



2017 Annual Report

A Report by the New York
Independent System Operator



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Message from Board Chair and Interim CEO



**NYISO Board Chair,
Ave M. Bie**



**NYISO Interim President & CEO,
Robert Fernandez**

A look across the energy industry today reveals that we are experiencing a period of exciting and unprecedented innovation. The New York Independent System Operator (NYISO) is at the heart of these changes. We continue to promote reliability, meet consumer needs, and drive innovation and efficiencies that strengthen the grid. And we do so while operating under a transparent and inclusive process that includes representatives from all market participants, guaranteeing independence to provide fair and open access to the power system.

As the NYISO continues its mission of providing grid reliability and excellence in managing the wholesale electricity markets in New York State, we have also taken a leadership role in meeting the needs of a changing electric power system. In 2017, the NYISO focused on a series of initiatives designed to address emerging public policy goals, changing patterns of demand, and enabling the wholesale market participation of new technologies to serve the needs of New Yorkers.

New York State's Reforming the Energy Vision (REV) and Clean Energy Standard (CES) initiatives are playing an important role in shaping our work to prepare for the electric grid of the future. The integration of Distributed Energy Resources (DER) and meeting renewable energy goals in the context of our competitive markets are specific areas of focus.

Consistent with the REV initiative, we began discussions with our stakeholders on the important work of integrating DER into our markets and developed new market rules to enable certain distributed energy resources to participate in New York's wholesale electricity markets. This process included a day-long workshop that brought together more than 200 market participants, policymakers, interested stakeholders, and industry experts to help design a roadmap for the future.

In 2017, the NYISO engaged with stakeholders and policymakers to examine the potential for using carbon pricing within the wholesale energy markets to further New York's energy policy goals. The NYISO

retained The Brattle Group to evaluate conceptual market design options for integrating the social cost of carbon into competitive wholesale energy markets administered by the NYISO. The report was released in August 2017, and is intended to explore how carbon pricing can align wholesale markets with state energy policies. The report looks at several factors, including the effect on customer costs and emissions reductions.

In recognition that a carbon pricing proposal can only be achieved in conjunction with state policymakers, the NYISO is working closely with the New York State Department of Public Service (DPS). Our collaboration reflects a shared commitment to seeking an approach to value carbon in the wholesale energy market as an instrument of state policy.

While New York State reached a record 1,622 MW of wind generation in October of 2017, the ambitious renewable energy targets established by the CES will drive the need to reliably integrate more wind and solar. The NYISO's innovative market design and wind forecasting tools made New York a leader in wind energy integration. The next step was to apply that success to solar, and in 2016 the NYISO initiated an impact study that established the groundwork for reliably managing the projected growth in solar resources. The NYISO also began in 2016 to develop a real-time load forecasting system that incorporated the impacts of behind-the-meter solar PV systems. That system became operational in November 2017.

Sustained system reliability and adherence to stringent physical and cybersecurity requirements are at the core of our mission and serve as hallmarks of excellence in the NYISO's operations. In 2017, we successfully completed an independent audit of mandatory North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) technical security standards. This achievement placed the NYISO among the first organizations in the country to adopt and complete a successful audit of compliance with the new standards.

In this annual report you will find more details and additional discussion of other important items the NYISO was engaged in throughout 2017. The NYISO's mission stands upon four pillars: reliability from expert system operations; open, transparent, and innovative energy markets that promote efficiency and enable new investment; effective system planning to support the needs of the grid today and tomorrow; and independent, expert and authoritative information. Working together with stakeholders, regulators, and policymakers, the NYISO is proud of the value that wholesale energy markets have brought to New York.

Key 2017 Accomplishments

2017 was a year distinguished by several important accomplishments. In addition to maintaining expected system reliability, the NYISO also added new critical infrastructure and continued to support New York State policies regarding the development and reliable integration of new renewable resources and Distributed Energy Resources (DER).

- Published **Distributed Energy Resource Roadmap for New York's Wholesale Electricity Markets (DER Roadmap)** outlining how the NYISO expects DERs to integrate into wholesale markets, a goal central to the state's Reforming the Energy Vision (REV) initiative.
- Working with the New York State Department of Public Service and The Brattle Group, released the study, **Pricing Carbon into NYISO's Wholesale Energy Market to Support New York's De-carbonization Goals**. The study explores the role of markets and whether current rules should be revised to work in tandem with a carbon pricing methodology.
- Successfully achieved 2017 milestones in the multi-year project to upgrade both the **Energy Management System (EMS)** and the **Business Management System (BMS)**, which encompass the critical core reliability functions used by the system operators and the day ahead and real time energy market functions.
- Issued its biannual **Comprehensive Reliability Plan (CRP)**, providing a blueprint for meeting electric system reliability requirements through 2026, and confirming that the Reliability Needs identified in the **2016 Reliability Needs Assessment (RNA)** are resolved.
- Completed the first **Public Policy Transmission Planning Process** resulting in the evaluation and selection of the most efficient/cost effective projects to satisfy a Public Policy Transmission Need for transmission congestion relief in Western New York.
- Successfully concluded the **Comprehensive Interconnection Process Improvements Assessment**, which identified interconnection practices to improve administrative efficiency, compress the interconnection study process and allow for expedited project development.
- Successfully completed and executed the **Transmission Congestion Contract (TCC) Balance of Period Auction**, maximizing the value of TCC awards based on the bids, offers, and the transmission line and contingency constraints.
- Implemented new **Capacity Market Demand Curves for the 2017/2018, 2018/2019, 2019/2020, and 2020/2021 Capability Years**, and established a new transparent, formulaic process to annually update net energy and ancillary service revenues between resets.

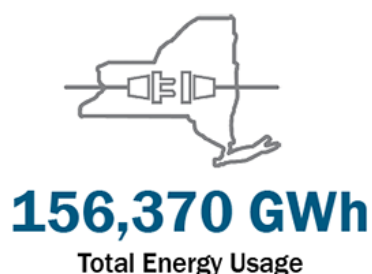
These key accomplishments build upon the organization's ongoing commitment to lowering grid-management charges, improving compliance with applicable reliability standards, facilitating industry compliance with state policies, and lowering the cost of electricity to consumers across New York.

Reliability New Yorkers Can Count On

The New York Independent System Operator (NYISO) delivers electricity across New York in exactly the right amount, at exactly the right time. The NYISO conducts and monitors auctions of wholesale electricity every five minutes, every day of the year, to provide the lowest-cost power available and to encourage competition that drives innovation and efficiency to meet consumers' needs.

The NYISO performs comprehensive planning studies for New York's energy future, and provides independent, authoritative information to public policymakers and private investors with the common goal of meeting future electricity needs while sustaining the reliable supply of electricity for years to come.

2017 by the numbers



Highlights & Accomplishments

The NYISO has a proven track record of advancing change to keep pace with technology, demand, fuel supply economics, and public policy. These efforts included several strategic initiatives in 2017 aimed at building a cleaner, more sustainable grid and ensuring system reliability.

DER Roadmap

Continuing its work at the forefront of market design and commitment to making the electric grid smarter, cleaner, and more efficient, the NYISO issued its *Distributed Energy Resource Roadmap for New York's Wholesale Electricity Markets*.

The objectives described in the *Roadmap*, though focused on wholesale markets, largely parallel the objectives of the New York State Public Service Commission's (PSC) Reforming the Energy Vision (REV) initiative in order to complement efforts to incentivize DER investment by the utilities and other industry participants. Using the *Roadmap*, the NYISO's goal is to develop a series of market enhancements to more fully integrate and optimize DER.

To further inform the *Roadmap* initiative, the NYISO launched a pilot program in 2017 to integrate innovative DER applications into its wholesale market systems. The pilot program will inform market design efforts within the NYISO; build operational DER experience among the NYISO, utilities, and market participants; and demonstrate coordination of market and grid operations with new or revised market rules for DER integration.

Distributed energy is a natural extension of the NYISO's mission. The NYISO recognizes the need to develop a fully integrated grid that balances the traditional, centralized power system with emerging distributed energy resources. The goal of the *Roadmap* initiative is to present a vision for economically integrating DER into the NYISO's wholesale markets, creating potential for increased efficiencies by enabling consumers to make decisions about energy use that are informed by wholesale market signals and real-time conditions on the grid.

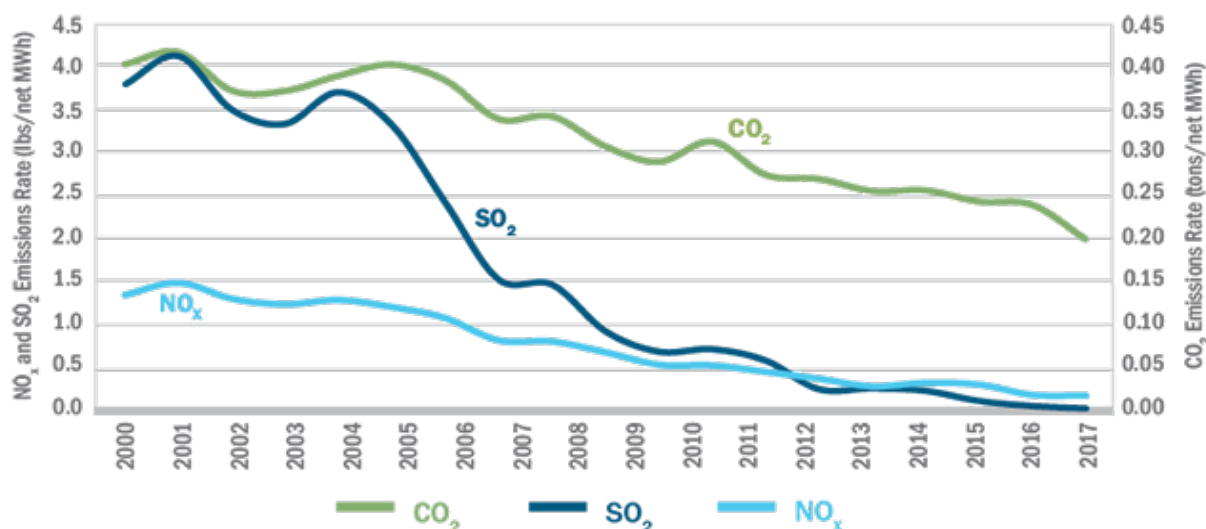
Aligning Wholesale Markets with Public Policy

To convert the State Energy Plan goals into mandated requirements, the PSC issued an order on August 1, 2016 adopting the Clean Energy Standard (CES). The Commission order charted a course for the state toward a future where 50% of all energy consumed in New York will come from renewable resources by 2030.

The CES will play a significant role in shaping New York's bulk power system over the next 15 years. Specifically, the order codifies the state's commitment to promoting increases in renewable generation to achieve 50-by-30, supporting construction and continued operation of renewable generation in New York, protecting upstate nuclear facilities from premature closure, and promoting the market objectives of REV.

Through competitive markets and state energy policy, New York has established itself as a national leader with respect to clean energy production and reduced carbon emission. Emissions of carbon dioxide and other air pollutants have already decreased significantly, as illustrated in Figure 1. With state policies taking on a more prominent role in shaping the grid, NYISO stakeholders sought to investigate incorporating a cost for carbon dioxide emissions into the NYISO's energy market.

Figure 1: Emissions Rates from Electric Generation in New York: 2000-2017



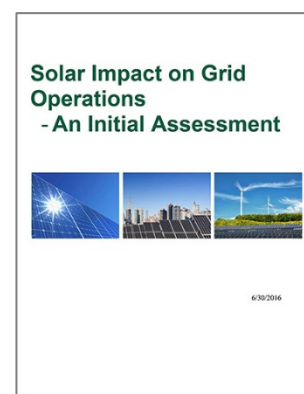
Source: 2018 Power Trends report

Working with the New York State Department of Public Service and the consulting firm The Brattle Group, the NYISO issued a study on how carbon pricing in the wholesale energy markets might enable the state to achieve its goals more efficiently and cost-effectively. The report noted that carbon pricing would be an economically-efficient way to harmonize New York’s environmental goals and wholesale market design by sending granular price signals on carbon costs to the entire market to incentivize cleaner generation.

Together, the NYISO, the PSC, and Department of Public Service staff are diligently planning for the system transformation necessary to facilitate the growth of clean energy resources in New York. By leveraging competitive markets, the NYISO believes the state can pursue its goals in an economically efficient manner, while maintaining the reliability New Yorkers have come to expect.

Preparing for Solar Growth

With the release of its report, *Solar Impact on Grid Operations: An Initial Assessment*, the NYISO began laying the groundwork for reliably managing projected growth in solar resources. The report examined the potential for growth in solar power, the impact of increasing intermittent resources on grid operations, and forecasting issues that must be addressed to make effective use of solar resources in the future.



The study found that the New York electric system can reliably manage the increased variability in five-minute loads associated with the solar PV and wind penetration levels studied — up to 4,500 MW of wind and 9,000 MW of solar photovoltaics (PV).

Going forward, large-scale deployment of behind-the-meter solar PV will impact the NYISO's load profile and system operations. Although these impacts may be mitigated in the future by on-site storage technology, the study recommended the incorporation of real-time and day-ahead solar forecasts into its control room operations and markets as soon as practicable.

Similar to its innovative work in the area of wind forecasting, the NYISO began evaluating potential solar forecasting systems in 2016. This forecasting system went live in November of 2017, and today solar forecasts are an integral part of daily operations.

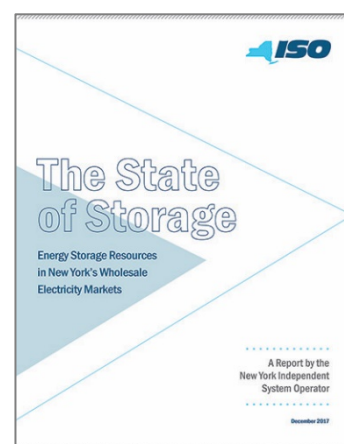
Wind Power Record

Electricity generated by wind power in New York reached a new peak in October 2017. The new record of 1,622 MW over a one-hour period edged out the previous record of 1,571 MW set in January of 2016. As wind production reached 1,622 MW, it provided 12% of all energy generation in the state for that period. The record output represented 89% of the 1,827 MW of installed wind capacity in New York State in 2017.

The Future of Energy Storage

One of the fundamental challenges of grid operations is constantly maintaining a balance between electric supply and demand. Energy storage can play a key role in this balance, and clearly will be an integral part of the grid of the future. Since the announcement of the New York PSC's Reforming the Energy Vision initiative, there has been a growing interest in wholesale market participation of energy storage resources.

The NYISO was the first grid operator in the nation to establish federally-approved market rules for energy storage in 2009, and to deploy the associated software and control systems. In 2017, the NYISO released its plans for creating a market participation model designed to maximize the economic and societal benefits of energy storage resources. Through the release of *State of Storage: Energy Storage Resources in New York's Wholesale Electricity Markets*, the NYISO examines the technical, regulatory, and market landscape for energy storage resources and outlines the steps it will take to develop a full market participation model. The report proposes three phases of market design work:



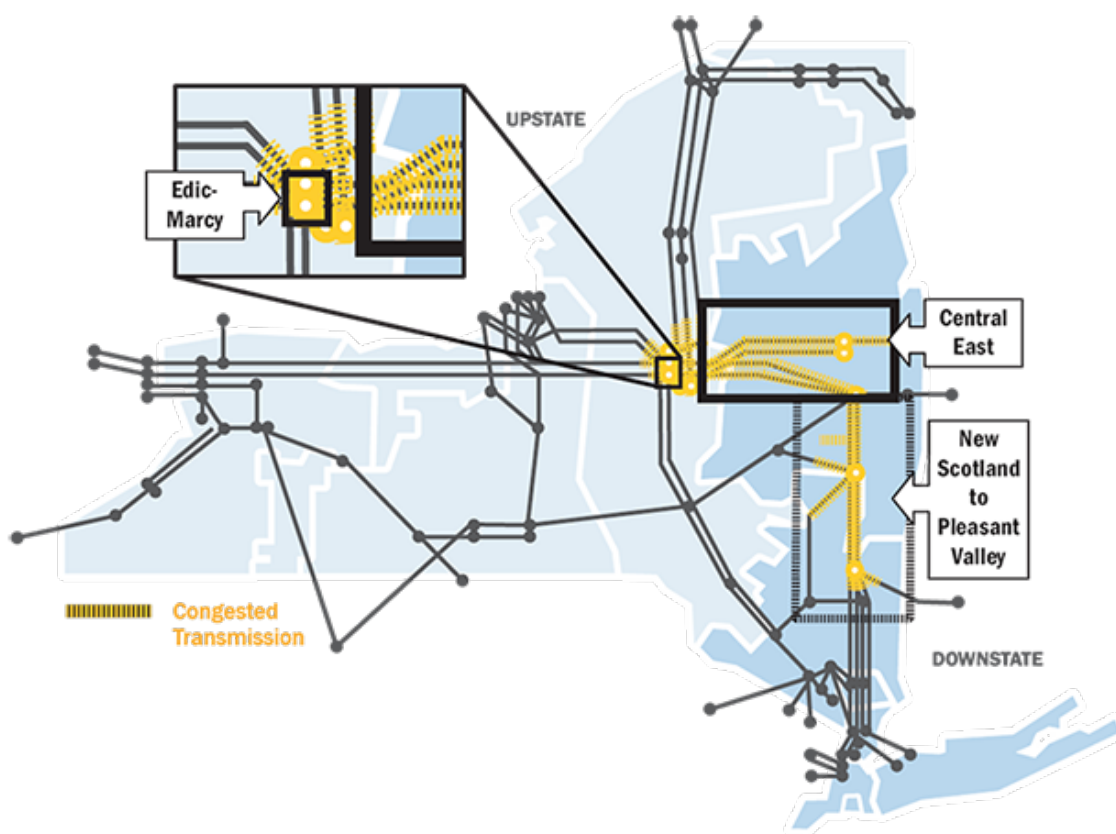
- Energy storage integration
- Energy storage optimization
- Renewable and storage aggregation

The concepts articulated in the *State of Storage* report are consistent with the energy storage participation objectives outlined in *Order No. 841 (Docket No. RM16-23)* issued by the Federal Energy Regulatory Commission intended to expand opportunities for storage to participate in wholesale markets. The NYISO has begun designing market structures to further integrate storage in its markets and operations to meet these state and federal objectives.

Public Policy Transmission Solutions

A cleaner, greener, integrated grid to serve New York requires a modernized, upgraded, and expanded transmission system to enable the new resource mix in a changing energy landscape in New York. Upgraded transmission capability is vital to meeting public policy goals and efficiently moving power to address regional power needs.

Figure 2: Transmission Congestion Corridors in New York State



Source: 2018 Power Trends report

FERC's *Order No. 1000* required that planning processes consider transmission needs driven by public policy requirements. Transmission projects that fulfill such requirements will be eligible for cost recovery through the NYISO's tariff — if they are selected by the NYISO as the more efficient or cost-effective transmission solution to the need identified by the PSC. Through *Order No. 1000*, the PSC has identified public policy transmission needs in Western New York and on the UPNY-SENY and Central-East interfaces between upstate and downstate New York.

For the Western New York Public Policy Transmission Need, the PSC determined that reducing transmission congestion in the region could achieve significant environmental, economic, and reliability benefits throughout the state. These include optimizing output from the Niagara Power Project, greater imports of renewable energy from Ontario, and increased operational flexibility and efficiency.

The NYISO solicited proposals to resolve the Western New York transmission need. Of the proposed solutions submitted by developers, the NYISO determined that ten proposals were viable and sufficient. In October 2016, following consideration of public comments, the PSC issued an order confirming the Western New York need and determined that the NYISO should evaluate and select a transmission solution. In a decision that will support New York's goal of maximizing the flow of energy from renewable resources in the region, the NYISO Board of Directors selected a proposal from NextEra Energy Transmission New York (NextEra) to address the public policy need for new transmission in Western New York. While maximizing the flow of energy from renewable resources, the transmission upgrades also are expected to provide reliability, environmental and economic benefits, including: improving transmission security, reducing emissions, and increasing consumer access to lower-cost resources. The selected Empire State Line includes two new 345 kV substations near Dysinger and Elma, a twenty-mile 345 kV line connecting the new substations, as well as a phase angle regulator to control power flows. All facilities will predominantly utilize existing rights of way. The Dysinger substation will become the new transmission hub in Western New York, connecting a total of seven 345 kV lines. This new hub will not only provide access to existing renewable resources, but will also provide a backbone for future renewable resource integration in Western New York.

In the AC Transmission proceeding, the Commission identified a Public Policy Transmission Need to relieve congestion on the UPNY-SENY and Central East interfaces, a section of the grid that runs from Central New York through the Capital Region to the lower Hudson Valley.

Developers submitted 15 transmission projects and one non-transmission project in response to NYISO's solicitation of proposed solutions. The NYISO identified 13 viable and sufficient projects, and filed its assessment with the PSC.

Throughout 2016, the NYISO engaged in detailed evaluations of the transmission proposals for both the Western New York and the AC Transmission Needs efforts. Each proposal was evaluated to determine benefits to the transmission system, including their operability, expandability, performance and cost.

Upgrading EMS/BMS Systems

The NYISO currently has a combined Energy Management System (EMS) and Business Management System (BMS) collectively referred to as 'Ranger.' This system was initially placed into operation in 2005, upgraded in 2007, and incrementally enhanced through marketplace and business directed initiatives.

In 2012, industrial technology company ABB announced that it would cease further evolution of the Ranger System in favor of consolidating the product into a single network manager product. The Ranger System runs on a dedicated proprietary hardware platform projected to reach its end of support lifecycle in 2019. In June 2016, the NYISO executed a contract with ABB for a new system based on project milestones and tied to defined acceptance criteria.

The NYISO is committed to a multi-year effort to develop and deploy a new EMS/BMS system that will build upon our capabilities to create the platform for incorporating more sophisticated tools for regional coordination and the reliable integration of growing renewable and distributed resources.

In 2017, the NYISO and ABB hit key projects milestones, including the completion of software design, software development, and testing preparation efforts. ABB conducted training leading up to the factory testing at ABB's facilities, which began on schedule in September, and continued throughout the year with the goal of moving testing to NYISO's site in the following year.

Comprehensive Reliability Plan

The NYISO's Board of Directors approved and released the NYISO's 2016 Comprehensive Reliability Plan, providing a blueprint for meeting electric system reliability requirements via market-based solutions by encouraging developers and investors to assess and assume the risks of investments while minimizing costs to consumers. While finding that all reliability needs have been satisfied on the bulk power system, the 2016 CRP notes that reliability margins could change over the study period (2017-2026) based upon changes in assumptions and other possible risk factors. The CRP also makes clear that developments concerning the future of nuclear generating units in New York could impact system resources, requiring additional study and monitoring.

Corporate Social Responsibility

The NYISO has a long history of employee support for numerous social and charitable causes. In 2017, NYISO employees raised more than \$100,000 for the United Way. In recognition, the United Way presented

the NYISO with the 2017 *Campaign of Distinction* and the *Leader in Giving* awards. The awards are presented to companies whose campaigns demonstrated significant growth and success due to renewed energy and community spirit.

Throughout the year, NYISO employees also supported a number of other charitable and community endeavors, including contributions to the March of Dimes and American Red Cross blood drives, as well as participation in the American Heart Association Heart Walk, CDPHP Workforce Team Challenge run, and hosting of meetings for the Society of Women Engineers, Toastmasters, and Women in Power.

In Summary

2017 was a year of considerable progress for the NYISO in terms of furthering clean energy initiatives, ensuring the long-term reliability of the energy supply that New Yorker's depend on, and integrating the public policy initiatives that continue to shape the future of our power grid. We look forward to building on this foundation and to collaborating with our market participants as we continue to explore avenues for innovation and efficiency.

Market Participants

3M Company
 Abest Power & Gas, LLC
 ABN Energy, LLC
 AC Energy, LLC
 Accent Energy Midwest II LLC dba
 IGS Energy
 Aesir Power, LLC
 AG Energy, L.P.
 Agera Energy, LLC
 Aggressive Energy, LLC
 Agway Energy Services, LLC
 Albany Energy LLC
 Allegany Generating Station, LLC
 Alpha Gas and Electric, LLC
 Alphataraxia Nickel LLC
 Ambit New York, LLC
 American Power & Gas, LLC
 Ameristar Energy LLC
 Amherst Utility Cooperative (AUC)
 AP Gas & Electric (NY), LLC dba
 APG&E
 AP Gas & Electric (TX), LLC
 Appian Way Energy Partners East,
 LLC
 Approved Energy II LLC
 Ardor Energy Limited Liability
 Company
 ASC Energy Services, Inc.
 Associated Renewable Inc.
 Astoria Energy II, LLC
 Astoria Energy LLC
 Astoria Generating Company L.P.
 Astral Energy LLC
 Atlantic Energy, LLC
 Atlantic Power and Gas LLC
 ATNV Energy, LP
 Axon Energy, LLC
 Baker Boy, LLC
 Barclays Services Corporation
 Bayonne Energy Center, LLC
 BBPC, LLC, d/b/a Great Eastern
 Energy
 Binghamton BOP LLC
 BioUrja Power, LLC

BJ Energy LLC
 Black Oak Energy LLC
 Blue Rock Energy, Inc.
 BNP Paribas Energy Trading GP
 Boralex Hydro Operations Inc
 Boston Energy Trading and
 Marketing LLC
 BP Energy Company
 Brookfield Energy Marketing LP
 Brookfield Renewable Energy
 Marketing US LLC
 Broome Energy Resources, LLC
 Brown's Energy Services LLC
 Bruce Power Inc.
 Buy Energy Direct, LLC
 Calpine Energy Services LP
 Canadian Wood Products -
 Montreal Inc
 Canandaigua Power Partners, LLC
 Canastota Windpower LLC
 Cargill Power Markets, LLC
 Carr Street Generating Station LP
 Carthage Energy LLC
 Castleton Commodities Merchant
 Trading L.P.
 Castleton Power, LLC
 Cayuga Operating Company, LLC
 CCI Rensselaer LLC
 CECONY-LSE
 Censtar Energy Corp
 Central Hudson Gas & Electric Corp.
 Centre Lane Trading Ltd.
 Champion Energy Services, LLC
 Chesapeake Trading Group, LLC
 CHI Power Marketing, Inc
 Chief Energy Power, LLC
 Chubu TT Energy Management Inc.
 Citigroup Energy Inc.
 Citizens Choice Energy, LLC dba
 AmeriChoice Energy
 City of Niagara Falls
 City Power & Gas, LLC
 CleanChoice Energy, Inc. dba
 Ethical Electric

Clear Choice Energy, LLC
 Clearview Electric, Inc.
 Columbia Utilities Power, LLC
 Commerce Energy, Inc. d/b/a
 Amigo Energy
 Con Edison Solutions, Inc.
 ConocoPhillips Company
 Consolidated Edison Co. of New
 York, Inc.
 Consolidated Edison Energy, Inc.
 Consolidated Hydro New York, Inc.
 Consolidated Power Co., LLC
 Constellation Energy Power Choice,
 LLC
 Constellation Energy Services of
 New York, Inc.
 Constellation Energy Services, Inc.
 Constellation NewEnergy, Inc.
 Copperwood Energy Fund, LP
 County of Erie NY
 County of Niagara NY
 Covanta Niagara, LP
 Credit Suisse (USA), Inc.
 Cummins Inc
 Cumulus Master Fund
 Cutone & Company Consultants,
 LLC
 Danskammer Energy, LLC
 Darby Energy, LLLP
 DC Energy LLC
 DC Energy New York, LLC
 Direct Energy Business Marketing,
 LLC
 Direct Energy Business, LLC
 Direct Energy Marketing Inc
 Direct Energy Services, LLC
 Direct Energy Small Business, LLC
 Drift Marketplace, Inc.
 DTE Energy Trading Inc
 Dynamis ETF, LLC
 Dynasty Power Inc
 Dynegy Marketing and Trade, LLC
 (DMT)
 Eagle Creek Hydro Power, LLC
 Eagle Power Authority, Inc.

Eagles Power, LLC
 East Coast Power and Gas, LLC
 East Coast Power, LLC
 Eceasis LLC
 EDF Energy Services, LLC
 EDF Trading North America, LLC
 EDP Renewables North America LLC
 eKapital NY, LLC
 Eligo Energy NY, LLC
 Eligo Energy, LLC
 Emera Energy Services Subsidiary No. 1, LLC
 Emera Energy Services, Inc
 Emera Energy U.S. Subsidiary No. 1, Inc.
 Emera Energy U.S. Subsidiary No. 2, Inc.
 EMP Power, LLC
 Empire Generating Co, LLC
 Empire Natural Gas Corp.
 Enbala Power Networks (USA) Inc.
 Energy Conservation and Supply, Inc.
 Energy Cooperative of America, Inc dbaEnCoop of NY
 Energy Discounters, LLC dba Maximum Power and Gas
 Energy Limited Inc
 Energy Plus Holdings LLC
 Energy Power Investment Company, LLC
 Energy Services Providers, Inc dba NY Gas&Electric
 Energy Spectrum Inc.
 Energy Technology Savings, Inc
 Energya VM Gestion de Energia S.L.U.
 EnergyMark, LLC
 EnerNOC, Inc.
 Enerwise Global Technologies, Inc. dba CPower
 Engelhart CTP (US) LLC
 Entergy Nuclear Fitzpatrick, LLC
 Entergy Nuclear IP-2 LLC
 Entergy Nuclear IP3, LLC
 Entergy Nuclear Power Marketing LLC
 Entergy Solutions LLC

Entra Energy LLC
 Entrust Energy East, Inc.
 Erie Boulevard Hydropower LP
 Erie Wind, LLC
 ETC Endure Energy L.L.C.
 ETS Emerald LLC
 Everyday Energy, LLC
 Exelon Generation Company LLC
 Family Energy Inc
 FC Energy Services Company, LLC
 First Choice Energy, Inc.
 First Commodities International Inc.
 Flanders Energy LLC
 Flat Rock Windpower II LLC
 Flat Rock Windpower LLC
 Franklin Power LLC
 Freepoint Commodities LLC
 Freeport Electric
 Frontier Utilities Northeast LLC
 Galaxy Energy, LLC
 Galt Power Inc.
 Gateway Energy Services Corporation
 GBE Power Inc.
 GDF Suez Energy Marketing NA, Inc
 GDF Suez Energy Resources NA, Inc
 GDF SUEZ Retail Energy Solutions, LLC dbaThinkEner
 GenOn Energy Management, LLC
 Global Energy LLC
 Green Island Power Authority
 Green Mountain Energy Company
 Green Mountain Power Corporation
 Greenlight Energy Inc
 GRG Energy LLC
 Griffiss Utility Services Corporation
 Group628, LLC
 Hampshire Paper Co., Inc.
 Hardscrabble Wind Power LLC
 HIKO Energy, LLC
 Homer City Generation, L.P.
 Howard Wind LLC
 HQ Energy Services (US)
 HSBC Bank USA

Hudson Energy Services, LLC
 Iberdrola Renewables, LLC
 IDT Energy, Inc
 Indeck Energy Svs of Silver Springs
 Indeck-Corinth LP
 Indeck-Olean LP
 Indeck-Oswego LP
 Indeck-Yerkes LP
 Independence Energy Group LLC dba Cirro Energy
 Inertia Power V, LLC
 Infinite Energy Corp dba Definite Energy Group
 Innovative Energy Systems, Inc.
 Innoventive Power LLC
 Inspire Energy Holdings, LLC
 International Paper Company
 IPKeys Power Partners, LLC
 Islip Resource Recovery Agency
 J Aron and Company
 Jamestown Board of Public Utilities
 Jericho Rise Wind Farm LLC
 Josco Energy Corp.
 Just Energy New York Corp
 Kaleida Health
 KASS Commodities, LLC
 KFW Energy Trading, LLC
 Kiwi Energy NY LLC
 L&L Energy, LLC
 Lavand & Lodge, LLC
 Lexington Power & Light, LLC
 Liberty Power Holdings LLC
 Linde Energy Services, Inc.
 Lockport Energy Assoc.
 Long Island Power Authority
 Lyonsdale Biomass, LLC
 M&R Energy Resources Corp.
 Macquarie Energy LLC
 Madison Windpower, LLC
 MAG Energy Solutions Inc.
 Major Energy Electric Services, LLC
 Mansfield Power and Gas, LLC
 Marathon Power LLC
 Marble River, LLC
 Marsh Hill Energy LLC

Median Energy Corp.
 Mercuria Energy America, Inc
 Merrill Lynch Commodities, Inc.
 Midwest Energy Trading East LLC
 Mitchell Supreme Fuel Co.
 Model City Energy, LLC
 Modern Innovative Energy, LLC
 Monroe County NY
 Monterey NY, LLC
 Morgan Stanley Capital Group, Inc.
 Morgan Stanley Services Group Inc.
 MPower Energy LLC
 Munnsville Wind Farm, LLC
 Nalcor Energy Marketing Corporation
 National Gas & Electric, LLC
 Nationwide Energy, LLC
 NDC Partners LLC
 NetPeak Energy Group LLC
 New Athens Generating Company LLC
 New Wave Energy Corp
 New York Industrial Energy Buyers, LLC
 New York Municipal Power Agency
 New York Power Authority
 New York State Electric & Gas Corp.
 New York Transco LLC
 Next Utility Energy LLC
 NextEra Energy Power Marketing, LLC
 NextEra Energy Services Massachusetts, LLC
 NextEra Energy Services New York, LLC
 Niagara Frontier Transportation Authority
 Niagara Generation, LLC
 Niagara Mohawk Power Corp.
 Niagara University
 Niagara Wind Power, LLC
 Nine Mile Point Nuclear Station, LLC
 Nissequogue Cogen Partners
 Noble Altona Windpark, LLC
 Noble Americas Energy Solutions LLC
 Noble Americas Gas & Power Corp

Noble Bliss Windpark, LLC
 Noble Chateaugay Windpark, LLC
 Noble Clinton Windpark I, LLC
 Noble Ellenburg Windpark, LLC
 Noble Wethersfield Windpark LLC
 NOCO Electric LLC
 Nordic Energy Services, LLC
 North American Power and Gas LLC
 North Energy Power, LLC
 Northbrook Lyons Falls, LLC
 Northbrook New York LLC
 Northern States Power Company
 Northstar NY Ltd.
 NRG Curtailment Solutions, Inc.
 NRG Power Marketing LLC
 NuEnerGen, LLC
 Oasis Power, LLC d/b/a Oasis Energy
 Occidental Power Services Inc
 OCP Resources, LLC
 Onondaga County
 Ontario Power Generation Energy Trading, Inc.
 Ontario Power Generation Inc.
 Orange & Rockland Utilities, Inc.
 ORU-LSE
 Pacific Summit Energy LLC
 Palmco Power NJ, LLC
 Palmco Power NY, LLC
 Pay Less Energy, LLC
 Peninsula Power, LLC
 Perigee Energy, LLC
 Phoenix Energy Group, LLC
 Planet Energy (New York) Corp
 Plant-E Corp.
 Plymouth Rock Energy, LLC
 Power City Partners, L.P.
 Power Supply Services LLC
 Powerex Corporation
 Precept Power LLC
 Premier Empire Energy LLC
 PSEG Energy Resource & Trade, LLC
 Public Power, LLC
 Pure Energy Inc

Quantum Power Corp.
 R.E. Ginna Nuclear Power Plant, LLC
 Rainbow Energy Marketing Corp
 RBC Energy Services LP
 Red Wolf Energy Trading, LLC
 Red Wolf NT, LLC
 ReEnergy Black River LLC
 Reliant Energy Northeast, LLC dba NRG Retail Solut
 Renaissance Power & Gas, Inc.
 Repsol Energy North America Corporation
 Residents Energy, LLC
 Riverbay Corporation
 Robison Energy, LLC
 Rochester Gas & Electric Corp.
 Roctop Investments Inc
 Roseton Generating LLC
 Royal Bank of Canada
 Rubicon NYP Corp.
 S.J. Energy Partners, Inc.
 Sanctorum Energy Inc.
 Saracen Energy East LP
 Saracen Energy West LP
 Saracen Power LP
 Saranac Power Partners, L.P.
 SBF New York, L.L.C.
 SBR Energy, LLC
 Schools & Municipal Energy Cooperative (SMEC)
 Selkirk Cogen Partners, L.P.
 Seneca Energy II, LLC
 Seneca Power Partners, L.P.
 SESCO Enterprises LLC
 Sheldon Energy LLC
 Shell Energy North America (US), L.P.
 Siemens Industry, Inc
 Smart One Energy, LLC
 SmartEnergy Holdings, LLC
 Sol Energy, LLC
 Solea Energy, LLC
 Solios Power LLC
 Somerset Operating Company, LLC
 South Bay Energy Corp.
 South Jersey Energy Company

South Jersey Energy ISO1, LLC
 South Jersey Energy ISO3, LLC
 South Jersey Energy ISO4, LLC
 South Jersey Energy ISO5, LLC
 South Jersey Energy ISO6, LLC
 South Jersey Energy ISO7, LLC
 South Jersey Energy ISO8, LLC
 Southern Energy Solution Group, LLC
 Spark Energy, L.P.
 Spartan Electricity Futures, Inc
 Sperian Energy Corp
 SREC Generating Company, Inc
 Starion Energy NY, Inc
 StatArb Investment LLC
 State of New York - OGS
 State of New York - OGS Municipal
 State of New York - SUNY
 State of New York - SUNY Buffalo
 Stephentown Spindle, LLC
 Sterling Power Partners, L.P.
 Stony Creek Energy LLC
 Stream Energy New York, LLC
 Sustaining Power Solutions LLC
 Synergy Biogas LLC
 Talen Energy Marketing, LLC
 Targray Americas Inc.
 TC Ravenswood, LLC
 TEC Energy Inc.
 Tenaska Power Services Co.
 Texas Retail Energy, LLC
 Time Warner Inc.
 TrailStone Power, LLC
 TransAlta Energy Marketing (U.S.) Inc.
 TransCanada Power Marketing, Ltd.
 Transgrid Midwest LLC
 Trident Retail Energy, LLC dba Trident Power
 Triton Power Company
 TrueLight Energy Fund, LP
 Twin Eagle Resource Management, LLC
 U.S. Energy Partners LLC
 UGI Energy Services, LLC
 Uncia Energy, LP - Series F

Uniper Global Commodities North America LLC
 University of Rochester
 Utility Expense Reduction, LLC
 Velocity American Energy Master I, L.P.
 Verde Energy USA New York, LLC
 Village of Rockville Centre
 Viridian Energy NY, LLC
 Viridity Energy, Inc.
 Virtual Power Hedging, LLC
 Vitol Inc.
 Watchtower Bible and Tract Society of New York, In
 Western New York Wind Corp.
 Wheelabrator Hudson Falls, LLC
 Wheelabrator Westchester, L.P.
 WM Renewable Energy, LLC
 XO Energy NY, LP
 XO Energy NY2, LP
 XOOM Energy New York, LLC
 XOOM Energy, LLC
 Zone One Energy, LLC

Corporate Governance

Board of Directors

Ave M. Bie, Board Vice Chair

Partner in the law firm of Quarles & Brady and former Chair of the Wisconsin Public Service Commission

Robert A. Hiney, Board Vice Chair

Former Executive Vice President for Power Generation of the New York Power Authority (NYPA)

Michael B. Bemis

Former President of Exelon Power and President of Energy Delivery for the Exelon Corporation; Chief Executive of London Electricity; and Executive Vice President for Entergy Corporation

Daniel C. Hill

Former Senior Vice President and Chief Information Officer of Exelon Corporation

Roger B. Kelley

Former President and CEO of the New York Power Authority, former President & CEO of Peregrine Midstream Partners, LLC., and former President & CEO of Fortistar Renewable

Mark S. Lynch

Former President and CEO of New York State Electric and Gas Corporation and Rochester Gas and Electric Corporation, and former President and CEO of the New York Independent System Operator

James V. Mahoney

President and CEO of Energy Market Solutions, Inc. and former President and CEO of DPL Inc., a regional energy and utility company

Thomas Ryan, Jr.

Former President and Chief Operating Officer of the American Stock Exchange

Robert E. Fernandez

Interim President and CEO of the New York Independent System Operator

Corporate Officers

Robert E. Fernandez

Interim President and CEO

Richard Dewey

Executive Vice President

Rick Gonzales

Senior Vice President and Chief Operating Officer

Rana Mukerji

Senior Vice President, Market Structures

Douglas Chapman

Vice President, Chief Information Officer

Diane L. Egan

Board Secretary and Corporate Secretary

Karen Gach

Acting General Counsel

Cheryl Hussey

Vice President and Chief Financial Officer

Kevin Lanahan

Vice President, External Affairs

Emilie Nelson

Vice President, Market Operations

Zachary G. Smith

Vice President, System and Resource Planning

Wesley Yeomans

Vice President, Operations

2017 Financial Statements

Independent Auditors' Report

The Board of Directors
New York Independent System Operator, Inc.:

We have audited the accompanying financial statements of New York Independent System Operator, Inc. which comprise the statements of financial position as of December 31, 2017 and 2016, and the related statements of activities, and cash flows for the years then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements 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 entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the financial statements referred to above present fairly in all material respects, the financial position of New York Independent System Operator, Inc. and the results of its operations, change in its net assets, and its cash flows for the years then ended in accordance with U.S. generally accepted accounting principles.

Albany, New York
March 13, 2018

**NEW YORK INDEPENDENT
SYSTEM OPERATOR, INC.**

Statements of Financial Position

December 31, 2017 and 2016

Assets	2017	2016
Current assets:		
Cash and cash equivalents	\$ 41,038,251	48,384,113
Restricted cash	402,474,459	420,933,363
Marketable securities - (note 8)	1,097,651	720,532
Accounts receivable – net (note 2)	6,514,674	5,352,084
Prepaid expenses	8,324,320	8,133,318
Regulatory assets - current portion (note 3)	1,778,962	—
Total current assets	461,228,317	483,523,410
Noncurrent assets:		
Regulatory assets (note 3)	19,672,395	16,322,844
Property and equipment – net (note 4)	110,942,990	110,562,505
Other noncurrent assets (note 7)	2,744,395	4,167,483
Total noncurrent assets	133,359,780	131,052,832
Total	\$ 594,588,097	614,576,242
Liabilities		
Current liabilities:		
Accounts payable and accrued expenses	\$ 101,383,316	185,822,701
Market participant security deposits	295,761,033	232,400,182
Market participant prepayments	8,920,739	11,162,659
Working capital reserve (note 10)	33,527,919	33,148,714
Long-term debt – current portion (note 6)	27,058,891	23,353,697
Regulatory liabilities – current portion (note 3)	4,621,822	7,840,568
Deferred revenue (note 11)	13,545,876	10,659,256
Other current liabilities (note 8)	1,449,538	1,358,773
Total current liabilities	486,269,134	505,746,550
Noncurrent liabilities:		
Accrued pension liability (note 8)	6,489,090	4,930,278
Accrued postretirement liability (note 8)	9,523,178	6,633,487
Regulatory liabilities (note 3)	3,496,584	4,595,536
Other noncurrent liabilities (notes 7 and 8)	10,034,584	14,292,466
Long-term debt (note 6)	78,775,527	78,377,925
Total noncurrent liabilities	108,318,963	108,829,692
Total liabilities	594,588,097	614,576,242
Unrestricted net assets	—	—
Total liabilities and net assets	\$ 594,588,097	614,576,242

See accompanying notes to financial statements.

**NEW YORK INDEPENDENT
SYSTEM OPERATOR, INC.**

Statements of Activities

Years ended December 31, 2017 and 2016

	<u>2017</u>	<u>2016</u>
Revenues:		
Rate Schedule 1 tariff charge	\$ 155,341,396	156,253,809
Federal Energy Regulatory Commission fees recovery	12,878,135	12,397,456
Planning studies revenue	10,346,409	5,460,603
Fees and services	1,199,388	1,143,255
Interest income	497,042	206,361
Total revenues	<u>180,262,370</u>	<u>175,461,484</u>
Operating expenses:		
Compensation and related benefits (note 8)	85,940,345	81,427,512
Professional fees and consultants	23,759,260	23,294,133
Depreciation (note 4)	21,535,917	24,179,894
Maintenance, software licenses and facility costs	20,587,146	19,413,423
Federal Energy Regulatory Commission fees	12,878,135	12,397,456
Administrative and other expenses	4,641,338	4,595,109
Interest expense	4,037,409	3,760,151
Telecommunication expenses	3,236,109	3,034,436
Insurance expense	2,843,827	2,914,612
Training, travel, and meeting expenses	2,017,384	1,752,317
Northeast Power Coordinating Council fees	281,227	264,718
Change in fair value of marketable securities	(117,006)	(38,060)
Change in fair value of interest rate swaps (note 7)	(1,378,721)	(1,534,217)
Total operating expenses	<u>180,262,370</u>	<u>175,461,484</u>
Change in unrestricted net assets	—	—
Unrestricted net assets, beginning of year	—	—
Unrestricted net assets, end of year	<u>\$ —</u>	<u>—</u>

See accompanying notes to financial statements.

**NEW YORK INDEPENDENT
SYSTEM OPERATOR, INC.**

Statements of Cash Flows

Years ended December 31, 2017 and 2016

	<u>2017</u>	<u>2016</u>
Cash flows from operating activities:		
Change in unrestricted net assets	\$ —	—
Adjustments to reconcile change in unrestricted net assets to net cash provided by operating activities:		
Depreciation	21,535,917	24,179,894
Amortization of debt issuances cost	88,355	172,648
Loss on disposition of assets	171,044	59,395
Change in fair value of marketable securities	(117,006)	(38,060)
Change in operating assets and liabilities:		
(Increase) decrease in accounts receivable and prepaid expenses	(1,353,592)	32,803,625
(Increase) decrease in restricted cash	18,458,904	(68,213,190)
Increase in marketable securities	(260,113)	(258,817)
Increase in regulatory assets	(4,668,653)	(1,378,763)
Decrease other assets	1,423,088	1,267,043
(Decrease) increase in accounts payable and accrued expenses	(82,606,472)	54,944,289
(Decrease) increase in market participant prepayments	(2,241,920)	3,226,313
Increase (decrease) in market participant security deposits	63,360,851	(24,731,834)
Increase in working capital reserve	379,205	137,635
Decrease in regulatory liabilities	(2,504,826)	(1,716,526)
Decrease in deferred revenue and other liabilities	895,274	(1,041,128)
Net cash provided by operating activities	<u>12,560,056</u>	<u>19,412,524</u>
Cash flows from investing activities:		
Acquisition of property and equipment (including capitalized interest)	<u>(23,920,359)</u>	<u>(19,629,088)</u>
Net cash used in investing activities	<u>(23,920,359)</u>	<u>(19,629,088)</u>
Cash flows from financing activities:		
Payment of debt issuance cost	(15,000)	(83,750)
Proceeds from revolving credit facility loan	6,000,000	6,000,000
Repayment of revolving credit facility loan	(6,000,000)	(6,000,000)
Repayment of 2011 – 2013 budget facility loan	—	(2,889,018)
Proceeds from 2014 – 2018 budget facility loan	24,671,000	25,000,000
Repayment of 2014 – 2018 budget facility loan	(24,641,321)	(24,941,403)
Proceeds from 2016 – 2018 EMS/BMS facility loan	10,100,000	6,730,000
Repayment of 2016 - 2018 EMS/BMS facility loan	(2,243,333)	—
Repayment of 2012 Infrastructure Loan	(2,646,316)	(2,646,316)
Repayment of Mortgage and Renovations loans	<u>(1,210,589)</u>	<u>(1,138,473)</u>
Net cash provided by financing activities	<u>4,014,441</u>	<u>31,040</u>
Net decrease in cash and cash equivalents	(7,345,862)	(185,524)
Cash and cash equivalents – beginning of year	<u>48,384,113</u>	<u>48,569,637</u>
Cash and cash equivalents – end of year	<u>\$ 41,038,251</u>	<u>48,384,113</u>
Supplemental disclosure of cash flow information:		
Cash paid during the year for interest, net of capitalized interest	\$ 3,909,959	3,584,780
Noncash operating activity:		
Change in pension and postretirement liabilities	\$ 2,272,732	1,656,591
Change in fair value of interest rate swaps	(1,378,721)	(1,534,217)
Noncash investing activities:		
Property and equipment additions which were accrued but not paid	\$ 2,760,443	4,593,356
Property and equipment additions previously accrued which were paid	<u>4,593,356</u>	<u>3,971,670</u>

See accompanying notes to financial statements.

(1) Summary of Significant Accounting Policies

(a) Business Description

The New York Independent System Operator, Inc. (NYISO) was formed in April 1997 and commenced operations on December 1, 1999. NYISO is incorporated in the state of New York as a not-for-profit organization. NYISO assumed the responsibilities of its predecessor, the New York Power Pool (NYPP), which had coordinated the reliability of New York State's electric power grid for more than 30 years. Formed as a result of Federal Energy Regulatory Commission (FERC) policies, NYISO monitors a network of 11,000 circuit miles of high-voltage transmission lines and serves approximately 400 market participants.

NYISO's mission, in collaboration with its stakeholders, is to serve the public interest and provide benefit to consumers by maintaining and enhancing regional reliability, operating open, fair and competitive wholesale electricity markets, planning the power system for the future, and providing factual information to policymakers, stakeholders and investors in the power system. The NYISO facilitates fair and open competition in the wholesale electricity markets in which electricity and related services are purchased and sold on the basis of competitive bidding. Billing invoices are issued by NYISO to each market participant to settle transactions occurring in the NYISO markets.

NYISO is governed by an independent board of directors, as well as a committee structure consisting of market participant representatives. In addition to FERC oversight, NYISO is also subject to regulation in certain aspects by the New York State Department of Public Service Commission.

(b) Basis of Accounting and Presentation

The accompanying financial statements have been prepared on an accrual basis of accounting in accordance with U.S. generally accepted accounting principles.

The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. Significant items subject to such estimates and assumptions include the useful lives of fixed assets, recoverability of regulatory assets, the valuation of derivative instruments, and reserves for employee benefit obligations.

(c) Regulatory Accounting

NYISO's financial statements are prepared in accordance with generally accepted accounting principles for rate-regulated entities, Financial Accounting Standards Board Accounting Standards Codification (FASB ASC) Topic 980, *Regulated Operations*. As such, regulators may permit specific incurred costs, typically treated as expenses by unregulated entities, to be deferred and expensed in future periods when it is probable that such costs will be recovered in customer rates. Incurred costs are deferred as regulatory assets when NYISO concludes that it is probable future revenues will be provided to permit recovery of the previously incurred cost. A regulatory liability is recorded when amounts that have been recorded by NYISO are likely to be refunded to customers through the rate-setting process.

(d) Revenue Recognition

Settlements of market participants' energy transactions are not reflected in NYISO's Statements of Activities since they do not represent revenues or expenses of NYISO, as NYISO merely acts as an intermediary in the settlement process. In this role, NYISO receives and disburses funds from and to market participants for each settlement period.

Effective July 1, 2012, NYISO's two FERC-approved tariffs, the Open Access Transmission Tariff (OATT) and the Market Administration and Control Area Services Tariff (Services Tariff), were amended to clarify NYISO's role as the single counterparty to market participant transactions in the NYISO markets. For all market participant transactions in the NYISO markets, flash title passes through NYISO immediately prior to passing to the ultimate buyer and seller of the product. This arrangement reinforces NYISO's authority to continue to net a market participant's offsetting financial positions in NYISO markets for credit and billing purposes; provides clarity in NYISO's legal standing to pursue collection from a bankrupt market participant; and, also complies with the FERC directives on credit policy requirements for competitive wholesale electricity markets.

NYISO's tariffs allow recovery of NYISO's capital requirements, operating expenses and debt service costs through a surcharge assessed to market participants. The revenue from this surcharge, Rate Schedule 1, is earned when energy is scheduled and dispatched. Market participants are then billed for such charges in the subsequent settlement period's invoice.

NYISO's Rate Schedule 1 includes a timing mechanism that effectively meets the requirements of an alternative revenue program set forth in ASC Topic 980, Regulated Operations, Subtopic 602, Revenue Recognition. Accordingly, revenue is recognized for net financing obligations and capital costs incurred during the reporting period based on the revenue requirement formula in the tariffs. NYISO has recorded as a component of Other Noncurrent Liabilities \$4,778,865 and \$8,427,823, respectively, in the accompanying 2017 and 2016 Statements of Financial Position in connection with this rate-making recovery mechanism.

Effective January 1, 2016, NYISO implemented an independent mechanism for recovering NYISO's share of the FERC's cost assessed under Part 382 of The Commission's regulations (the annual FERC fee) outside of NYISO's Rate Schedule 1. NYISO invoices market participants to recover the estimated annual FERC fee. Once NYISO receives the invoice for the actual amount of the annual FERC fee, NYISO calculates a true-up amount equal to the difference between the estimated fee and the actual fee. NYISO recovers (or refunds) this true-up amount to market participants' over a six month period following receipt of the invoice. Annual FERC fee recoveries are held in a restricted, interest bearing escrow account until the invoice payment is due. NYISO recognizes this recovery of FERC fees as revenue which is offset by a corresponding FERC fee expense.

Revenues recorded as planning studies revenues arise from billing and collection services in the study service agreement process performed by NYISO. These revenues are offset by the corresponding study expenses, recorded in operating expenses, which were incurred in performing such studies. A portion of the deposits related to planning studies are nonrefundable and recorded as revenue when received.

(e) *Cash and Cash Equivalents*

NYISO considers short-term marketable securities with original maturities of three months or less to be cash equivalents. The cash equivalents at December 31, 2017 and 2016 were held in money market accounts invested primarily in short-term U.S. government obligations. NYISO's cash and cash equivalents consist primarily of funds accumulated for the working capital reserve, for general operating purposes, and amounts for funding certain employee benefit plans.

(f) *Restricted Cash*

Restricted cash consists primarily of market participant security deposits held in escrow accounts, amounts prepaid by market participants in advance of settlement billing dates, amounts collected on settlement invoices, amounts collected for Transmission Congestion Contract (TCC) auctions, amounts deposited for planning studies, amounts collected for the estimated annual FERC fee and amounts collected for voltage support services. Security deposits are invested at the market participant's choice in money market funds or short or intermediate-term bond funds. Effective

September 2017, the short and intermediate-term bond fund investment options were eliminated. NYISO presents changes in restricted cash in the operating activities section of the Statements of Cash Flows instead of in the investing activities section. NYISO has determined that this classification is more suitable to the nature of its operations.

(g) Other Assets

Other assets consist primarily of timing differences on certain rate-making recoveries, the fair value of interest rate swap agreements, and noncurrent prepaid expenses.

(h) Property and Equipment

Property and equipment are recorded at cost. NYISO capitalizes property and equipment additions in excess of \$5,000 with a useful life greater than one year. Depreciation is computed on the straight-line method over the assets' estimated useful lives of three to five years, except for building and building improvements, which are depreciated on a straight-line basis over 20 years. When assets are retired or otherwise disposed of, the cost and related depreciation are removed, and any resulting gain or loss is reflected in expense for the period. Repairs and maintenance costs are charged to expense when incurred.

Labor, overhead, interest, consulting, and related costs incurred to acquire and develop computer software for internal use are capitalized and amortized using the straight-line method over three years. These costs are reported as work in process until the deployment of the developed software. Costs incurred prior to the determination of feasibility of developed software and following the in-service date of developed software are expensed.

NYISO capitalizes the interest cost as part of the historical cost of developing certain assets.

Long-lived assets are recorded at cost, and are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amounts of the assets may not be recoverable. Management is not aware of any events or changes in circumstances that would necessitate a review of any long-lived assets as of the years ended December 31, 2017 and 2016.

(i) Working Capital Reserve

In order to maintain the liquidity and stability of NYISO's markets, NYISO has accumulated a working capital fund through amounts charged to market participants under the Rate Schedule 1. Any change to NYISO's working capital needs would be billed to market participants in future Rate Schedule 1 charges. Market participants are entitled to interest on their principal contributions to the working capital reserve. Each market participant is allocated interest based on the respective ratio share of each market participant's principal contributions to the total working capital fund. Accumulated interest on the working capital fund is distributed annually to market participants.

(j) Market Participant Prepayments

To reduce certain energy and ancillary services credit requirements, Market Participants may choose to prepay to the NYISO, in advance of settlement billing dates, their energy and ancillary services financial obligations. Moreover, certain Market Participants choose to make advance payments to the NYISO to be applied to future settlement invoices.

(k) Deferred Revenue

Advance payments from developers for planning studies are reflected as deferred revenue. Fees for participation in NYISO's governance process are billed to market participants in advance of the year for which they apply and are amortized over the related governance period. All such unamortized amounts are included in deferred revenue.

(l) Income Taxes

NYISO has been recognized by the Internal Revenue Service as an organization described in Internal Revenue Code (The Code) Section 501(c)(3) and is generally exempt from income taxes under Section 501(a) of the Code. During the calendar years 2017 and 2016, no unrelated business taxable income was generated by NYISO, and therefore no disclosure is made for federal or state income taxes.

The NYISO has determined prior to recording any benefit in the financial statements that it is more likely than not that the tax position will be sustained upon examination by the appropriate taxing authorities, as required by the Accounting for Uncertainty in Income Taxes Topic of the FASB ASC. 740. A tax position is measured at the largest amount of benefit that is greater than fifty percent likely of being realized upon settlement.

On December 22, 2017, the President signed into law H.R. 1, originally known as the Tax Cuts and Jobs Act. The new law includes several provisions that result in substantial changes to the tax treatment of tax-exempt organizations. NYISO has reviewed these provisions and the potential impact and concluded the enactment of H.R. 1 will not have a material effect on the operations of the organization.

(m) Fair Value

NYISO utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible. Fair value is determined based on assumptions that market participants would use in pricing an asset or liability in the principal or most advantageous market. When considering market participant assumptions in fair value measurements, the following fair value hierarchy distinguishes between the observable and unobservable inputs, which are categorized in one of the following levels:

Level 1 inputs: Unadjusted quoted prices in active markets for identical assets or liabilities that NYISO has the ability to access at the measurement date

Level 2 inputs: Other than quoted prices included within Level 1 inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the asset or liability

Level 3 inputs: Unobservable inputs for the asset or liability used to measure fair value to the extent that observable inputs are not available, thereby allowing for a situation in which there is little, if any, market activity for the asset or liability at the measurement date

The level in the fair value hierarchy within which a fair value measurement in its entirety falls is based on the lowest-level input that is available for that particular financial instrument.

NYISO's financial instruments consist primarily of cash and cash equivalents, restricted cash, marketable securities, accounts receivable, prepaid expenses, accounts payable and accrued expenses, short-term and long term debt, and benefit plan assets such that carrying value approximates fair value. The fair value of derivative instruments and benefit plan assets is discussed in notes 7 and 8, respectively.

(n) Pension and Other Postretirement Benefit Plans

NYISO has a defined benefit pension plan covering certain employees upon their retirement. The benefits are based on years of service and employee's compensation during the five years before retirement. NYISO also sponsors a defined postretirement benefit medical plan for retired employees and their dependents. NYISO records annual amounts relating to its pension and postretirement plans based on calculations that incorporate various actuarial and other assumptions, including discount rates, mortality, assumed rates of return, compensation increases, turnover rates, and healthcare costs and trend rates. Assumptions are reviewed on an annual basis and modifications

are made to the assumptions based on current rates and trends. The effect of modifications made to those assumptions utilized in recording its obligations under its plans are reasonable based on its experience and market conditions.

The net periodic costs are recognized as employees render the services necessary to earn the pension and postretirement benefits. Unamortized amounts that are expected to be recovered in rates in future years are recorded as a regulatory asset or liability. See note 8 for additional information.

(o) Concentration of Credit Risk

Financial instruments that subject NYISO to credit risk consist primarily of market settlement invoices and Rate Schedule 1 revenue due from market participants. As provided in the OATT and Services Tariff, NYISO reviews the creditworthiness of market participants, who are required to either maintain certain financial statement criteria and/or approved credit ratings, to post with NYISO, specified financial security in an amount sufficient to cover their outstanding liability to NYISO, or to prepay their obligations in advance of settlement billing dates.

NYISO's tariffs establish specific periods for the adjustment of settlement invoices and for market participant challenges to amounts billed for a particular service period. Settlement invoices can be adjusted for up to four months after the date of the monthly invoice issuance, and these invoices can be challenged for an additional one month after the issuance of all settlement adjustment invoices. Subsequent invoices issued during the settlement adjustment period "true up" amounts previously billed. After all true-up invoices are issued during the settlement adjustment period, market participants may challenge the amounts billed for a particular service period. If NYISO agrees with the provisions of the challenge, a final invoice is issued for that service period. As a result, NYISO is exposed to credit risk until all settlement adjustments and final invoices for each service period are finalized and liquidated. As of December 31, 2017, the adjustments and true-ups of all settlement invoices through March 2017 were completed. However, in the event of a market participant default and bad debt loss, Rate Schedule 1 of the OATT allows NYISO to recover bad debt losses from all remaining market participants on future invoices.

(p) Derivative Instruments

NYISO recognizes all derivative instruments as either assets or liabilities in the Statement of Financial Position at their respective fair value. The fair values of NYISO's derivative instruments are quoted by external sources. The changes in the fair value of these derivatives are recorded as a change in fair value of interest rate swaps in the Statement of Activities. Due to NYISO's regulated rates, any changes in fair value of these derivative instruments are recorded as either Other Current or Noncurrent Assets or Other Current or Noncurrent Liabilities, as appropriate. Payments on these derivative instruments are recorded and classified as interest expense.

NYISO uses derivative instruments primarily to hedge the cash flow effects of fluctuations in interest rates. NYISO is exposed to credit loss in the event of nonperformance by the commercial banks under the interest rate swap agreements. The credit risk related to hedge agreements is limited to the cost to NYISO to replace the aforementioned hedge arrangements with like instruments. NYISO monitors the credit standing of the counterparties and anticipates that the counterparties will be able to fully satisfy their obligations under the hedge arrangements. See note 7 for additional information.

(q) Debt Issuance Costs

Debt issuance costs are included as a direct deduction to the corresponding debt liability and have been deferred. Debt issuance costs are amortized using the effective interest method over the life of the associated debt issuance.

(2) Accounts Receivable

NYISO's accounts receivable at December 31, 2017 and 2016 consisted of the following:

	<u>2017</u>	<u>2016</u>
Billed:		
Miscellaneous billed receivables	\$ 905,666	400,942
Past-due settlement invoices	—	16,986
	<u>905,666</u>	<u>417,928</u>
Unbilled:		
Rate Schedule 1 revenue for December	4,485,155	4,199,999
Miscellaneous unbilled receivables	<u>1,123,853</u>	<u>734,157</u>
	5,609,008	4,934,156
Total	<u>\$ 6,514,674</u>	<u>5,352,084</u>

Miscellaneous billed and unbilled receivables are for planning study services provided by the NYISO in accordance with the NYISO (OATT). These revenues are offset by the corresponding planning study expenses, which were incurred in performing such studies.

NYISO recovers its Rate Schedule 1 revenue in the invoice following the period of service. Therefore, a portion of unbilled Rate Schedule 1 revenues for December are billed and recovered in January of the subsequent year.

(3) Regulatory Assets and Liabilities

At December 31, 2017 and 2016, regulatory assets and liabilities consisted of the following:

	<u>2017</u>	<u>2016</u>
Regulatory assets:		
Funding for pension benefits	\$ 10,148,344	9,688,484
Funding for postretirement deferred charges	7,282,161	6,205,342
Funding for postretirement benefits	2,241,890	429,018
Voltage support service (reactive power) market	1,354,779	—
Rate Schedule 1 transactional volume undercollections	<u>424,183</u>	<u>—</u>
Total regulatory assets	21,451,357	16,322,844
Less current	<u>(1,778,962)</u>	<u>—</u>
Noncurrent regulatory assets	<u>\$ 19,672,395</u>	<u>16,322,844</u>
Regulatory liabilities:		
Rate Schedule 1 underspending	\$ 4,621,822	3,688,090
Funding for pension deferred charges	3,496,584	4,595,536
Rate Schedule 1 transactional volume overcollections	—	3,614,539
Voltage support service (reactive power) market	<u>—</u>	<u>537,939</u>
Total regulatory liabilities	8,118,406	12,436,104
Less current	<u>(4,621,822)</u>	<u>(7,840,568)</u>
Noncurrent regulatory liabilities	<u>\$ 3,496,584</u>	<u>4,595,536</u>

(a) Funding for Pension and Postretirement Benefits

The pension and postretirement funding regulatory assets reflect the unrecognized pension and postretirement benefit costs that under GAAP for rate-regulated entities are recorded as deferred noncurrent regulatory assets. These amounts are expected to be included in future rates.

(b) Funding for Deferred Charges

The NYISO recovers its annual employer cash contributions for both the pension and postretirement benefit plans via Rate Schedule 1. The amounts in funding for deferred charges represents the pension and postretirement benefit costs net of cash contributions.

(c) Rate Schedule 1 Underspending

To the extent that NYISO's spending does not exceed the annual Rate Schedule 1 revenue requirement, a regulatory liability is established for the underspending amount.

(d) Rate Schedule 1 Transactional Volume Collections

NYISO recovers its costs through a surcharge assessed to market participants via Rate Schedule 1 of the OATT and Services Tariff. To the extent that transactional volumes billed under Rate Schedule 1 fall short of the amount expected when the Rate Schedule 1 surcharge is established, NYISO reflects a regulatory asset for the undercollection amounts. To the extent that transactional volumes billed under Rate Schedule 1 exceed the amount expected when the Rate Schedule 1 surcharge is established, NYISO reflects a regulatory liability for the overcollection amounts.

(e) Voltage Support Service

In order to maintain acceptable transmission voltages on the New York State transmission system, certain market participants within the New York Control Area produce or absorb voltage support service (reactive power). Payments to market participants supplying voltage support service and recoveries from other market participants are assessed via Rate Schedule 2 of the OATT and Services Tariff. Differences between the timing of recoveries and payments for voltage support service that result in undercollections or overcollections are reflected as regulatory assets or liabilities.

(4) Property and Equipment

As of December 31, 2017 and 2016, property and equipment consisted of the following:

	2017	2016
Software developed for internal use	\$ 174,745,846	170,200,287
Building, building improvements, and leasehold improvements	105,001,210	102,407,284
Computer hardware and software	66,432,085	69,049,622
Work in progress	15,032,453	7,742,965
Machinery and equipment	7,427,961	7,230,957
Land and land improvements	3,361,818	3,333,126
Furniture and fixtures	3,265,094	3,269,928
	<u>375,266,467</u>	<u>363,234,169</u>
Accumulated depreciation	<u>(264,323,477)</u>	<u>(252,671,664)</u>
Property and equipment – net	<u>\$ 110,942,990</u>	<u>110,562,505</u>

Property and equipment includes interest of \$225,176 and \$99,113 capitalized during 2017 and 2016, respectively. Depreciation expense for the years ended December 31, 2017 and 2016 was \$21,535,917 and \$24,179,894, respectively.

Total capitalized labor for the years ended December 31, 2017 and 2016 was \$6,323,453 and \$5,570,047, respectively.

(5) Revolving Credit Facility

On October 22, 2013, NYISO entered into a \$50.0 million Revolving Credit Facility with an effective date of January 1, 2014 through December 31, 2017. On March 18, 2016, this agreement was amended to extend the effective date through December 31, 2018. The proceeds from this Revolving Credit Facility are to be used for working capital purposes. Interest on borrowings under the Revolving Credit Facility is based on NYISO's option of varying rates of interest tied to either the prime rate or the London Interbank Offered Rate (LIBOR). At December 31, 2017 and 2016, respectively, there were no amounts outstanding on the Revolving Credit Facility. During 2017 and 2016, \$6.0 million in borrowings were made under this credit agreement, each year, at an average interest rate of 2.067% and 1.326%, respectively.

(6) Long-Term Debt

At December 31, 2017, the following amounts were outstanding on NYISO's long-term debt:

	2014–2018 Budget facility loan (i)	2016–2018 EMS/BMS facility loan (ii)	Mortgage (iii)	Renovations (iii)	2012 Infrastructure loan (iv)	Total
Outstanding balance	\$ 42,368,367	14,586,667	7,245,499	6,017,805	35,945,796	106,164,134
Less current portion	(17,545,467)	(5,596,346)	(770,105)	(512,498)	(2,634,475)	(27,058,891)
Less unamortized debt issuance costs	(115,085)	(40,701)	(8,438)	(5,625)	(159,867)	(329,716)
Long-term portion	<u>\$ 24,707,815</u>	<u>8,949,620</u>	<u>6,466,956</u>	<u>5,499,682</u>	<u>33,151,454</u>	<u>78,775,527</u>

At December 31, 2016, the following amounts were outstanding on NYISO's long-term debt:

	2014–2018 Budget facility loan (i)	2016–2018 EMS/BMS facility loan (ii)	Mortgage (iii)	Renovations (iii)	2012 Infrastructure loan (iv)	Total
Outstanding balance	\$ 42,338,688	6,730,000	7,972,862	6,501,030	38,592,113	102,134,693
Less current portion	(17,279,048)	(2,231,460)	(726,240)	(482,475)	(2,634,474)	(23,353,697)
Less unamortized debt issuance costs	(167,941)	(47,481)	(9,563)	(6,375)	(171,711)	(403,071)
Long-term portion	<u>\$ 24,891,699</u>	<u>4,451,059</u>	<u>7,237,059</u>	<u>6,012,180</u>	<u>35,785,928</u>	<u>78,377,925</u>

- (i) On October 22, 2013, NYISO entered into an unsecured \$100.0 million line of credit facility (2014–2017 Budget Facility), the proceeds of which could be drawn between January 1, 2014 through December 31, 2017 to fund capital purchases and the development of significant projects during 2014–2017. Interest on borrowings under this facility is based on NYISO's option of varying rates of interest tied to LIBOR plus 95 basis points for borrowings, or the prime rate. Interest payments on borrowings are due monthly. On March 18, 2016, NYISO amended and restated its unsecured \$100.0 million line of credit facility to increase the unsecured amount to \$125.0 million and allow the proceeds to be drawn through December 31, 2018 (2014–2018 Budget Facility). NYISO must convert each year's annual borrowings to term loans, with principal and interest payments payable over three years.

As of December 31, 2017 and 2016, the loan details on the 2014–2018 Budget Facility consisted of the following:

Draw year	2014	2015	2016	2017
Draw amount	\$ 25,000,000	\$ 25,000,000	\$ 25,000,000	\$ 24,671,000
Converted to term loan	January 2015	January 2016	January 2017	January 2018
Term Period	36 months	36 months	36 months	36 months
Maturity Date	1/1/2018	12/1/2018	12/1/2019	12/1/2020
As of 12/31/2017				
Outstanding balance at fixed interest rate	\$ -	\$ 1,030,701	\$ 13,333,333	\$ 20,000,000
Fixed interest rate	N/A	2.510%	3.370%	4.076%
Outstanding balance at variable interest rate	\$ -	\$ -	\$ 3,333,333	\$ 4,671,000
Variable Interest Rate	N/A	N/A	2.457%	2.465%
As of 12/31/2016				
Outstanding balance at fixed interest rate	\$ 672,021	\$ 13,333,333	\$ 20,000,000	\$ -
Fixed interest rate	1.780%	2.510%	3.370%	N/A
Outstanding balance at variable interest rate	\$ -	\$ 3,333,334	\$ 5,000,000	\$ -
Variable Interest Rate	N/A	1.567%	1.567%	N/A

- (ii) On March 18, 2016, NYISO entered into a new unsecured \$30.0 million delayed-draw term loan (EMS/BMS Facility Loan) to fund the replacement of NYISO's Energy Management and Business Management Systems (EMS/BMS). In accordance with the loan agreement, the proceeds can be drawn beginning March 18, 2016 through December 31, 2018. NYISO must convert each year's annual borrowings to term loans, with principal and interest payments payable over three years. Interest on borrowings under this facility is based on NYISO's option of varying rates of interest tied to LIBOR plus 95 basis points for borrowings, or the prime rate. Interest payments on borrowings are due monthly.

As of December 31, 2017 and 2016, the loan details on the EMS/BMS Facility Loan consisted of the following:

Draw year	2016	2017
Draw amount	\$ 6,730,000	\$ 10,100,000
Converted to term loan	January 2017	January 2018
Term Period	36 months	36 months
Maturity Date	12/1/2019	12/1/2020
As of 12/31/2017		
Outstanding balance at fixed interest rate	\$ 2,676,005	\$ 6,023,995
Fixed interest rate	2.070%	2.070%
Outstanding balance at variable interest rate	\$ 1,810,662	\$ 4,076,005
Variable Interest Rate	2.457%	2.433%
As of 12/31/2016		
Outstanding balance at fixed interest rate	\$ 3,000,000	\$ -
Fixed interest rate	2.070%	N/A
Outstanding balance at variable interest rate	\$ 3,730,000	\$ -
Variable Interest Rate	1.630%	N/A

(iii) On July 8, 2005, NYISO entered into two financing agreements to purchase and renovate a 140,000-square foot office building in Rensselaer, NY. The first agreement is a \$14.7 million mortgage to finance the building purchase (Mortgage), and the second agreement represents a \$10.0 million line of credit for renovations during an 18-month period, beginning in July 2005 (Renovations Loan). Both agreements are secured by liens on the building and subsequent capitalized renovations. Interest on borrowings under both facilities is due monthly and is based on varying rates of interest tied to LIBOR plus 100 basis points.

As of December 31, 2017 and 2016, the loan details on the Mortgage and Renovation Loans consisted of the following:

Loan	Mortgage	Renovation
Draw amount	\$ 14,708,750	\$ 10,000,000
Converted to term loan	September 2005	January 2007
Term Period	20 years	20 years
Maturity Date	7/1/2025	12/1/2026
As of 12/31/2017		
Outstanding balance	\$ 7,245,499	\$ 6,017,805
Fixed interest rate	5.790%	5.960%
As of 12/31/2016		
Outstanding balance	\$ 7,972,862	\$ 6,501,030
Fixed interest rate	5.790%	5.960%

- (iv) On July 18, 2012, NYISO entered into the 2012 Infrastructure Loan to renovate its facilities in Guilderland, NY and to perform construction at its facility in Rensselaer, NY. The agreement permitted borrowings of up to \$45.0 million through July 18, 2014. As of July 3, 2014 the full \$45.0 million was drawn on the loan, which was converted to a term loan on July 18, 2014. The NYISO is required to make interest only payments for up to 24 months, followed by 17 years of principal and interest payments. Interest on borrowings under the 2012 Infrastructure Loan is due monthly and is based on varying rates of interest tied to LIBOR plus 225 basis points.

As of December 31, 2017 and 2016, the loan details on the 2012 Infrastructure Loan consisted of the following:

	12/31/2017	12/31/2016
Outstanding balance at fixed interest rate	\$ 31,960,784	\$ 34,313,726
Fixed interest rate	4.149%	4.149%
Outstanding balance at variable interest rate	\$ 3,985,012	\$ 4,278,387
Variable interest rate	3.781%	2.867%

Effective December 31, 2016, NYISO retrospectively adopted the provisions of the FASB Accounting Standards Update (ASU) No. 2015-03, Interest – Imputation of Interest (ASU 2015-03). ASU 2015-03 requires that debt issuance costs related to a recognized debt liability be presented in the statement of financial position as a direct deduction from the carrying amount of that debt liability.

Effective December 31, 2016, NYISO also retrospectively adopted the provisions of the FASB Accounting Standards Update (ASU) No. 2016-01, Financial Instruments – Overall (ASU 2016-01). ASU 2016-01 eliminates the requirement to disclose the fair value of financial instruments measured at amortized cost for nonpublic entities.

At December 31, 2017, scheduled maturities of NYISO's long-term debt were as follows:

	2014–2018 Budget facility loan	2016–2018 EMS/BMS facility loan	Mortgage	Renovations	2012 Infrastructure loan	Total
2018	\$ 17,587,701	5,610,000	771,230	513,248	2,646,316	27,128,495
2019	16,557,000	5,610,000	817,743	545,136	2,646,316	26,176,195
2020	8,223,666	3,366,667	866,134	578,162	2,646,316	15,680,945
2021	—	—	919,297	614,926	2,646,316	4,180,539
2022	—	—	974,739	653,131	2,646,316	4,274,186
Thereafter	—	—	2,896,356	3,113,202	22,714,216	28,723,774
Total	\$ 42,368,367	14,586,667	7,245,499	6,017,805	35,945,796	106,164,134

(7) Derivatives and Hedging Activities

NYISO's derivative instruments are cash flow hedges used to manage its exposure related to changes in interest rates related to long-term debt. The NYISO does not enter into derivative instruments for any purposes other than cash flow hedging. By using derivative instruments to hedge exposure to changes in interest rates, NYISO is exposed to credit and market risk. Credit risk is the failure of the counterparty to perform under the terms of the derivative contract. When the fair value of a derivative contract is positive, the counterparty owes the NYISO, which creates credit risk. When the fair value is negative, the NYISO owes the counterparty and, therefore, the NYISO is not exposed to the counterparty's credit risk in those circumstances. NYISO minimizes counterparty credit risk in derivative instruments by entering into transactions with high-quality counterparties. Market risk is the adverse effect on the value of a derivative instrument that results from a change in interest rates.

In February 2005, NYISO entered into two interest rate swap agreements with a commercial bank to fix interest rate payments on the financing of a new office building purchase. The notional amount of debt on the swap agreement for the Mortgage was \$14,708,750. NYISO pays a fixed interest rate of 5.79% on the outstanding principal amount of this financing on payments from August 2005 through August 2025. The notional amount of debt on the swap agreement for the Renovations Loan was \$10,000,000, and NYISO pays a fixed interest rate of 5.96% on payments from January 2007 through January 2027. As of December 31, 2017 and 2016, the fair value of these interest rate swap agreements was (\$761,519) and (\$1,059,251), respectively, for the Mortgage and (\$790,978) and (\$1,038,290), respectively, for the Renovations Loan, recorded in Other Noncurrent Liabilities. For the years ended December 31, 2017 and 2016, NYISO recorded a fair value gain of \$545,044 and \$567,107, respectively, related to these two swap agreements.

In July 2012, NYISO entered into an interest rate swap agreement with a commercial bank to fix interest rate payments on the 2012 Infrastructure Loan. The notional amount of debt on the swap agreements was \$40,000,000. NYISO pays a fixed interest rate of 4.149% through July 2031. As of December 31, 2017 and 2016, the fair value of this interest rate swap agreement was \$682,001 and \$484,394, respectively, recorded in Other Noncurrent Assets. For the years ended December 31, 2017 and 2016, NYISO recorded a fair value gain of \$197,607 and \$393,475, respectively, related to this swap agreement.

In October 2013, NYISO entered into four interest rate swap agreements with a commercial bank to fix interest rate payments on the 2014–2017 Budget Facility. The notional amount of the debt on the swap agreements was \$80,000,000. In May 2016, NYISO entered into a fifth interest rate swap agreement with a commercial bank to fix interest rate payments on the 2014–2018 Budget Facility. The notional amount of the debt on the swap agreement was \$20,000,000. NYISO pays fixed interest rates ranging from 1.780% to 4.076% through December 2021 on the five swap agreements. As of December 31, 2017 and 2016, the fair value of these five interest rate swap agreements was (\$128,708) and (\$725,489), respectively, recorded in Other Noncurrent Liabilities. For the years ended December 31, 2017 and 2016, NYISO recorded a fair value gain of \$596,781 and \$355,320, respectively, related to these five swap agreements.

In October 2016, NYISO entered into an interest rate swap agreement with a commercial bank to fix interest rate payments on the EMS/BMS Facility loan. The notional amount of the debt on the swap agreement was \$15,000,000. NYISO pays a fixed interest rate of 2.07% through December 2021. As of December 31, 2017 and 2016, the fair value of this interest rate swap agreement was \$185,687 and \$146,398, respectively, recorded in Other Noncurrent Assets. For the years ended December 31, 2017 and 2016, NYISO recorded a fair value gain of \$39,289 and \$146,398, respectively, related to this swap agreement.

		Swap Notional amount at inception	Swap Notional amount at December 31, 2017	Swap Fair value at December 31, 2016	Swap Fair value at December 31, 2017	2017 Gain (loss) on fair value
Loan:						
2014 – 2018 Budget Facility	\$	100,000,000	44,000,000	(725,489)	(128,708)	596,781
2012 Infrastructure Loan		40,000,000	31,960,784	484,394	682,001	197,607
EMS/BMS Facility Loan		15,000,000	8,700,000	146,398	185,687	39,289
Mortgage		14,708,750	7,245,499	(1,059,251)	(761,519)	297,732
Renovations		10,000,000	6,017,805	(1,038,290)	(790,978)	247,312
Total						<u>\$ 1,378,721</u>

The fair value of NYISO's interest rate swaps are determined using pricing models developed based on the LIBOR swap rate and other observable market data (Level 2 inputs).

The fair value of interest rate swaps are included in Other Noncurrent Assets and Other Noncurrent Liabilities. The following table presents the carrying amounts and estimated fair values of NYISO's interest rate swaps at December 31, 2017 and 2016:

	2017		2016	
	Carrying amount	Fair value	Carrying amount	Fair value
Financial assets:				
Interest rate swaps	\$ 867,688	867,688	630,792	630,792
Financial liabilities:				
Interest rate swaps	\$ 1,681,205	1,681,205	2,823,030	2,823,030

(8) Employee Benefit Plans

Defined Benefit Pension and Postretirement Plans

NYISO has a defined benefit pension plan covering certain employees upon their retirement. Plan benefits are based on employee compensation levels and years of service, including service for certain employees previously employed by NYPP member companies. There were no NYISO cash contributions made during 2017 and 2016 to the pension plan. Effective December 1, 2009, NYISO adopted changes to its pension plan to end the accrual of future benefits for most employees. NYISO replaced the defined benefit accruals with equivalent contributions to employee 401(k) plan accounts after December 1, 2009.

NYISO sponsors a defined benefit postretirement plan to provide medical benefits for eligible retirees and their dependents. NYISO employees who retire on or after age 55 become eligible for these benefits provided they have been credited with at least ten years of NYISO service (5 years of NYISO service for those employees hired before January 1, 2005). The benefits are contributory based upon years of service, with NYISO paying up to 50% of costs for retired employees and up to 25% for their dependents (subject to specified dollar limits). Medical coverage becomes secondary upon Medicare eligibility.

Pursuant to resolutions adopted by NYISO's Board of Directors, NYISO's Retirement Board is responsible for administration of NYISO's pension and postretirement plans, including recommending investment policy to the Board of Directors, and monitoring investment performance. The Retirement Board reports to NYISO's Board of Directors and currently consists of NYISO's Chief Financial Officer, Vice President of Human Resources, General Counsel, Controller and Assistant Treasurer and one non-executive employee. The Retirement Board provides reports to the Commerce and Compensation Committee of the Board of Directors on at least an annual basis.

NYISO records the overfunded or underfunded position of a defined benefit pension and postretirement plan as an asset or liability, with any unrecognized prior service costs, transition obligations, or gains/losses reported as recoverable under ASC Topic 980 and recorded as a regulatory asset or liability.

For payment of benefits under the postretirement plan, as noted above, the NYISO established a Voluntary Employee Benefit Association (VEBA) trust in January 2010. The assets held in the VEBA trust reduce the accumulated postretirement benefit obligation as reported on the NYISO's Statements of Financial Position. The VEBA trust held assets of \$5,720,041 and \$5,234,811 as of December 31, 2017 and 2016, respectively. As noted in the following table, current obligations are assumed to be paid out of the trust assets, with the remaining unfunded obligation to be reflected as a noncurrent liability.

The schedules that follow show the benefit obligations, the plan assets, and the funded status as of December 31, 2017 and 2016, and the change in benefit obligations for NYISO's pension and postretirement plans for the years ended December 31, 2017 and 2016.

	Pension plan		Postretirement plan	
	2017	2016	2017	2016
Change in benefit obligation:				
Benefit obligation – beginning of year	\$ 32,120,331	31,394,538	11,868,298	10,085,370
Service cost	17,485	15,895	904,086	799,631
Interest cost	1,142,533	1,174,562	486,098	450,792
Actuarial (gain)/loss	2,227,811	807,645	2,239,665	665,092
Participant contributions	–	–	160,216	159,095
Settlements	(3,128,839)	–	–	–
Benefits paid	(795,522)	(1,272,309)	(415,144)	(291,682)
Benefit obligation – end of year	<u>31,583,799</u>	<u>32,120,331</u>	<u>15,243,219</u>	<u>11,868,298</u>
Change in plan assets:				
Fair value of plan assets – beginning of year	27,190,053	27,574,455	5,234,811	5,024,248
Actual return on plan assets	1,993,936	1,058,192	766,350	390,198
Participant contributions	–	–	160,216	159,095
Settlements	(3,128,839)	–	–	–
Benefits paid	(795,522)	(1,272,309)	(415,144)	(291,682)
Expenses paid	(164,919)	(170,285)	(26,192)	(47,048)
Fair value of plan assets – end of year	<u>25,094,709</u>	<u>27,190,053</u>	<u>5,720,041</u>	<u>5,234,811</u>
Funded status	<u>\$ (6,489,090)</u>	<u>(4,930,278)</u>	<u>(9,523,178)</u>	<u>(6,633,487)</u>

Amounts recognized in the 2017 and 2016 Statements of Financial Position consist of the following:

	Pension plan		Postretirement plan	
	2017	2016	2017	2016
Net actuarial (gain)/loss recognized in regulatory assets (liabilities)	\$ 10,148,344	9,688,484	2,241,890	429,018
Projected benefit obligation	(31,583,799)	(32,120,331)	(15,243,219)	(11,868,298)
Fair value of assets	<u>25,094,709</u>	<u>27,190,053</u>	<u>5,720,041</u>	<u>5,234,811</u>
Unfunded projected benefit obligation	<u>\$ (6,489,090)</u>	<u>(4,930,278)</u>	<u>(9,523,178)</u>	<u>(6,633,487)</u>

Net periodic pension expense and other postretirement benefit costs include the following components:

	Pension plan		Postretirement plan	
	2017	2016	2017	2016
Service cost	\$ 17,485	15,895	904,086	799,631
Interest cost	1,142,533	1,174,562	486,098	450,792
Expected return on plan assets	(1,221,646)	(1,244,068)	(313,365)	(300,678)
Amortization of unrecognized (gain) loss	154,223	128,487	—	—
Amortization of unrecognized prior service cost	1,348	1,348	—	—
Settlement loss	1,005,009	—	—	—
Total	\$ 1,098,952	76,224	1,076,819	949,745

NYISO uses a December 31 measurement date for its pension and postretirement benefit plans. NYISO's accumulated benefit obligation for the defined benefit pension plan is \$31,533,310 and \$32,085,216 at December 31, 2017 and 2016, respectively.

During 2017, the sum of all lump-sum pension benefits paid during the year exceeded the sum of the service and interest cost components of the net periodic benefit cost for the year, resulting in the recognition of a net settlement loss of \$1,005,009.

The following table as of December 31, 2017 and 2016 shows the assumptions used to calculate the pension and postretirement benefit obligations and net periodic costs:

	Pension plan		Postretirement plan	
	2017	2016	2017	2016
Benefit obligations:				
Discount rate	3.40%	3.75%	3.75%	4.10%
Rate of compensation increases	3.00	3.00	N/A	N/A
Net cost or credit:				
Discount rate	3.75%	3.90%	4.10%	4.30%
Rate of compensation increases	3.00	3.00	N/A	N/A
Expected return on plan assets	4.60	4.60	6.10	6.10

NYISO's expected rate of return on plan assets reflects anticipated returns on the pension and postretirement plans' current and future assets. To determine this rate, NYISO considers historical returns for equity and debt securities, as well as current capital market conditions and projected future conditions. The long-term investment objective for NYISO's pension plan is to maximize the total return on plan assets while limiting risk, reflected in volatility of returns, to prudent levels. To that end, NYISO's Retirement Board has appointed and regularly meets with an investment advisor to review asset performance, compliance with target asset allocation guidelines, and appropriate levels of asset diversification. NYISO's investment advisor operates under written guidelines provided by NYISO, which cover such areas as investment objectives, performance measurement, permissible investments, investment restrictions, and communication and reporting requirements.

NYISO's pension and postretirement plan investments are composed of common stocks, mutual funds and commingled trust funds that are redeemable at net asset value (NAV) on a daily basis. Redemption of such investments generally requires 1 to 2 days' notice prior to redemption.

NYISO measured benefit obligations using the most recent RP-2014 mortality tables and MP-2017 mortality improvement scale in selecting mortality assumptions as of December 31, 2017.

The targeted allocation and actual investment mix of the pension plan's assets are as follows at December 31:

Asset category	2017		2016	
	Target	Actual	Target	Actual
Fixed income	70%	70%	70%	72%
International and emerging equities	15	17	15	15
Large cap equities	8	7	8	7
Mid cap equities	5	4	5	4
Small cap equities	2	2	2	2
Total	100%	100%	100%	100%

The targeted allocation and actual investment mix of the VEBA Trust (postretirement) plan's assets are as follows:

Asset category	2017		2016	
	Target	Actual	Target	Actual
Domestic equities	50%	56%	50%	55%
Fixed income	35	29	35	31
International and emerging equities	15	15	15	14
Total	100%	100%	100%	100%

The actual rate of return for the pension plan's assets as of December 31, 2017 and 2016 is as follows:

Asset category	Annual returns December 31	
	2017	2016
International and emerging equities	26.4%	(1.4)%
Large cap equities	22.8	11.0
Mid cap equities	20.1	10.0
Small cap equities	15.1	17.1
Fixed income	2.8	3.7
Total portfolio weighted average	7.7%	3.8%

The actual rate of return for the VEBA Trust (postretirement) plan's assets as of December 31, 2017 and 2016 is as follows:

Asset category	Annual returns December 31	
	2017	2016
International and emerging equities	27.8%	(4.7)%
Domestic equities	17.0	13.7
Fixed income	3.4	1.9
Total portfolio weighted average	14.1%	7.0%

The fair values of the pension plan assets at December 31, 2017 and 2016 are presented below:

	2017 Fair value			
	Level 1	Level 2	Level 3	Total
Domestic investments:				
Equities:				
Small cap	\$ 535,633	—	—	535,633
Mid cap	943,284	—	—	943,284
Large cap	1,757,014	—	—	1,757,014
Total	3,235,931	—	—	3,235,931
Fixed income	5,070,768	12,568,618	—	17,639,386
Total	5,070,768	12,568,618	—	17,639,386
International and emerging equities	4,211,056	—	—	4,211,056
Total	4,211,056	—	—	4,211,056
Cash and cash equivalents	8,336	—	—	8,336
	\$ 12,526,091	12,568,618	—	25,094,709

2016 Fair value				
	Level 1	Level 2	Level 3	Total
Domestic investments:				
Equities:				
Small cap	\$ 571,968	—	—	571,968
Mid cap	1,056,102	—	—	1,056,102
Large cap	1,912,943	—	—	1,912,943
Total	3,541,013	—	—	3,541,013
Fixed income	5,806,828	13,918,473		19,725,301
Total	5,806,828	13,918,473	—	19,725,301
International and emerging equities	3,850,694	—	—	3,850,694
Total	3,850,694	—	—	3,850,694
Cash and cash equivalents	73,045	—	—	73,045
	\$ 13,271,580	13,918,473	—	27,190,053

The fair values of VEBA Trust (postretirement) plan's assets at December 31, 2017 and 2016 are presented below:

2017 Fair value				
	Level 1	Level 2	Level 3	Total
Domestic equities	\$ 1,394,099	—	—	1,394,099
Fixed income	1,670,194	—	—	1,670,194
International and emerging equities	2,565,250	—	—	2,565,250
Total	5,629,543	—	—	5,629,543
Cash and cash equivalents	90,498	—	—	90,498
	\$ 5,720,041	—	—	5,720,041

2016 Fair value				
	Level 1	Level 2	Level 3	Total
Domestic equities	\$ 2,345,174	—	—	2,345,174
Fixed income	1,597,295	—	—	1,597,295
International and emerging equities	991,681	—	—	991,681
Total	4,934,150	—	—	4,934,150
Cash and cash equivalents	300,661	—	—	300,661
	\$ 5,234,811	—	—	5,234,811

In 2017, the assumed postretirement plan healthcare cost trend rates for participants pre-65 are 8.5% for 2018 to 2019 decreasing to 4.75% in 2033, and the participants post-65 are 8.0% going from 2018 to 2019 decreasing to 4.75% in 2031. In 2016, the assumed postretirement plan healthcare cost trend rates for participants pre-65 are 7.5% for 2017 to 2018 decreasing to 4.75% in 2028, and the participants post-65 are 6.5% going from 2017 to 2018 decreasing to 4.75% in 2024. A one-percentage point change in the assumed healthcare cost trend rate would change the 2017 postretirement benefit obligation as follows:

	<u>1% increase</u>	<u>1% decrease</u>
Effect on postretirement benefit obligation	\$ 2,452,600	(1,891,200)
Effect on total of service and interest cost components	235,700	(178,800)

The following benefit payments, which reflect expected future service, are expected to be paid:

	<u>Pension plan</u>	<u>Postretirement plan</u>
2018	\$ 2,286,879	257,181
2019	2,472,993	322,558
2020	2,649,551	430,612
2021	2,186,057	536,195
2022–2027	11,975,046	4,552,952

401(k) Plan

NYISO has a 401(k) Retirement and Savings Plan open to all non-temporary employees. This plan provides for employee contributions up to specified limits. NYISO matches 100% of the first 3% of employee contributions, and 50% of the next 2% of employee contributions. Beginning December 1, 2009, NYISO also contributes funds to employee 401(k) plan accounts equivalent to defined benefit accruals formerly earned in the pension plan.

Employees are immediately vested in NYISO's matching contributions and become vested in other employer contributions after three years of credited service. The total NYISO contributions to the 401(k) plan were \$6,121,157 and \$5,865,501 for 2017 and 2016, respectively.

Long-Term Incentive Plan

NYISO's Long-Term Incentive Plan provides certain members of senior management with deferred compensation benefits. Benefits are based upon the achievement of three-year performance goals established by the Board of Directors, with participants becoming fully vested and distributions payable for these deferred amounts after the completion of the audited financial statements for the third year. Benefits are paid out in equal installments over three years following the end of the three-year cycle. Accrued Long-Term Incentive Plan benefits included in Other Noncurrent Liabilities at December 31, 2017 and 2016, were \$3,574,514 and \$2,966,614, respectively. The short-term portion of such liability, included in Other Current Liabilities, at December 31, 2017 and 2016, was \$1,166,381 and \$1,171,900, respectively.

457(b) Plan - Eligible Deferred Compensation Plan

NYISO's 457(b) Plan provides for certain members of senior management to defer a portion of their current compensation and have it credited under a supplemental unfunded savings program. This Plan is intended to satisfy the requirements of an eligible deferred compensation plan maintained by NYISO as a non-government tax-exempt entity under Code section 457(e)(1)(B). Plan participants have the ability to invest these funds in the same investments offered by the NYISO 401(k) plan at their discretion. The investment balance at December 31, 2017 and 2016 was \$1,097,651 and \$720,532, respectively, recorded as marketable securities. The corresponding deferred compensation liability is recorded in Accounts Payable and Accrued Expenses.

(9) Other Commitments

On July 8, 2005, NYISO purchased an office building to relocate NYISO's alternate control center and to consolidate employees located in leased facilities. In connection with the purchase, management entered into a Payment in Lieu of Taxes (PILOT) Agreement with the Rensselaer County Industrial Development Agency (RCIDA) to achieve certain benefits. Per the terms of this agreement, NYISO is required to make annual payments of approximately \$195,000 for the first 10 years. Effective January 1, 2016, this PILOT Agreement was amended to add three additional parcels of land purchased in 2014 and 2015, and to extend the term of the PILOT an additional 10 years. Per the amendment, NYISO is required to make annual payments of approximately \$299,000, over the next 8 years. The agreement is cancelable at the discretion of NYISO.

(10) Working Capital Reserve

At December 31, 2017 and 2016, the working capital reserve consisted of the following:

	<u>2017</u>	<u>2016</u>
Market participant contributions through Rate Schedule 1	\$ 33,000,000	33,000,000
Interest on market participant contributions	<u>527,919</u>	<u>148,714</u>
Total	<u>\$ 33,527,919</u>	<u>33,148,714</u>

(11) Deferred Revenue

Deferred revenue at December 31, 2017 and 2016 consisted of the following:

	<u>2017</u>	<u>2016</u>
Advance payments received on planning studies	\$ 13,128,976	10,227,856
Governance participation fees	<u>416,900</u>	<u>431,400</u>
Total	<u>\$ 13,545,876</u>	<u>10,659,256</u>

(12) Commitments and Contingencies

NYISO is routinely involved in regulatory actions. In the opinion of management, none of these matters will have a material adverse effect on the financial position, results of operations, or liquidity of NYISO.

(13) Subsequent Events

NYISO considers events and transactions that occur after the balance sheet date, but before the financial statements are issued, to provide additional evidence relative to certain estimates or to identify matters that require additional disclosure. These financial statements were available to be issued on March 13, 2018 and subsequent events have been evaluated through that date.



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