

# Rapidly Changing Investment Climate Challenges Planned PJM Gas Plants

*Renewables, Falling Capacity Payments, Flat  
Demand Undercut Plans for New Gas Capacity*

## Executive Summary

The recent decision by developers to cancel the planned 1,000-megawatt (MW) Beech Hollow combined cycle gas plant in Pennsylvania is the latest warning for investors considering funding other new gas-fired power plants in the PJM Interconnection: The economics have changed. In particular, the low gas prices and high capacity payments that helped drive a near-doubling of installed combined cycle gas turbine (CCGT) capacity over the last 10 years have gone away, posing far greater financial risks for investors and developers considering moving forward with 15,000 megawatts of projects still in the planning phases.

The issues facing developers and investors include:

- Significant uncertainty about future capacity prices, particularly in light of the sharp drop in the region's latest power auction.
- A downward trend in power prices in the last 10 years.
- Flat regional demand growth.
- Major projected increases in battery storage and renewable energy generation, including thousands of megawatts of offshore wind capacity.
- Rising concern in financial markets about climate change and the likelihood of required fossil fuel plant closures by 2050.

In the year since IEEFA and the Applied Economics Clinic released a report about the emergence of these issues,<sup>1</sup> they have only grown more acute. In addition to Beech Hollow, two other projects have been officially cancelled this year, while two others apparently were cancelled earlier; three others have been postponed indefinitely; and at least six more now appear unlikely to proceed.

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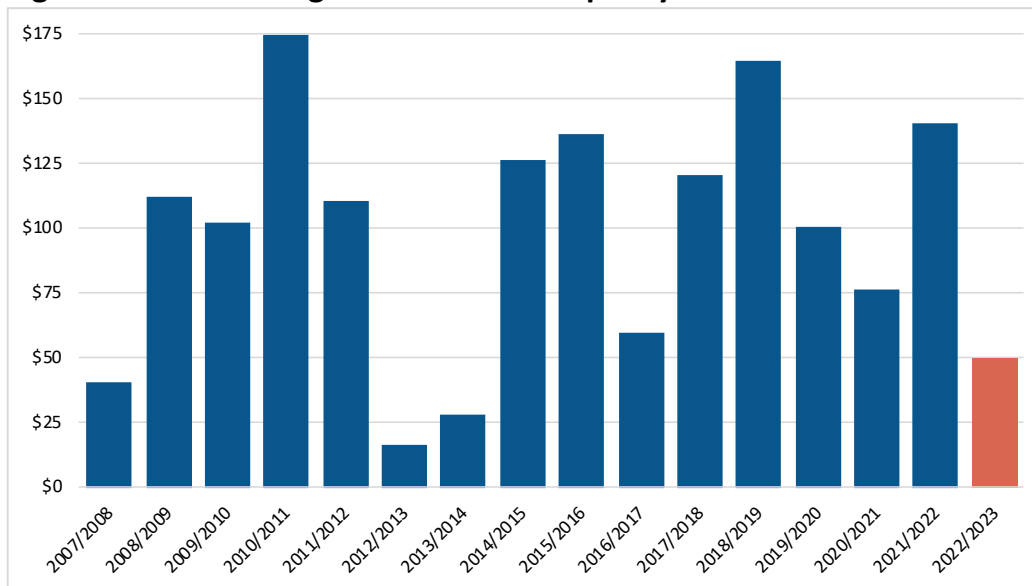
<sup>1</sup> IEEFA. *Risks Outweigh Rewards for PJM Natural Gas Project Investors*. October 2020.

## The PJM Capacity Market

The PJM market, which covers 65 million customers across all or part of 13 states and the District of Columbia, is characterized by its annual capacity auction, which is used to secure needed energy supplies plus a reserve margin for the system three years into the future. The generators that clear the annual auction for energy supplies earn a capacity payment, measured in dollars per megawatt-day. This structure has proven enticing to project developers, particularly for new combined cycle gas plants that have been able to rely on this expected cash flow when calculating the financial viability of projects.

The system's capacity payments have varied, sometimes significantly, from auction to auction, but the average since 2014 has been high and relatively steady. For the capacity years 2014-2015 to 2017-2018, PJM's base capacity payments averaged \$110.34 per megawatt-day.<sup>2</sup> For the whole eight years ending with the 2021-2022 delivery year, the average was \$115.33/MW-day. We started with 2014, when capacity prices were \$124.99/MW-day, since that was the first year of the sharp increase in CCGTs in PJM; installed capacity that year rose by 3,181MW, up 12 percent from the year before.

**Figure 1: PJM Clearing Prices for Base Capacity Resources**



Source: PJM 2022/2023 RPM Base Residual Auction Results.

Coupled with plentiful supplies of gas from the Marcellus and Utica resources, those capacity prices drove a huge buildout of new CCGTs in the PJM region. From

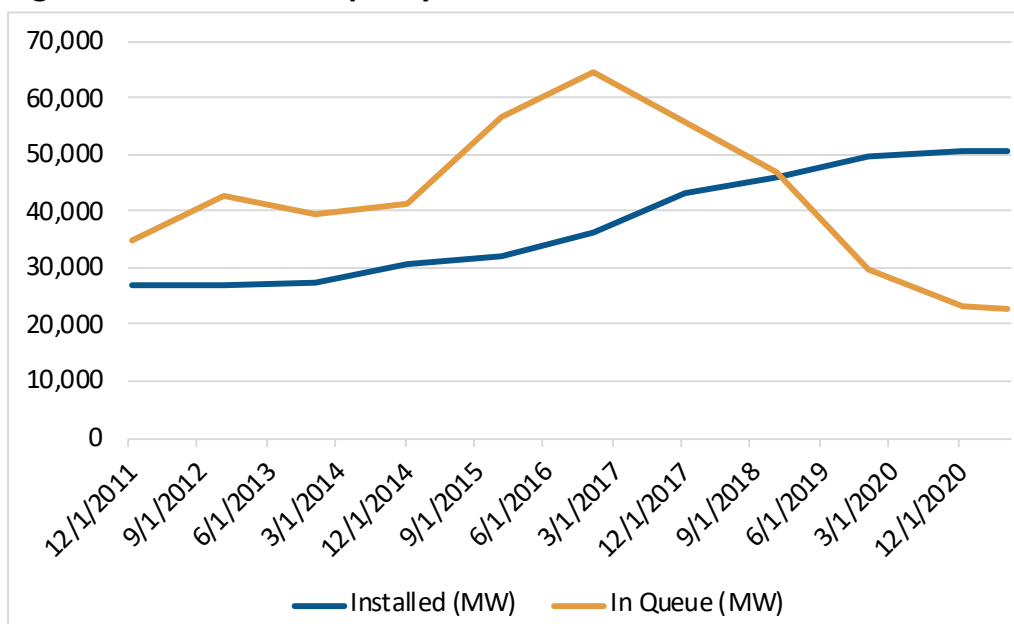
<sup>2</sup> PJM's capacity payments are calculated by delivery area, with constrained areas to the east, particularly in New Jersey, northern Ohio and Illinois, generally posting significantly higher prices than the rest of the system. The figures used here are those from what PJM labels the RTO region, which includes most of the system's territory and would host most of the planned gas plants in this report.

27,292MW at the end of 2013, installed CCGT capacity jumped to 50,602MW at the end of 2020—an 85 percent increase in just seven years.

But that gas-fired gold rush looks to be over. There is one last batch of plants currently under construction, but there is significant uncertainty about the other planned projects in the PJM development queue.

As the graphic below illustrates, the increase in gas-fired capacity has levelled off in the last two years, while at the same time the amount of planned capacity has dropped significantly.

**Figure 2: PJM Gas CC Capacity**



Source: PJM State of the Market Reports 2011-2021. Monitoring Analytics.

The changes do not reflect the impact of the latest PJM auction, when the base capacity price fell to \$50/MW-day, the lowest level in more than a decade. They also do not include current expectations that capacity prices in the next auction—now likely to occur in January or February for the 2023-2024 delivery year—will not bounce back to prior levels even if they do increase. Financing a gas plant based on expected capacity prices is going to become increasingly difficult.

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## The Growing Importance of Renewables and Battery Storage

Renewables and battery storage remain a small segment of the PJM market, but there are obvious signs that this is changing, and changing quickly.

A record 1,512MW of solar capacity cleared in the latest PJM auction, an increase of 942MW from the prior auction. The amount of wind also rose 312MW, totalling 1,728MW. These are small amounts of capacity in a system with more than 150,000MW of overall capacity, but they highlight the growing cost-competitiveness of renewable resources.

Changes in the PJM development queue also showcase the growing interest in renewables and battery storage. As of June 30, 2021, battery storage projects with 27,885MW of capacity were in the queue, pushing storage proposals above the amount of CCGT capacity still being considered by regional developers.

There also are a growing number of offshore wind projects under active development in PJM. In New Jersey, for example, the state has awarded contracts for 3,758MW of offshore wind capacity that will be online in the mid- to late 2020s—roughly the same commercialization date of a CCGT that has not yet started construction. The state hopes to have a total of 7,500MW of offshore generation capacity online by 2035. Similarly, Dominion Energy has started development of a 2.6-gigawatt (GW) offshore wind farm, which should be online by the middle of the decade.

The new capacity will combine to limit the need for gas-fired generation, particularly given the region's persistent slow growth. It also will constrain power prices, another problem for conventional resources.

## Renewed Concerns About Gas Prices and Volatility

The last decade's CCGT buildout was also premised on the twin expectations of low and stable gas prices. Recent developments have called those two assumptions into question.

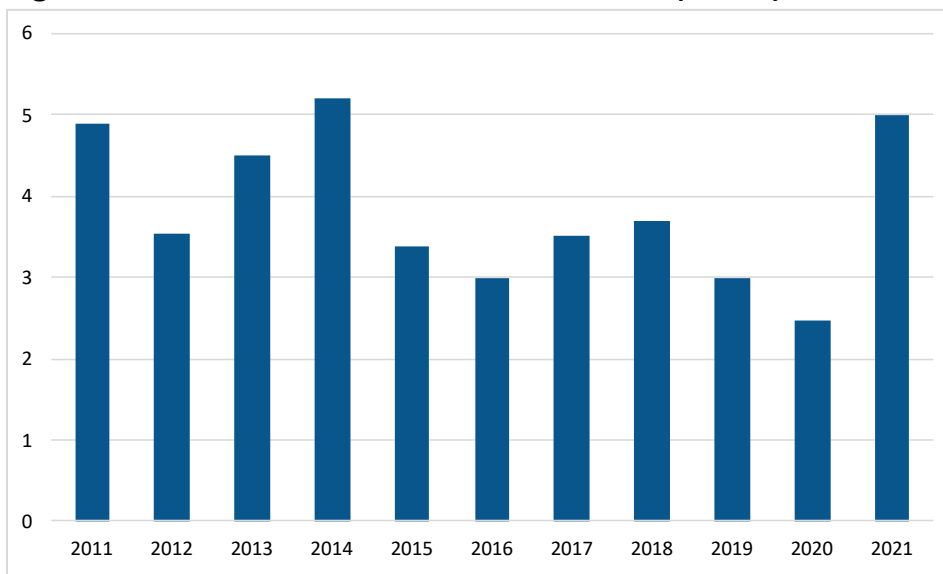
Driven by constrained production from U.S. frackers and a sharp rise in liquefied natural gas exports (these exports now total 10 percent of the U.S. market), gas prices for electric power generators have climbed significantly in the U.S. in the past year. After being well below \$4 per million cubic feet (Mcf) since 2015, including last year's pandemic-induced low of \$2.48/Mcf, prices have jumped to \$4.99/Mcf through August this year, according to the Energy Information Administration (see below), with significant uncertainty about the future.<sup>3</sup> This is problematic for investors and developers on two counts. First, volatility makes it difficult to analyze a project's long-term profitability—a project solidly in the black when gas prices are

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<sup>3</sup> Energy Information Administration. [Electric Power Monthly](#). November 12, 2021. Also see: Energy Information Administration. [Natural Gas](#).

expected to remain at or below \$3.25/Mcf could run consistently in the red if prices climb above \$4/Mcf. Second, fuel prices are the key component of a CCGT unit's generation costs. If fuel price increase, gas-fired units become less competitive (unless power prices also rise, see below), likely cutting into energy sales.

**Figure 3: U.S. Natural Gas Electric Power Price (\$/Mcf)**



Source: U.S. Energy Information Administration; 2021 data is through July.

PJM power prices, while volatile, have also trended downward in the past 10 years. From 2010 to 2015, the load weighted average real-time price in PJM largely bounced around between \$40 per megawatt-hour (MWh) and \$60/MWh. Since 2015, that average has dropped to between \$20/MWh and \$40/MWh,<sup>4</sup> cutting into the profitability of all energy sales.

## The Reality of Low Growth

A final problem for CCGT developers is the region's persistent low growth. PJM's 2020 summer peak was only 148,433MW, 25,000MW less than the system had projected 10 years ago.<sup>5</sup> 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 just 0.3%.<sup>6</sup>

The flat growth is exacerbated by rising energy efficiency and demand response efforts in the region. A record 4,810MW of energy efficiency measures cleared the PJM market for 2022-23, up 70% from the prior auction. In addition, while down

<sup>4</sup> S&P Global Market Intelligence. [2020 PJM power prices lowest in history due to lower fuel prices, capacity reform needed](#). March 11, 2021.

<sup>5</sup> PJM. [PJM Load Forecast Report](#). January 2010.

<sup>6</sup> PJM. [PJM Load Forecast Report](#). January 2021.

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somewhat from prior years, 8,812MW of demand response also cleared the market this year.<sup>7</sup>”

## The Cloudy Future for Gas

### *The Projects*

The risks discussed above pose serious hurdles for developers and potential investors in the gas-fired power plants still on the drawing board in PJM. According to the grid operator, there were 23,095 MW of combined cycle gas-fired capacity in the regional development queue at the end of 2020. Of that total, six projects with a total capacity of 7,051MW are now either under construction or entered commercial service in early 2021. This leaves roughly 15,000MW of still-to-be-developed capacity.<sup>8</sup>

IEEFA has identified 17 projects that remain undeveloped. Three have been officially canceled this year, and we believe others will follow. A number of others are described in Energy Information Administration or Standard & Poor’s data as still being officially in the development queue, but we believe they have essentially been canceled. The pages that follow outline the current status of these projects, which are grouped into four categories— canceled, indefinitely postponed, unlikely and possible. The terminated/postponed list is drawn from corporate announcements, S&P and EIA data and news stories. The unlikely and possible categories are IEEFA’s estimate of the likelihood that the project will be constructed.

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<sup>7</sup> PJM. [2022/2023 RPM Base Residual Auction Results](#).

<sup>8</sup> There are some industrial facilities not included in this tally and there are frequently small differences in published project capacity figures. Still, these totals are exceedingly close and account for the universe of planned/under construction gas plants in PJM.

**Figure 4: Status of PJM Gas Plants**

GAS PLANT PROJECT	CAPACITY (MW)	STATE	DEVELOPER	YEAR PROPOSED
<b>TERMINATED</b>		<b>4,328</b>		
Mattawoman Energy Center	1,063	Maryland	Panda Power	2013
C4GT	1,060	Virginia	Ares Management	2016
Beech Hollow (CC Plant Robinson)	1,025	Pennsylvania	Robinson Power	2011
Good Spring Natural Gas CC 1&2	695	Pennsylvania	Tyr Energy	2008
Archbald Energy Project	485	Pennsylvania	Ember Partners	2016
<b>INDEFINITELY POSTPONED</b>		<b>2,395</b>		
ESC Tioga County Power Plant	892	Pennsylvania	Energy Solutions	2016
ESC Brooke County Power 1	830	West Virginia	Energy Solutions	2016
Moundsville Power Project	673	West Virginia	Quantum Utility Generation	2014
<b>UNLIKELY</b>		<b>5,490</b>		
Chickahominy	1,600	Virginia	Balico	2018
Renovo	1,062	Pennsylvania	Bechtel	2015
Trumbull Energy Center	940	Ohio	Clean Energy Future	2017
West Deptford Energy Project	762	New Jersey	LS Power	—
Harrison County Project	579	West Virginia	Energy Solutions	2015
Deepwater Repowering	547	New Jersey	Calpine/Volt LP	2013
<b>POSSIBLE</b>		<b>2,791</b>		
Longview Power Clean Energy Center	1,200	West Virginia	Bain Capital, KKR, and others	2019
Cadiz CC Plant (Harrison County)	1,050	Ohio	Ember Partners	2016
Allegheny Energy Center	541	Pennsylvania	Invenergy	2016
IEEFA				

Source: Corporate announcements, S&P and EIA data, news stories, and IEEFA estimates.

## Terminated/Postponed Mattawoman Energy Center

The 1,063MW project was first proposed in 2013 by Panda Power Funds, a private equity firm focused on natural gas-fired projects. In its project announcement, Panda Power said the Mattawoman project was needed “due to the expected tightening of PJM reserve margins as a result of the coal-fired retirements [in the region].”<sup>9</sup>

The company had continued working on the project, which was planned for Prince George’s County in Maryland. As recently as September 2020, it requested and was granted a revision to its certificate of public convenience and necessary (CPCN) by state regulators, a necessary step prior to commencing construction.

But the project never got off the ground. The developer officially canceled it in January, telling the Maryland Public Service Commission that it had “determined

<sup>9</sup> S&P Global Market Intelligence. [Panda Power looks to build gas-fired plant in Maryland](#). August 25, 2013.



that the MEC is no longer feasible, and hereby provides notice to the commission that Mattawoman will not move forward the MEC project.”<sup>10</sup>

### *Archbald Energy Project*

The Archbald project was proposed by Ember Partners LP in connection with New Jersey construction firm DCO Energy LLC. Ember Partners, based in Houston, was established by management following the bankruptcy of EmberClear Corp., a Canadian power plant developer. The July 2016 bankruptcy reorganization occurred six months after EmberClear proposed the 485MW combined cycle facility.

The company received its Pennsylvania air quality permit in 2017, but there was no move to begin construction.

In 2019 The Times Tribune in Scranton reported the company had pulled the plug on the project. James Palumbo, senior vice president and chief engineer for EmberClear, told the paper that “the cost of access to PPL Electric Utilities’ electrical grid, getting a proper gas supply and other factors made the project economically unfeasible.”<sup>11</sup>

No reference to the project is available on the EmberClear website, which includes other projects that are both under construction and in the planning stage.

### *Beech Hollow Combined Cycle Plant*

The Beech Hollow project was first proposed in 2005 as a 272MW coal-fired power plant. The developer, Robinson Power, subsequently modified that project and proposed two smaller units, one gas-fired and the other using coal. Later, the project was revised again, this time proposed as a 1,025MW combined cycle plant. The state granted the project an air permit in 2017 and then issued a revised permit earlier this year after design changes by the developer.<sup>12</sup>

In early October, the developer asked the Pennsylvania Department of Environment Projection to withdraw its permits, effectively terminating the project.

### *Good Spring Natural Gas Combined Cycle 1&2*

The two-unit, 695MW Good Spring project was initially proposed by Tyr Energy in 2008. Tyr, a subsidiary of Japan’s Itochu Corporation, received its Pennsylvania air permit in 2014 and said construction would begin later that year on the first unit with work on the second following soon after.

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<sup>10</sup> Maryland Public Service Commission. [In the Matter of the Application of Mattawoman Energy, LLC, for a Certificate of Public Convenience and Necessity to Construct a Nominally Rated 859 MW Generating Facility in Prince George’s County, Maryland](#). January 26, 2021.

<sup>11</sup> The Times-Tribune. [Plans for Archbald natural gas plant crumble](#). June 9, 2020.

<sup>12</sup> S&P Capital IQ. [Robinson Power terminates plans for 1,000-MW gas plant in Pennsylvania](#). October 7, 2021.



The project, which totaled 695MW, is no longer on Tyr's web site, and it is listed as terminated in S&P's database.

### *C4GT*

The 1,060MW project was proposed by Novi Energy, a family-owned company in Michigan that had no demonstrable experience in large-scale power plant development. The financial backing for the project was from Ares EIF Management LLC, a unit of Los Angeles-based Ares Management.

Ares has developed other combined-cycle plants in PJM, most recently the 488MW Birdsboro project in Pennsylvania that came online in 2019. Ares subsequently sold portions of Birdsboro to Japanese investors. Tokyo Gas now owns 33% of the facility, and a group of five other Japanese firms owns another 33% of the facility.

The plan for C4GT was likely the same, but the project ran into substantial headwinds. Virginia's decision to join the Regional Greenhouse Gas Initiative (RGGI), a group of 11 Eastern states working to cut carbon dioxide emissions, would have boosted the project's costs. It also would have been required to close in 2045 under the Virginia Clean Economy Act. On top of this, the project faced significant local opposition and was involved in a legal fight with Virginia Natural Gas, the utility expected to provide C4GT's gas supplies.

These difficulties prompted the company to cancel the project, announcing in July that: "After taking feedback from the community **and assessing the changing market** [emphasis added], NOVI Energy has decided not to pursue the C4GT power plant."<sup>13</sup>

### *ESC Tioga County Power Plant*

The 892MW Tioga project was proposed in May 2016 by Energy Solutions Consortium. The company received its air permit from the Pennsylvania Department of Environmental Protection on August 20, 2019. According to a permit review by the department for the Renovo project (see below), construction on the Tioga County plant had not started as of October 2, 2020.<sup>14</sup> According to information from the Energy Information Administration, the project has been "indefinitely postponed."<sup>15</sup>

Further indicating the project's zombie status, there is no information about it on the company's uncompleted website.

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<sup>13</sup> Virginia Mercury. [Company pulls plug on proposed Charles County gas power plant](#). July 10, 2021.

<sup>14</sup> Pennsylvania Department of Environmental Protection. [Application Review Memo for Plan Approval 18-99933B](#). October 2, 2020.

<sup>15</sup> Energy Information Administration. [EIA-860](#). October 29, 2021.

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## *ESC Brooke County Power 1*

The 830MW project planned for the northern panhandle region of West Virginia is one of four combined cycle plants on the books in the traditionally coal-heavy state. Brooke County was proposed in 2016 and initially was expected to enter commercial service in 2022. The plans were stymied by opposition from Murray Energy (the parent of Murray Coal), which funded an effort to challenge the Brooke County project. The CCGT's developer, Energy Solutions Consortium, ultimately prevailed in court, but the delays apparently undid the project.

The Weirton Daily Times quoted a company spokesman in October 2020 saying that ESC had dropped plans for the project due to **“changing conditions in the energy and financial markets.”**<sup>16</sup> [emphasis added]

The spokesman added that the company was “evaluating alternative options to move forward.”<sup>17</sup>

Market conditions in the PJM market have certainly not improved in the past year, particularly with the significant increase in gas prices. Another factor that likely will dissuade ESC and other West Virginia developers is the recent decision by state regulators to approve significant environmental upgrades at three large coal plants—Amos, Mitchell and Mountaineer—that could keep them operational until 2040. The three plants have a combined generation capacity of 5,759MW, which will serve to maintain the region's capacity surplus and keep power prices in check, both discouraging developments for new projects.

According to information from the Energy Information Administration, the project has been “indefinitely postponed.”<sup>18</sup>

## *Moundsville Power Project*

This 673MW combined cycle facility was first proposed in 2014. The original developer, Energy Solutions Consortium LLC, had said construction on the project would begin in mid-2015.<sup>19</sup>

That did not happen. By 2018, permits for the project (like the Brooke County and Harrison proposals) were being challenged by Murray Energy. The challenges were subsequently dismissed by the West Virginia Supreme Court, but they did cause development delays, a major risk for developers.

Another risk, uncertain capacity prices, was also changing the development equation. Already by 2017, the project's new owner, Quantum Utility Generation, a unit of private equity firm Quantum Energy Partners, was warning that capacity

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<sup>16</sup> The Weirton Daily Times. [Developer pulls plug on Brooke County Power plant proposal](#). October 13, 2020.

<sup>17</sup> *Ibid.*

<sup>18</sup> Energy Information Administration, *op. cit.*

<sup>19</sup> S&P Global Market Intelligence. [Wednesday, Energy edition](#). April 23, 2014.

prices in PJM might not be high enough to justify the risk of developing new projects.

"It is very difficult to look at this capacity market and think everything is perfect," Quantum Utility Generation Executive Vice President and COO Dirk Strausfeld said. "The capacity price we are receiving at the forward auctions are a little bit misleading. We shouldn't forget what we get for \$100-MW/day is worth way less because we have all of the risks of the power plant that the lenders do not take."<sup>20</sup>

PJM's latest auction price of \$50/MW-day, for capacity available from June 2022 to May 2023, plus expectations that these prices will remain low into the future, will only exacerbate those concerns for developers and investors.

According to EIA, the project has been "indefinitely postponed."<sup>21</sup>

## Unlikely

### *Deepwater Repowering*

On the books since 2013, this project was supposed to be built at a Calpine-owned facility in southern New Jersey, taking the place of three older, now-retired units at the site. The repowered 547MW plant was supposed to enter commercial service at the end of the year, according to S&P data. However, Calpine, now owned by private equity firm Energy Capital Partners, does not list the facility on its own website outlining the plants it now operates and those it is developing.

PJM's flat demand growth and significant capacity oversupply should keep the project off the books in the near term. Regional offshore wind expansion, particularly in New Jersey, which has awarded contracts for more than 3,700MW of capacity due online by 2028, should do the same in the longer term. This project is not likely to get off the drawing board.

### *West Deptford*

There is an existing 774MW combined cycle gas plant operating at this site, located on the Delaware River in southern New Jersey. Developed by LS Power, the unit came online in 2014. A second 762MW combined cycle unit has been proposed for the site, but its future is highly uncertain.

The financial performance of Unit 1 has recently been poor, which should undercut any rationale for constructing a second, similarly sized facility. The debt of West Deptford Energy Holdings has been downgraded twice by Moody's Investors Service since February, pushing the rating down to B2. In Moody's ratings scheme, B ratings "are considered speculative and are subject to high credit risk."<sup>22</sup>

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<sup>20</sup> S&P Global Market Intelligence. [PJM capacity auction outcome a test for new-build power investors](#). April 26, 2017.

<sup>21</sup> Energy Information Administration, *op. cit.*

<sup>22</sup> Moody's Investors Service. [Moody's Rating Scale and Definitions](#).

A major part of the problem, Moody's said, has been the project's recent under-utilization. Its capacity factor for the first six months of 2021 was less than 20%, following its 30% performance for all of 2020. This, the company added, is "far short of the 60-70% expected utilization." This recent performance can be attributed to New Jersey's decision to rejoin RGGI, the regional effort to cut CO<sub>2</sub> emissions. This puts West Deptford at a competitive disadvantage, adding an estimated \$3 per megawatt-hour (MWh)<sup>23</sup> to its operating expenses.

Looking ahead, Moody's warned that the outcome of the next two capacity auctions "will have a significant impact on the [existing] project's longer term prospects."<sup>24</sup> Previously, Moody's and other analysts have said they do not expect significant increases in the next auction, for the delivery year June 2023-May 2024, which is scheduled to be held this winter.

These issues make construction of the second gas unit unlikely in the short term. In the long term, New Jersey's environmental policies, which include a 50% renewable energy mandate by 2030 in addition to its offshore wind buildout, are likely to undercut future fossil fuel development efforts.

### *Trumbull Energy Center*

Clean Energy Future announced plans for the Trumbull Energy Center, a proposed 940MW CCGT, in early 2017. The developer said it hoped to have financing for the project in place by the end of the year and to begin construction in early 2018.<sup>25</sup>

Those plans were sidetracked by a legal dispute with the owners of an adjacent CCGT plant, the 940MW Lordstown Generating Station. That plant, also developed by Clean Energy Future but now majority-owned by Macquarie Group, argued that the second facility would undercut its market share and sought to prevent its construction. That dispute was resolved in late 2018, prompting the company to predict that construction would begin in 2019.<sup>26</sup>

That prediction proved overly optimistic. In March 2021, the company told a public hearing in Warren County, Ohio, that it was in the process of completing financing for the project and planned to begin construction in September, with the plant operating within three years.<sup>27</sup>

No announcement about either the completion of financing or the beginning of construction has been made yet. The project is still listed as planned by S&P but doesn't show up in EIA's database.

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<sup>23</sup> [Moody's Investors Service Credit Opinion](#). West Deptford Energy Holdings LLC.

<sup>24</sup> *Ibid.*

<sup>25</sup> S&P Global Market Intelligence. [Clean Energy Future officially announces plans for second 940-MW Ohio gas plant](#). January 13, 2017.

<sup>26</sup> Marcellus Drilling News. [Legal Dispute Resolved For 2<sup>nd</sup> Lordstown Utica-Fired Elec Plant](#). February 25, 2019.

<sup>27</sup> The Business Journal. [Clean Energy Future LLC Presents Case for 100% Tax Break to Build \\$900M Energy Plant](#). March 18, 2021.

## *Renovo*

The Renovo project, a 1,062MW combined cycle facility proposed by Bechtel Development Company, has been on the books since 2015, but it did not receive its state air permit until earlier this year. The permit is now being challenged by environmental groups that believe the facility would worsen local air quality.

Initially, the Renovo plant was expected online by 2017. The date was subsequently pushed to 2018; now, there is no certainty when or if construction will begin. Currently, July 2024 is listed as the project's expected online date.

But that remains uncertain. Clinton County Economic Partnership CEO Mike Flanagan, who has been involved with the project since it was first proposed, said recently that the project still hadn't nailed down financing. The lack of financing is indicative of the rising risks for both developers and potential investors with the region's flat demand growth, overcapacity and growing renewable energy penetration.

Another potential roadblock surfaced in October, in the form of New York's decision to deny permits for two new gas-fired power plants in the state. In letters rejecting those proposals, Daniel Whitehead, director of the environmental permits division in the state Department of Environmental Conservation, wrote: "[I]t is already clear that the construction and operation of a new fossil fuel-fired power plant is inconsistent with the [New York] Climate Act, unless an adequate justification, assessment of alternatives, and [greenhouse gas] mitigation are provided."

Renovo would be built in Pennsylvania, but the initial plan was to export about half the project's electricity to New York. The developer still has an active transmission expansion project in the New York state development queue. Given New York's recent decision, it is hard to imagine Renovo being able to export electricity from a new gas plant into the state.

## *Chickahominy*

The developer behind this project is looking to build a 1,600MW facility in the same central Virginia location as the now-cancelled C4GT facility. The project's size raises significant red flags given the substantial over-capacity and slow demand growth across the PJM region. It would also face the same issues that undercut the C4GT proposal: Virginia's 2045 carbon-free electricity mandate and the additional costs imposed by the state's membership in RGGI. The project is also strongly opposed by several local citizens groups.

However, the key problem for Chickahominy and its developer is its lack of access to gas supplies. As a result, the company earlier this year proposed building its own pipeline from the Transco interstate gas line that moves gas from the Gulf of Mexico region through the southeastern U.S. before terminating in New York City. The lateral pipeline for the Chickahominy project would run a total of 83 miles—adding significant costs to the overall development proposal and undercutting the plant's competitiveness in the PJM power market.

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Pipeline construction cost estimates vary, but a similar project built by Transco and brought online in 2015 cost an estimated \$300 million.<sup>28</sup> That project, dubbed the Virginia Southside Expansion, included 100 miles of new 24-inch pipeline;<sup>29</sup> the planned Chickahominy pipeline would also be 24 inches in diameter. In addition, Transco built its expansion next to an existing utility corridor; the Chickahominy project would be built largely through privately held land.

It is unclear where the money for this project would come from since the developer has kept that information private. However, building such a pipeline, even if it could be financed, would take a considerable amount of time and the costs would severely undercut the gas plant's competitiveness. We believe the project is unlikely to go forward.

### *Harrison County Project*

The 625MW combined cycle project was proposed by Energy Solutions Consortium (ESC) in April 2015. In the company's 2016 air permit application with the West Virginia Department of Environmental Protection the company said it hoped commercial operations at the plant would begin by June 2020.

That deadline has long since passed and there are serious questions about the project's viability. The developers, Caithness Energy and ESC, had an option to buy county land for the project for a nominal sum, but it expired at the end of 2020 and there has been no movement since. Michael Jenkins, president of the Harrison County Development Authority, the entity in charge of the land transfer, acknowledged the lack of progress in an October 2021 meeting.

"So far, nothing's moved over there. I haven't heard from them in quite a while," Jenkins said. "We probably need to reach out to them and see what their intentions are ... If they're not planning on moving ahead with their project, then we need to get that back up and try to get someone else moving in there."<sup>30</sup>

Privately held Caithness has significant development experience in PJM and is certainly aware of the rapidly changing environment for new gas plants in the region. While the developers may be reluctant to pull the plug, the project's lengthy delays clearly indicate concerns about its financial viability.

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<sup>28</sup> Business Wire. [Williams' Transco Completes Virginia Southside Expansion](#). September 1, 2015.

<sup>29</sup> *Ibid.*

<sup>30</sup> The Exponent Telegram. [Harrison County \(West Virginia\) Development Authority to seek out status of gas-fired power plant project](#). October 19, 2021.

## Possible

### *Cadiz Combined Cycle Plant (Harrison County)*

The 1,050MW Cadiz project was proposed in 2016 by Ember Partners. Initially, the developers said construction would begin in 2018 and the plant would enter commercial operation in 2021. The developer now says the facility, which is designed as two units, will come online in 2022 and 2024.

In December 2020, Argan Inc., the parent of Gemma Power Systems, the company hired to build the plant, said the project still had not secured its financing. As such, Argan said, it would not be adding the value of the construction to its order backlog. “We are cautiously optimistic that the start of construction activities for these projects will occur over the next twelve months from now,” the company said. “However, we cannot predict with certainty when the project will commence.”<sup>31</sup>

Ember announced last year that it intended to use Mitsubishi turbines at the project that would be capable of burning a blend of hydrogen and gas. The plan may help the project ultimately get built as Mitsubishi has an incentive to get its new turbines into the market so other developers gain confidence in their operational capabilities. EmberClear also said it was working with the Japanese company “to complete the late-stage development and financing activities.”<sup>32</sup>

### *Allegheny Energy Center*

The project is backed by Invenergy, a privately held power development firm with more than 29,000MW of capacity to its credit. Initially proposed as a 541MW unit in early 2016, the company boosted the planned size to 639MW earlier in 2021.

The Allegheny County Health Department is in the process of considering the project’s air permit application. When that is complete, the project must also get a permit from the Pennsylvania Department of Environmental Protection; according to the DEP’s website, the company has not yet applied, and no review is currently underway.<sup>33</sup>

The plant’s tentative online date is June 2024, but with the recent runup in gas prices and significant uncertainty about future PJM capacity prices, construction is far from certain.

### *Longview Power*

The 1,200MW Longview combined cycle gas plant was proposed in 2019 by a group of private equity firms led by Bain Capital and KKR. The project is backed by the same companies that own the 710MW Longview coal plant in West Virginia, which has filed for bankruptcy twice since beginning commercial operations in 2011. The

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<sup>31</sup> Argan Inc. [Form 10-Q](#). December 9, 2020.

<sup>32</sup> EmberClear. [Harrison Power](#).

<sup>33</sup> Pennsylvania Department of Environmental Protection. [Invenergy-Allegheny Energy Center Site Background](#).



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gas plant, also known as the Mountain State Clean Energy facility, would be built adjacent to the existing coal plant.

The developers are currently in the process of securing an air permit from West Virginia regulators for the facility. Public comment on the proposal ended in early November. The facility is now expected to enter commercial operations at the beginning of 2025.

While the problems faced by the Longview coal plant are unique to that unit, two points come out repeatedly in the coal unit's credit ratings that are directly relevant for the planned gas facility: Regional power prices are relatively low, and PJM still has too much capacity.

In its latest credit review of the coal plant, Moody's underscored both points. "PJM power prices have remained persistently low and are not expected to rise materially," it said, adding: "The PJM region is plagued by persistent excess capacity [and] tepid electric demand ..."<sup>34</sup>

The Longview gas plant will be challenged by market realities as well. The recent runup in gas prices and expectations of continued volatility will pose additional challenges for the proposed plant.

## Conclusion

The gas capacity-building spree in PJM is coming to an end. Developers and investors face a growing number of risks that IEEFA believes will prevent most of the 23,000MW of planned capacity still in the region's development queue from being built. These risks include:

- Significant uncertainty about future capacity prices, particularly in light of the sharp drop in the region's latest power auction.
- A decade-long downward trend in power prices.
- Flat regional demand growth.
- Major projected increases in battery storage and renewable energy generation, including thousands of megawatts of offshore wind capacity.
- Financial market concerns about climate change and the likelihood of required fossil fuel plant closures by 2050.

The future for planned gas-fired power plants appears bleak as the investment market leaves them behind.

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<sup>34</sup> Moody's Investors Service. [Longview Power LLC](#). February 4, 2021.

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## 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](http://www.ieefa.org)

## About the Authors

### Dennis Wamsted

Analyst/Editor Dennis Wamsted has covered energy and environmental policy and technology issues for 30 years. He is the former editor of The Energy Daily, a Washington, D.C.-based newsletter.

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