

PJM Interconnection, L.L.C.

Consolidated Financial Statements

December 31, 2022 and 2021

Management's Responsibility for Financial Reporting

The management of PJM Interconnection, L.L.C. is responsible for the preparation and objectivity of the following consolidated financial statements and for their integrity. These financial statements have been prepared to conform to accounting principles generally accepted in the United States of America and, where required, include amounts that represent management's best judgments and estimates. PJM's management is responsible for the preparation of other information in this annual report and for its accuracy and consistency with the financial statements.

PJM has established a system of internal accounting and financial controls and procedures designed to provide reasonable assurance as to the integrity and reliability of financial reporting. Management continually reviews the effectiveness and efficiency of this system, and takes actions when opportunities for improvement are identified.

This system includes a separate Internal Audit Department, which monitors internal controls and reports directly to the Risk and Audit Committee of the Board of Managers. Management views the purpose of internal auditing to be an independent examination and assessment of PJM's activities related to compliance with policy, procedures and the law, as well as safeguarding of assets. The Risk and Audit Committee meets with management, internal auditors and the independent auditors on a regular basis to review financial information, internal controls and the internal audit process.

PJM's independent auditors, PricewaterhouseCoopers LLP, are engaged to conduct an independent audit of PJM's consolidated financial statements in accordance with generally accepted auditing standards promulgated by the American Institute of Certified Public Accountants.

Manu Asthana
President and Chief Executive Officer

Lisa Drauschak
Vice President, Chief Financial Officer and
Treasurer



Report of Independent Auditors

To Management and the Board of Managers of PJM Interconnection, L.L.C.:

Opinion

We have audited the accompanying consolidated financial statements of PJM Interconnection, L.L.C. and its subsidiaries (the "Company"), which comprise the consolidated statements of financial position as of December 31, 2022 and 2021, and the related consolidated statements of income, comprehensive income and paid-in capital, retained earnings and accumulated other comprehensive income (loss), and of cash flows for each of the three years in the period ended December 31, 2022, including the related notes (collectively referred to as the "consolidated financial statements").

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (US GAAS). Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are required to be independent of the Company and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for one year after the date the consolidated financial statements are available to be issued.

Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditors' report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with US GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement



resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the consolidated financial statements.

In performing an audit in accordance with US GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the consolidated financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Other Information

Management is responsible for the other information included in the annual report. The other information comprises Management's Discussion & Analysis and Management's Responsibility for Financial Reporting Letter, but does not include the consolidated financial statements and our auditors' report thereon. Our opinion on the consolidated financial statements does not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the consolidated financial statements or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

PricewaterhouseCoopers LLP

Philadelphia, Pennsylvania
March 9, 2023

PJM INTERCONNECTION, L.L.C.
Consolidated Statements of Financial Position (\$ in thousands)
December 31,

	2022	2021
Assets		
Current assets:		
Deposits on hand	\$ 2,959,245	\$ 2,523,941
Operating cash	1,013,278	117,237
Receivables	131,384	25,930
Study and interconnection receivables	98,541	33,567
Prepaid income taxes	2,376	6,036
Prepaid expenses and other	21,181	11,343
Note receivable	2,919	2,771
	<u>4,228,924</u>	<u>2,720,825</u>
Non-current assets:		
Fixed assets, net of accumulated depreciation and amortization of \$801,685 and \$783,618	77,215	95,263
Land	1,420	1,420
Projects in development	56,858	44,786
Right-of-use assets - Finance lease	7,538	-
Right-of-use assets - Operating leases	3,619	-
Deferred recovery of pension and postretirement costs	-	47,478
Deferred income taxes, net of valuation allowance	31,427	31,565
Prepaid expenses	3,909	2,361
Note receivable	2,267	2,660
Other	20,992	26,978
	<u>205,245</u>	<u>252,511</u>
Total assets	<u>\$ 4,434,169</u>	<u>\$ 2,973,336</u>
Liabilities, paid-in capital, retained earnings and accumulated other comprehensive income		
Current liabilities:		
Accounts payable and accrued expenses	\$ 75,292	\$ 30,458
Due to members	1,124,009	154,486
Study and interconnection payables	101,715	36,744
Accrued payroll and benefits	39,426	37,156
Current portion of long-term debt	2,886	2,886
Current portion of capital lease	-	1,941
Current portion of lease liability - Finance lease	1,475	-
Current portion of lease liability - Operating leases	2,022	-
Deferred FERC fees	5,512	5,782
Deferred regulatory liability	-	14,700
Deferred revenue	3,498	3,442
Postretirement healthcare benefits liability	1,877	1,775
Other employee benefits	289	325
Deposits	2,959,245	2,523,941
	<u>4,317,246</u>	<u>2,813,636</u>
Non-current liabilities:		
Long-term debt	5,049	7,935
Long-term capital lease	-	9,484
Lease liability - Finance lease	7,462	-
Lease liability - Operating leases	2,143	-
Interest rate swap	-	425
Deferred recovery of pension and postretirement costs	1,891	-
Pension benefits liability	14,094	36,647
Postretirement health care benefits liability	46,017	59,321
Other employee benefits	24,370	31,412
	<u>101,026</u>	<u>145,224</u>
Total liabilities	<u>4,418,272</u>	<u>2,958,860</u>
Commitments and contingencies (Note 11)		
Paid in capital	722	722
Retained earnings	15,150	13,680
Accumulated other comprehensive income	25	74
Total paid-in capital, retained earnings and accumulated other comprehensive income	<u>15,897</u>	<u>14,476</u>
Total liabilities, paid-in capital, retained earnings and accumulated other comprehensive income	<u>\$ 4,434,169</u>	<u>\$ 2,973,336</u>

The accompanying notes are an integral part of these consolidated financial statements.

PJM INTERCONNECTION, L.L.C.**Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss) (\$ in thousands)**
For the Years Ended December 31,

	2022	2021	2020
Income			
Operating revenue:			
Service fees	\$ 319,524	\$ 326,152	\$ 319,718
Deferred regulatory income	-	(28,404)	(39,049)
FERC fees reimbursement	71,760	72,065	65,309
Study and interconnection fees	6,763	6,055	5,585
Membership fees	3,546	3,471	3,516
Other	3,852	3,270	3,741
Total operating revenue	<u>405,445</u>	<u>382,609</u>	<u>358,820</u>
Operating expenses:			
Compensation	165,534	153,643	145,378
FERC fees	71,760	72,065	65,309
Outside services	60,331	56,153	55,560
Depreciation and amortization	36,434	35,619	35,459
Software licenses and fees	24,542	20,378	20,049
Pension benefits - service cost	12,799	15,015	11,182
Other expenses	11,736	9,895	8,853
Computer maintenance and office supplies	7,937	7,941	7,699
Study and interconnection services	6,763	6,055	5,585
Lease expenses	2,072	2,039	2,096
Postretirement health care benefits - service cost	2,010	2,121	1,795
Total operating expenses	<u>401,918</u>	<u>380,924</u>	<u>358,965</u>
Operating income (loss)	<u>3,527</u>	<u>1,685</u>	<u>(145)</u>
Other income:			
Interest income	43,652	1,029	5,879
Interest expense	(41,972)	(502)	(6,456)
Pension and postretirement health care benefits (benefit) - other components of net benefit cost	(569)	(1,813)	(3,899)
Total other income	<u>2,249</u>	<u>2,340</u>	<u>3,322</u>
Income before income taxes	5,776	4,025	3,177
Income tax expense	<u>4,307</u>	<u>2,550</u>	<u>1,101</u>
Net income	1,469	1,475	2,076
Other comprehensive (loss) income:			
Unrealized (loss) gain on securities, net	(48)	-	91
Comprehensive income, net	<u>\$ 1,421</u>	<u>\$ 1,475</u>	<u>\$ 2,167</u>
Paid-in capital, retained earnings and accumulated other comprehensive income (loss)			
Beginning balance	14,476	13,001	10,834
Net income	1,469	1,475	2,076
Other comprehensive (loss) income	(48)	-	91
Ending balance	<u>\$ 15,897</u>	<u>\$ 14,476</u>	<u>\$ 13,001</u>

The accompanying notes are an integral part of these consolidated financial statements.

PJM INTERCONNECTION, L.L.C.
Consolidated Statements of Cash Flows \$ in thousands)
For the Years Ended December 31,

	2022	2021	2020
Cash flows from operating activities:			
Net income	\$ 1,469	\$ 1,475	\$ 2,076
Adjustments:			
Depreciation and amortization expense	36,434	35,619	35,459
Deferred income taxes, net of valuation allowance	138	2,913	(5,185)
Deferred recovery of pension and postretirement costs	49,369	43,760	(58,242)
Deferred regulatory liability	-	28,401	39,049
Employee benefit expense (less than) greater than funding	(42,833)	(28,501)	54,650
Net fair value changes related to interest rate swap	(580)	(471)	248
Changes in assets and liabilities:			
(Increase) decrease in receivables	(105,454)	(701)	31,961
(Increase) decrease in study and interconnection receivables	(64,974)	(18,815)	2,582
Decrease (increase) in prepaid expenses and other	(12,678)	172	(5,301)
Change in deferred FERC fee position	(270)	8,482	(3,968)
Decrease (increase) in prepaid income taxes	3,660	(6,001)	(19)
Increase (decrease) in accounts payable and accrued expenses	45,245	(7,312)	(93)
Increase (decrease) in study and interconnection payables	64,972	21,239	(2,397)
Increase (decrease) in accrued payroll and benefits	2,270	(443)	(856)
Increase (decrease) in deferred revenue	56	19	(85)
Refunds to members	(14,700)	(31,443)	(41,355)
Net cash (used in) provided by operating activities	<u>(37,876)</u>	<u>48,393</u>	<u>48,524</u>
Cash flows (used in) from investing activities:			
Cost of projects in development	(30,870)	(35,336)	(39,896)
Note receivable	245	814	(3,107)
Net cash (used in) investing activities	<u>(30,625)</u>	<u>(34,522)</u>	<u>(43,003)</u>
Cash flows from financing activities:			
Borrowings under line of credit	1,280,782	1,985,973	967,715
Repayments under line of credit	(1,280,782)	(1,985,973)	(967,715)
Repayments of long-term debt	(2,886)	(2,886)	(2,886)
Payments under finance lease	(2,095)	-	-
Increase (decrease) in due to members	969,523	3,171	48,817
Increase in deposits	435,304	722,641	203,416
Net cash provided by financing activities	<u>1,399,846</u>	<u>722,926</u>	<u>249,347</u>
Net increase in cash and cash equivalents	1,331,345	736,797	254,868
Cash and cash equivalents balance (including customer deposits), beginning of year	2,641,178	1,904,381	1,649,513
Cash and cash equivalents balance (including customer deposits), end of year	<u>\$ 3,972,523</u>	<u>\$ 2,641,178</u>	<u>\$ 1,904,381</u>
Cash paid during the year for:			
Interest	510	554	609
Income taxes	663	7,374	6,838
Noncash activity:			
Projects in development additions included in ending accounts payable and accrued expenses	412	325	921

The accompanying notes are an integral part of these consolidated financial statements.

1. Company Overview

Background

PJM Interconnection, L.L.C. (PJM or the Company) is a Regional Transmission Organization (RTO) responsible for the operation of wholesale electric markets and for centrally dispatching electric systems in the PJM region. PJM's services and the markets PJM operates are subject to regulation by the Federal Energy Regulatory Commission (FERC).

PJM is a limited liability, non-stock company incorporated in the state of Delaware. PJM's Board of Managers is constituted as an independent body, and PJM operates independently from its members.

Nature of Operations

The Company currently coordinates a pooled generating capacity of more than 183,254 megawatts (MW) and operates wholesale electricity markets with approximately 1,111 members. PJM enables the delivery of electric power to more than 65 million people in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia.

PJM manages a sophisticated regional planning process for generation and transmission expansion to ensure continued reliability of the electric system. Using information technology, PJM provides real-time information to market participants to support their daily transactions and business decision-making. In addition to ensuring the reliable supply of electricity, PJM administers internet-based bid markets in which participants buy and sell day-ahead and spot-market energy, Financial Transmission Rights (FTRs), synchronized reserves and regulation services.

PJM Settlement, Inc. (PJM Settlement) is a wholly owned subsidiary of PJM, organized as a Pennsylvania nonprofit corporation, and is a FERC-regulated entity. PJM Settlement was formed to handle all of the credit, billing and settlement functions for PJM's members' transactions in the PJM markets and for transmission service. PJM Settlement acts as a counterparty to members' pool transactions in the PJM markets. For the pool transactions in the PJM markets, flash title passes through PJM Settlement immediately prior to passing to the ultimate buyer and seller of the product. This arrangement reinforces PJM's authority to continue to net a member's offsetting financial positions in PJM markets for credit and billing purposes, provides clarity in PJM Settlement's legal standing to pursue collection from a bankrupt member and complies with FERC's recommendation on credit policy requirements for competitive wholesale electricity markets.

PJM Connex, L.L.C (PJM Connex) is a wholly owned subsidiary of PJM and is not a FERC-regulated entity. PJM Connex was formed to provide service and technology solutions to existing and emerging energy markets, system operators, RTOs and other entities.

PJM Technologies, Inc. (PJM Tech) is a wholly owned subsidiary of PJM Connex and is not a FERC-regulated entity. PJM Tech provides international consulting services including training, program planning and implementation advice regarding development of wholesale electric market design and market rules.

PJM Environmental Information Services, Inc. (PJM EIS) is a wholly owned subsidiary of PJM Connex formed to provide environmental and emissions attributes reporting and tracking services to its subscribers in support of renewable portfolio standards and other disclosure requirements that may be implemented by governmental agencies. PJM EIS is not a FERC-regulated entity.

Tariff Cost Recovery

During 2022, PJM recovered its administrative costs through a formula rate mechanism under the Company's Open Access Transmission Tariff (Tariff).

During 2021 and 2020, PJM recovered its administrative costs through a stated-rate mechanism under the Company's Tariff. The composite stated rate under the Tariff was 38.7 cents and 37.8 cents per megawatt hours (MWh) in 2021 and 2020, respectively.

During 2022, 2021 and 2020, PJM Settlement recovered its administrative costs under a separate schedule under the Tariff.

Summary of Service Fees

	2022	2021	2020
PJM revenues	\$ 304,328	\$ 317,546	\$ 311,105
PJM Settlement revenues	15,196	8,606	8,613
	-	(28,404)	(39,049)
Total service fees	<u>\$ 319,524</u>	<u>\$ 297,748</u>	<u>\$ 280,669</u>

On October 1, 2021, PJM filed a rate revision proposal with the FERC requesting changes to the Tariff associated with how PJM recovers administrative costs of serving as an RTO. The filing proposed a change in the form of administrative cost recovery, moving to monthly formula rates based on that month's costs and that month's billing determinants. Under this proposal, PJM no longer requires the accumulation of a financial reserve. The filing also proposed billing for services provided by PJM Settlement based on the number of invoices issued per member. On December 1, 2021, FERC issued an order accepting PJM's proposed Tariff revisions effective January 1, 2022, subject to refund, hearing and settlement judge proceedings specific to the proposed PJM Settlement cost allocation. On November 9, 2022 FERC approved an updated PJM Settlement cost allocation, which became effective and was implemented on February 1, 2023.

2. Summary of Significant Accounting Policies and Selected Financial Information

Accounting Standards Not Yet Adopted

Rate Reference Reform

In March 2020, the FASB issued guidance addressing the potential accounting burden expected when global capital markets move away from the London Interbank Offered Rate (LIBOR) as a benchmark interest rate. The guidance provides optional expedients and exceptions for contract modifications and hedging relationships that reference LIBOR or another reference rate expected to be discontinued. The new standard is effective from issuance through December 31, 2024. The Company is currently evaluating the effect of the new standard on the Company's Consolidated Statements of Financial Position; Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss); and Consolidated Statements of Cash Flows.

Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements have been prepared on an accrual basis in accordance with generally accepted accounting principles in the United States of America (GAAP) and include the accounts of PJM and its wholly owned subsidiaries. All intercompany transactions and balances have been eliminated.

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying disclosures. The following accounting policies are particularly important to PJM's financial position or results of operations, and some require estimates or other judgments of matters of uncertainty. Changes in the estimates or other judgments included within these accounting policies could result in a significant change to the financial statements. These estimates are based on management's best knowledge of current events and actions the Company may undertake in the future.

Certain reclassifications have been made to conform previously reported data to current presentation.

Net Presentation of Member Activity

The Company has determined that although PJM has flash title to pooled transactions through its wholly owned subsidiary PJM Settlement, all activity for which PJM Settlement is the central counterparty should be recorded on a net basis. The Company's determination is based on these facts: (1) the member company, not PJM Settlement, is the primary obligor in each transaction; (2) PJM Settlement earns a fixed amount per transaction; and (3) the member company has the credit risk, not PJM Settlement. As such, the Company presents member activity for which PJM Settlement is the central counterparty, including accounts receivable, accounts payable, revenue and expense, on a net basis in its consolidated financial statements.

Lease Transactions

On January 1, 2022 PJM implemented new guidance related to lease accounting, which resulted in the recognition of lease assets and lease liabilities on the Consolidated Statements of Financial Position and disclosure of key information about leasing arrangements.

PJM utilized a modified retrospective transition approach to adoption, chose not to adjust comparative periods and has elected the guidance's practical expedient relief provisions. The practical expedient relief provisions: (1) allowed PJM to not reassess whether any existing contract is or contains a lease, (2) provided that identified leases could retain lease classification as determined under previously issued lease guidance and (3) waived the requirement to reassess initial direct costs for leases.

The discount rate utilized to measure PJM's operating leases at January 1, 2022 were risk-free rates matched to lease duration.

PJM applied the hindsight practical expedient related to lease renewal provisions, which allowed the Company to factor into consideration information available at the guidance effective date.

Refer to Note 11 for additional details related to PJM's leases.

Study and Interconnection Activity

Under the Tariff, PJM's transmission provider role is to direct the operation and coordinate the maintenance of the transmission system and indicate, based on studies conducted by PJM, necessary enhancements or modifications to the transmission system. The modifications that are performed on the transmission system, such as network upgrades and generation additions, are conducted principally by third-party vendors at the request of transmission customers. In its system planning capacity as a transmission service provider, PJM provides billing and collection services in the interconnection service agreement process. Billings and

collections by PJM for work it performs on behalf of the counterparties to the specific interconnection agreements are reported on a net basis in the Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss).

Cash Equivalents

Highly liquid investments with maturities of three months or less when purchased are considered cash equivalents.

Concentration of Credit Risk

Financial instruments that subject PJM to credit risk consist primarily of accounts receivable relating to monthly service fee billings. As provided in PJM's Operating Agreement, members are required either to maintain approved credit ratings or to post specified financial security to obtain credit within the PJM markets. During 2022, approximately 60% of PJM's operating expenses were billed to approximately 16 of its members. PJM had approximately 1,111 members at year-end 2022.

Under the terms of the PJM Operating Agreement, any payment defaults may be billed to and collected from PJM's other member companies.

Fixed Asset Capitalization

PJM's fixed assets principally comprise software and capitalized software development costs, leasehold improvements, computer hardware and buildings. The costs incurred to acquire and develop computer software for internal use, including financing costs, are capitalized. However, costs incurred prior to the determination of feasibility of developed software and costs incurred following the in-service date of developed software are expensed. Fixed assets are depreciated or amortized using the straight-line method over the useful lives of the assets as follows:

Software and capitalized software development costs	3 to 10 years
Computer hardware	3 to 5 years
Vehicles	5 years
Furniture and fixtures	10 years
Building and leasehold improvements	10 to 15 years
Buildings	25 years

Deferred Recovery of Pension and Postretirement Costs

The Company recognizes the funding status of the projected benefit obligation (PBO) of its defined benefit pension plan and other postretirement employee benefit plan as liabilities in the Consolidated Statements of Financial Position. The PBO represents the actuarial present value of benefits attributable to employee service rendered to date, including the effects of estimated future salary increases. At December 31, 2022, PJM recorded the underfunded PBO as a liability.

At December 31, 2022, in addition to recording the underfunded PBO as a liability, PJM recorded a \$1.9 million regulatory liability to reflect net over recovery of amounts funded through the Company's rate structure. The shift to a net regulatory liability is a result of higher discount rates at December 31, 2022.

At December 31, 2021, in addition to recording the underfunded PBO as a liability, PJM recorded a \$47.5 million regulatory asset to reflect the anticipated future recovery of the amounts expected to be funded in the future through the Company's rate structure.

Deferred FERC Fees and Deferred FERC Fee Asset/Liability

FERC charges an annual assessment to all public utilities based on kilowatt-hours of interstate transmission service provided. PJM recovers from its members the annual charges from FERC. At December 31, 2022, PJM had a \$5.5 million deferred FERC fee liability. The liability represents the difference between amounts collected from PJM members and amounts ultimately assessed by the FERC during the year and is a factor

considered in determining the FERC fee charges billed to PJM members during the subsequent year. At December 31, 2021, PJM had a \$5.8 million deferred FERC fee liability that resulted from over-collections during 2021.

Deferred Regulatory Liability

During 2021 and 2020, PJM recovered administrative costs under a stated-rate mechanism that provided for the accumulation of a financial reserve. PJM was permitted to maintain a reserve as a deferred regulatory liability in an amount defined as a percentage of stated-rate revenues. On a quarterly basis, PJM refunded the deferred regulatory liability balance in excess of the permitted financial reserve for the previous quarter. During 2021 and 2020, PJM made refunds of \$31.4 million and \$41.4 million, respectively.

For PJM Settlement, the deferred regulatory liability was defined in its rate schedule in the Tariff and was equal to revenues collected in excess of accrual-basis expenses. This balance was refunded quarterly. The PJM Settlement rate schedule did not include a financial reserve element.

PJM recognized deferred regulatory income in the revenue section of the Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss) for the amount by which service fee revenues pursuant to the rate schedules differed from applicable expenses in the reporting period. The amount by which cumulative revenues under the rate schedules exceeded cumulative expenses and refunds was reported as a deferred regulatory liability in the Consolidated Statements of Financial Position. In circumstances in which revenues were less than expenses, PJM reduced the deferred regulatory liability with an offset to deferred regulatory income.

Under PJM's administrative rate proposal, effective January 1, 2022, PJM no longer requires the accumulation of a financial reserve.

At December 31, 2021, the deferred regulatory liability balance of \$14.7 million represented the reserve accrued under stated rates. The balance was classified as current liability and was refunded to members in the first quarter of 2022.

Deferred Revenue

PJM membership fees, which are billed and collected in advance of the year for which they apply, are amortized ratably over the related annual membership period.

Deposits

At December 31, 2022, the deposits balance comprised \$425.9 million received for study and interconnection fees and \$2,533.3 million for customer credit. At December 31, 2021, the deposits balance comprised \$344.5 million received for study and interconnection fees and \$2,179.4 million for customer credit. These deposits are maintained in separate cash accounts that are not legally restricted.

Due to Members

At December 31, 2022, the \$1.1 billion due-to-members balance comprised \$667.5 million held by PJM related to the December 1 - December 21, 2022 month-to-date market settlement billing statements, paid to market participants by PJM on January 3, 2023, \$320.7 million of market participant prepayments for Winter Storm Elliott market settlement balances and \$135.8 million of settled and unbilled excess congestion.

At December 31, 2021, the due-to-members balance comprised \$154.5 million held by PJM related to the December 1 – December 22, 2021 month-to-date market settlement billing statements, paid to market participants by PJM on January 4, 2022.

Income Tax Accounting

PJM has elected to be taxed as a corporation for both federal and state income tax purposes. PJM and its subsidiaries file a consolidated federal income tax return. The consolidated financial statements include prepaid income taxes, accrued income taxes and deferred income taxes. Prepaid income taxes relate to federal and state overpayments on deposit with taxing authorities. These overpayments will be applied to future

federal and state income tax liabilities. Deferred income taxes represent the temporary differences between the Company's financial statement basis and tax basis in existing assets and liabilities measured using presently enacted tax rates. A valuation allowance has been provided against certain deferred tax assets for which management has concluded it is more likely than not the Company will be unable to recognize the income tax benefit associated with those future tax deductions.

Fair Values of Financial Instruments

The carrying amounts reported in the Consolidated Statements of Financial Position for current financial assets and liabilities generally approximate their fair values.

Benefit Plan Accounting

PJM accrues the costs of providing future employee benefits based on assumptions made regarding the valuation of benefit obligations and performance of plan assets. Delayed recognition of differences between actual results and those assumed allows for a relatively even recognition of the effects of changes in benefit obligations and plan performance over the working lives of the employees who benefit under the plans.

In addition to recognizing the underfunded or overfunded PBO of a defined benefit pension plan as an asset or liability in the Consolidated Statements of Financial Position, PJM recognizes annual changes in gains or losses, prior service costs or other credits that have otherwise not been recognized as a part of the liability for pension benefits in the Consolidated Statements of Financial Position. A corresponding regulatory asset or liability, deferred recovery of pension and postretirement costs, have been recognized in the Consolidated Statements of Financial Position.

PJM's selection of the discount rate, health care cost-trend rate and expected rate of return on assets is based on its review of available current, historical and projected rates, as applicable.

Derivatives

PJM has one interest rate swap that qualifies as a derivative instrument. The Company accounts for this derivative as either an asset or liability at fair value in the Consolidated Statements of Financial Position, with changes in fair value recorded through earnings. Refer to Note 7 for additional details related to PJM's interest rate swap.

Revenue Recognition

PJM recognizes as revenue amounts both billed and unbilled under PJM and PJM Settlement's Tariff rate schedules.

Revenues recorded as study and interconnection fees arise from billing and collection services in the interconnection service agreement process performed by PJM. These revenues are presented on a gross basis in the Company's Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss), and are offset directly by the corresponding interconnection expenses.

PJM Connex, PJM Tech and PJM EIS recognize as revenues amounts both billed and unbilled.

Subsequent Events

PJM has performed an evaluation of subsequent events through March 9, 2023, which is the date the consolidated financial statements were issued.

3. Revenue and Accounts Receivable

Disaggregated Revenues

The Company has included in the table below disaggregation of PJM service fee revenues as defined in Schedule 9 of the Company's Tariff.

	2022	2021	2020
PJM service fees			
Control area administration service	\$ 195,772	\$ 185,721	\$ 176,473
Market support service	71,062	85,493	86,017
FTR administration service	14,612	31,076	33,567
Capacity resource and obligation management service	22,882	15,256	15,048
Deferred regulatory expense	-	(28,404)	(39,049)
	304,328	289,142	272,056
PJM Settlement service fees	15,196	8,606	8,613
Total service fees	\$ 319,524	\$ 297,748	\$ 280,669

For the years ended December 31, 2022, 2021 and 2020, PJM Connex recorded consolidated revenue of \$4.9 million, \$3.8 million and \$3.7 million, respectively, which is included in membership fees and other operating revenue in the Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss).

Contract Balances

PJM membership fees, which are billed and collected in advance of the year for which they apply, are recognized as revenue ratably over the related annual membership period. Membership fees – recorded as deferred revenue – are considered contract liabilities. At December 31, 2022, and 2021, balances of deferred revenue resulting from contracts with customers were \$3.5 million and \$3.4 million, respectively. During each year 2022, 2021 and 2020, PJM recognized \$3.5 million of revenue for PJM membership fees.

There were no material contract assets as of December 31, 2022.

PJM's receivables balance at December 31, 2022 included \$78.1 million of unbilled services fees and excess congestion, \$52.6 million of unbilled PJM recovery of pass-through charges and \$0.7 million of billed PJM Connex receivables. PJM's receivables balance at December 31, 2021 included \$11.5 million of unbilled service fees, net of refunds to members, \$13.8 million of unbilled PJM recovery of pass-through charges and \$0.6 million of billed PJM Connex receivables. There was no excess congestion balance billed or unbilled at December 31, 2021.

PJM's member companies are billed on a monthly basis for recovery of PJM and PJM Settlement's administrative costs under the Tariff.

All study and interconnection receivables were billed at December 31, 2022.

4. Fixed Assets

A summary of fixed assets by classification as of December 31, 2022, and 2021, follows:

	2022	2021		
Buildings	\$ 18,812	\$ 18,812		
Leasehold improvements	72,531	69,246		
Capitalized lease (a)	-	25,889		
Software development	615,469	598,178		
Computer hardware	166,040	160,708		
Furniture and fixtures	5,866	5,866		
Vehicles	182	182		
Subtotal	878,900	878,881		
Accumulated depreciation and amortization	(801,685)	(783,618)		
Total fixed assets, net of accumulated depreciation and amortization	\$ 77,215	\$ 95,263		

(a)

) On January 1, 2022 PJM implemented new guidance related to lease accounting utilizing a modified retrospective transition approach to adoption. At transition, PJM did not adjust comparative periods. Refer to Note 11 for details related to PJM's leases.

Amortization of software development costs for the years ended December 31, 2022, 2021 and 2020, were \$20.5 million, \$20.6 million and \$22.1 million, respectively.

Amortization of capitalized lease costs was \$1.7 million for each of the years ended December 31, 2021 and 2020.

Total interest costs incurred for the years ended December 31, 2022, 2021 and 2020, were \$42.4 million, \$1.1 million and \$7.1 million, respectively. For the years ended December 31, 2022, 2021 and 2020, interest capitalized for assets under development was \$0.5 million, \$0.6 million and \$0.6 million, respectively.

5. Note Receivable

On March 21, 2008, FERC approved a settlement to restructure the relationship between PJM and PJM's former Market Monitoring Unit. As part of the settlement, the Market Monitoring Unit and its functions transitioned from being an internal PJM department to an external firm, Monitoring Analytics, LLC (MA). MA operates independently of PJM management and the Board of Managers. In order to facilitate the externalization of this function and as part of the settlement agreement approved by FERC, PJM entered into a revolving loan agreement with MA during March 2008. The revolving loan agreement was extended in November 2019 to March 31, 2026.

The purpose of the PJM revolving loan to MA is to fund capital needs associated with MA's technology systems and working capital needs related to MA's responsibilities per Attachment M of the Tariff to monitor the markets administered by PJM. The revolving loan has a capacity of \$11.0 million and is secured by MA's accounts receivable and future collections of accounts receivable. At December 31, 2022, and 2021, the interest rate on the revolving loan agreement between PJM and MA was 7.50% and 3.25%, respectively. The interest rate on all loan advances is equal to the PNC Bank Base Rate. The PNC Bank Base Rate is the highest of (A) the Prime Rate, (B) the sum of the Federal Funds Rate plus 50 basis points (0.50%), or (C) the sum of the daily LIBOR plus 100 basis points (1.0%).

The Company's revolving note receivable is accounted for in accordance with authoritative guidance governing receivables, and is classified as held for investment. At December 31, 2022, and 2021, the outstanding balance due from MA recorded by PJM as a note receivable was \$5.2 million and \$5.4 million, respectively. At December 31, 2022, and 2021, the current portion of the note receivable was \$2.9 million and \$2.7 million, respectively. The current balance at December 31, 2022, represents the amount to be repaid during 2023. The non-current portion of the note receivable was \$2.3 million at December 31, 2022, and \$2.7 million at December 31, 2021.

6. Short-Term Debt

PNC Bank (PNC) Revolving Line of Credit

PJM maintains with PNC a FERC-approved revolving line of credit agreement with a capacity amount of \$200 million. PJM received approval from FERC on May 27, 2021, to continue to borrow under this facility through May 31, 2023. The revolving line of credit is unsecured and available to fund short-term cash obligations.

Under the loan covenants for the revolving line of credit agreement, PJM is required to meet certain financial and non-financial covenants. PJM was in compliance with these covenants as of December 31, 2022.

At both December 31, 2022, and 2021, there were no amounts outstanding under the revolving line of credit agreement. The interest rate on borrowings under this facility is based on the 30-day LIBOR rate plus a spread of 62.5 basis points (0.625%). At December 31, 2022, the interest rate was 5.02%.

The line of credit facility has a commitment fee of 6.00 basis points (0.06%) on the unused balance. This fee is calculated daily and paid quarterly.

7. Long-Term Debt and Derivative Financial Instrument – Interest Rate Swap

Bank of America (BoA) Loan Agreement

On June 28, 2018, FERC approved PJM's request to refinance the Company's then existing bank loan through a new term loan from BoA. On July 20, 2018, PJM entered into a \$20.2 million loan agreement with BoA. The BoA term loan has a seven-year term and is unsecured.

As of December 31, 2022 and 2021, the outstanding borrowings under the term loan were \$7.9 million and \$10.8 million, respectively. As defined in the loan agreement, the term loan bears interest at a rate per annum equal to the LIBOR rate plus a spread of 65 basis points (0.65%). As of December 31, 2021, the interest rate was 4.77%.

Under the loan agreement, PJM is required to meet certain financial and non-financial covenants. PJM was in compliance with these covenants as of December 31, 2022.

Repayments of principal under the BoA Bank Loan Agreement are scheduled as follows:

Year Ended December 31,

2023		2,886			
2024		2,886			
2025		2,163			
	Total	<u>\$ 7,935</u>			

Derivative Financial Instrument – Interest Rate Swap

To manage interest rate risk associated with the \$20.2 million loan agreement with BoA, the Company entered into an interest rate swap agreement with BoA effective August 1, 2018. The interest rate swap agreement effectively fixes the interest payments of the Company's floating rate debt instrument at a rate of 3.62%. The term of the interest rate swap matches the term of the loan.

While PJM has entered into an economic hedge of its interest rate, the Company has elected not to designate this instrument as a cash flow or fair value hedge for accounting purposes. Accordingly, the interest rate swap is carried at fair value in the Consolidated Statements of Financial Position with changes in fair value recorded through earnings. At December 31, 2022, and 2021, the fair value of the swap was an asset of \$0.2 million and a liability of \$0.4 million, respectively.

For the years ended December 31, 2022, 2021 and 2020, in conjunction with changes in the fair value of the interest rate swap, PJM recognized a \$0.6 million derivative mark-to-market gain, a \$0.5 million derivative mark-to-market gain and a \$0.3 million derivative mark-to-market loss, respectively, in interest expense in the Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss).

The Company does not hold or issue financial instruments for speculative or trading purposes for its own account.

8. Fair Value Disclosures

Fair value is the price that would be received to sell an asset, or paid to transfer a liability, in an orderly transaction between market participants at the measurement date (exit price). In determining fair values, PJM utilizes market data or assumptions that market participants would use in pricing the asset or liability, including assumptions about risk and the risks inherent in the inputs to the valuation technique. The authoritative guidance pertaining to fair value establishes a fair value hierarchy that prioritizes the inputs used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurement) and the lowest priority to unobservable inputs (Level 3 measurement). The three levels of the fair value hierarchy defined by this guidance are as follows:

Level 1 – Quoted prices are available in active markets for identical assets or liabilities as of the reporting date. Active markets are those in which transactions for the asset or liability occur in sufficient frequency and volume to provide pricing information on an ongoing basis.

Level 2 – Pricing inputs are other-than-quoted prices in active markets included in Level 1 that are directly or indirectly observable as of the reporting date. Level 2 includes those financial instruments that are valued using broker quotes in liquid markets and other observable pricing data. Level 2 also includes those financial instruments that are valued using internally developed methodologies that have been corroborated by observable market data through correlation or by other means. Significant assumptions are observable in the marketplace throughout the full term of the instrument and can be derived from observable data or are supported by observable levels at which transactions are executed in the marketplace.

Level 3 – Pricing inputs include significant inputs that are generally less observable than those from objective sources.

PJM utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs. PJM is able to classify fair value balances based on the observability of the inputs. In accordance with the authoritative guidance, financial assets and liabilities are classified in their entirety based on the lowest level of observability for an input that is significant to the fair value measurement. PJM's assessment of the significance of a particular input to the fair value measurement requires the exercise of judgment and may affect the valuation of fair value assets and liabilities and their placement within the fair value hierarchy levels.

The following table presents PJM's cash and cash equivalents as well as financial assets and liabilities that were accounted for at fair value on a recurring basis as of December 31, 2022, and 2021, by level within the fair value hierarchy.

(\$ in millions)	December 31, 2022				December 31, 2021
	Level 1	Level 2	Level 3	Carrying Value	Carrying Value
Cash and cash equivalents	\$ 3,971	\$ -	\$ -	\$ 3,971	\$ 2,641
Deposit liabilities	2,958	-	-	2,958	2,524
Derivative asset (a)	-	-	-	-	-
Derivative liability	-	-	-	-	1

a) PJM's interest rate swap was valued as a \$0.2 million asset at December 31, 2022, recorded as a component of other non-current assets.

9. Income Taxes

Income tax expense shown on the Consolidated Statements of Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss) consisted of the following:

	2022	2021	2020
Federal income taxes			
Current	\$ 2,653	\$ (585)	\$ 5,002
Deferred	(3,324)	499	(4,003)
Change in valuation allowance	147	(2,240)	-
	(524)	(2,326)	999
State income taxes			
Current	\$ 1,496	\$ 221	\$ 1,197
Deferred	4,037	211	(1,086)
Change in valuation allowance	(702)	4,444	(9)
	4,831	4,876	102
Income tax expense	\$ 4,307	\$ 2,550	\$ 1,101

The effects of temporary differences giving rise to deferred income tax assets at December 31, 2022, and 2021 consisted of the following:

	2022	2021			
Deferred tax liabilities					
Deferred pension and postretirement costs	\$ (138)	\$ (13,726)			
Fixed assets and other capitalized costs	-	(358)			
	<u>(138)</u>	<u>(14,084)</u>			
Deferred tax assets					
Postretirement healthcare	11,959	17,663			
Net operating loss carryforwards	2,853	7,410			
Pension	4,772	11,873			
Accrued expenses	12,251	14,396			
Fixed assets and other capitalized costs	2,337	-			
	<u>34,172</u>	<u>51,342</u>			
Net deferred income tax assets	34,034	37,258			
Valuation allowance	(2,607)	(5,693)			
Deferred income tax assets, net	<u>\$ 31,427</u>	<u>\$ 31,565</u>			

The income tax rate on PJM's operating activities differed from the federal statutory rate as follows:

	2022	2021	2020
Income tax expense at the federal statutory rate	\$ 1,213	\$ 845	\$ 667
Increase resulting from			
Change in valuation allowance	(555)	2,698	(5)
Permanent differences	149	116	210
State income taxes, net of federal tax benefit	504	(155)	270
State income taxes, effect of rate change	3,867		
Research and Development tax credits	(875)	(884)	-
Other	4	(70)	(41)
Income tax expense	<u>\$ 4,307</u>	<u>\$ 2,550</u>	<u>\$ 1,101</u>

On July 8, 2022, the Commonwealth of Pennsylvania's tax code was amended to reduce the corporate net income tax rate from 9.99% to 8.99%, effective January 1, 2023. The corporate net income tax rate will continue to decrease by 0.5% annually until 2031, when it reaches 4.99%. Accounting standards applicable for PJM require that the effects of a change in tax law or rates be recognized in the period that includes the enactment date. Accordingly, PJM was required to revalue the Company's deferred tax assets and liabilities in 2022. The revaluation resulted in \$3.9 million of state income tax expense.

PJM recorded a \$0.9 million tax benefit in December 31, 2022 results related to research and development tax credit analysis for the tax years ended December 31, 2019, 2020, 2021 and 2022. PJM recorded a \$0.9 million tax benefit in December 31, 2021 results related to research and development tax credit analysis for the tax years ended December 31, 2016, 2017 and 2018.

PJM has net operating loss carryforwards of \$70.4 million for Pennsylvania state tax purposes that begin expiring in 2029. PJM has concluded that it is more likely than not, due to enacted statutory restrictions, that certain Pennsylvania net operating loss carryforwards will expire. During 2022, PJM decreased the valuation allowance against these net operating loss carryforwards by \$7.0 million. The total valuation allowance recorded against these net operating loss carryforwards was \$64.0 million at December 31, 2022.

PJM had recognized a deferred tax asset associated with the deferred regulatory liability accrued under stated rates. Under formula rates, effective January 1, 2022, PJM no longer requires the accumulation of a financial reserve. At December 31, 2021, PJM wrote off the deferred tax asset associated with the deferred regulatory liability and the associated \$1.8 million valuation allowance.

PJM and its subsidiaries file a U.S. consolidated federal income tax return and consolidated or separate company tax returns in various states, including the Commonwealth of Pennsylvania. The tax years subsequent to 2015 remain open to examination by the United States Internal Revenue Service, and generally, the tax years subsequent to 2018 remain open to examination by various state taxing authorities. There are no ongoing audits at this time.

10. Benefit Plans

Pension Plan

PJM sponsors a defined benefit Pension Plan (the plan) that covers all regular full-time employees and part-time employees hired prior to January 1, 2014. Benefits under the plan are based on years of service and the employee's compensation. PJM's funding of the plan is determined according to the funding requirements set forth by the Employee Retirement Income Security Act of 1974 (ERISA). Plan assets are invested primarily in stocks and bonds and are monitored by PJM's Benefits Administration Committee. This plan was closed to new participants beginning January 1, 2014. Employees hired on or after January 1, 2014, are given a supplemental benefit in their 401k Savings Plan (the Savings Plan) based on their age and years of service.

Between January 1, 2022 and December 31, 2022, \$26.2 million of lump-sum payments were distributed to plan participants, exceeding the sum of the plan's service cost and interest cost. As a result, during 2022, PJM recognized a settlement charge of \$1.6 million within pension expense related to the payment of lump-sum benefits.

Supplemental Executive Retirement Plan (SERP)

PJM sponsors a SERP to provide certain members of executive management with benefits in excess of normal pension benefits. PJM invested \$4.2 million in equity securities in prior years, with the intention to use the proceeds to offset future obligations under the SERP. There were no contributions made during the years ended December 31, 2022, and 2021. The investment is included in other non-current assets in the Consolidated Statements of Financial Position at its market value of \$0.3 million and \$0.4 million as of December 31, 2022, and 2021, respectively.

During 2020, PJM recognized a settlement charge of \$1.0 million within SERP pension expense related to the payment of lump-sum benefits on January 1, 2020 and July 1, 2020.

In conjunction with the establishment of a defined contribution SERP on January 1, 2021, benefit accruals in the existing defined benefit SERP were frozen as of December 31, 2020. PJM recognized a curtailment charge of \$0.2 million at December 31, 2020, related to the freeze of benefit accruals.

PJM recognized \$1.0 million and \$1.2 million in expense related to the defined contribution SERP during 2022 and 2021, respectively. This expense is included as a component of pension expense in the Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss).

Deferred Compensation Plan

PJM sponsors a deferred compensation plan to provide an opportunity to certain members of executive management and the PJM Board of Managers to defer a portion of compensation. At December 31, 2022, and 2021, the value of this employee liability amounted to \$20.5 million and \$26.5 million, respectively. This amount is included in other employee benefits in the Consolidated Statements of Financial Position.

Postretirement Benefits

The Other Postretirement Employee Benefit Plan (OPEB Plan) provides certain health care and other benefits to retired employees and their spouses and dependents. The amount of the pre-65 benefit is dependent upon the employee's years of service at retirement. The amount of post-65 benefit at retirement is dependent upon the employee's age and years of service as of January 1, 2016. The post-65 OPEB Plan was closed to new hires as of January 1, 2010.

The schedules that follow show the changes in the benefit obligations, plan assets and funded status of the respective plans as of December 31, 2022 and 2021, and components of net periodic pension and postretirement health care costs of these plans for the years ended December 31, 2022, 2021 and 2020.

	Pension Benefits				Other Postretirement Benefits	
	Qualified		SERP		2022	2021
	2022	2021	2022	2021		
Change in Benefit Obligation						
Net benefit obligation at beginning of year	\$ 329,447	\$ 354,239	\$ 4,423	\$ 4,437	\$ 78,493	\$ 80,464
Service cost	11,854	13,734	-	-	2,010	2,121
Interest cost	11,136	9,688	131	119	2,493	2,175
Plan settlements	(26,235)	-	-	-	-	-
Plan participants' contributions	-	-	-	-	65	62
Actuarial (gain)	(112,360)	(31,122)	(1,248)	(60)	(19,930)	(4,731)
Gross benefits paid	(2,687)	(17,092)	(73)	(73)	(1,842)	(1,598)
Net obligation at end of the year	\$ 211,155	\$ 329,447	\$ 3,233	\$ 4,423	\$ 61,289	\$ 78,493

PJM uses a measurement date of December 31 for all of its pension and postretirement benefit plans. Actuarial gains recognized in 2022 resulted primarily from an increase in the discount rate actuarial assumption at the December 31, 2022 measurement date. Discount rates of 5.68%, 5.53% and 5.58% were used to calculate year-end 2022 pension, SERP and other postretirement benefit obligations, respectively.

	Pension Benefits				Other Postretirement Benefits	
	Qualified		SERP		2022	2021
	2022	2021	2022	2021		
Change in Plan Assets						
Fair Value of plan assets at beginning of year	\$ 292,800	\$ 290,530	\$ -	\$ -	\$ 17,397	\$ 16,216
Actual return on plan assets	(66,817)	19,362	-	-	(4,002)	1,182
Employer contributions	-	-	73	73	1,776	1,536
Plan settlements	(26,235)	-	-	-	-	-
Plan participants' contributions	-	-	-	-	66	62
Gross benefits paid	(2,687)	(17,092)	(73)	(73)	(1,842)	(1,599)
Fair value of plan assets at end of year	\$ 197,061	\$ 292,800	\$ -	\$ -	\$ 13,395	\$ 17,397
Funded status at end of year	\$ (14,094)	\$ (36,647)	\$ (3,233)	\$ (4,423)	\$ (47,894)	\$ (61,096)
Net amount recognized at end of year and amounts recognized in the Statement of Financial Position	\$ (14,094)	\$ (36,647)	\$ (3,233)	\$ (4,423)	\$ (47,894)	\$ (61,096)

	Pension Benefits				Other Postretirement Benefits	
	Qualified		SERP		2022	2021
	2022	2021	2022	2021		
Amounts recognized in Deferred Recovery of Pension and Postretirement Costs:						
Net actuarial loss (gain)	\$ 19,314	\$ 53,575	\$ (503)	\$ 760	\$ (18,425)	\$ (3,406)
Prior service (credit)	-	-	-	-	(2,277)	(3,451)
	\$ 19,314	\$ 53,575	\$ (503)	\$ 760	\$ (20,702)	\$ (6,857)

	Pension Benefits				Other Postretirement Benefits	
	Qualified		SERP		2022	2021
	2022	2021	2022	2021		
Amounts recognized in the Statement of Financial Position consist of:						
Current liability	\$ -	\$ -	\$ 289	\$ 325	\$ 1,877	\$ 1,775
Noncurrent liability	14,094	36,647	2,944	4,098	46,017	59,321
Net amount recognized at end of year	\$ 14,094	\$ 36,647	\$ 3,233	\$ 4,423	\$ 47,894	\$ 61,096

At the end of 2022 and 2021, the PBO, the accumulated benefit obligation and the fair value of plan assets for all of PJM's pension and postretirement benefit plans are as follows:

	Pension Benefits				Other Postretirement Benefits	
	Qualified		SERP		2022	2021
	2022	2021	2022	2021		
End of year						
Projected benefit obligation	\$ 211,155	\$ 329,447	\$ 3,233	\$ 4,423	\$ 61,289	\$ 78,496
Accumulated benefit obligation	166,911	257,912	3,233	4,423	-	-
Fair value of plan assets	197,061	292,800	-	-	13,395	17,397

Expected Cash Flows

Information about expected cash flows for the pension and postretirement benefit plans follows:

	Qualified benefits	SERP benefits	Other postretirement benefits
Employer contributions			
Expected employer contributions for 2023 to plan trusts	\$ -	\$ -	\$ -
Expected employer contributions in form of direct benefit payments for 2023	-	298	1,928
Expected benefit payments			
2023	8,966	298	1,928
2024	9,974	341	2,189
2025	10,885	385	2,494
2026	12,214	340	2,797
2027	13,511	332	3,097
2028 - 2032	78,865	1,265	19,697

The table above reflects the benefits expected to be paid from the plan or from PJM's assets for PJM's share of the benefit cost. The participants' share of the cost, which is funded by participant contributions to the plan, is not included in this table. Expected contributions to plan trusts reflect expected amounts to be contributed by PJM to the fund.

Components of Net Periodic Benefit Cost	Pension Benefits								
	Qualified			SERP			Other Postretirement Benefits		
	2022	2021	2020	2022	2021	2020	2022	2021	2020
Service cost	\$ 11,858	\$ 13,734	\$ 10,812	\$ -	\$ -	\$ 370	\$ 2,010	\$ 2,121	\$ 1,795
Interest cost	11,135	9,688	9,895	131	120	172	2,493	2,178	2,358
Expected return on assets	(15,495)	(15,718)	(16,167)	-	-	-	(910)	(892)	(910)
Prior service cost (gain)	-	-	3	-	-	29	(1,176)	(1,309)	(1,287)
Actuarial loss (gain)	2,567	5,198	1,428	17	22	171	-	-	(83)
Curtailment charge	-	-	-	-	-	191	-	-	-
Settlement charge	1,644	-	-	-	-	1,064	-	-	-
Total net periodic benefit cost	\$ 11,709	\$ 12,902	\$ 5,971	\$ 148	\$ 142	\$ 1,997	\$ 2,417	\$ 2,098	\$ 1,873

For each of the years ended December 31, 2022, 2021 and 2020, \$1.0 million, \$1.1 million and \$0.8 million of total pension and postretirement benefits expense was included in capitalized project costs, respectively.

The following schedule shows the assumptions used to calculate the pension and postretirement benefit expense for the years ended December 31, 2022, 2021 and 2020.

	Pension Benefits			SERP			Postretirement Benefits		
	2022	2021	2020	2022	2021	2020	2022	2021	2020
Discount rate	(a) 2.76%	3.65%	3.01%	2.69%	(b)	3.06%	2.70%	3.55%	
Expected return on plan assets	(a) 5.50%	6.40%	N/A	N/A	N/A	5.50%	5.50%	6.40%	
Rate of compensation increase	3.86%	4.50%	4.50%	N/A	N/A	4.50%	N/A	N/A	
Medical care cost-trend rate									
Current (Pre-65)							5.07%	5.39%	5.65%
Current (Post-65)							5.12%	5.55%	6.02%
Ultimate (Pre-65)							4.45%	4.46%	4.46%
Ultimate (Post-65)							4.46%	4.45%	4.45%
Years to ultimate							16	17	18

- (a) Pension expense for the period January 1, 2022 to November 30, 2022, was calculated using a discount rate of 3.19% and an expected return on plan assets of 5.50%. From December 1, 2022 through December 31, 2022, pension expense was calculated using a discount rate of 5.57% and an expected return on plan assets of 6.00%.
- (b) Pension expense for the SERP for the period January 1, 2020 to June 30, 2020, was calculated using a discount rate of 3.55%, from July 1, 2020 through December 30, 2020, using a discount rate of 3.00% and on December 31, 2020, using a discount rate of 2.69%.

The expected return on plan assets assumption has been determined based on PJM's investment objectives and is supported by analysis of simulated investment return using capital market assumptions published by the Company's independent actuaries for the PJM pension plan and other postretirement benefit plan's target asset mix, net of an adjustment for expense to be paid from the plan assets.

The asset allocation for the PJM pension plan and other postretirement benefits plan at the end of 2022 and 2021 and the target allocation for 2022 and 2021 by asset category follows. The fair value of plan assets for the PJM pension plan and other postretirement benefit plan was \$210.5 million and \$310.2 million at the end of 2022 and 2021, respectively.

Asset category	Target allocation	2022	2021
Equity securities	35% - 45%	49%	48%
Debt securities	55% - 65%	50%	52%
Other	0% - 2%	1%	0%
Total	100%	100%	100%

The assets of the PJM pension plan and other postretirement benefit plan are invested to provide a source of retirement income for participants and beneficiaries of the plan. The financial objectives of the plans have been established in conjunction with the comprehensive review of the current and projected financial requirements of the plans. The financial objectives are to maximize assets in order to consistently and materially exceed the accumulated benefit obligation under the plans and to reduce contributions over time.

The assets of the PJM pension plan and other postretirement benefit plan are invested in accordance with all relevant legislation and regulation, in a manner consistent with fiduciary standards of ERISA and other applicable law. Specifically, the investment program includes such safeguards and diversity to which a prudent investor would adhere, and all transactions undertaken on behalf of the plans are in the sole interest of plan participants and their beneficiaries.

Fair Value Measurements

The following table presents PJM's pension and other postretirement benefit plan assets measured at fair value and their respective levels within the fair value hierarchy as of December 31, 2022, and 2021:

December 31, 2022 (a)					
Plan assets	Level 1	Level 2	Level 3	Carrying Value	
Cash and cash equivalents	\$ 1,876	\$ -	\$ -	\$ 1,876	
Commingled funds	-	102,296	-	102,296	(b)
Mutual funds	-	106,284	-	106,284	(c)
Total plan assets	\$ 1,876	\$ 208,580	\$ -	\$ 210,456	
December 31, 2021 (a)					
Plan assets	Level 1	Level 2	Level 3	Carrying Value	
Cash and cash equivalents	\$ 841	\$ -	\$ -	\$ 841	
Commingled funds	-	148,721	-	148,721	(b)
Mutual funds	-	160,635	-	160,635	(c)
Total plan assets	\$ 841	\$ 309,356	\$ -	\$ 310,197	
(a) See Note 8 for a description of levels within the fair value hierarchy.					
(b) The benefit plans own commingled funds that invest in equity and fixed income securities.					
(c) This category predominantly represents diverse issues of domestic, investment-grade, fixed income securities.					

Valuation Techniques Used to Determine Fair Value

Cash equivalents – Investments with maturities of three months or less when purchased, including certain short-term fixed-income securities, are considered cash equivalents and are included in the recurring fair value measurements hierarchy as Level 1.

Commingled funds – Commingled funds are maintained by investment companies that hold certain investments in accordance with a stated set of fund objectives that are consistent with PJM's overall investment strategy. The values of the majority of commingled funds are not publicly quoted and must trade through a broker. For equity and fixed-income commingled funds traded through a broker, the fund administrator values the fund using the net asset value per fund share, derived from quoted prices in active markets of the underlying securities. These funds are valued at Net Asset Value (NAV) and have been categorized as Level 2.

Mutual funds – Mutual funds are pooled instruments that hold certain investments in accordance with a stated set of fund objectives that are consistent with PJM's overall investment strategy. These funds consist of fixed income, developing markets and indexed securities. Fidelity Investments, the fund manager, monitors prices supplied by pricing services and may use a supplemental price source or change the primary price

source of a given security if the portfolio managers challenge an assigned price and Fidelity determines that another price source is considered to be preferable. These funds are valued at NAV and have been categorized as Level 2.

Savings Plan

PJM also sponsors the savings plan for all eligible employees of the Company. The savings plan permits employees to contribute up to 75% of their gross compensation on a pretax basis, subject to limitations as described in the savings plan. PJM makes matching contributions equal to 100% of the employee's first 5% of gross salary contributed. PJM contributions to the savings plan were approximately \$6.8 million, \$5.9 million and \$5.7 million for the years ended December 31, 2022, 2021 and 2020, respectively. This expense is included in compensation in the Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss).

11. Commitments and Contingencies

Leases

PJM leases office space and telecommunication equipment under operating leases and a finance lease. These leases expire during the period 2023-2027 and have been recorded as right-of-use assets, with associated lease liabilities, on the PJM Statement of Financial Position at December 31, 2022.

	December 31, 2022	
	Right-of-use assets	Lease Liabilities
Operating leases	\$ 3,619	\$ 4,165
Finance lease	7,538	8,937
	<u>\$ 11,157</u>	<u>\$ 13,102</u>

At December 31, 2022, the current portions of the operating lease liabilities and the finance lease liability were \$1.5 million and \$2.0 million, respectively.

Lease expense associated with PJM's operating leases for the year ended December 31, 2022 was \$2.1 million. Amortization and interest expense associated with PJM's finance lease for the year ended December 31, 2022 was \$2.1 million and \$0.1 million, respectively.

Future minimum rentals under non-cancelable lease agreements are as follows:

Year Ended December 31,

		Operating	Finance			
2023		\$ 1,475	\$ 2,022			
2024		1,127	2,103			
2025		1,131	2,186			
2026		939	2,269			
2027		236	904			
	Total	<u>\$ 4,908</u>	<u>\$ 9,484</u>			

Other Items

Credit Matter – GreenHat Energy, LLC (GreenHat)

On June 21, 2018, GreenHat defaulted on its obligations related to its FTR portfolio, which included positions applicable to the then current planning year as well as the 2019/2020 and 2020/2021 planning years. The \$179.6 million aggregate payment default of GreenHat, net of collateral held, has been billed to the non-defaulting members in accordance with the default allocation assessment formula in the PJM Operating Agreement.

On November 5, 2021, FERC issued an order finding that GreenHat engaged in energy market manipulation by engaging in a manipulative scheme in the FTR market operated by PJM in violation of the Federal Power Act, FERC's regulations and PJM's Tariff and Operating Agreement. FERC ordered the assessment of civil penalties against GreenHat and its principals in the amount of \$229.6 million and disgorgement of profits in the amount of \$13.1 million.

On January 6, 2022, the FERC filed a complaint in the U.S. District Court for the Eastern District of Pennsylvania, FERC v. GreenHat Energy, LLC, to enforce its order against GreenHat Energy.

On January 6, 2022, PJM filed a complaint in California state court, PJM v. Estate of Andrew Kittel, in order to preserve its rights to recover any dollars from the Kittel estate. On April 5, 2022, the defendants filed their answer, generally denying the claims in the complaint.

On August 4, 2022, in a joint status report, the parties reported that they had reached a settlement of all cases with all parties. On August 19, 2022, the Commission issued an order approving the parties' settlement agreements with the Commission. On August 26, 2022, the parties submitted the first settlement agreement to the San Diego Probate Court for approval. On February 1, 2023, the San Diego Probate Court signed an order approving the settlement. The recovery by PJM will be distributed to Members to offset default allocation assessments, concluding this matter.

Credit Matter – Hill Energy Resource & Services (Hill Energy)

On January 11, 2022, PJM declared a PJM member and FTR market participant, Hill Energy, in default on its obligations to comply with a collateral call in the amount of \$0.9 million under PJM's credit policies. PJM placed the portfolio in default in accordance with PJM's credit rules and policies. As of December 31, 2022, PJM held approximately \$2.5 million in collateral while assessing the total potential exposure of Hill Energy's defaulted portfolio, which includes FTR positions through May 2025.

On January 24, 2022, PJM filed a complaint against Hill Energy and its principal Lee Chen (Chen) in the District Court of Travis County, Texas. In the action, PJM, on behalf of its members, sought damages, expedited discovery and injunctive relief associated with Hill Energy's default in PJM's FTR market. On March 4, 2022, Hill Energy and Chen filed general denials of the claims in the complaint. Hill Energy additionally asserted a counterclaim for breach of PJM's Operating Agreement. On November 14, 2022, PJM submitted a filing with FERC seeking to terminate the membership of Hill Energy, which Hill Energy is contesting.

12. Related-Party Transactions

PJM occupies two buildings that are owned by a subset of PJM's members. One of the buildings was purchased in 1992 at a cost of \$2.9 million. This building was subsequently renovated at a cost of \$2.9 million. A second building occupied by PJM and used as one of PJM's control centers was purchased in July 1995 at a cost of \$4.8 million. PJM pays a nominal rent of two dollars per year for the use of these facilities. PJM is responsible for facility maintenance, property taxes, insurance and other related costs associated with these two buildings. Estimated annual market rent for these two buildings is approximately \$2.0 million.

Management's Discussion and Analysis

Forward-Looking Statements

In addition to the historical information presented throughout this report, there are forward-looking statements that reflect management's expectations for the future. Sometimes the words "estimate," "plan," "expect," "believe" or similar expressions will be used to identify such forward-looking statements. These forward-looking statements are based on current expectations. These statements are not guarantees of future performance and are subject to certain risks and uncertainties.

Many factors could cause actual results to differ materially from these statements. These factors include, but are not limited to, the results of regulatory proceedings, the conditions of the capital markets, interest rates, actuarial assumptions, availability of credit, liquidity and general economic conditions, including those resulting from the COVID-19 pandemic; changes in accounting principles and practices; acts of terrorists; the actions of adjacent control areas and other Regional Transmission Organizations (RTOs); and other operational conditions that could arise on the power system. For a description of these and other factors that may cause actual results to differ, reference is made hereby to PJM Interconnection L.L.C.'s (PJM or the Company) Consolidated Financial Statements, Notes thereto and other documents filed by the Company from time to time with the Federal Energy Regulatory Commission (FERC).

These forward-looking statements represent PJM's estimates and assumptions only as of the date of this report, and PJM assumes no responsibility to update these forward-looking statements.

Nature of Operations

The Company currently coordinates a pooled generating capacity of more than 183,254 megawatts (MW) and operates wholesale electricity markets with approximately 1,111 members. PJM enables the delivery of electric power to more than 65 million people in all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia.

PJM manages a sophisticated regional planning process for generation and transmission expansion to ensure continued reliability of the electric system. Using information technology, PJM provides real-time information to market participants to support their daily transactions and business decision-making. In addition to ensuring the reliable supply of electricity, PJM administers internet-based bid markets in which participants buy and sell day-ahead and spot-market energy, Financial Transmission Rights (FTRs), synchronized reserves and regulation services.

PJM Settlement, Inc. (PJM Settlement) is a wholly owned subsidiary of PJM, organized as a Pennsylvania nonprofit corporation, and is a FERC-regulated entity. PJM Settlement was formed to handle all of the credit, billing and settlement functions for PJM's members' transactions in the PJM markets and for transmission service. PJM Settlement acts as a counterparty to members' pool transactions in the PJM markets. For the pool transactions in the PJM markets, flash title passes through PJM Settlement immediately prior to passing to the ultimate buyer and seller of the product. This arrangement reinforces PJM's authority to continue to net a member's offsetting financial positions in PJM markets for credit and billing purposes, provides clarity in PJM Settlement's legal standing to pursue collection from a bankrupt member and complies with FERC's recommendation on credit policy requirements for competitive wholesale electricity markets.

PJM Connex, L.L.C. (PJM Connex) is a wholly owned subsidiary of PJM and is not a FERC-regulated entity. PJM Connex was formed to provide service and technology solutions to existing and emerging energy markets, system operators, RTOs and other entities.

PJM Technologies, Inc. (PJM Tech) is a wholly owned subsidiary of PJM Connex and is not a FERC-regulated entity. PJM Tech provides international consulting services including training, program planning and implementation advice regarding development of wholesale electric market design and market rules.

PJM Environmental Information Services, Inc. (PJM EIS) is a wholly owned subsidiary of PJM Connex formed to provide environmental and emissions attributes reporting and tracking services to its subscribers in support of renewable portfolio standards and other disclosure requirements that may be implemented by governmental agencies. PJM EIS is not a FERC-regulated entity.

Tariff Cost Recovery

During 2022, PJM recovered its administrative costs through a formula rate mechanism under the Company's Open Access Transmission Tariff (Tariff).

During 2021 and 2020, PJM recovered its administrative costs through a stated-rate mechanism under the Company's Tariff. The composite stated rate under the Tariff was 38.7 cents and 37.8 cents per megawatt hours (MWh) in 2021 and 2020, respectively.

During 2022, 2021 and 2020, PJM Settlement recovered its administrative costs under a separate schedule under the Tariff.

On October 1, 2021, PJM filed a rate revision proposal with the FERC requesting changes to the Tariff associated with how PJM recovers administrative costs of serving as an RTO. The filing proposed a change in the form of administrative cost recovery, moving to monthly formula rates based on that month's costs and that month's billing determinants. Under this proposal, PJM no longer requires the accumulation of a financial reserve. The filing also proposed billing for services provided by PJM Settlement based on the number of invoices issued per member. On December 1, 2021, FERC issued an order accepting PJM's proposed Tariff revisions effective January 1, 2022, subject to refund, hearing and settlement judge proceedings specific to the proposed PJM Settlement cost allocation. On November 9, 2022 FERC approved an updated PJM Settlement cost allocation, which became effective on February 1, 2023.

Significant Accounting Policies

Preparation of the financial statements and related disclosures in compliance with generally accepted accounting principles in the United States requires the application of appropriate technical accounting rules and guidance, as well as the use of estimates. PJM's application of those principles involves judgments regarding many factors, which, in and of themselves, could materially affect the financial statements and disclosures. A future change in the assumptions or judgments applied in determining the following matters, among others, could have a material impact on future financial results: revenue recognition; net presentation of member activity; accounting for deferred recovery of pension and postretirement costs; benefit plan accounting; fixed asset capitalization; income tax accounting; and study and interconnection activity.

Net Presentation of Member Activity

The Company has determined that although PJM has flash title to pooled transactions through the wholly owned subsidiary, PJM Settlement, all activity for which PJM Settlement is the central counterparty should be recorded on a net basis. The Company's determination is based on these facts: (1) the member company, not PJM Settlement, is the primary obligor in each transaction; (2) PJM Settlement earns a fixed amount per transaction; and (3) the member company has the credit risk, not PJM Settlement. As such, the Company presents member activity for which PJM Settlement is the central counterparty, including accounts receivable, accounts payable, revenue and expense, on a net basis in its consolidated financial statements.

Deferred Recovery of Pension and Postretirement Costs

The Company recognizes the funding status of the projected benefit obligation (PBO) of its defined benefit pension plan and other postretirement employee benefit plan as liabilities in the Consolidated Statements of Financial Position. The PBO represents the actuarial present value of benefits attributable to employee service rendered to date, including the effects of estimated future salary increases. At December 31, 2022, PJM recorded the underfunded PBO as a liability.

At December 31, 2022, PJM recorded a \$1.9 million net regulatory liability to reflect over recovery of amounts funded through the Company's rate structure. The shift to a net regulatory liability is a result of higher discount rates at December 31, 2022.

At December 31, 2021, in addition to recording the underfunded PBO as a liability, PJM recorded a \$47.5 million regulatory asset to reflect the anticipated future recovery of the amounts expected to be funded in the future through the Company's rate structure.

Deferred Regulatory Liability

During 2021 and 2020, PJM recovered administrative costs under a stated-rate mechanism that provided for the accumulation of a financial reserve. PJM was permitted to maintain a reserve as a deferred regulatory liability in an amount defined as a percentage of stated-rate revenues. On a quarterly basis, PJM refunded the deferred regulatory liability balance in excess of the permitted financial reserve for the previous quarter. During 2021 and 2020, PJM made refunds of \$31.4 million and \$41.4 million, respectively.

For PJM Settlement, the deferred regulatory liability was defined in its rate schedule in the Tariff and was equal to revenues collected in excess of accrual-basis expenses. This balance was refunded quarterly. The PJM Settlement rate schedule did not include a financial reserve element.

PJM recognized deferred regulatory income in the revenue section of the Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss) for the amount by which service fee revenues pursuant to the rate schedules differed from applicable expenses in the reporting period. The amount by which cumulative revenues under the rate schedules exceeded cumulative expenses and refunds was reported as a deferred regulatory liability in the Consolidated Statements of Financial Position. In circumstances in which revenues were less than expenses, PJM reduced the deferred regulatory liability with an offset to deferred regulatory income.

Under PJM's administrative rate proposal, effective January 1, 2022, PJM no longer requires the accumulation of a financial reserve.

At December 31, 2021, the deferred regulatory liability balance of \$14.7 million represented the reserve accrued under stated rates. The balance was classified as current liability and was refunded to members in the first quarter of 2022.

Benefit Plan Accounting

PJM accrues the costs of providing future employee benefits based on assumptions made regarding the valuation of benefit obligations and performance of plan assets. Delayed recognition of differences between actual results and those assumed allows for a relatively even recognition of the effects of changes in benefit obligations and plan performance over the working lives of the employees who benefit under the plans.

In addition to recognizing the underfunded or overfunded PBO of a defined benefit pension plan as an asset or liability in the Consolidated Statements of Financial Position, PJM recognizes annual changes in gains or losses, prior service costs or other credits that have otherwise not been recognized as a part of the liability for pension benefits in the Consolidated Statements of Financial Position. A corresponding regulatory asset or liability, deferred recovery of pension and postretirement costs, has been recognized in the Consolidated Statements of Financial Position.

PJM's selection of the discount rate, expected rate of return on assets and health care cost-trend rate is based on its review of available current, historical and projected rates, as applicable.

In selecting the discount rate assumption for the PJM retirement plan at December 31, 2022, the Company used a method that matches projected payouts from the plan with a yield curve that was produced from a universe containing high quality corporate bonds, all of which have a fixed- or zero-coupon and are rated AA or equivalent, and excluding the 10% of the bonds with the highest yields and the 40% with the lowest yields. The discount rate was then developed as a level equivalent rate that would produce the same present value as would result using spot rates to discount the projected pension or postretirement benefit payments. Based on this analysis, at December 31, 2022, the discount rate for the PJM pension plan, PJM Supplemental Executive Retirement Plan (SERP) and PJM postretirement plan increased to 5.68%, 5.53% and 5.58%, respectively.

The results during 2022 for the PJM pension plan for the period January 1, 2022 to November 30, 2022, were derived using a discount rate of 3.19%. From December 1, 2022 through December 31, 2022, pension expense was calculated using a discount rate of 5.57%. The results during 2022 for the SERP and PJM postretirement health care plan were derived using discount rates of 3.01% and 3.06%, respectively.

In selecting an expected return on plan assets, PJM considers past performance and economic forecasts for the types of investments held by the plans. The assumption for the expected rate of return on assets was 5.50% from January 1, 2022 to November 30, 2022. For both the period from December 1, 2022 through December 31, 2022 and at December 31, 2022, the assumption for the expected rate of return on assets was 6.00%. The assumption for the expected rate for which compensation will increase was 4.50% during 2021 and was 3.86% at December 31, 2022. In selecting health care cost trend rates, PJM considers past performance and forecasts of health care costs. The rate selected at December 31, 2022, for pre-65 plan participants was 5.07%, declining to 4.45% over the next 16 years. The rate selected at December 31, 2022, for post-65 plan participants was 5.12%, declining to 4.46% over the next 16 years.

Fixed Asset Capitalization

PJM’s fixed assets principally comprise software and capitalized software development costs, leasehold improvements, computer hardware and buildings. The costs incurred to acquire and develop computer software for internal use, including financing costs, are capitalized. However, costs incurred prior to the determination of feasibility of developed software and costs incurred following the in-service date of developed software are expensed. Fixed assets are depreciated or amortized using the straight-line method over the useful lives of the assets as follows:

Software and capitalized software development costs	3 to 10 years
Computer hardware	3 to 5 years
Vehicles	5 years
Furniture and fixtures	10 years
Leasehold improvements	10 to 15 years
Buildings	25 years

Income Tax Accounting

PJM has elected to be taxed as a corporation for both federal and state income tax purposes. PJM and its subsidiaries file a consolidated federal income tax return. The consolidated financial statements include prepaid income taxes, accrued income taxes and deferred income taxes. Prepaid income taxes relate to federal and state overpayments on deposit with taxing authorities. These overpayments will be applied to future federal and state income tax liabilities. Deferred income taxes represent the temporary differences between the Company’s financial statement basis and tax basis in existing assets and liabilities measured using presently enacted tax rates. A valuation allowance has been provided against certain deferred tax assets for which management has concluded it is more likely than not the Company will be unable to recognize the income tax benefit associated with those future tax deductions.

Study and Interconnection Activity

Under the Tariff, PJM’s transmission provider role is to direct the operation and coordinate the maintenance of the transmission system and indicate, based on studies conducted by PJM, necessary enhancements or modifications to the transmission system. The modifications that are performed on the transmission system, such as network upgrades and generation additions, are conducted principally by third-party vendors at the request of transmission customers. In its system planning capacity as a transmission service provider, PJM provides billing and collection services in the interconnection service agreement process. Billings and collections by PJM for work it performs on behalf of the counterparties to the specific interconnection agreements are reported on a net basis in the Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss).

Results of Operations for 2022, 2021 and 2020

Revenues and Expenses

PJM's service fees increased \$21.7 million or 7% for the year ended December 31, 2022, as compared with service fees net of regulatory deferral for the year ended December 31, 2021. 2022 service fees reflect actual costs billed under formula rates.

Total expenses, excluding FERC fees, study and interconnection services, interest expense and income taxes, increased \$21.8 million to \$322.8 million in 2022 as compared to an increase of \$16.9 million in 2021. The increase in expenses in 2022 resulted primarily from an increase in compensation expense, due to higher head count period over period and normal merit increases reflected in 2022 results. The period over period increase also reflected higher outside services related to building maintenance and legal fees, higher software licenses and fees due to inflation and a larger software subscription base to support and higher other expense resulting from increased member and employee training, costs of insurance premiums and higher travel expense. The period over period increase was partially offset by a decrease in benefit plan expense resulting from higher discount rates used to calculate 2022 pension and postretirement benefit expense.

Financial results for the year ended December 31, 2022, includes accounting for the impact of a dividend from PJM Connex, LLC to PJM Interconnection, LLC. The dividend was made in accordance with the dividend agreement in place between the entities. While the dividend eliminates upon consolidation, the dividend resulted in lower collections from PJM members in the second quarter of 2022.

PJM's service fees increased \$6.4 million, or 2%, to \$326.2 million from 2020 to 2021. 2021 service fees reflect slightly higher transmission volumes year over year and a 2.5 % increase in the composite stated rate on January 1, 2021. Transmission volumes for 2021 were 821 terawatt-hours (TWhs) as compared with 800 TWhs for 2020.

Total expenses, excluding FERC fees, study and interconnection services, interest expense and income taxes, increased \$16.9 million to \$301.0 million in 2021 as compared to a decrease of \$12.8 million in 2020. The increase in expenses in 2021 resulted primarily from an increase in compensation expense, due to COVID-19 related costs, higher head count period over period and normal merit increases reflected in 2021 results. The period over period increase also reflects an increase in benefit plan expense resulting from lower discount rates used to calculate 2021 pension and postretirement benefit expense.

Deferred regulatory income represented the change in PJM's deferred regulatory liability for the period, resulting from PJM's stated-rate Tariff service fees in excess of, or lower than, expenses. For the years ended December 31, 2021 and 2020, PJM recorded \$28.4 million and \$39.0 million in deferred regulatory income, respectively. For each year, deferred regulatory income was a reduction to Operating Revenues.

Net income is derived from PJM's non-FERC regulated subsidiaries. Net income was \$1.5 million, \$1.5 million and \$2.1 million for each of the years ended December 31, 2022, 2021 and 2020, respectively.

For each of the years ended December 31, 2022, 2021 and 2020, outside services included amounts paid to PJM's independent auditor, PricewaterhouseCoopers LLP, totaling \$1.1 million, which were predominantly for audits of the PJM Consolidated Financial Statements and examination of certain internal controls related to PJM's market settlements and associated information technology systems and processes.

Key information systems, system enhancements and capital investments completed by PJM in 2022 include:

- *Market System Enhancements*: developing the next generation of energy market systems, updating Reserve Market to align with FERC approved changes, and market to market
- *Operations and Planning System Enhancements*: enhancing operations and planning applications, including the energy management system, forecasting applications, dispatcher tools and interconnection database and planning applications

- *Technology Infrastructure and Visualization:* upgrading security monitoring, intrusion detection, firewalls, servers, storage, network, video wall and telecommunications
- *Facilities Infrastructure:* replacing cooling and uninterruptable power supply systems
- *Information Technology:* expanding the data tool for providing PJM members with markets and operations information, data analytics capability and a dispatcher software tool refresh
- *Access Management:* automating and enhancing PJM's applications used to monitor and grant user access to systems and facilities to ensure PJM meets compliance requirements and to gain operating efficiencies
- *Credit and Risk Monitoring:* enhancing credit monitoring and risk simulation tools

Billings for Services

PJM had approximately 1,111 members at December 31, 2022. The billings presented below are administered on behalf of the members; however, the associated receivables and payables are presented net in PJM's Consolidated Statements of Income, Comprehensive Income and Paid-in Capital, Retained Earnings and Accumulated Other Comprehensive Income (Loss). The only billings included in PJM's consolidated financial statements are PJM Scheduling, System Control and Dispatch, PJM Settlement and FERC annual charge recovery. For 2022, 2021 and 2020, settlements processed by PJM under the Tariff, Operating Agreement and Reliability Assurance Agreement, which is a non-GAAP measure, were as follows:

	(\$ in millions)		
	2022 Amount Billed	2021 Amount Billed	2020 Amount Billed
Energy markets	\$54,753	\$27,362	\$ 14,551
Network transmission service	9,729	9,039	8,232
Capacity	7,008	9,446	7,466
Transmission congestion	6,382	2,664	1,363
Transmission losses	2,817	1,215	642
FTR auction revenues	1,817	1,090	1,126
Transmission enhancement	1,767	1,750	1,568
Reactive supply	384	367	353
Regulation market	296	144	77
PJM scheduling, system control and dispatch (operating expense reimbursement, net of stated- rate refunds)	288	286	270
Operating reserves	288	177	90
Point-to-point transmission service	244	157	149
Synchronized reserve market	82	74	33
FERC annual charge recovery	71	78	63
Black start service	69	68	65
RTO scheduling, system control and dispatch (transmission owners' control center expenses)	59	70	69
Distribution facilities	58	60	63
Generation deactivation	47	-	-
ReliabilityFirst Corporation (RFC)	18	17	17
PJM Settlement	15	9	9
Monitoring Analytics, LLC	13	11	12
Miscellaneous	12	12	13
North American Electric Reliability Corporation (NERC)	12	11	11
Day-ahead scheduling reserve market	11	10	13
Load response program	11	1	-
Emergency energy	9	-	-
MISO Transmission Expansion Planning (MTEP) cost recovery	6	7	7
Reactive services	2	1	-
Inadvertent interchange	1	4	3
Organization of PJM States, Inc. (OPSI) fees	1	1	1
Member default allocation assessments	-	-	20
Expansion cost recovery and RTO startup cost recovery	-	-	1
Consumer Advocates of PJM States, Inc. (CAPS) fees	-	-	-
Total	\$86,270	\$54,131	\$36,287

In 2021, PJM changed the methodology for calculating gross billing of market activity, a non-GAAP measure. Prior periods were revised for consistency with 2021 disclosure.

Liquidity and Capital Resources

PJM maintains with PNC Bank (PNC) a FERC-approved revolving line of credit agreement with a capacity amount of \$200 million. PJM received approval from FERC, on May 27, 2021, to continue to borrow under this facility through May 31, 2023. The revolving line of credit is unsecured and available to fund short-term cash obligations. At December 31, 2022, there were no outstanding borrowings under the revolving credit agreement.

On June 28, 2018, FERC approved PJM's application to refinance the Company's existing bank loan with a new term loan at Bank of America (BoA). On July 20, 2018, PJM entered into a \$20.2 million loan agreement with BoA. The BoA term loan has a seven-year term and is unsecured. At December 31, 2022, the outstanding borrowings under the term loan were \$7.9 million. PJM is expected to make \$2.9 million of principal payments during 2023.

Under the loan covenants for each facility, PJM is required to provide unaudited financial statements 45 days after each quarter and audited financial statements 120 days after year-end. PJM is in compliance with these covenants.

At December 31, 2022, PJM and PJM Settlement were assigned an Aa2 issuer rating by Moody's Investors Service.

For study and interconnection work performed, PJM obtains liquid collateral from the transmission customer for the estimated costs of the transmission system modifications. PJM's study and interconnection receivables comprise of billings to transmission customers for services performed under these interconnection service agreements. PJM's study and interconnection payables represent amounts due to the transmission owners for services performed under these interconnection service agreements. PJM held deposits related to study and interconnection activity totaling \$425.9 million and \$344.5 million at December 31, 2022, and 2021, respectively.

PJM Settlement requires deposits from various parties in connection with services to be performed or as collateral for market activity. PJM Settlement held credit deposits of \$2.5 billion and \$2.2 billion at December 31, 2022, and 2021, respectively. These deposits are maintained in separate cash accounts that are not legally restricted. At December 31, 2022, PJM Settlement also held approximately \$3.4 billion in letters of credit as collateral for market activity.

For 2023, PJM's Board of Managers has approved a capital budget of \$45 million. These capital expenditures will be used for application replacements, system reliability applications, new products and services for PJM's membership, risk management and interregional coordination. Actual expenditures may differ from these amounts as PJM continues to assess its capital needs.

Risks and Uncertainties

PJM does not provide forecasts of future financial performance. While PJM management is optimistic about the Company's long-term prospects, the following issues and uncertainties, among others, should be considered in evaluating its outlook.

Contingencies and Recent Regulatory Actions

Third-Party Relationships

PJM engages third parties as suppliers in arrangements to provide services in areas other than core competencies to ensure the service and support of members and timely product development. Although PJM seeks to establish strong working relationships with parties that share PJM's industry goals and have adequate resources to fulfill their responsibilities, these relationships lead to a number of risks. These suppliers may suffer financial or operational difficulties that may affect their performance, which could lead to delays in product development or timely completion of projects. Also, major companies from which PJM purchases components or services may be in high demand, which could affect pricing, new product development or future performance. Finally, difficulties in coordinating activities may lead to gaps in delivery and performance of PJM services.

Credit Risks

PJM bills and collects its operating expenses monthly from its members. Payment of all operating expense bills is due from PJM's members three business days after the month-end bill is issued by PJM, generally within the first two weeks of each month. During 2022, approximately 60% of PJM's operating expenses were billed to approximately 16 of its members. PJM had approximately 1,111 members at year-end 2022. In the event of a default of any PJM members, PJM has the right to bill the remaining PJM members a ratable portion of the operating expenses previously billed to the defaulting member.

In accordance with PJM's credit policy, PJM obtains collateral from certain members in order to secure their credit positions. The collateral can be in the form of a cash deposit or letter of credit. Corporate guaranties are also accepted from creditworthy affiliates to fulfill certain credit requirements.

At December 31, 2022, 338 members are FTR holders related to 6.0 million MWh. The estimated fair value of the FTR portfolio at December 31, 2022, under a mark-to-auction model, was \$1.9 billion. PJM held \$2.1 billion in collateral related to these FTR transactions. The collateral is based on the calculated net value of the positions held in each member's FTR portfolio. The collateral can be in the form of cash or a letter of credit.

Winter Storm Elliott impacted the PJM region on December 23 – December 25, 2022. During this event, PJM entered performance assessment intervals for 277 intervals across December 23 and December 24. The event resulted in a \$1.8 billion December 1 - December 28, 2022 month-to-date market settlement billing statement. The December 1 – December 28, 2022 billing was settled on January 9, 2023 with no payment defaults. Under PJM's Tariff, units that underperformed relative to their committed capacity obligation during the performance assessment intervals will be penalized, and those that overperformed will receive bonuses. Penalty and bonus invoicing will begin in the March 2023 month-end bill issued in early April 2023.

Other Items

Credit Matter – GreenHat Energy, LLC (GreenHat)

On June 21, 2018, GreenHat defaulted on its obligations related to its FTR portfolio, which included positions applicable to the then current planning year as well as the 2019/2020 and 2020/2021 planning years. The \$179.6 million aggregate payment default of GreenHat, net of collateral held, has been billed to the non-defaulting members in accordance with the default allocation assessment formula in the PJM Operating Agreement.

On November 5, 2021, FERC issued an order finding that GreenHat engaged in energy market manipulation by engaging in a manipulative scheme in the FTR market operated by PJM in violation of the Federal Power Act, FERC's regulations and PJM's Tariff and Operating Agreement. FERC ordered the assessment of civil penalties against GreenHat and its principals in the amount of \$229.6 million and disgorgement of profits in the amount of \$13.1 million.

On January 6, 2022, the FERC filed a complaint in the U.S. District Court for the Eastern District of Pennsylvania, FERC v. GreenHat Energy, LLC, to enforce its order against GreenHat Energy.

On January 6, 2022, PJM filed a complaint in California state court, PJM v. Estate of Andrew Kittel, in order to preserve its rights to recover any dollars from the Kittel estate. On April 5, 2022, the defendants filed their answer, generally denying the claims in the complaint.

On August 4, 2022 in a joint status report, the parties reported that they had reached a settlement of all cases with all parties. On August 19, 2022, the Commission issued an order approving the parties' settlement agreements with the Commission. On August 26, 2022, the parties submitted the first settlement agreement to the San Diego Probate Court for approval. On February 1, 2023, the San Diego Probate Court signed an order approving the settlement. The recovery by PJM will be distributed to Members to offset default allocation assessments, concluding this matter

Credit Matter – Hill Energy Resource & Services (Hill Energy)

On January 11, 2022, PJM declared a PJM member and FTR market participant, Hill Energy, in default on its obligations to comply with a collateral call in the amount of \$0.9 million under PJM's credit policies. PJM placed the portfolio in default in accordance with PJM's credit rules and policies. As of December 31, 2022, PJM held approximately \$2.5 million in collateral while assessing the total potential exposure of Hill Energy's defaulted portfolio, which includes FTR positions through May 2025.

On January 24, 2022, PJM filed a complaint against Hill Energy and its principal Lee Chen (Chen) in the District Court of Travis County, Texas. In the action, PJM, on behalf of its members, sought damages, expedited discovery and injunctive relief associated with Hill Energy's default in PJM's FTR market. On March 4, 2022, Hill Energy and Chen filed general denials of the claims in the complaint. Hill Energy additionally asserted a counterclaim for breach of PJM's Operating Agreement. On November 14, 2022, PJM submitted a filing with FERC seeking to terminate the membership of Hill Energy, which Hill Energy is contesting.