

# **Information Memorandum**

## **Linden VFT Transmission Scheduling Rights Open Solicitation**

**April 15, 2022**

## DISCLAIMER

This Information Memorandum (“IM”) is intended solely to provide sophisticated parties with possible input into their bid consideration. It does not and should not, however, be considered to contain a complete statement of all the matters that an interested party should consider before submitting a bid, and should not be considered or treated by an interested party as a substitute for their own independent investigation.

Prior to submitting any bid contemplated by this IM you should independently determine, without reliance upon the information in this IM or any information provided by us or our affiliates, including Linden VFT, LLC (“Linden VFT”) or our advisors, including The Brattle Group (“Brattle”), and Latham & Watkins LLP (“Latham & Watkins”), the economic risks and merits (and independently determine that you are able to assume these risks), as well as the legal, tax and accounting characterizations and consequences of any such bid and any transaction contemplated thereby. The economic value of Transmission Scheduling Rights (“TSRs”) on the Linden VFT facility (“VFT”) is based on many factors, including the prices for the relevant electric products obtainable in the PJM Interconnection, LLC (“PJM”) and the New York Independent System Operator Inc. (“NYISO”) markets, your access to generation in those markets under a range of operating conditions, the PJM and NYISO Open Access Transmission Tariffs (“OATTs”), and the activities of other market participants and regulatory agencies including interregional planning processes. Accordingly, you must conduct your own investigation of these factors and be prepared to assume the associated risks.

Any prices or price levels contained herein are historical and indicative only. They do not represent bids or offers, nor do they consider the risks or cost of transactions that you may incur pursuant to the PJM and NYISO OATTs to schedule your use of TSRs. These indications are provided solely for your information and consideration, are subject to change at any time without notice and are not intended as a solicitation with respect to the purchase or sale of any product described herein. Any estimates included herein constitute our sole and exclusive judgment as of the date hereof and are subject to change without notice. Any examples included herein are intended to be illustrative only and should not be relied upon as representative of any other historical period or a projection of any future period. **Further, in no way is past performance or historical or indicative prices referred to herein an indicator of future results.**

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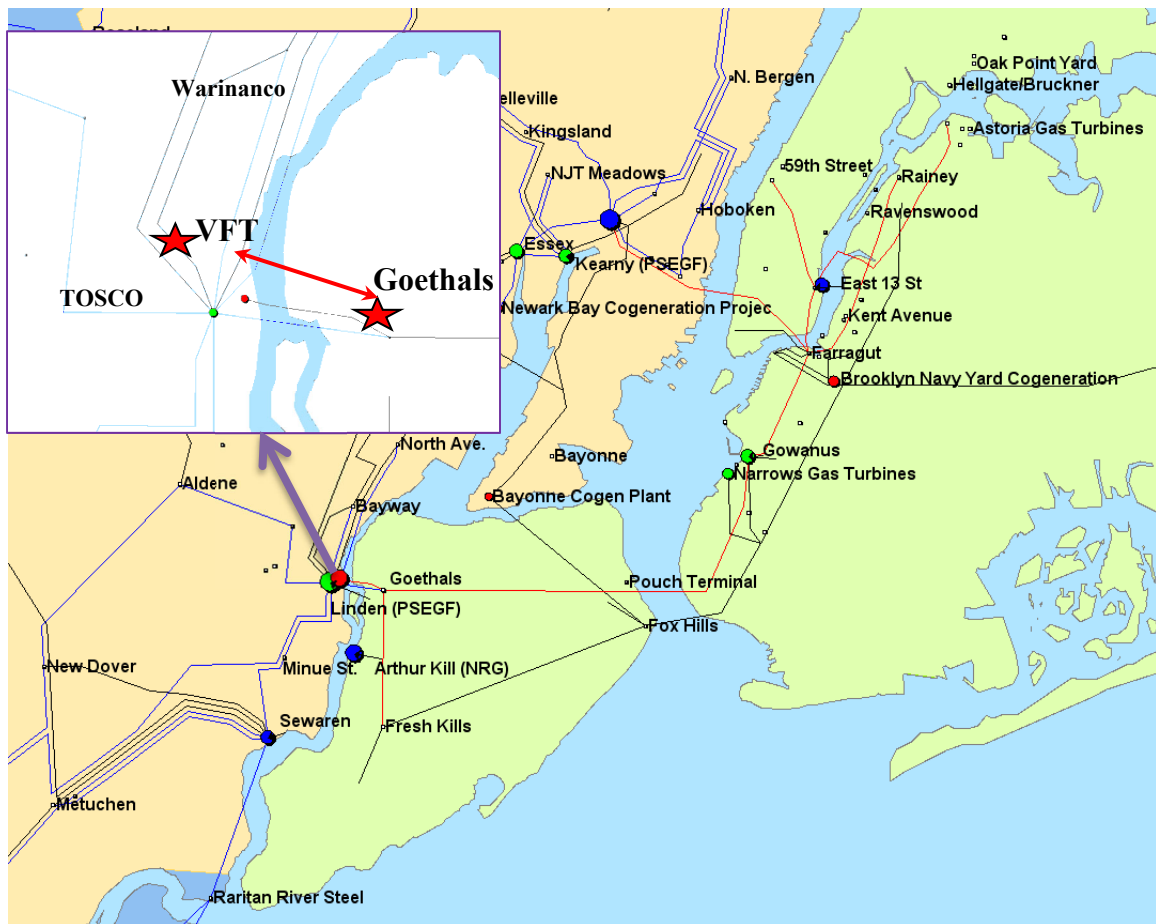
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## 1. OVERVIEW OF SOLICITATION

In 2009, Linden VFT, an affiliate of General Electric Company (“GE”), installed a Variable Frequency Transformer facility (“VFT”) that created an additional 315 megawatts (“MWs”) of bi-directional electricity transfer capability between the control area of PJM and NYISO, Zone J. Linden VFT is located in the PS North Locational Delivery Area (“LDA”) of PJM.



Linden VFT previously held five open seasons where the Transmission Scheduling Rights (“TSRs”) associated with the 315 MWs of electricity transfer capacity were auctioned to market participants, and agreements for those TSRs were executed for varying term lengths. In 2018, Linden VFT held an open solicitation wherein bidders were able to make bids covering varying term lengths and for different amounts of MWs. The current TSR agreements will expire on May 31, 2023.

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Linden VFT will now conduct an open solicitation to sell 315 MWs of transfer capability for contract periods beginning June 1, 2023. Bidders in the open solicitation process may make bids covering varying term lengths and for different amounts of MWs, recognizing Linden VFT's general preferences for longer term lengths and the ability to coordinate contract expiration dates for purposes of entering into future sales of TSRs.

This memorandum provides a brief overview of how the open solicitation process will proceed, describes the VFT technology, and illustrates the potential value of its associated TSRs. Interested bidders may register on the solicitation website (<http://www.lindenvftauction.com>) to receive periodic email announcements regarding the open solicitation.

Linden VFT (or, interchangeably, "Owner") has retained The Brattle Group ("Brattle") to serve as the independent solicitation manager ("ISM") and oversee the open solicitation process. The Owner and the ISM will work together to conduct the open solicitation in a fair, transparent and non-discriminatory manner in accordance with the rules outlined in the Bid Form ("Bid Form") and its associated schedules, to be posted on the solicitation website, and all relevant Federal Energy Regulatory Commission ("FERC") requirements.

The open solicitation process will proceed in the three stages outlined below. Interested parties are requested to carefully review the Bid Form and solicitation website for more information on each of these stages.

1. **Marketing and Informational Stage:** During this stage, the Owner and the ISM will:  
(a) publicize the open solicitation to parties that they believe might be interested in participating and market the open solicitation in certain general circulation and industry publications; (b) make publicly available a website containing documents related to the open solicitation, including this information memorandum; and (c) respond to questions from interested participants and post FAQs on the website. After registering and signing a confidentiality agreement, participants will be granted access to confidential information, including the Bid Form. The confidentiality agreement and instructions for accessing confidential information can be found in the public documents section of the solicitation website.
2. **Bidding Stage:** Prospective bidders in the open solicitation process who have registered and entered into a confidentiality agreement and wish to bid must submit a completed Bid Form, which will include contact information, certain financial disclosures, specifics of their indicative bid, a description of their relevant experience, and other representations. Bidders may submit a bid for contracts beginning June 1, 2023 with the term length as

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specified by the bidder. The ISM will review the information submitted with each bid to confirm that it conforms to the requirements set forth in the Bid Form.

- 3. Negotiation Stage:** The open solicitation will culminate in a negotiation stage. The Owner and the ISM will develop a short list of qualifying bids in accordance with the criteria set forth on the Bid Form. Each bidder will be notified as to whether it is on the short list. Owner (with oversight from the ISM) will individually negotiate with the bidders on the short list. Following negotiations, one or more winning bid(s) will be selected and a TSR purchase agreement(s) will be executed promptly.

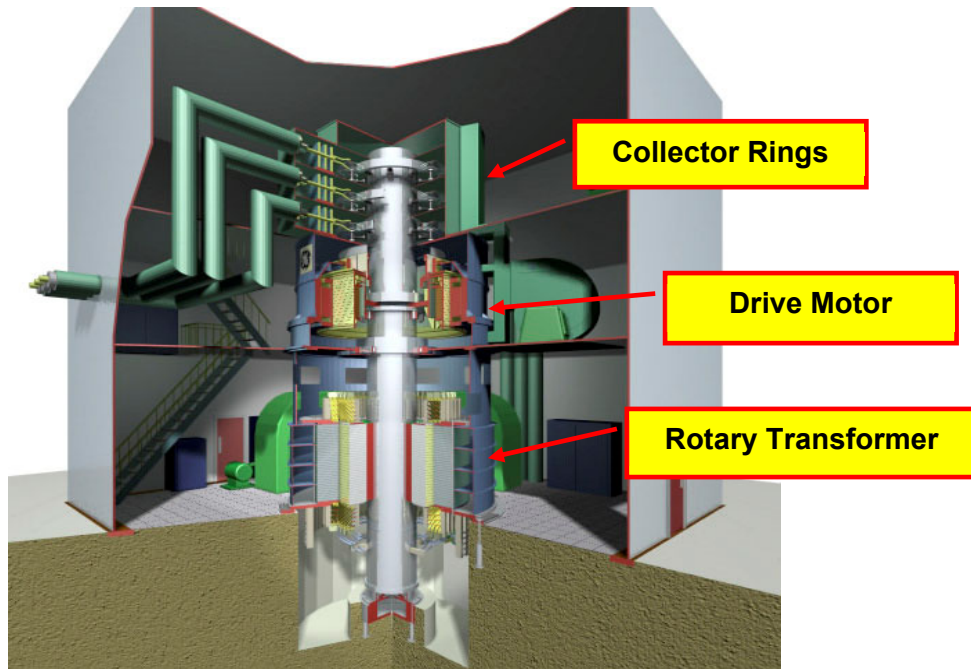
The Owner and ISM intend to adhere to the following schedule for the open solicitation. This schedule is subject to change, and the latest version shall be posted on the solicitation website.

<b>Date</b>	<b>Milestone</b>
April 20, 2022	Marketing and informational stage begins
May 23, 2022	Bids due
June 3, 2022	Notification of short list
June 6, 2022	Negotiation window begins

## **2. VFT TECHNOLOGY**

The Variable Frequency Transformer system is a patented GE technology developed in the 1990s. VFT technology provides an alternative to traditional grid system inter-tie technologies such as back-to-back DC converters or phase angle regulating transformers (“PARs”). Its continuously variable operating range with real-time regulation, as well as unlimited phase angle control, provides for better power control over PARs, which can only regulate within a fixed angular range and in a stepwise fashion with a time delay. VFTs also possess a natural tendency to dampen power system transients, can operate with no minimum power level, and have fewer compatibility issues with control systems of nearby generators or HVDC installations. The VFT is an electrical machine physically similar to a vertically-oriented hydroelectric generator. Its key element is a Rotary Transformer (“RT”), which is a continuously variable phase angle regulating device capable of operating between synchronous or asynchronous power grids. Power transferred across the device is regulated by positioning the RT’s rotary winding relative to its stationary winding and introducing a phase-shift between voltages on either side. A drive motor control system

maintains and regulates the rotor position in real time so that a constant level of desired power transfer can be maintained.



*Rotary transformer enclosure main components*

### **3. OPERATION AND PERFORMANCE**

Linden VFT is under the operational control of PJM and receives its operating schedules and power level set points directly from PJM via redundant telemetry. The VFT normally operates automatically with no need for operator intervention. A power order (in MWs) is received from PJM, processed by the VFT control systems, and the VFT channels regulate power flow to meet the power order. If disturbances occur in the surrounding power system (subject to VFT's design parameters), VFT responds to restore the power order within fractions of a second.

The VFT is operated and maintained in accordance with good utility practice and applicable rules and standards for electric utility facilities in the region. It can be expected to perform in a similar fashion as comparable power system equipment would perform in a typical utility system operating environment. VFT has been able to achieve on average 99.2% availability in the last two calendar years.



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#### **4. OPEN SOLICITATION—PRODUCT DEFINITION & PURCHASE AGREEMENT**

The purpose of this open solicitation is to sell the TSRs associated with 315 MWs of VFT transmission capacity, beginning June 1, 2023. On January 29, 2018, Linden VFT submitted an application at FERC to amend its Negotiated Rate Authority pertaining to the sales of its TSRs to (a) change a formal open season process to an open solicitation process; (b) move from shorter term (1-5 years) arrangements to arrangements under different durations ranging from shorter term to longer term customer arrangements for potentially up to 100% of the TSRs; and (c) allow customer contracts under varying pricing arrangements. The Commission accepted the application on March 30, 2018<sup>1</sup> in Docket No. ER18-730.

Consistent with its amended authority, Linden VFT is seeking bids in this open solicitation, and intends to then negotiate with a short list of bidders. Linden VFT invites bidders to submit bids for variable contract lengths starting on June 1, 2023 and for variable MW blocks. Linden VFT also invites bidders to propose pricing arrangements for the TSRs, which can include: (i) a \$/kW-month price, (ii) revenue/profit sharing (percentage) between the bidder and Linden VFT, (iii) a combination of the two approaches, or (iv) other arrangements to utilize the Linden VFT facility.

Linden VFT currently has the rights to 325 MW of Long-Term Firm Point-to-Point Transmission Service from PJM to the Linden VFT facility, which Linden VFT currently assigns to its customers that hold TSRs through May 31, 2023. Linden VFT's customers also are holders of NYISO unforced capacity deliverability rights ("UDRs"), which potentially allow them to offer generation capacity not physically located in the NYISO control area to the NYISO market, subject to compliance with applicable NYISO Tariff requirements. FERC denied a complaint challenging NYISO's recently stated determination that holders of UDRs associated with the Linden VFT facility met the requirement of Section 5.12.2.1 of NYISO's Services Tariff and therefore such holders are eligible to sell capacity into the NYISO market by transmitting that capacity to the NYISO interface associated with the UDR transmission facility (*i.e.*, Linden VFT).<sup>2</sup>

The rate for such Long-Term Firm Point-to-Point Transmission Service is set forth in Schedule 7 of the PJM Tariff under the "Border of PJM" category and the current filed rate is \$5.635/kW-month. However, on October 7, 2021, a Settlement Agreement and Offer of Settlement (the "Proposed Border Rate Settlement") was filed with FERC, that if approved, would establish the

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<sup>1</sup> *Linden VFT, LLC*, 162 FERC ¶ 61,297 (2018).

<sup>2</sup> *Indep. Power Prod. of NY, Inc.*, 169 FERC ¶ 61,209 (2019).

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rate as set forth in the following table. The Proposed Border Rate Settlement is currently pending before FERC.<sup>3</sup>

Year	Rate (\$/kW-month)
2023	2.250
2024	2.625
2025	3.042
2026	3.542
2027	4.250

Linden VFT will assign its rights to Long-Term Firm Point-to-Point Transmission Service to the winning bidder via OASIS for the term of the TSR contract.

Bidders shall include an executed version of the Bid Form with their bid, including all requirements set forth therein. Key features of the Bid Form are described in the following table:

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<sup>3</sup> See PJM Interconnection, L.L.C., Docket No. ER19-2105-005 (filed Oct. 7, 2021).

<b>KEY BID FORM FEATURES</b>	
<b>Contract Term Length</b>	Beginning June 1, 2023, with contract term length to be specified by the Bidder (minimum of 1 year; no maximum)
<b>Quantity of TSRs</b>	MWs of Transmission Scheduling Rights (TSRs), up to 315 MW, to be specified by Bidder.
<b>Pricing Arrangement</b>	Bidder shall specify its proposed pricing arrangement, <i>e.g.</i> , (i) \$/kW-month price, (ii) revenue or profit sharing (percentage) between the bidder and Linden VFT, (iii) a combination of the two approaches, or (iv) alternative pricing arrangements.
<b>Long-Term Firm Point-to-Point Transmission Service Options</b>	Long-Term Firm Point-to-Point Transmission Service corresponding to the quantity of TSRs shall be assigned to Bidder. Bidder shall specify whether it agrees to pay the applicable filed rate, or propose a cost-sharing or alternative arrangement.
<b>Credit and Financial Information</b>	Bidder shall provide credit ratings and/or other financial information, as indicated on the Bid Form.
<b>Experience</b>	Bidder shall include a discussion of experience in the industry in its bid.

The VFT is under the operational control of PJM and is subject to certain joint operating agreements between PJM and NYISO. Therefore, in advance of bidding in this solicitation, bidders should independently review and understand all of the PJM and NYISO constituent agreements, governing documents, tariffs, and protocols that could influence a party's decision to bid or the terms of such bid and/or are relevant to the exercise of TSRs associated with the VFT

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facility including, but not limited to, Schedules 16 and 16A of the PJM OATT, the NYISO ICAP Manual, PJM Manuals 18 and 21, NYISO Technical Bulletin No. 223, and the First Amended Joint Operating Protocol For The Linden VFT Facility.

Linden VFT previously held 330 MW of Firm Transmission Withdrawal Rights (“TWRs”) from PJM and pursuant to holding such rights, it was subject to Transmission Expansion Charges under PJM’s Regional Transmission Expansion Plan (“RTEP”). Effective December 31, 2017, Linden VFT converted its 330 MW of TWRs from Firm to Non-Firm, and PJM determined that Linden VFT is therefore no longer subject to RTEP charges pursuant to Schedule 12 of the PJM Tariff.<sup>4</sup>

The winning bids in the open solicitation are those bids or combination of bids that produce the best risk-revenue combination as determined by the Owner (and overseen by the ISM). A TSR purchase agreement to be executed by the Owner and the winning bidder will precisely define the TSR product and all associated conditions of its use.

## **5. VALUE PROPOSITION**

Linden VFT TSRs allow their holders the unique opportunity to arbitrage between the capacity and energy markets in PJM and NYISO. Each MW of TSRs is associated with one MW of NYISO UDRs, which facilitates the sale of capacity located in PJM into the NYISO capacity markets. Rights holders can sell their own capacity into the NYISO market, or arrange for available capacity located in PJM to be purchased and sold into the NYISO market subject to PJM’s and NYISO’s tariffs and market rules, as applicable.

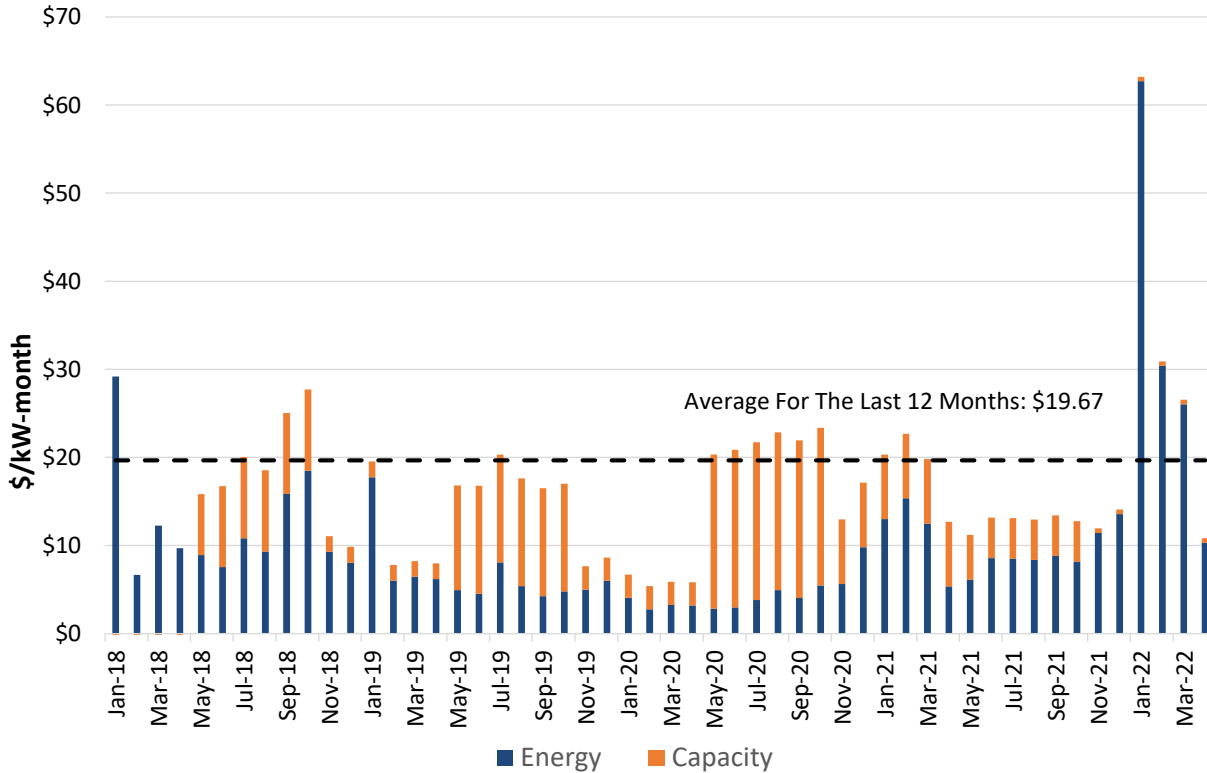
For energy, TSR holders have the ability to sell into either PJM’s or NYISO’s day-ahead or real-time markets subject to PJM’s and NYISO’s tariffs and market rules, as applicable. A TSR holder can purchase (or produce) energy in the market where it expects the price to be lower and then use its TSRs to schedule transactions for the sale of that energy into the higher-priced market. During the last twelve months (ending in March 2022), the potential levelized combined monthly energy (real-time market) and capacity arbitrage value between PJM and NYISO has averaged \$19.67/kW-month.

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<sup>4</sup> Linden VFT has been involved in litigation before FERC and the United States Court of Appeals for the District of Columbia Circuit regarding, among other things, RTEP charges it has been assessed and its TWRs, which remain pending at this time. *See, e.g., Consolidated Edison Company v. FERC*, DC Circuit Case No. 15-1183 and *New Jersey Board of Public Utilities v. FERC*, DC Circuit Case No. 20-1079.

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**Figure 1: Potential Monthly Energy and Capacity Arbitrage Value between PJM and NYISO, January 2018 to March 2022**



*Note: Energy price differentials represent the arbitrage value of moving power between the PJM Linden VFT price node and NYISO Linden VFT price node in both directions in the real-time market. Capacity price differentials are the arbitrage value between NYISO semi-annual auction prices for NYC and PJM IA prices for the PS-North zone when selling capacity from PJM to NYISO. In the first four months of 2018, the relevant PJM IA price slightly exceeded the NYC price.*

Beginning in November 2014, NYISO implemented a market option for external transactions that provides additional flexibility for TSR holders. This option, called Coordinated Transaction Scheduling (“CTS”), provides transmission customers with a more precise method of arbitraging price differences between the NYISO and PJM markets, and it is available for pricing the spread between NYISO and PJM using the Linden VFT Scheduled Line Proxy Generator Bus. CTS allows imports and exports to be scheduled based on an energy bidder's willingness to purchase energy using VFT's receipt point as a source and selling it using VFT's delivery point in Zone J as a sink (or vice versa), when the forecasted price at the sink minus the forecasted price at the source is greater than a value specified by the bidder. CTS transactions are ordinarily evaluated on a 15-minute basis.

Certain regulatory changes in both the PJM and NYISO markets, including, but not limited to, New York State's "reforming the energy vision" initiative calling for additional distributed

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generation resources, changing state policies regarding renewable generation targets, market mitigation measures in both markets, and the treatment of demand and energy efficiency resources in both markets may affect the arbitrage opportunities realizable from the TSRs. Bidders should consult their own advisors in considering these and other regulatory matters.

### **5.1 CAPACITY ARBITRAGE OPPORTUNITY**

The UDRs associated with the Linden VFT TSRs allow capacity that is physically located in (or deliverable to) PJM to be bid into the semi-annual or monthly auctions for capacity in NYISO's highly constrained Zone J.<sup>5</sup> Annual average capacity prices in NYISO's Zone J typically exceed capacity prices in PJM. Additionally, NYISO has determined that Linden VFT's installed capacity would not be subject to mitigation pursuant to NYISO Service Tariff Attachment H § 4.5, including its Offer Floor.<sup>6</sup>

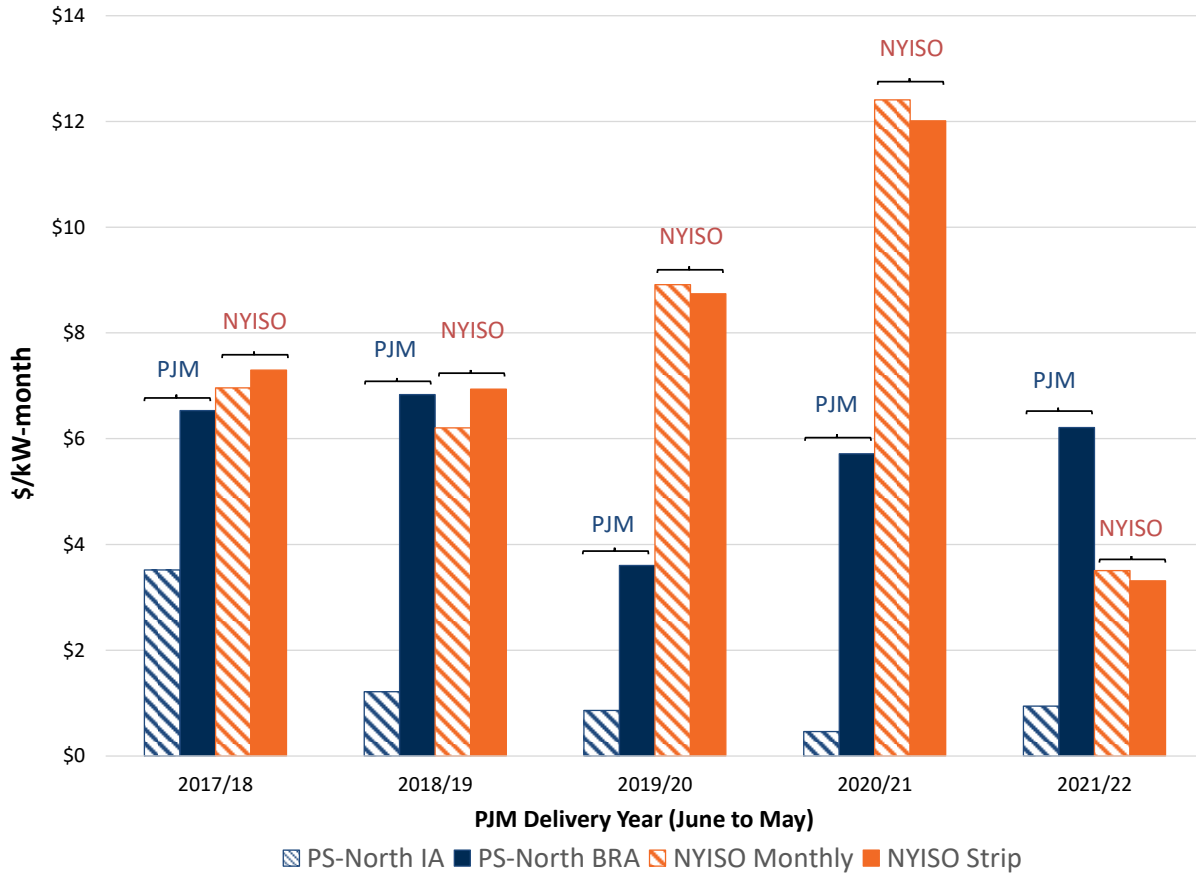
Linden VFT TSR holders can employ different capacity purchasing and selling strategies to capture the price spread between PJM and NYISO. For example, recent prices from capacity auctions for PJM PS-North (*i.e.*, the Base Residual Auction ("BRA") and 3rd Incremental Auction ("IA")) and NYISO Zone J (*i.e.*, monthly and semi-annual strip auctions) are displayed in Figure 2 below. Capacity prices from the monthly and semi-annual strip auctions for NYISO Zone J are represented in this figure as annual averages across the PJM delivery year (June to May).

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<sup>5</sup> While capacity prices have historically been higher in NYISO Zone J than in PJM, the sale of capacity located in NYISO into the PJM market via Linden VFT may be possible.

<sup>6</sup> A copy of this determination from NYISO is available in the confidential documents section of the solicitation website.

**Figure 2: PJM PS-North and Annual Average NYISO Zone J Capacity Prices Since 2017**



Since 2014, PS-North capacity prices typically have been lower than annual average Zone J capacity prices. In the last four years, the NYISO monthly and semi-annual strip auctions have produced prices that have been relatively similar (when viewed over the same annual delivery periods).

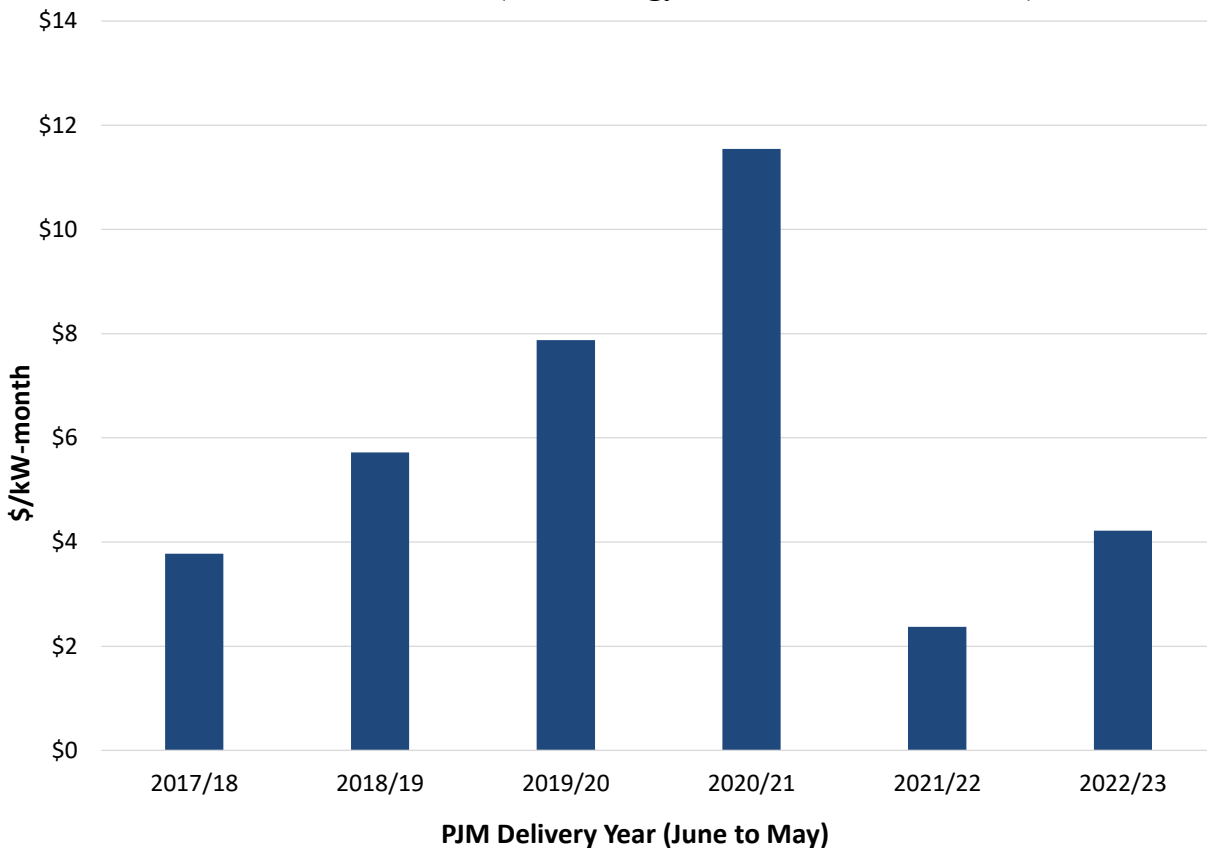
Comparing the capacity prices between the NYISO semi-annual strip auctions (Zone J prices) and the IAs in PS-North, the differential was \$3.78/kW-month in the 2017/18 delivery year, \$5.72/kW-month in the 2018/19 delivery year, \$7.88/kW-month in the 2019/20 delivery year, \$11.55/kW-month in the 2020/21 delivery year, and \$2.37/kW-month in the 2021/22 delivery year. Figure 3 shows the recent trend in this differential, with 2022/23 still in progress. With 315 MWs of Linden VFT TSRs, this differential could have produced \$14.3 million of revenue in the 2017/18 delivery year, \$21.6 million in the 2018/19 delivery year, \$29.8 million in the 2019/20 delivery year, \$43.7

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million in the 2020/21 delivery year, and \$9.0 million in the 2021/22 delivery year.<sup>7</sup> The differentials and capacity arbitrage values presented here assume that the relevant PJM capacity resource is located in PS-North. However, capacity is deliverable from anywhere in PJM. In recent years, PJM-wide capacity pricing has typically been below that in PS-North. Accordingly, the capacity arbitrage value may exceed that presented here for potential bidders controlling capacity resources located elsewhere in PJM.

**Figure 3: Annual Average Differentials between PJM PS-North IA Prices and NYISO Strip Auction Zone J Prices (PJM Energy Years 2017/18 to 2022/23)**



\*Note: 2022/23 results are based on known capacity auction results as of April 2022.

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<sup>7</sup> All revenue figures contained in this information memorandum are indicative and subject to potential transaction costs. Actual transactions will be subject to PJM and NYISO market rules, and the results will be subject to the risks associated with such transactions and potential transaction costs.



## **5.2 ENERGY ARBITRAGE OPPORTUNITY**

Scheduling energy deliveries over the VFT allows rights holders to purchase and sell energy in order to capture the difference in locational marginal prices (“LMPs”) between the VFT’s injection and withdrawal points in PJM and NYISO—respectively, the 230 kV VFT Switching Station pricing node in New Jersey and the Linden VFT pricing node connecting to the Goethals Substation in Staten Island. Because the Linden VFT allows for the bi-directional transfer of power, TSR holders can arbitrage from the PJM market to the NYISO market and from the NYISO market to the PJM market. TSR holders can choose to operate in the PJM and NYISO day-ahead markets, real-time markets, or both (subject to any day-ahead bidding requirements imposed by a TSR holder’s capacity obligations). The real-time markets have historically offered a better opportunity for arbitrage than the day-ahead markets, with substantial financial opportunities in both directions depending on market conditions.<sup>8</sup>

Recent market conditions (*e.g.*, March 1 - 31, 2022) provide a reasonable example of the potential value of this energy arbitrage opportunity. In the day-ahead market, the average absolute value of the LMP differential was \$10.91/MWh for March, with January and February having differentials of \$57.00/MWh and \$37.41/MWh respectively. The potential arbitrage revenue for 315 MWs of TSRs from trading only in the day-ahead market in March could have amounted to approximately \$2.6 million (approximately \$2.4 million from buying in PJM and selling to NYISO, and \$0.2 million from buying in NYISO and selling in PJM).<sup>9</sup> Figure 4 shows the daily average day-ahead price differentials during this period.

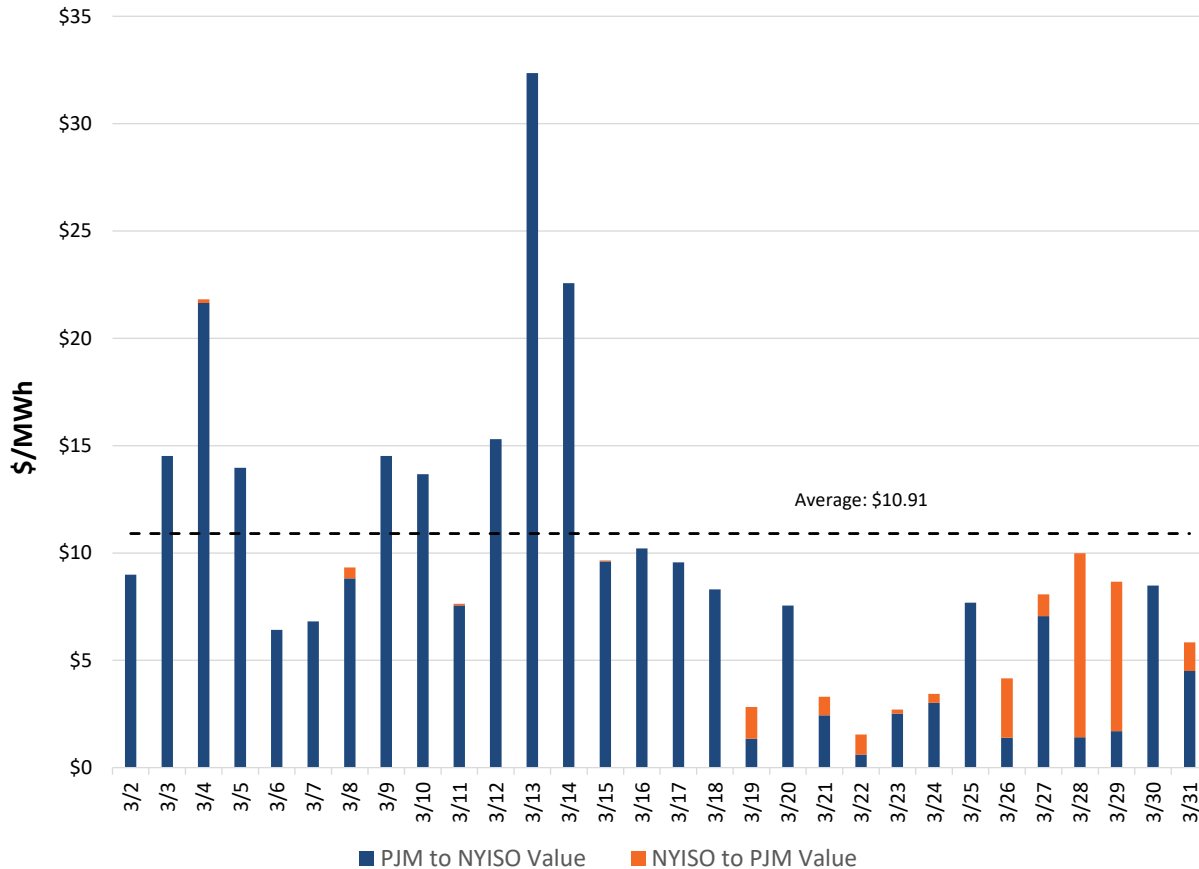
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<sup>8</sup> Losses and inadvertent energy across the Linden VFT Facility are allocated pro rata by PJM pursuant to Schedules 16 and 16-A of the PJM OATT. Losses across the 315 MW Linden VFT Facility are approximately 2.5%.

<sup>9</sup> Transactions to schedule energy deliveries between PJM and NYISO, and vice versa, are subject to the transmission service arrangements made by the holder of TSRs pursuant to the PJM and NYISO OATTs. All revenue figures contained in this information memorandum are indicative and subject to the risks associated with actual transactions and potential transaction costs.

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**Figure 4: Daily Average Day-Ahead LMP Differentials  
March 2022**

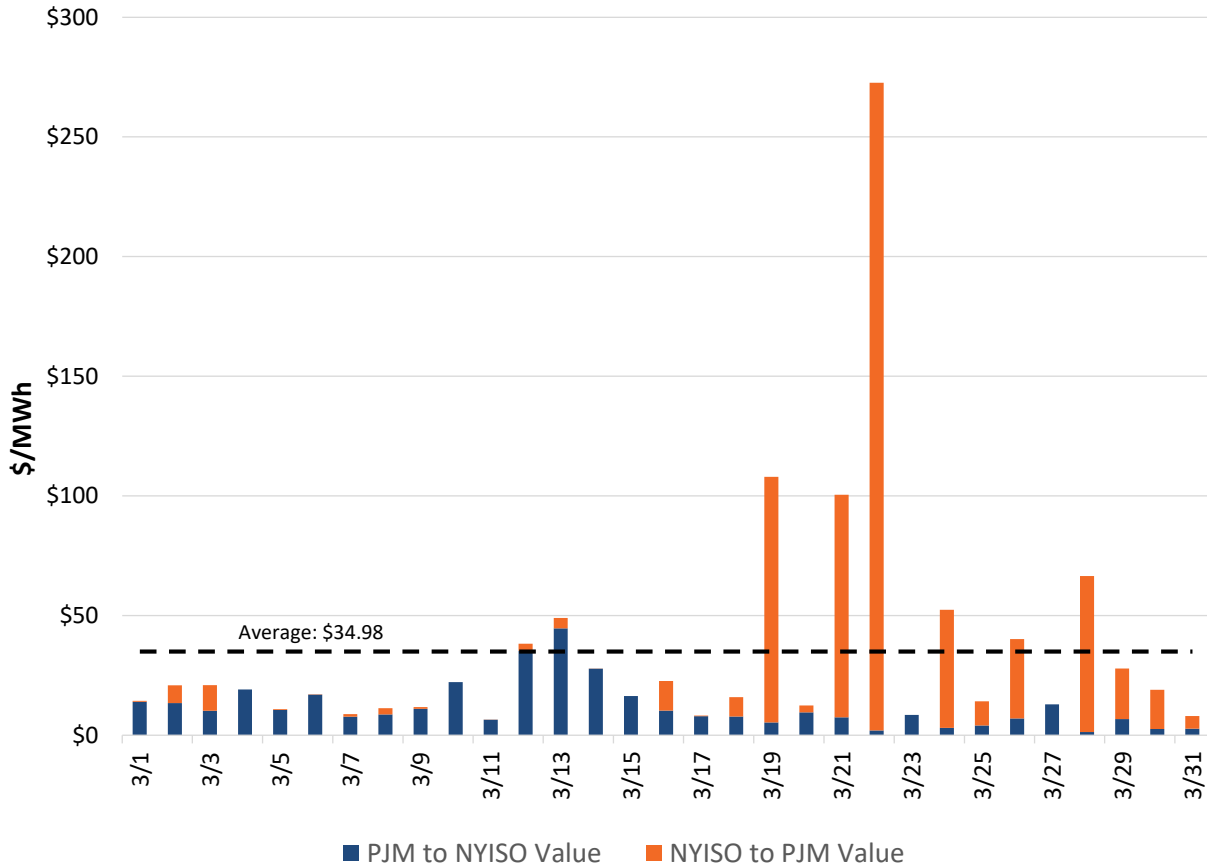


As shown in Figure 5, the real-time energy markets presented a greater arbitrage opportunity than the day-ahead market during the same period (March 1 – 31, 2022). The average absolute price differential in the real-time market averaged \$34.98/MWh, implying that the real-time energy arbitrage revenue for 315 MWs of TSRs could have amounted to approximately \$8.2 million in that month.<sup>10</sup> While other months may present different arbitrage opportunities, we have provided these data to illustrate the potential arbitrage opportunities that have existed during recent market conditions.

<sup>10</sup> All revenue figures contained in this information memorandum are averages. Actual transactions will be subject to PJM and NYISO market rules, and the results will be subject to the risks associated with such transactions and potential transaction costs.

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**Figure 5: Daily Average Real-Time LMP Differentials  
March 2022**

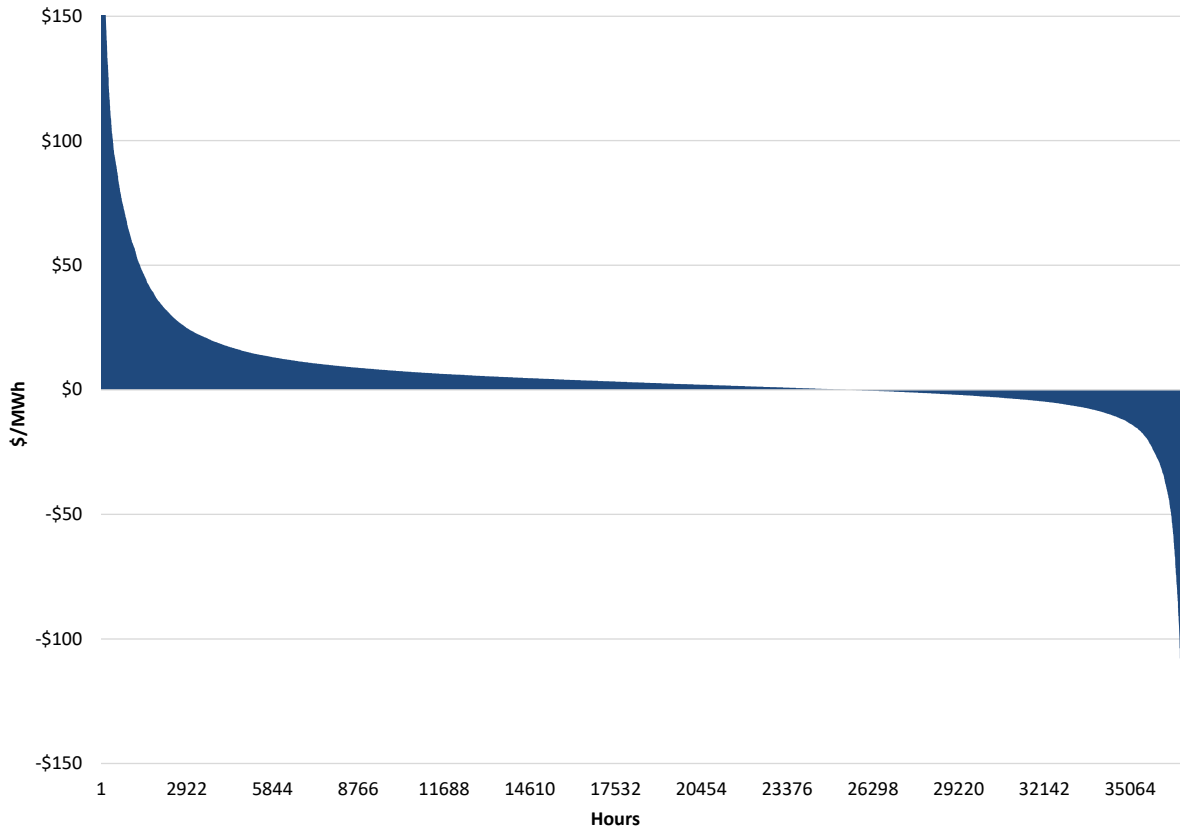


Across all hours since January 1, 2018, the real-time price differential has exhibited significant volatility and has been greater (in absolute value) than \$50/MWh in over 2,500 hours during that 51 month period. Figure 6 depicts these hourly price differentials (defined as the Linden VFT NYISO LMP minus the Linden VFT PJM LMP), sorted in order of magnitude. Periodic weather conditions can create substantially increased price differentials, such as during the Polar Vortex in January 2014. More recently, a series of winter storm events affecting the northeastern U.S. in January 2022 were accompanied by significant increases in price differentials.<sup>11</sup>

<sup>11</sup> The average absolute energy differential was \$78.76/MWh in January 2014. On twelve of these days, the average price differential was above \$100. In January 2022, the average absolute price differential was slightly higher than in January 2014, at \$84.28/MWh.

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**Figure 6: Sorted Real-Time LMP Differentials  
NYISO LMP minus PJM LMP, January 2018 to March 2022**



*Note: 379 hours have a differential above \$150/MWh or below -\$150/MWh. The average absolute value of these "out-of-bounds" differentials is \$305.08/MWh.*

### **5.3 MARKET DEVELOPMENTS THAT MAY AFFECT TSR VALUE**

Future changes in market fundamentals in NYISO Zone J and PJM could affect both the energy and capacity price differentials between the two zones. We have provided below a brief discussion of certain factors that may affect the value of TSRs, although we caution that there can be no assurance that any one or more of these events will occur or have a positive effect on the value of TSRs. We note that numerous other events and circumstances that are not described herein may result in increases and decreases in the value of TSRs.

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### **Supply and Demand in NYISO Zone J**

In its 2018 Reliability Needs Assessment Report (RNA Report), NYISO projected a peak load in Zone J of 11,336 MW in 2022 and a slight decrease to 11,328 MW in 2023.<sup>12</sup> They also project that peak load in Zone J will be 11,557 MW in 2024, decrease slightly to 11,552 MW in 2025, and increase thereafter through 2030 in their more recent 2020 RNA. The capacity located within Zone J is also projected to decrease between 2024 and 2025, going from 8,795 MW to 8,190 MW, but remains constant thereafter. The Zone J resource to load ratio is anticipated to be only 83% in 2024, and decreases thereafter.<sup>13</sup> If Zone J installed capacity does not keep pace with load, then energy and capacity prices may increase in Zone J.

### **Supply and Demand Affecting the PS-North LDA**

Capacity additions may depress capacity and energy prices on the PJM side of the VFT, further increasing the arbitrage value provided by the TSRs in selling capacity and energy sourced in PJM into the NYISO. As of December 31, 2021, there are 254,915 MWs of capacity (approximately 168% of PJM's 2021 annual peak demand) in the PJM interconnection queue scheduled for construction through 2029. Of this queued capacity, 3,583 MW are in PSEG.<sup>14</sup>

Increased transmission capability into PS-North from other parts of PJM also may decrease capacity and energy prices. Approximately \$38.9 billion of new transmission infrastructure projects throughout PJM have been approved through the Regional Transmission Expansion Process (RTEP) since 1997.<sup>15</sup> The Capacity Emergency Transfer Limit ("CETL") for PS-North, which reflects the quantity of external supply PJM considers deliverable to the PS-North LDA, increased by 1,180 MW from 3,180 MW in the 2021/2022 BRA to 4,360 MW for the 2022/23 BRA. The CETL decreased very slightly, however, by 11 MW to 4,349 MW for the 2023/24 BRA.<sup>16</sup>

### **Changes in PJM and NYISO Capacity Markets**

NYISO and PJM periodically make changes to their capacity markets. Among other changes, PJM recently eliminated its broad minimum offer price rule (MOPR), reduced market seller offer caps,

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<sup>12</sup> NYISO 2018 Reliability Needs Assessment Report.

<sup>13</sup> NYISO 2020 Reliability Needs Assessment Report.

<sup>14</sup> 2021 State of the Market Report for PJM, pp. 627, 631.

<sup>15</sup> PJM 2021 Regional Transmission Expansion Plan.

<sup>16</sup> See 2022/2023 RPM Base Residual Auction Planning Period Parameters and 2023/2024 RPM Base Residual Auction Planning Period Parameters.

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and implemented effective load carrying capacity (ELCC) accounting to assign capacity values to renewable and storage resources. Recent NYISO proposals that if adopted could affect future capacity market outcomes include proposed reforms to scale back MOPR (known as buyer-side mitigation) and a proposed implementation of ELCC.

Similarly, changes in demand and supply conditions can affect capacity market outcomes. Capacity auction parameters used to determine the administrative demand curves include load forecasts, required reserve margins, and the net Cost of New Entry, or CONE, which is the cost of new entry considering expected revenue from energy and ancillary services. In recent auctions, lower values for these parameters, among other factors, have resulted in lower capacity market clearing prices in both PJM and NYISO.

### **Natural Gas Prices**

If natural gas prices increase in the future, it may have a positive effect on the price differential between the NYISO and PJM nodes since the marginal, price-setting unit at nodes in NYISO's Zone J and nodes near the VFT in PJM is frequently gas-fired. Implied heat rates from historical power prices and gas prices indicate that the heat rates of the marginal unit in Zone J and the marginal unit near the VFT in PJM can be markedly different in each hour.

Divergences between these units' heat rates mean that, all else equal, the energy price differential will increase if the price of gas increases. Current forward price curves indicate that gas prices are on average predicted to be higher over the next five years than they were in the past several years.

### **Forward Energy Prices**

Trends in forward energy prices in PJM and NYISO Zone J indicate that the potential energy arbitrage value associated with the Linden TSRs could grow substantially. Comparing monthly day-ahead forwards from ICE Futures against recent day-ahead historical energy prices; we observe higher differentials between the two markets on average in the near future (2023 and 2024) than those seen in the most recent 12 months. Current forward prices for 2025-27 indicate that the differential may continue to grow.<sup>17</sup> Therefore, the Linden VFT TSRs may potentially provide larger arbitrage benefits in the next few years than indicated by price differentials observed over the past few years.

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<sup>17</sup> Generally speaking, trading volumes are thinner the farther these forward contracts extend into the future.

**Table 1: Historical and Forward NYISO – PJM Differentials, 2021 - 2027**

<b>Period</b>	<b>NYISO - PJM Differential</b>
<i>Past 12 months</i>	\$13.63
Rest of 2022	\$11.30
2023	\$17.88
2024	\$17.38
2025	\$20.46
2026	\$22.07
2027	\$20.82

Sources and Notes:

“Past 12 months” refers to the time period from April 2021 through March 2022 and reflects the difference between the average Day-Ahead LMPs at Linden on the New York side and the average Day-Ahead LMPs at Linden on the PJM side.

“Rest of 2022” refers to April 2022 through December 2022. The reported figures reflect average differentials between monthly forward prices at NYISO Zone J and PJM (PSEG). Forward price data are ICE Futures obtained from Bloomberg. Other years reflect calendar years.

Beyond 2024, trading volumes underlying these forward prices may be limited.

The increase in forward prices may be driven by expected retirements of peaker units in New York City, pursuant to environmental regulations.

## **6. DESCRIPTION OF MAJOR PARTIES INVOLVED IN OPEN SOLICITATION**

### **6.1 THE BRATTLE GROUP, INC.**

The Brattle Group provides consulting and expert testimony in economics, finance, and regulation to corporations, law firms, and governments around the world. Through its energy practice, Brattle has provided assistance to electric utilities, transmission companies, independent power producers, municipal utilities and cooperatives, power purchasers, and regulators such as the FERC and state public utility commissions. Brattle has extensive experience in designing, managing, and evaluating auction and solicitation processes and providing strategic bidding advice to bidders in the electric power and telecommunications sectors. More generally, Brattle has analyzed energy and capacity pricing issues in PJM and the NYISO in a variety of different contexts. For more information, please visit [www.brattle.com](http://www.brattle.com).

As the Independent Solicitation Manager for this open solicitation, Brattle will manage the bidder qualification and bidding processes.

## **6.2 LATHAM & WATKINS LLP**

Latham & Watkins LLP (“Latham & Watkins”) is a global law firm that includes offices in Washington, D.C., New York, London, Los Angeles, and Chicago. Latham & Watkins has a leading energy transactional, litigation and regulatory practice that advises clients on the full spectrum of energy issues. Latham & Watkins attorneys in our global Power Industry Group help clients achieve their objectives and provide pragmatic advice to clients on all stages of their business cycle. We regularly represent independent power producers, transmission and distribution utilities, and equity and debt investors on a variety of matters, including: mergers and acquisitions; project finance transactions; purchase and sale agreements, commodity sales and other structured transactions; controversy matters (including administrative litigation); compliance and enforcement matters; and project siting and permitting. More information can be found at: [www.lw.com](http://www.lw.com). Latham & Watkins is acting as legal advisor to Linden VFT for this solicitation process.

## **7. ADDITIONAL INFORMATION**

### **7.1 SOLICITATION WEBSITE**

A solicitation website (<http://www.lindenvftauction.com>) has been established to host materials related to this open solicitation and to facilitate communication between the ISM and prospective or qualified bidders. The website is divided into several sections:

- Home: An overview of the open solicitation will be posted in this section.
- Solicitation FAQ: Questions that the ISM receives during the open solicitation will be posted in this section along with answers. All identifying information will be removed from questions before they are posted. In the rare case that a question is so specific as to make it impossible to remove identifying information, the question will not be posted.
- Ask the Manager: Prospective bidders who have registered and executed a confidentiality agreement may submit questions directly to the ISM through this web form.
- Calendar: Contains a list of important dates related to the open solicitation.
- Public Documents: Contains all publicly available documents related to the open solicitation, including this information memorandum, and a confidentiality agreement that must be executed and returned for access to documents that will not be publicly available.
- Confidential Documents: This password-protected area of the website will contain documents that are not publicly available, such as certain technical specifications of the



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VFT and the standard forms that bidders must use to participate in the solicitation. Prospective bidders will be required to execute and return a confidentiality agreement (available in the public documents section of the website) before they are given access to this section.

- Document Submittal: This password-protected area of the website allows registered parties to submit documents electronically to the ISM.
- Registration: Interested bidders may complete the form on this page in order to register and receive email updates regarding the open solicitation. When they register, they may also upload an executed confidentiality agreement through this web form.

## **7.2 CONTACTING THE ISM**

Prospective bidders may contact the ISM through the website or by email at [linden-vft-ism@brattle.com](mailto:linden-vft-ism@brattle.com).