Private equity funds like Blackstone and ArcLight need to take seriously the message of the International Energy Agency that no new fossil fuel investments are permissible if the world is to meet the goals established under the Paris Agreement.[44]

[44] International Energy Agency, Net Zero by 2050, May 17, 2021.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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