



**Institute for Energy Economics
and Financial Analysis**

Private Equity in PJM: Growing Risks for Communities

*PE Ownership Heightens Local Economic and
Employment Uncertainties*

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Key Findings

Risks are on the rise for communities in the PJM power market that host fossil fuel plants, as they face the increasing possibility of rapid plant closures and the economic dislocations that inevitably follow.

These growing risks for communities are a direct outcome of the increasingly challenging financial landscape and competitive power markets that plant owners, project developers and investors face.

The economic disruptions caused by the Knighthead group's sudden closure of Homer City should be seen as a harbinger of future dislocations, especially in localities hosting PJM's aging coal-fired generation capacity.

Indiana County officials need to learn from Homer City to prevent a repeat with the Keystone and Conemaugh plants, particularly by utilizing new federal resources available through the IRA to help ease the shift.



Executive Summary

Private capital, particularly difficult-to-track private equity (PE) investment, has reshaped the PJM power market in the past decade. PJM data shows that 35,515 megawatts (MW) of combined cycle gas capacity have been built in the 13-state regional system since 2011, reflecting the impact of the fracking revolution that brought plentiful, low-cost gas supplies to the market. PE and other private sources developed more than 80% of the total—28,815 MW.

This gas-driven growth, coupled with significant PE investment in the region's coal-fired power plants, has transformed the ranks of PJM's largest generators. As recently as 2017, the five largest capacity owners were all regulated publicly traded companies: American Electric Power, Dominion Energy (the parent of Virginia Power), Exelon (the parent of Commonwealth Edison), FirstEnergy and NRG Energy. Today, three of the largest generators are private firms—ArcLight with 14,230 MW of operating capacity, LS Power (10,803 MW) and Talen (now controlled by Nuveen/TIAA and Rubric Capital), with 10,370 MW.¹ Beyond these three majors, there are several private and PE firms that own from 1,000 MW to 5,000 MW of capacity. Together, private capital now owns roughly 60% of the fossil-fuel fired generation capacity in PJM.

Ownership status is important. Utilities are overseen by state regulators who have a vested interest in keeping costs for ratepayers in check; private capital is largely free from that oversight. Utilities, as well as publicly traded independent power producers (IPPs), are also required to file regular financial reports with the Securities and Exchange Commission; private capital, by and large, is not. These differences largely shield private firms from public pressure, as well as regulatory and financial oversight.

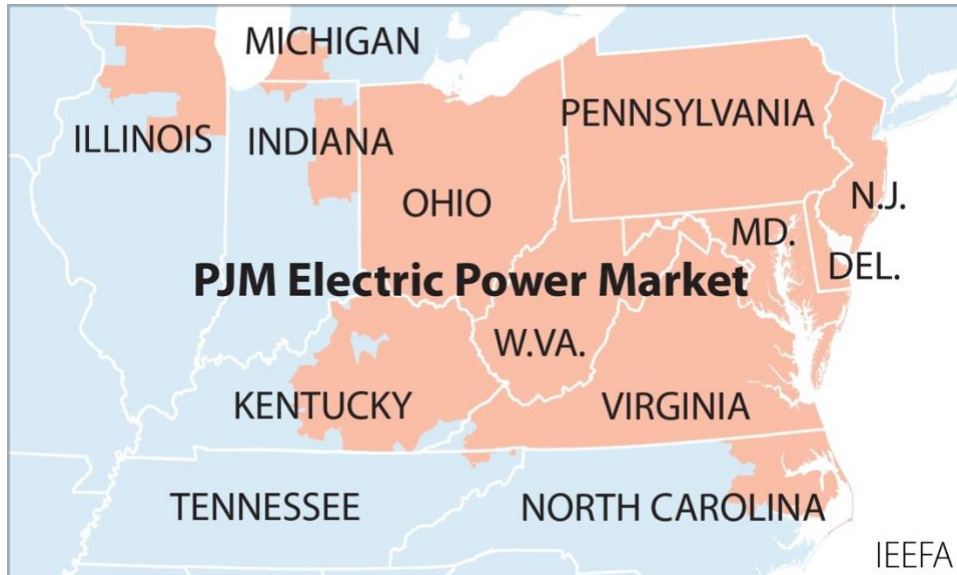
In a three-part report, IEEFA is examining the increasing risk environment in PJM, the nation's largest power market. This final report focuses on the risks posed by PE's relative immunity from oversight and public pressure. This is a particularly serious threat for the places where plants are located, since PE generators can decide on short notice to close a facility if the economics no longer work, leaving unprepared communities facing significant economic dislocations from job and tax losses. This exact scenario played out in the spring at the Homer City power plant in Pennsylvania, as we will examine. That experience is not going to be the last, especially in areas that host the region's aging coal-fired power plants. The transition away from fossil fuel generation resources is under way. Local and state leaders need to be planning now for those plants' closures.

In the first of our reports, we examined the rising financial risks facing PE and other private firms. These risks include the recent substantial drop in capacity prices, the financial fallout from the 2022 winter storm in the northeastern U.S., and ongoing market reform efforts by the system operator.

¹ The data is correct as of Dec. 31, 2022. See: Monitoring Analytics, LLC. [State of the Market Report for PJM-2022](#). March 9, 2023, p. 314.

The second report focused on the limited partners (LPs)—the pension and retirement funds that poured money into the PE sector in the past decade, and were generally well rewarded for their investments. But our research highlighted several funds with significant PJM fossil fuel generation assets that are underperforming, and we concluded that the changing regional power environment is likely to continue to drag down returns, boost investment risks, or both.

Figure ES 1: PJM Electric Power Market



Community Risks

Homer City Closes Quickly

Risks are on the rise for communities in the PJM power market that host fossil fuel plants, particularly coal plants, as they face the increasing possibility of rapid plant closures and the economic dislocations that inevitably follow. These growing risks for communities are a direct outcome of the increasingly challenging financial landscape and competitive power markets that plant owners, project developers and investors face, especially those that otherwise have few ties to local areas.

On April 3, 2023, the private equity owners of the 1,888MW Homer City coal-fired power plant in Indiana County, Penn., announced that they would be closing the facility effective at the beginning of July—just 90 days away. The plant, the largest operating coal plant in the state, has been financially stressed for the past decade, with two bankruptcies in 2012 and 2017, and a near-death experience in 2022 when the current owners warned that the plant might have to close two of its three units.

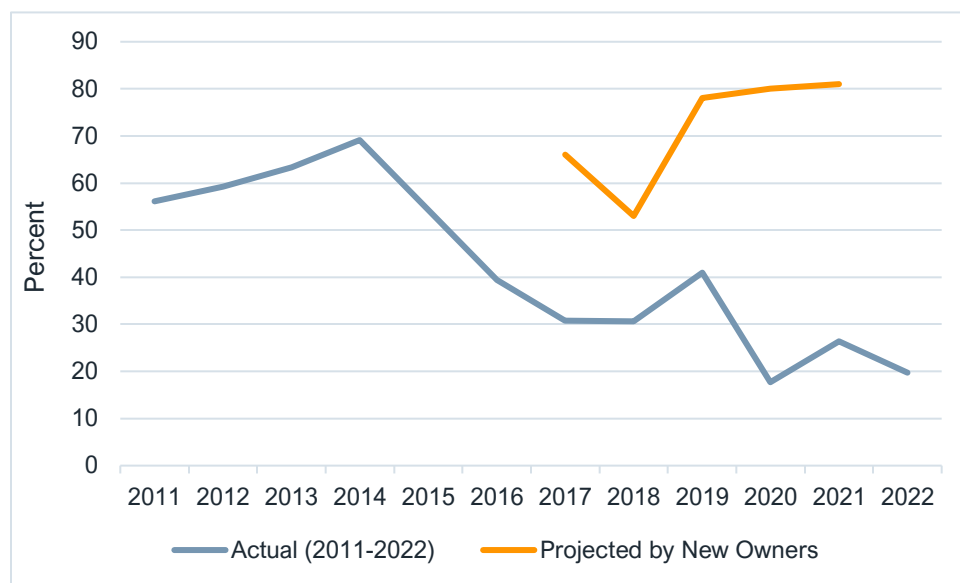
The announcement was clearly not good for residents and employees, and it points to a key issue with private equity ownership. Those firms typically offer up condolences for the impact of their decisions, as Bill Wexler, the president and CEO of Homer City, did in announcing the closure: “This is an unfortunate day for us at Homer City because we did everything possible to maintain our operations. We will continue to look [for ways] ... to support the community.”²

But the bottom line for Wexler and the plant’s principal owner, New York-based Knighthood Capital, which boosted its stake in the plant to 39.37% in a 2021 transaction, is indeed the bottom line. And here Homer City was failing to meet expectations. When Knighthood and the other owners, including The Carlyle Group, Aegon USA and Golden Tree Asset Management,³ took control after the 2017 bankruptcy, they projected that Homer City’s capacity factor (the ratio of how much electricity a plant produces compared to what it could have produced if it operated 100% of the time) would climb into the 80% range within a couple of years (see graphic below).

At best, that was wishful thinking. From 2010-16, Homer City’s capacity factor averaged 56.9% and was never more than 70% in any year. Regardless, it was a clear misreading of the market, where low-cost gas had unleashed a rush to build new combined cycle gas turbine (CCGT) capacity throughout the region. That, coupled with a small, but steady increase in renewable energy generation and no demand growth, undercut aging coal generators such as Homer City. Since 2017 the plant’s capacity factor has averaged just 27.6%, and it fell to 19.7% in 2022, which likely was a key factor in the closure decision.

² Homer City coal plant, the largest in Pa., will close by June. Pittsburgh Post-Gazette. April 4, 2023.

³ In Knighthood’s April 20, 2021, filing at FERC detailing its planned purchase, it listed the post-transaction ownership stakes as being 39.37% for itself, 19.96% for Carlyle, 11.59% for Golden Tree and 10.95% for Aegon. The other owners, holding stakes of less than 10%, were not identified.

Figure 1: Homer City Annual Capacity Factor (%)

Source: S&P, ownership FERC filings.

Wexler and the new owners did not hide their plans when they took control of Homer City. Knighthead touts itself as a firm that sees opportunity in distressed credit, where its investment can unlock value to be realized through a future sale.

Wexler summarized that outlook in a 2017 interview: “I’ve spoken to all the employees, and I explained who we are and what we’re here to do,” he said. That is: “to get this plant to be a far more profitable member of the community and to sell it.”⁴

To make the plant profitable, Wexler and the Knighthead team only had one option—cut expenses, since revenues, both from energy sales and the capacity auction, are driven by the PJM market. So that is what they did—in particular by cutting employment. After they took over in 2017, the new owners cut the payroll from 240 onsite employees to 129 in 2022,^{5,6} even though all three units at the plant were still being operated.

Cutting maintenance expenses was another target for Wexler. While that may have been a good short-term measure, those costs simply get postponed, not eliminated, particularly with older plants that generally see maintenance costs rise over time.

These measures clearly didn’t work, so Knighthead finally pulled the plug on the plant, leaving residents and employees to deal with the aftermath with virtually no notice.

⁴ [Homer City power plant, out of bankruptcy, still needs an overhaul](#). Pittsburgh Post-Gazette. June 15, 2017.

⁵ Ibid.

⁶ Op. Cit. Homer City coal plant to close.

Knighthead is not alone in its approach; the bottom line is the sole driving rationale for the private equity sector. If an asset is not producing, cut your losses through a sale, a bankruptcy or a closure.

Utilities, in contrast, tend to have deeper regional ties as part of their mandate to provide reliable power in exchange for getting a guaranteed, but limited, profit, and are regulated by state public utility commissions, which includes oversight of utilities' long-term plans for power plants. It is this very regulation of profit limits and planning that private equity ownership is designed to sidestep.

Homer City Is a Harbinger

The Age Issue

Far from being a one-off event, the economic disruptions caused by the Knighthead group's sudden closure of Homer City should be seen as a harbinger of future dislocations, especially in localities hosting PJM's aging coal-fired generation capacity.

According to PJM's market monitor, there were 40,555 MW of installed coal capacity in the sprawling 13-state region as of June 30, 2023, and 30,868 MW of that total—more than 75%—is already more than 40 years old.⁷ For localities looking ahead, an even more ominous number is that 21,153 MW of that total is already at least 50 years old.⁸ That is a key marker: According to data from the Energy Information Administration (EIA), the capacity-weighted average retirement age for all coal-fired generating units since 2000 has been 50 years. In other words, that capacity—43 units at 16 plants—is operating on borrowed time. (A full listing of the operating coal-fired units in PJM that are at least 40 years old is presented in the table on page 12.)

Although a given unit may outperform, there is broad agreement that as coal plants age, operation and maintenance expenses climb and performance declines.

In a recent technical document, the Environmental Protection Agency (EPA) said: “As technology progresses, newer technologies coming online operate more efficiently and at lower costs than aging EGUs [electric generating units]. The maintenance costs increase and the efficiency of EGUs declines over time as equipment degrades, further hindering cost competitiveness of older EGUs.”⁹

EIA echoed this in an earlier analysis: “Planned retirements continue to be focused on relatively older facilities. Coal-fired generators—especially older, less efficient units—face higher operating and maintenance costs, which make them less competitive and more likely to retire.”¹⁰

⁷ Monitoring Analytics. [State of the Market Report H1 2023](#). P. 693.

⁸ Plant ages and locations were derived by IEEFA using EIA and S&P data.

⁹ EPA, [Power Sector Trends: Technical Support Document](#). April 2023. P. 8.

¹⁰ EIA. [Nearly a quarter of the operating U.S. coal-fired fleet scheduled to retire by 2029](#). Nov. 7, 2022.

These higher operating and maintenance (O&M) costs, especially in a competitive market such as PJM, tend to feed a downward spiral. As costs climb, the units are dispatched less frequently. That, in turn, forces plant owners to spread rising O&M costs over less output, effectively raising the cost of their power and making them even less competitive in the market.

This is clearly what happened at Homer City, as the graphic on page 7 illustrates. The plant operated relatively well from 2010-14, posting an average capacity of more than 60%. That dropped beginning in 2015 as new capacity from highly efficient CCGT plants began to come online and the coal units aged; from 2015-19, the plant's average capacity factor fell below 40%. The downward spiral continued from 2020-22, with the plant's capacity factor averaging just 21% during those last three full years of operation. Age and competition caught up with Homer City.

Vistra Changes Its Mind

Competition and age are almost certain to catch up with other coal-fired power plants in PJM, likely starting with the region's PE-owned facilities, which skew particularly on the older side. PE firms own six coal plants with 9,834 MW of capacity in PJM that are more than 40 years old, just under a third of the regional aged-plant capacity. More worrisome, five of those plants are already more than 50 years old and the two units at the sixth plant, the 2,600MW Gavin facility in Ohio owned by ArcLight and Blackstone, turn 50 in 2024 and 2025. But the plants owned by independent power producers—who, like the PE companies, cannot pass costs through to ratepayers—also face growing economic risks in the PJM market, regardless of their age.

In 2022, for example, Vistra Corp. closed the 1,305MW, single unit W.H. Zimmer coal plant in Ohio even though the facility was just 31 years old. The company had said in 2020 that it would retire the facility in 2027 as part of a corporate move to lower carbon generation resources, but moved the date up to 2022 when the plant failed to secure capacity payments in the PJM auction in 2021 for the 2022-2023 delivery year (PJM's year runs from May 31-June 1).

In announcing the early closure, Vistra CEO Curt Morgan said the plant relied on PJM's capacity market. "The PJM capacity revenues are critical to Zimmer, and unfortunately, without them, the plant simply doesn't make money," he said.¹¹

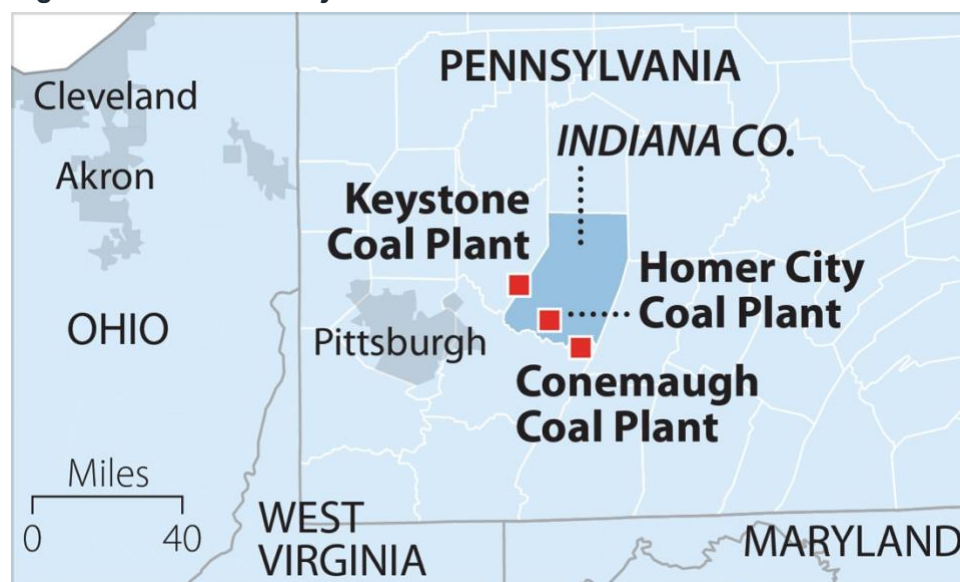
With one exception, the remaining IPP-owned capacity in PJM is scheduled for closure by 2027. But as the Zimmer example illustrates, corporate announcements are not cast in stone, and localities need to plan both for the inevitability of the coming plant closures and the very real possibility that those closures could occur even sooner than projected.

¹¹ S&P. [Vistra shuts down 1,333-MW Zimmer coal plant in Ohio](#). June 6, 2022.

Regional Risk: Looming Closures of Conemaugh and Keystone

Coming full circle, Indiana County leaders now need to turn their full attention to the Conemaugh and Keystone power plants, or risk a repeat of the 90-day closure of Homer City and its resulting economic dislocations. As the map below indicates, Conemaugh is in the southeastern corner of Indiana County; Keystone is just over the border to the west in Armstrong County. The two plants, essentially identical two-unit supercritical facilities each with 1,700 MW of generating capacity, are both roughly 19 miles by road from Homer City. In other words, their closures are going to have a county-wide impact.

Figure 2: Indiana County Confronts Coal Plant Closures



Source: IEEFA.

There is no doubt Conemaugh and Keystone are going to close. The two plants told Pennsylvania regulators in late 2021 that they would retire by 2028 rather than comply with new EPA rules designed to reduce pollution in the wastewater released by power plants.¹² James Locher, the chief operating officer of Key Con LLC, which manages the two plants for its private equity ownership groups, reaffirmed that decision in testimony before a Pennsylvania Senate committee in May 2023: “Given the current market uncertainties, and the inability to recover that investment, the Key Con ownership group has chosen not to invest the required \$100 million, and therefore has set plant retirement dates of **no later than** [emphasis added] December 2028.”¹³

There also is the possibility that the Conemaugh plant could be forced to close even earlier due to concerns about the plant’s ash disposal ponds.¹⁴ And, as happened at Homer City, the plants’

¹² AP. [Coal-fired power plants to close after new wastewater rule](#). Nov. 22, 2021.

¹³ [James Locher testimony](#), Key Con LLC. Pennsylvania Senate Environmental Resources and Energy Committee. May 1, 2023

¹⁴ Pennsylvania Capital Star. [EPA ruling could shutter W. Pa power plant ahead of schedule](#). Jan. 26, 2023.

ownership groups could simply decide the economic returns no longer justify running the plants. In that scenario, they could send deactivation notices to PJM and ask for a 90-day closure. Given the size of the plants and their proximity, PJM could require them to remain online for a longer period, particularly if their closures would have local transmission and/or reliability impacts. But that would be a temporary reprieve, at best.

So, the county has a maximum of five years to plan for what will be a major transition. According to Locher's testimony, the plants currently have a total of 250 employees and pay substantial taxes to their home municipalities and school districts.¹⁵ More broadly, he estimated that the plants have a statewide economic impact of about \$750 million annually.¹⁶

This transition will not be easy, but there is significant federal support available now for states and localities going through these issues, provided officials in the affected areas are willing to plan for the future. We discuss some of those programs in the next section.

¹⁵ Locher. Op. Cit.

¹⁶ Ibid.

Table 1: PJM's Aging Coal Plants

Plant Name	Unit	Owner(s)	Owner Type	State	Capacity (Summer MW)	Year in Service	2023 Age
Clifty Creek	1	AEP et al.	Utility	IN	195	1955	68
Clifty Creek	2	AEP et al.	Utility	IN	195	1955	68
Clifty Creek	3	AEP et al.	Utility	IN	195	1955	68
Clifty Creek	4	AEP et al.	Utility	IN	195	1955	68
Clifty Creek	5	AEP et al.	Utility	IN	195	1955	68
Kyger Creek	1	AEP et al.	Utility	OH	194	1955	68
Kyger Creek	2	AEP et al.	Utility	OH	192	1955	68
Kyger Creek	3	AEP et al.	Utility	OH	192	1955	68
Kyger Creek	4	AEP et al.	Utility	OH	192	1955	68
Kyger Creek	5	AEP et al.	Utility	OH	192	1955	68
Clifty Creek	6	AEP et al.	Utility	IN	195	1956	67
Herbert Wagner	1	Talen	PE	MD	126	1956	67
Brunner	1	Talen	PE	PA	306	1961	62
J. Sherman Cooper	1	East Kentucky Co-Op	Utility	KY	116	1965	58
Brunner	2	Talen	PE	PA	363	1965	58
Mt Storm	1	Dominion	Utility	WV	554	1965	58
Herbert Wagner	3	Talen	PE	MD	305	1966	57
Mt Storm	2	Dominion	Utility	WV	555	1966	57
Kincaid	1	Vistra	IPP	IL	554	1967	56
Cardinal	1	Buckeye Power Co-Op	Utility	OH	585	1967	56
Cardinal	2	Buckeye Power Co-Op	Utility	OH	585	1967	56
Keystone	1	Arclight, Bardin Hill et al.	PE	PA	850	1967	56
Fort Martin	1	FirstEnergy	Utility	WV	552	1967	56
Kincaid	2	Vistra	IPP	IL	554	1968	55
Keystone	2	Arclight, Bardin Hill et al.	PE	PA	850	1968	55
Fort Martin	2	FirstEnergy	Utility	WV	546	1968	55
J. Sherman Cooper	2	East Kentucky Co-Op	Utility	KY	225	1969	54
Brunner	3	Talen	PE	PA	742	1969	54
Conemaugh	1	Arclight, Talen et al.	PE	PA	850	1970	53
Conemaugh	2	Arclight, Talen et al.	PE	PA	850	1971	52
John E Amos	1	AEP	Utility	WV	800	1971	52
Mitchell	1	AEP	Utility	WV	770	1971	52
Mitchell	2	AEP	Utility	WV	790	1971	52
Powerton	1	NRG	IPP	IL	769	1972	51
Herbert Wagner	4	Talen	PE	MD	397	1972	51
Montour	1	Talen	PE	PA	752	1972	51
John E Amos	2	AEP	Utility	WV	800	1972	51
Harrison	1	FirstEnergy	Utility	WV	652	1972	51
Montour	2	Talen	PE	PA	752	1973	50
John E Amos	3	AEP	Utility	WV	1,300	1973	50
Harrison	2	FirstEnergy	Utility	WV	651	1973	50
Mt Storm	3	Dominion	Utility	WV	520	1973	50
Gavin	1	Arclight, Blackstone	PE	OH	1,330	1974	49
Harrison	3	FirstEnergy	Utility	WV	651	1974	49
Powerton	2	NRG	IPP	IL	769	1975	48
Gavin	2	Arclight, Blackstone	PE	OH	1,361	1975	48
Miami Fort	7	Vistra	IPP	OH	510	1975	48
H.L. Spurlock	1	East Kentucky Co-Op	Utility	KY	300	1977	46
Cardinal	3	Buckeye Power Co-Op	Utility	OH	620	1977	46
Miami Fort	8	Vistra	IPP	OH	510	1978	45
Pleasants	1	Omnis	Private	WV	639	1979	44
Indian River	4	NRG	IPP	DE	410	1980	43
Mountaineer	1	AEP	Utility	WV	1,299	1980	43
Pleasants	2	Omnis	Private	WV	639	1980	43
East Bend	1	Duke	Utility	KY	600	1981	42
H.L. Spurlock	2	East Kentucky Co-Op	Utility	KY	510	1981	42
> 40 Years					31,301		
> 50 Years					21,153		
> 60 Years					2,564		

Source: EIA, S&P.

Transition Opportunities

Billions of dollars of transition and redevelopment funding are now available from the federal government for local communities looking to move past fossil fuel infrastructure. In terms of communities saddled with closed or soon to close coal- and gas-fired power plants, the most important is Title 17 of the Department of Energy’s clean energy financing program. And within that title, Section 1706 or the energy infrastructure reinvestment (EIR) program matters most.

This section earmarks \$5 billion for the Department of Energy (DOE) to underwrite low-cost loans with a total value of as much as \$250 billion. It was created via the 2022 Inflation Reduction Act (IRA) and gives DOE’s Loan Programs Office (LPO) authority to “finance projects that retool, repower, repurpose or replace energy infrastructure that has ceased operations or enable operating energy infrastructure to avoid, reduce, utilize or sequester air pollutant or greenhouse gas emissions.”¹⁷ Of particular importance for areas like Indiana County where Homer City is located, the new section is designed specifically to help replace retired energy infrastructure with new clean energy projects. And unlike other funding opportunities, there is no requirement to build or install innovative technologies—just clean ones.

Among the acceptable reuse options, according to DOE, are:¹⁸

- Renewable energy and/or battery storage projects;
- Distributed energy or virtual power plant installations; and
- Manufacturing facilities to be used for clean energy products or services.

The required first step for areas interested in applying is to prepare a community benefits plan outlining how the planned funding will be used and how it will benefit residents, particularly disadvantaged communities and those most affected by previous energy sector infrastructure. Full details are available via DOE’s EIR site (<https://www.energy.gov/lpo/energy-infrastructure-reinvestment>), and the department is offering no-cost pre-application consultations to help interested communities get started. But the program is not unlimited—it ends in 2026, and essentially is a first-come, first-served operation, meaning that communities that wait may be out of the money.

Beyond this community redevelopment funding, the IRA also includes as much as a 10% bonus for developers building new infrastructure in defined energy communities. They can choose to use that bonus either via the investment tax credit or the production tax credit for their projects. As the map below indicates, Indiana County fits that definition, as would many communities across PJM.¹⁹

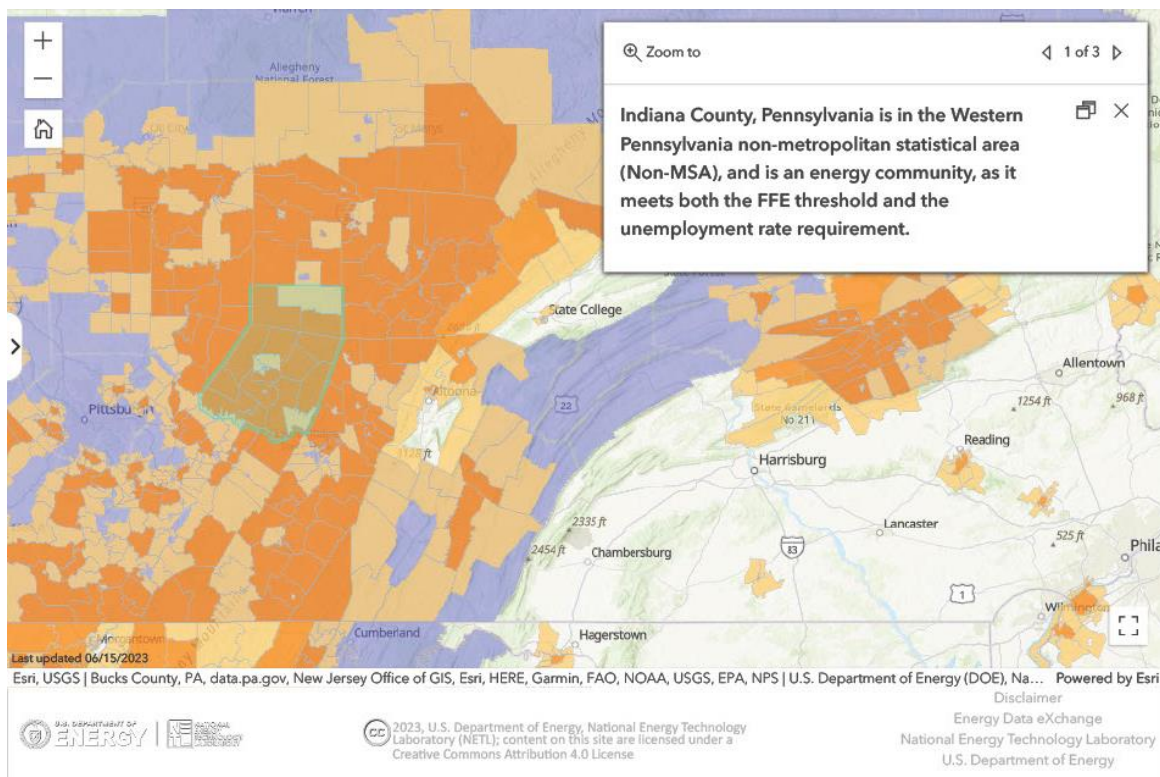
¹⁷ [Department of Energy Title 17 background information.](#)

¹⁸ Ibid.

¹⁹ The DOE mapping tool and a wealth of other project information is available at [Energycommunities.gov](https://www.energycommunities.gov)

The money is there, and as Jigar Shah, LPO’s director, has said, “the entire energy infrastructure ecosystem qualifies to come into the 1706 program to be repurposed.”²⁰ But communities must take the first step.

Figure 3: DOE's Mapping Tool for Energy Community Tax Credits



Source: DOE.

²⁰ Canary Media. [How will DOE loan out \\$250B to make dirty energy systems clean?](#) Nov. 2, 2022.

Conclusions

Communities in the PJM market have long benefitted from the jobs, taxes and other financial support from coal- and gas-fired power plants located in their boundaries. But the economic risks to host localities are growing quickly, particularly in those areas where the plants are owned by private equity firms. These PE-owned plants, many of which are aging coal-fired units, are being challenged economically by new gas-fired and renewable generation and environmentally by tightening emissions standards for a range of pollutants.

The result, as occurred at the Homer City coal plant in Pennsylvania, is likely to be more sudden and unexpected plant closures as PE ownership groups opt to get out of the PJM market and look for better investment returns elsewhere. This possibility poses enormous risks for host communities, as these closures may occur quickly, with little time for planning for the resulting economic disruptions.

Of particular concern is Pennsylvania's Indiana County, where the Homer City plant is located. Officials there should be accelerating planning efforts to prepare for the closures of the Keystone and Conemaugh plants. The ownership groups have already said they intend to close the plants in 2028, so there is still time to plan for the transition. But that work needs to begin now, since there is always the possibility that the current owners will move up their planned shut-down dates.

The transition will not be easy, but the process will be much less disruptive if officials tackle the issue head on. One key benefit for local leaders willing to look ahead is that there are significant new federal resources available through the IRA to help ease the shift.

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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At IEEFA, Dennis Wamsted concentrates on the ongoing transition away from fossil fuels to green generation resources, focusing particularly on the electric power sector.

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