# 2017 Financial Report



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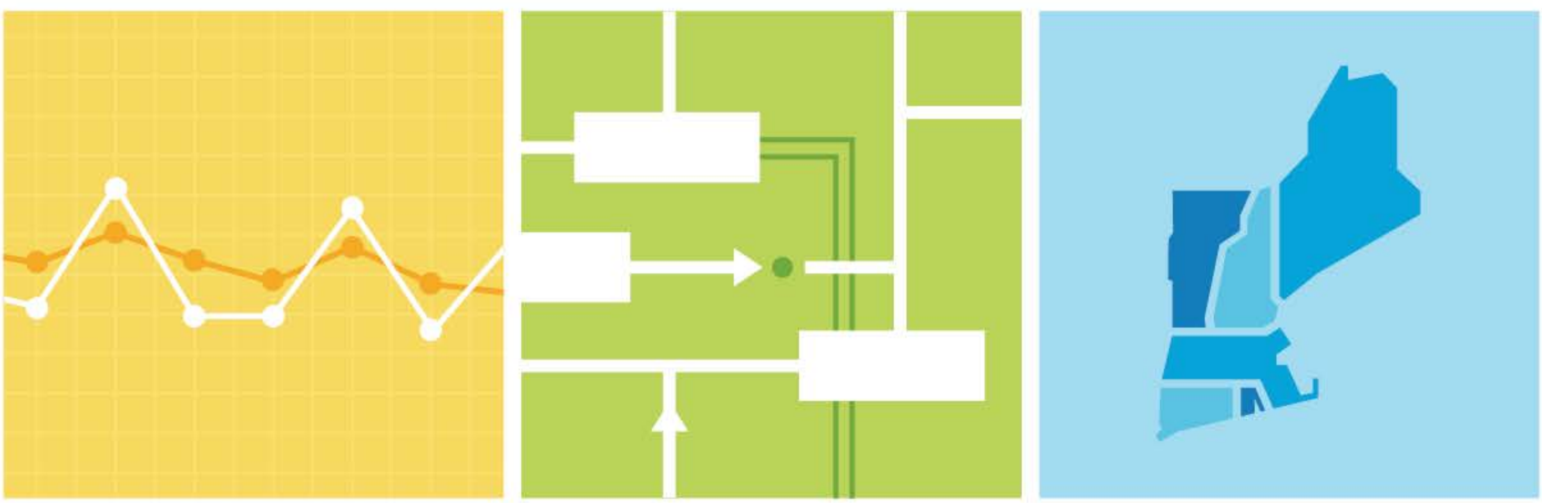

# Contents



# Figure



# Tables



## 2017 Financial Statements

# Letter from the CEO

ISO New England is pleased to issue its *2017 Financial Report.* As the not-for-profit Regional Transmission Organization for New England, the ISO measures success by our ability to deliver high-quality service within a framework of fiscal responsibility and best practices.

This document includes a summary of last year's operations and our financial position, as well as our financial statements audited by independent public accounting firm KPMG LLP. In addition to discussing the complex day-to-day operations we perform in service to the region, this report reflects expenditures for our extensive project work identified through a rigorous annual budgeting process. This process involves iterative input from New England state agencies and the New England Power Pool (NEPOOL), strong oversight from the ISO Board of Directors, and review and approval by the Federal Energy Regulatory Commission (FERC) (see www.iso-ne.com/budget). Some of these refinements and enhancements help address ongoing changes in and challenges to the region's electric power system, while others facilitate informed participation or introduce technological innovations and efficiencies that help the ISO provide even more value for the region. The ISO's annual *Regional Electricity Outlook* (www.iso-ne.com/reo) explores many of these issues.

Highlights of our efforts in 2017 include successfully completing two major projects to improve price formation in the region's wholesale electricity markets: the Subhourly Settlements project and the Real-Time Fast-Start Pricing project. Work continued on Price-Responsive Demand, a major project to complete full integration of demand resources into the markets, as well as on Forward Capacity Auction modifications to strengthen performance incentives and satisfy FERC requirements. We also continued to improve and evolve the ISO's cybersecurity program.

On behalf of ISO New England, I thank the market participants, federal and state officials, and other electricity stakeholders for their participation in a productive 2017 and look forward to the work ahead. In light of our rapidly evolving industry, your collaborative spirit and support is instrumental to the ISO's mission of ensuring the reliable supply of electricity that undergirds the region's prosperity and progress.

Sincerely,

Gordon van Welie

President and Chief Executive Officer

# Management’s Discussion and Analysis

## The Company

ISO New England Inc. (ISO) is a Regional Transmission Organization serving Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. The ISO meets the electricity demands of the region’s economy and people by fulfilling three primary responsibilities:

- Reliably plan and operate New England’s bulk electric power system, economically dispatching and directing the generation and flow of electricity minute-to-minute across the region’s interstate high-voltage transmission lines, thereby ensuring the constant availability of electricity for consumers
- Develop and administer New England’s competitive wholesale electricity markets that provide reliability and efficiency benefits for consumers
- Manage comprehensive, long-term bulk electric power system planning that considers and incorporates federal and state policies

The ISO is an entity organized as a nonstock corporation under the *General Corporation Law, as amended*, of the State of Delaware. The US Internal Revenue Service recognizes the company as an organization described in Internal Revenue Code (IRC) 501(c)(3) and is generally exempt from income taxes under IRC Section 501(a).

On January 13, 2014, the ISO, along with several Eastern Interconnection reliability coordinators (RC) became a member of a newly formed entity, Eastern Interconnect Data Sharing Network, Inc. (EIDSN).[1] EIDSN is a 501(c)(6) nonstock, nonprofit corporation established to, among other things, facilitate the secure, consistent, effective, and efficient sharing of important electric transmission and operational data among and between its members and other applicable parties to help improve electricity industry operations and promote the reliable and efficient operation of the Eastern Interconnection.[2]

## Current Environment

ISO New England has identified numerous priorities for 2018 and beyond that correspond to its three core objectives. The ISO fulfills these responsibilities while ensuring that its business operations are well managed, cost effective, and responsive to New England’s market participants, state officials, and other electricity stakeholders.

Projects and initiatives for 2018 will encompass three major strategic areas: reliable operations, wholesale electricity markets, and comprehensive bulk power system planning. Many are specifically related to the following near-term challenges to the power system: the retirement of uneconomic capacity, fuel-delivery

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[1] According to the North American Reliability Corporation (NERC) a *reliability coordinator* is an entity with the highest level of authority for reliably operating the bulk electric power system, including the authority to prevent or mitigate emergency operating situations in next-day and real-time operations. The ISO has registered with NERC as an RC and is responsible for complying with NERC standards applicable to an RC.

[2] The *Eastern Interconnection* is one of two major AC power grids in North America spanning from central Canada eastward to the Atlantic coast (excluding Québec), south to Florida, and west to the foot of the Rocky Mountains (excluding most of Texas—the portion in the Electric Reliability Corporation of Texas) that, during normal system conditions, interconnects transmission and distribution infrastructure and operates at a synchronized frequency of 60 Hz average. The Eastern Interconnection connects to the Western Interconnection, the Texas Interconnection, and the Québec Interconnection generally through numerous high-voltage DC transmission lines.

systems for power system operations, and the performance and flexibility of current system resources. Incorporating these strategic areas of focus, the ISO's major projects and initiatives in 2018 will address the following:

- Forward Capacity Market (FCM) reforms:
    - Competitive auctions with subsidized policy resources
    - Treatment of resources retained for reliability
    - Zonal demand curves
- Pay for performance (PFP)
- Fuel security
- Integration of energy storage devices into the markets
- Integration of photovoltaic forecasts in load projections
- Federal Energy Regulatory Commission (FERC) Order No. 1000[3]
- Price-responsive demand (PRD)
- Cybersecurity enhancements
    - FERC's supply-chain-risk initiative

## CIP-013 Critical Accounting Estimates

The ISO's management team must conduct the following tasks to prepare the company's financial statements in conformity with accounting principles generally accepted in the United States:

- Make estimates and assumptions that affect the reported amounts of assets and liabilities
- Disclose contingent assets and liabilities on the date of the financial statements
- Report the amounts of revenues and expenses during the reporting period.

Significant items subject to such estimates and assumptions include the useful lives of fixed assets; pension and postretirement benefits, including earnings rates, discount rates, healthcare cost trends, and reserve for employee-benefit obligations; and other contingencies.

## Accounting Policies

The ISO implemented *Sarbanes-Oxley 302* (SOX 302) compliance in 2003. SOX 302 is a set of internal procedures designed to ensure accurate financial disclosure, as well as the disclosure of material information about the ISO, to its signing officers. In 2009, the ISO added a critical vendor matrix to its SOX 302 disclosure. This matrix, prepared by the ISO's Vice President of Information Services and Chief Operating Officer (COO), identifies those companies that provide very specialized goods or services to the ISO. The critical vendor

[3] *Third Order No. 1000 Regional Compliance Filing of ISO New England Inc. and the Participating Transmission Owners Administrative Committee*, Docket No, ER13-193-___ (May 18, 2015), http://www.iso-ne.com/static-assets/documents/2015/05/er13-196-004.pdf and http://www.iso-ne.com/static-assets/documents/2015/05/er13-193-005.pdf. FERC, *Order on Compliance Filings* (May 17, 2013), http://www.iso-ne.com/static-assets/documents/regulatory/ferc/orders/2013/may/er13_193_er13_196_5_17_13_order_on_order_1000_compliance_filings.pdf.

matrix identifies the risk, as well as a mitigation plan for the risk, where applicable. The ISO also developed disclosure checklists, which represent the essential internal controls for maintaining financial accuracy. Department managers, senior officers, and the ISO's Chief Executive Officer (CEO) complete these disclosure checklists quarterly. The ISO's Chief Financial Officer (CFO) reports the results of the disclosures and matrices quarterly to the Audit and Finance Committee of the ISO's Board of Directors. The Audit and Finance Committee must review the SOX 302 disclosure before the release of the quarterly unaudited financial statements.

In 2010, the ISO implemented a modified *Sarbanes-Oxley 404* (SOX 404) compliance process to complement the SOX 302 procedures. For SOX 404 compliance, the ISO evaluates the control environment associated with financial reporting. To perform this evaluation, the ISO developed a principle evaluation matrix, which contains specific questions covering each of the seven principles that address the control environment component of guidance from the Committee of Sponsoring Organizations of the Treadway Commission (COSO).[4] Key individuals in the company complete the matrix annually, and the CEO and CFO review it for completeness and effectiveness. In addition, the ISO's Director of Finance and Accounting annually assesses the Statement of Financial Position and the Statement of Activities to measure the risk of fraud, control, and various other risk profiles that certain accounts and activities have. The CEO and CFO review the results of the risk assessment and make recommendations for additional controls, as needed.

## Tariff Recovery

Each year since its inception, the ISO has filed a new tariff with FERC to recover its operating costs and fund its capital expenditure program for the subsequent year. The ISO's funding-recovery process is defined in Section IV of the *ISO New England Inc. Transmission, Markets, and Services Tariff* (ISO tariff).[5] The funding-recovery process begins with the development of the annual budgets, which ultimately become the revenue requirement collected under Section IV.A, Recovery of ISO Administrative Expenses, of the ISO tariff and the anticipated capital expenditures. In preparing the budgets, the ISO executes a rigorous process to ensure that the budgets submitted to stakeholders for review and to FERC for approval align with the ISO's initiatives and goals and are just and reasonable.

The ISO's budgets are based on business plan initiatives the ISO sets for the coming five years. Senior management begins to develop the business plan at the start of the year preceding the budget year. The ISO reviews the plan with the ISO Board of Directors and stakeholders in the spring and early summer before establishing the budgets. The ISO meets with and obtains feedback from the New England Power Pool (NEPOOL), New England Conference of Public Utilities Commissioners (NECPUC), New England States Committee on Electricity (NESCOE), other state officials, and other interested stakeholders.

In July of each year, the ISO's department managers submit their budgets based on the business plan. Senior managers, including the CFO and CEO, review the budgets, which are then adjusted as needed. The ISO prepares a comprehensive presentation for review and amendment by the ISO's Board Audit and Finance Committee. The presentation includes information on the budget process, new initiatives, summarized budget data, budget details, depreciation and interest rates, the capital budget (with explanations for each

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[4] The Committee of Sponsoring Organizations of the Treadway Commission is a joint initiative of the American Accounting Association, American Institute of Certified Public Accountants, Financial Executives International, American Association of Accountants and Financial Professionals in Business, and Institute of Internal Auditors, which develop frameworks and guidance on enterprise risk management, internal control, and fraud deterrence; see https://www.coso.org.

[5] *ISO New England Inc. Transmission, Markets, and Services Tariff* (ISO tariff), Section IV (2014), www.iso-ne.com/participate/rules-procedures/tariff.

project), cash flow and pro forma financial projections for future years, and a comparison of cost data and services provided by other Independent System Operators and Regional Transmission Organizations.

The budgets are presented in August to the NEPOOL Budget and Finance Subcommittee for review, input, and recommendation to the NEPOOL Participants Committee, which reviews and votes on the budgets at its October meeting. During this August-to-October timeframe, the ISO solicits input on the budgets from state officials. The ISO's full board of directors then must approve the budgets in October of each year before considered complete and ready for filing with FERC.

The administrative costs budget and the capital budget recommended by the NEPOOL Participants Committee and approved by the ISO Board of Directors provide the basis for Section IV.A of the ISO tariff filed with FERC on or before November 1 of each year. Pursuant to Section IV.A, the ISO recovers its operating costs through the following three tariff schedules:

- Schedule 1—Scheduling, System Control, and Dispatch Service
- Schedule 2—Energy Administration Service
- Schedule 3—Reliability Administration Service

Each year during the tariff development process, department managers allocate their budgeted costs by activity, with each activity having an allocation to one, two, or all three of the tariff schedules. This process allows the ISO to categorize the applicable year's budget according to the three tariff schedules. The costs applicable to each schedule or set of activities become the revenue requirement for that schedule. To arrive at billable rates, the costs are then allocated to market participants on the basis of the billing determinants for each schedule's revenue requirements. The billing determinants are based on both volumetric and transactional units, depending on the schedule.

Because actual costs will vary from the budgeted costs, as well as the projected billing determinants, Section IV.A of the ISO tariff contains a true-up provision. The ISO records any over- or undercollection as a deferred charge or a regulatory liability, and the adjustment for the true up increases or decreases the cost recovery in a subsequent tariff filing.

## Liquidity and Capital Resources

As a nonstock, nonprofit organization, the ISO has neither equity nor any accumulated reserves. The creditworthiness of the ISO is based on the ISO tariff, which allows recovery of costs, including debt service costs. To fund its working capital needs, the ISO has a $20 million line of credit provided by a bank. In addition, to support shortfall payments under the ISO New England Billing Policy (Exhibit ID of the ISO tariff), the ISO has a $4 million line of credit provided by a bank. In June 2015, the ISO refinanced the expiring lines of credit for a new three-year term, which will expire on July 1, 2018. Section IV.B, Capital Funding Arrangements, of the ISO tariff is the backstop to all the ISO's borrowings in the event of any acceleration of debt repayments.

In 2017, the ISO's 10 year projection (reviewed and updated in 2017) of funding for future capital expenditures remained in place. The program includes funding for an average of $25 to $28 million in capital spending for the next 10 years.

The ISO reviewed many available financing options for meeting the needs of the spending program in a cost-effective manner and consequently discontinued its practice of securing new term-loan debt each year. By issuing longer-term private-placement notes, the ISO saves the cost of borrowing new money each year, as well as the cost of filing with FERC, and instills budgetary discipline in the capital expenditure program.

The ISO currently has two private-placement, fixed-rate note issuances totaling $50 million.

In 2012, the ISO issued $11 million in 12-year, private-placement, fixed-rate notes (expiring in 2024) to provide funding to support the capital project program. The additional $11 million in notes issued was a result of increased project work arising from the stakeholder process and regulations, as well as longer project-implementation lead times due to increased complexity. These notes were in addition to the then existing $39 million of private-placement, fixed-rate notes, expiring in September 2014. The $39 million of private-placement, fixed-rate notes that expired in 2014 were replaced for the same amount ($39 million); the new notes will expire in 2024.

The continued issuance of private-placement notes aligns with the ISO's philosophy of budgetary discipline and saving the cost of new borrowings each year. As the ISO places projects in service and the projects begin to depreciate, the ISO recovers the depreciation expense under Section IV.A of the ISO tariff, and the recovered expense becomes available for funding future capital spending requirements.

In 2005, the ISO secured $45.5 million of tax-exempt debt to finance its new master control center and renovate and consolidate its existing office facilities. The debt comprises multimode variable-rate civic-facility revenue bonds, which reprice weekly. The Massachusetts Development Finance Agency issued the bonds, which the ISO will be repaying over 25 years; principal repayments began in May 2007. The weighted average cost of the debt for 2017, including the direct-pay letter of credit, was 1.19%.

In 2012, the ISO secured $36 million of tax-exempt debt to finance the construction of its new backup control center (BCC). The new BCC was fully operational in May 2014. The debt comprises multimode variable-rate civic-facility revenue bonds, which reprice weekly. Connecticut Innovations Incorporated issued the bonds. Principal repayments began in November 2014, with a redemption payment of $1,350,000, in addition to the regularly scheduled principal payments because the project completed under budget. The weighted average cost of the debt for 2017, including the direct-pay letter of credit, was 1.19%.

## Regulatory Update

President Trump has put his stamp on energy policy over the past 15 months, including, among other actions, nominating four new commissioners to the Federal Energy Regulatory Commission. With the upcoming midterm elections in November, significant legislative progress on energy policy does not seem likely in Congress throughout the remainder of the year; however, committees with energy jurisdiction will almost certainly continue their ongoing oversight activities.

FERC was without a quorum for roughly half of 2017. However, between August and November, the four new commissioners were confirmed by the US Senate (joining sitting Commissioner Cheryl LaFleur), and a new chairman was appointed, returning FERC to full strength. A reconstituted commission was tasked with ruling on an October 2017 notice of proposed rulemaking (NOPR) issued by the US Department of Energy (DOE) recommending wholesale market changes to provide cost-of-service payments to generators possessing certain "resilience" characteristics.[6] In early January, FERC unanimously rejected the NOPR, noting that it did

[6] DOE, *Grid Resiliency Pricing Rule*, notice of proposed rulemaking; 82 *Federal Register*, 194: 46940–8 (October 10, 2017), https://www.federalregister.gov/documents/2017/10/10/2017-21396/grid-resiliency-pricing-rule.

not sufficiently demonstrate that current wholesale markets are in violation of statutory standards.[7] However, FERC paired its rejection with the initiation of a new proceeding on bulk power system resiliency, directing operators of the regional wholesale power markets to provide information as to whether the commission and the markets need to take additional action on resilience. The ISO submitted its compliance filing on March 9, 2018, in large part highlighting the issues raised in the *Operational Fuel-Security Analysis* (OFSA).[8]

The commission has also moved forward with ongoing efforts to promote storage technologies in wholesale markets, releasing a final rule directing operators of wholesale markets to remove "barriers to entry" and to create a participation model for technologies like electric storage.[9] The final rule, which follows an initial November 2016 NOPR, provides roughly one year for compliance filings and another year to implement any approved tariff revisions.[10] New England's wholesale energy markets appear to be well-suited to adhere to the FERC rulemaking and do not seem to require significant changes to achieve compliance with the rulemaking. Stakeholders will discuss any necessary market changes in future NEPOOL Markets Committee meetings, and the ISO will continue to engage stakeholders on ways to enhance opportunities for energy storage.

For the remainder of 2018, Congress is expected to continue holding hearings on energy-related matters. Throughout 2017, the House Energy and Power Subcommittee continued its oversight on possible changes to the *Federal Power Act* and discussion of the modernization of the electricity grid.[11] This included a hearing with ISO/RTO leaders, including Gordon van Welie, in July, as well as separate hearings with generation and transmission owners, consumer advocates (including a representative from New England's Consumer Liaison Group), and traders of virtual transactions and other financial products. Gordon also testified on Capitol Hill in January 2018 before the Senate Committee on Energy and Natural Resources (ENR), discussing bulk power system operations during the recent cold weather period as well as the OFSA.

One issue multiple Congressional committees will continue to explore is the digital and physical security of the electric power grid. Meaningful security legislation is not likely to emerge from Congress in the near future. However, Congress remains committed to strong oversight of FERC, the North American Electric Reliability Corporation (NERC), DOE, and the owners and operators of all parts of the electricity grid in terms of thorough efforts to maintain strong grid defenses.

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[7] FERC, *Order Terminating Rulemaking Proceeding, Initiating New Proceeding, and Establishing Additional Procedures* (on grid reliability and resilience pricing and grid resilience in RTOs and ISOs), 162 FERC ¶ 61,006 (January 8, 2018), https://www.ferc.gov/CalendarFiles/20180108161614-RM18-1-000.pdf.

[8] ISO New England, *Response of ISO New England Inc.* (on Grid Resilience in Regional Transmission Organizations and Independent System Operators), Docket No. AD18-7-000, FERC filing (March 9, 2018), https://www.iso-ne.com/static-assets/documents/2018/03/ad18-7_iso_response_to_grid_resilience.pdf, and *Operational Fuel-Security Analysis* (January 17, 2018), https://www.iso-ne.com/static-assets/documents/2018/01/20180117_operational_fuel-security_analysis.pdf.

[9] FERC, *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, final rule (February 15, 2018), errata notice (February 28, 2018), https://www.ferc.gov/whats-new/comm-meet/2018/021518/E-1.pdf.

[10] FERC, *Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators*, notice of proposed rulemaking, 157 FERC ¶ 61,121 (November 17, 2016), https://www.ferc.gov/whats-new/comm-meet/2016/111716/E-1.pdf.

[11] *Federal Regulation and Development of Power*, public law 113–23, 16 US Code, Chapter 12 (August 9, 2013), https://www.gpo.gov/fdsys/pkg/PLAW-113publ23/html/PLAW-113publ23.htm.

One particular piece of targeted legislation that remains relevant is a bill aimed at creating an avenue for ratepayer appeals when electricity rate increases take effect without definitive action from FERC. The measure stems from the commission deadlocking 2–2 on the results of Forward Capacity Auction #8, which allowed the auction results (and subsequent rate increases) to take effect. A version of the *Fair RATES Act*, authored by Congressman Joseph Kennedy III (D-MA4) and Senator Ed Markey (D-MA), passed the House in early 2017, while a version with different language was approved by ENR in March.[12] The Senate must approve the bill before it is sent back to the House for final passage.

## Results of Actual Operations

Table 1 summarizes the actual amounts and percentage of total expenses for the years ending December 31, 2017, and 2016:

**Table 1**
**Actual Amounts ($ Millions) and Percentages of Total Expenses for the Years Ending December 31, 2016 and 2017**

| Year Ending December 31, | 2017 ($) | 2017 (%) | 2016 ($) | 2016 (%) |
|---|---|---|---|---|
| **Salaries and benefits** | 106.2 | 57.6 | 105.0 | 57.8 |
| **Depreciation and amortization expense** | 32.6 | 17.6 | 32.1 | 17.7 |
| **Computer services** | 12.6 | 6.8 | 11.3 | 6.2 |
| **Professional fees and consultants** | 11.3 | 6.1 | 11.8 | 6.5 |
| **Northeast Power Coordinating Council and NERC dues and expenses** | 5.9 | 3.2 | 5.9 | 3.2 |
| **Insurance expense** | 2.2 | 1.2 | 2.0 | 1.1 |
| **Interest expense** | 2.2 | 1.2 | 2.0 | 1.1 |
| **Communication expense** | 1.7 | 0.9 | 2.1 | 1.1 |
| **Building services** | 1.4 | 0.8 | 1.3 | 0.7 |
| **Board of directors** | 1.2 | 0.7 | 1.2 | 0.7 |
| **Utilities** | 1.2 | 0.7 | 1.2 | 0.7 |
| **Information services and industry memberships** | 1.2 | 0.7 | 1.1 | 0.6 |
| **Rents and leases** | 1.0 | 0.5 | 1.0 | 0.6 |
| **Administrative and other** | 3.7 | 2.0 | 3.6 | 2.0 |
| **Total** | **$ 184.4** | **100.0%** | **$ 181.6** | **100.0%** |

[12] *Fair RATES Act*, H.R. 587, 115th Cong. (January 23, 2017), https://www.congress.gov/bill/115th-congress/house-bill/587.

Total expenses increased by $2.8 million, or 1.5%, in 2017 over 2016. Expenses net of depreciation, amortization, and interest increased $2.1 million, or 1.4%, in 2017 over 2016. The changes primarily were the result of the following factors:

- Salaries and benefits increased $1.2 million, or 1.1%, in 2017. Increases are due largely to year-over-year annual merit and promotional increases. Partially offsetting these increases were reductions due to a higher allocation of internal ISO staff work on capital development projects, lower salary levels for replacement positions that have resulted from staff turnover and retiring employees, and for lower post-retirement benefit plan contributions.
- Depreciation and amortization expense increased $0.5 million, or 1.6% in 2017. This increase in expense is a result of a number of large projects placed in service in late 2016 or mid-2017, including Subhourly Settlements, Real-Time Fast-Start Pricing, Forward Capacity Auction 11, Wind Integration Phase II/Do-Not-Exceed Dispatch, and Market Enhancements for Dispatchable Asset-Related Demand (DARD) Pumps. Partially offsetting the increases are large projects that depreciated fully during 2016 or mid-2017, including Wind Integration, NX9/NX12D Data Integration and Automation, Simultaneous Feasibility Test and Market System Upgrade, and Forward Capacity Auction #8.
- Computer services increased $1.3 million, or 11.5%, in 2017, with $0.2 million related to cyber costs, and more specifically due to the following:
    - Expenditures associated with the consolidation and upgrade of relational database server licenses
    - Additional licensing costs for the ongoing expansion of virtual system environments
    - Increases for existing products upon renewal of multiyear licensing and maintenance agreements, as well as year-over-year product inflationary increases
    - Cost increases for the purchase of additional licenses for security and compliance purposes
    - Increased storage-server licensing and maintenance costs due to expanding requirements for market and operations data
    - First-year maintenance expenses on request-for-proposal software purchased for issuing proposals sought for transmission planning projects under requirements of FERC Order No. 1000
- Changes in all other line items resulted in a net reduction of $0.2 million, most notable of which are as follows:
    - Reduced professional fees and fewer consultants ($0.5 million, or 4.2%), resulting from supplementing ISO staff and for various studies and other nonrecurring consulting work, with a large reduction in legal fees due to the reversal of prior years' expenses covered by insurance
    - Reduced communications expenses ($0.4 million, or 19.0%), primarily due to the removal of accrued charges when the ISO began a new phone contract with its vendor
    - Increases in insurance expense and interest expense, both of which increased $0.2 million, or 10.0%, which offset reductions

## Capital Spending

The FERC-approved capital expenditure budget for 2017 was $28.0 million. Actual spending was under budget by $1,382,000. Spending was reduced for a number of projects, including the following:

- Forward Capacity Market Improvements and Forward Capacity Market Pay-for-Performance projects, both of which are scheduled to be completed in 2018 and reflect lower overall costs than originally estimated
- Cybersecurity Network Segmentation Phase II project, which came in lower than estimated for 2017 due to the project being broken down into two phases and Phase I completed in 2016
- Energy Management Platform 3.2 Upgrade and Custom Reduction project, which is still in planning and experienced lower-than-budgeted spending through 2017
- Balance of Planning Period Financial Assurance project which was delayed to 2018 or beyond, due to further design changes awaiting FERC
- Removal of the 2017 Issue Resolution Phase II and the Forward Capacity Tracking System Technical Architecture Upgrade projects due to higher priority projects during the year

Major projects in 2017, some of which are ongoing and multiyear, are summarized in the sections that follow.

***Price-Responsive Demand***

The Federal Energy Regulatory Commission issued Order No. 745, Demand-Response Compensation in Organized Wholesale Energy Markets, during 2011. The order requires organized wholesale energy markets to pay demand-response providers the market price for electric energy for reducing consumption below expected levels, when doing so would lower the costs to consumers and help balance real-time supply and demand. ISO New England developed and designed market rules to fully integrate demand-response resources into the energy and reserve markets. Per Order No. 745, when a demand-response resource has the capability to balance supply and demand as an alternative to a generation resource and when the dispatch of that resource is cost-effective, it must be compensated for the service it provides to the energy market at the locational marginal price.

The proposed design for full integration will allow demand-response resources to be dispatchable and participate in the energy and reserve markets as well as the capacity market, in each case, comparable to a generator. The scope of work for the PRD project includes significant software changes and enhancements to multiple systems including the market database, market clearing engines, eMarket, the energy management system, electronic dispatch, day-ahead and real-time support applications, ISO enterprise applications, and market settlement applications. Finally, market participants with demand-response resource that become dispatchable will require significant hardware and software development. Therefore, the PRD project includes a communication plan for extensive customer outreach in preparation of the implementation date. The estimated total cost for this project is $9,579,200. The target completion date is June 2018.

***Subhourly Settlements***

The Subhourly Settlements project has improved price signals to ensure that the payments for real-time market performance are more accurate. Hourly settlement payments create disconnects between actual performance and compensation because the real-time markets (energy, reserve, and regulation) are settled hourly while real-time locational marginal prices are calculated every five minutes. Specifically, hourly settlement rules tend to undercompensate certain resources, particularly more flexible resources that respond quickly when system events result in tight operating conditions and the midhour price changes are significant. Compensating resources at the more granular, five-minute price has helped improve price formation by ensuring that the price for real-time performance is a more accurate market signal of the power system's current operating conditions.

The Subhourly Settlements project included software and hardware upgrades and technology improvements to multiple ISO systems and have provided the following additional enhancements:

- A system to execute a greater number of settlements and input/output transactions
- Five-minute settlement and metering of user-interface details
- Improvements for increasing the volume of reports and the development of new reports with settlement details at five-minute granularity
- Modifications to the Energy Management System to integrate the four-second telemetry over each five-minute interval and transfer this information to downstream systems

The project was completed and put into production in March 2017 with a cost of $4,128,000.

***Real-Time Fast-Start Pricing***

The ISO's Real-Time Energy Market has prevented fast-start resources from setting the energy price during the whole period of their commitment, even though these resources may have been the highest-cost resources supplying power. As a result, many of these units must be paid Net Commitment-Period Compensation (NCPC) (i.e., make-whole payments) whenever they operate. FERC accepted an ISO New England proposal for a real-time fast-start pricing method that aims to generate market prices that more fully reflect the total cost of fast-start unit deployments.[13] This pricing method can dispatch down other on-line resources below their profit-maximizing output level. Therefore, it includes a calculation for a lost-opportunity cost that must be paid to all on-line resources and that the real-time NCPC settlement calculations treat as revenue. This method thus creates a financial incentive for these resources to follow the ISO's dispatch instructions.

The Real-Time Fast-Start Pricing project required significant software and systems work associated with the real-time scheduling, pricing, and dispatch applications, the real-time locational marginal price calculator, the coordinated-transaction-scheduling pricing engine, and the real-time unit-commitment application. The project also required the creation of commitment snapshots to capture information at the time of commitment, as needed by the real-time NCPC settlement, and the implementation of real-time mitigation changes. The project was completed and put into production in March 2017 with a cost of $4,052,200.

***Forward Capacity Market Pay-for-Performance***

The pay-for-performance design improves the current Forward Capacity Market design by including stronger links between a supply resource's capacity revenues and such resource's performance during reserve deficiencies, providing strong incentives for each resource to perform as needed and to make the required investments to build and maintain the resources necessary to assure reliable service.

The FCM PFP project will require modifications to several existing software applications. Significant effort will be dedicated to modifying the Gateway Data Management application. Market database application programming interfaces will be enhanced to provide capacity scarcity conditions, unit-specific "capping" for transmission limitations, desired dispatch point, external reserve support, and replacement reserve megawatts to the ISO Gateway for eventual use in settlement. The current Forward Capacity Tracking System also will be enhanced. The current FCM supplemental availability bilateral mechanism does not contain the needed functionality or nomenclature to accommodate PFP and will be retired effective with the start of the

[13] FERC, *Tariff Revisions to Fast-Start Resource Pricing and Dispatch*, letter order (October 19, 2015), https://www.iso-ne.com/static-assets/documents/2015/10/er15-2716-000.pdf.

ninth capacity commitment period, commensurate with PFP implementation. This mechanism will be replaced with the capacity performance bilateral function to accommodate PFP functionality and nomenclature, and the Financial Assurance Management application will be updated to account for the possibility of net payment obligations for commercial resources, also consistent with the PFP construct.

The estimated total cost for this project is $2,266,600. The target completion date is June 2018.

### *Forward Capacity Auction (FCA) #11*

The FCA #11 project included the implementation of two primary efforts in accordance with FERC requirements: zonal demand curves and resource-retirement reforms. This project involved modifying the descending-clock auction and market-clearing engine, migrating from fixed (vertical) demand curves to zonal demand curves, and improving the options available to participants contemplating removing capacity from the marketplace. Additionally, this project has enabled the ISO to determine more readily whether a resource's retirement is also an attempt to exercise market power. The Forward Capacity Tracking System, the market-clearing engine, and Market Information System reports required a number of changes to accommodate the resource-retirement reforms.

The project was placed into service in February 2017 with a cost of $2,385,100.

### *Market Enhancements for Dispatchable Asset-Related Demand Pumps*

This project has implemented tariff changes the ISO filed with FERC to improve the modeling and dispatch of pumped-storage hydroelectric generating resources. The Market Enhancements for DARD Pumps project extended some of the intertemporal parameters available for DARD pump generators. This change enabled the pumps, like generators, to align their economic bids with their physical operating constraints. The DARD pump parameter changes, which had an impact on a number of the ISO's software applications, has improved the modeling of DARD pumps and provided market participants with the ability to use a number of new bidding parameters to manage the operation of DARD pumps. These bidding parameters include the ability to specify a minimum run time and minimum down time for use in the real-time market and to specify a maximum daily consumption limit and maximum number of daily starts for use in the day-ahead market. The tariff changes also include several changes to the Net Commitment-Period Compensation rules that lower the financial risks of operating a DARD pump on an economic basis. The rule changes should result in less financial risk for market participants with DARD pumps and more optimal day-ahead market schedules and real-time dispatch solutions for the market as a whole.

The project was placed into service in March 2017 with a cost of $1,570,000.

### *Internal Market Monitor Data Analysis Phase I*

The ISO's Internal Market Monitoring (IMM) department requires direct access to a range of historical and current market data to explore data across multiple markets (e.g., energy, capacity, and ancillary services) and multiple market products (e.g., physical and financial). IMM analysts use this information to search for data patterns, anomalies, and outliers across multiple dimensions, such as market participant, resource type, fuel type, location, and time. IMM analysts spend significant time and effort on the preparatory steps to gather this information. Therefore, the goal of this project is to create a solution that encompasses a set of "ready-to-use" data.

Phase I of the IMM Data Analysis project will assist the IMM department with defining its business requirements for a data system and develop and deliver application programming interfaces in three ISO New England markets: Financial Transmission Rights, the Forward Reserve Market, and the Forward Capacity Market. A data governance program will also be incorporated to provide accurate, consistent, reliable, timely, and complete information for analysis in addition to a business dictionary for support in defining individual data attributes and tracing them to the data-origination sources.

The estimated total cost for this project is $1,159,700. The target completion date is June 2018.

#### *Software Development Costs*

In addition to the major projects described above, the ISO incurred $2.4 million in software development costs during 2017. These costs supported a multitude of enhancements to existing software systems.

#### *Nonproject Hardware and Software Costs*

The ISO incurred $4.4 million of non-project-related hardware and software costs, $0.6 million of this was related to cyber purchases. Software purchases included an enterprise version of the real-time historian application that stores data generated from the Energy Management System. This enterprise version allows for an unlimited amount of storage-retention tags, removing the need for incremental future purchases as the requirement for data-storage increases.

Hardware purchases include the following:

- An investment in ultrahigh performance storage as a result of capacity growth and reliance on virtual server environments
- The purchase of appliances to support the virtualization of server infrastructure for customer-facing services that combine network, storage, and computing into a single-design solution that increases performance and reduces IT resources
- Equipment upgrades to bring the development and integration environments' storage and technology in line with production environments, which will improve the ability and productivity of testing technology solutions across the ISO
- Upgraded server technology to reduce database licensing requirements based on asset and license-management analysis
- Licensing increases and equipment upgrades to ensure compliance with patching and security requirements, including those for Critical Infrastructure Protection (CIP) and Service Organization Controls (SOC) audits

## Risks

ISO New England is exposed to financial risk in four primary areas: interest rates, litigation, cybersecurity, and regulatory changes. The ISO historically has included in its annual budget two contingency funds to address unknown costs—a CEO emerging-work allowance and a board of directors contingency fund. These contingencies typically represent a combined 1.0% to 1.5% of the total amount to be recovered each year under Section IV.A of the ISO tariff. The CEO emerging-work allowance is used as part of the normal course of business, and allocations are controlled by the CFO and CEO. The board contingency fund, subject to use only through ISO Board of Directors approval, has never been used. Because the ISO does not have any capital to draw on for unknown expenses, these two contingencies are important for the ISO to operate efficiently.

### *Interest Rates*

Fluctuating interest rates can have an impact on the costs of the ISO in several ways. Specifically, the ISO earns interest on the settlement funds it collects from market participants, pays a floating interest rate on its tax-exempt bonds, and uses assumptions on interest rates to establish liabilities and costs for its pension and postretirement benefit plans.

Historically, the average float in the settlement account had been consistently higher than the outstanding principal of the tax-exempt debt and, therefore, was an effective hedge against interest-expense rates. A decrease in the settlement float will make the hedge less effective against increasing interest rates. In 2017, the settlement float increased on average approximately 10% from 2016 levels. This increase was primarily due to rebounding clearing prices in the energy markets. The increase in float and the low interest rates of the tax-exempt debt has had a minor overall impact to the hedge; the average balance of the tax-exempt-issued debt was slightly higher than the average settlement float in 2017. However, to mitigate the risk of the uncovered hedge (i.e., the higher level of variable-rate debt to settlement float), in late 2012, the ISO purchased an interest-rate cap that benefits the ISO when interest rates exceed a certain level. The interest-rate cap is a 10-year cap, which amortizes as the tax-exempt debt principal is repaid. Both interest income and interest expense rates continued to remain low in 2017. The ISO regularly analyzes the interest-rate environments to ensure that its debt structure is as cost effective as possible, in addition to reviewing all debt and funding needs.

Interest rates also are used in the discount-rate assumptions for establishing the liabilities and costs associated with the pension and postretirement plans. Lower interest rates result in increased costs for these plans when the rates filed in the tariff for recovery include using the calculated expense amount for the cost of these items. For years before 2016, the rates filed for recovery were inclusive of this approach for the pension and postretirement plans; for 2016 and forward, only the postretirement benefit plan will be affected by the change in interest rates. In 2016, the ISO implemented a level funding approach to the pension benefit plans, rather than the historical method of funding the expense amount as calculated, in accordance with the Financial Accounting Standards Board's (FASB) Accounting Standards Codification (ASC) for the defined benefit pension and other postretirement plan topic. The level funding approach will reduce the volatility of the pension plan expense included in the ISO tariff, while still providing reasonable assurance for sufficient funding of the pension plan.

### *Litigation*

The ISO also has potential exposure to costs resulting from litigation. The ISO does not budget for unforeseen litigation costs during the normal budgeting process. Therefore, any material unexpected litigation that arises during the course of the year would pose a risk to the ISO's ability to operate within the approved budget.

### *Cybersecurity*

Cybersecurity continues to be one of the most important national security priorities. The volume and sophistication of cybersecurity threats has been increasing. The ISO's systems and networks contain vast amounts of critical and confidential information pertaining to the power system grid and internal networks. Protecting these systems, networks, and data is critical.

The ISO is continuing to improve and evolve its cybersecurity program. The ISO engaged leading cybersecurity experts to review the existing cybersecurity program, in 2014 to 2015. On the basis of these reviews, the ISO has developed a three-year plan to bolster its overall cybersecurity. In 2015, the ISO implemented and staffed a 24 x 7 Security Operations Center to be able to monitor its systems in real time, as well as to act more quickly when an issue arises. In addition, the ISO bolstered its security procedures and protocols, as prescribed by NERC's Critical Infrastructure Protection Standards V5, which represents significant progress in mitigating cybersecurity risks to the bulk power system.[14] The ISO completed the project to implement the requirements issued under CIP V5 in March 2016 and has continued to address the three-year cybersecurity plan established in 2015.

In addition, the ISO reorganized the IT department structures to form a focused group charged with cybersecurity operational responsibilities for the company. In 2017 and continuing into 2018, the ISO is working on enhancing its identity and access management program; addressing the new CIP-013 standards, including third-party cyber-risk management; segregating desktop access, including additional firewall controls; and enhancing email security, among other items. The ISO plans on preparing a new three-year cybersecurity plan in the near future to be ready for the next set of challenges.

***Regulatory Changes***

The ISO is always subject to new regulatory orders issued by FERC and NERC. If the ISO is not aware of a new requirement when the budget is prepared and submitted for approval to FERC, the ISO could be at risk from any additional cost associated with the new requirement.

## Billing and Credit

The ISO is responsible for the billings associated with the wholesale electricity markets for New England's bulk power generation and transmission system. It also must ensure that proper measures are in place to mitigate participants' exposure to credit risk from transacting in the ISO-administered markets. Since its inception in 1999, the ISO has continually reviewed its Billing and Financial Assurance Policies and, since 2004, has made great strides in reducing the credit risk for market participants.[15]

In 2017, the ISO continued to modify and improve the Financial Assurance Policy (FAP):

- In March 2017, the ISO submitted a filing to FERC to amend the Forward Capacity Market Capacity Charge Requirement component of the obligations in the ISO Financial Assurance Policy.[16] The purpose of the FCM Capacity Charge Requirement is to collateralize the capacity charges that load-serving entities with a capacity load obligation (CSO) pay. While the collateral calculation will necessarily be a rough estimate, the current calculation of the FCM Capacity Charge Requirement has the potential to require market participants to post far too much or too little collateral compared with their actual monthly capacity charges. To address this issue and to otherwise enhance how the FCM Capacity Charge Requirement is calculated, the ISO modified the calculation by replacing the estimated net regional clearing price (ENRCP) component of the calculation with a new factor, the FCM charge rate. The primary difference between the then-current approach, using the ENRCP, and the proposed approach, using the FCM charge rate, is that the former is backward looking and the latter is forward looking. By replacing the ENRCP with the FCM charge rate, the ISO will be able to use as much relevant information as possible for estimation purposes and provide market

[14] For more information on NERC's series of CIP V5 standards, see its "CIP Standards" webpage at https://www.nerc.com/pa/Stand/Pages/CIPStandards.aspx.

[15] *ISO New England Transmission, Markets, and Services Tariff*, Section 1, General Terms and Conditions: Exhibit IA, "ISO New England Financial Assurance Policy," (June 1, 2017) and Exhibit ID, "ISO New England Billing Policy," (July 1, 2017), https://www.iso-ne.com/participate/rules-procedures/tariff/.

[16] *Revisions to ISO New England Transmission, Markets, and Services Tariff Related to a Market Participant's FCM Capacity Charge Requirements Under the Financial Assurance Policy, Docket No. ER17- -000*, FERC filing (March 6, 2017), https://www.iso-ne.com/static-assets/documents/2017/03/er17-1103-000_fap.pdf.

participants adequate time to calculate financial-assurance obligations in advance of the billing month. FERC approved this modification on April 7, 2017.[17]

- In December 2017, the ISO submitted a filing to FERC to amend the ISO New England Financial Assurance Policy to specify that potential charges associated with annual reconfiguration transactions (ARTs) in the FCM are included in the calculation of financial-assurance requirements.[18] The amendments to the FAP were submitted with other changes and enhancements to the market rules associated with the new ART bilateral contracting mechanism. The existing capacity supply obligation bilateral (CSO bilateral) provided a means for capacity suppliers to acquire or shed CSOs by mutual agreement. While the CSO bilateral construct was compatible with the old, fixed vertical demand curves the FCM used until relatively recently, it was not designed to work with the market's recently implemented sloped zonal demand curves. FERC approved this modification on February 28, 2018.[19]
- In March 2016, the ISO launched a project to improve the Financial Transmission Rights (FTRs) Market, Balance of Planning Period Auctions (BoPP). The implementation of BoPP was first vetted with FERC in a May 2011 filing, which stated BoPP was a way to increase liquidity in the FTR market, enhance price discovery, and more efficiently allocate resources.[20] The ISO had been pursuing an arrangement with an exchange for several years before March 2016, which was expected to produce these same market benefits. The pursuit of the exchange arrangement ended due to regulatory hurdles that cannot be solved at this time and is uncertain for the future.

  The BoPP replacement to the exchange approach will open up a fundamentally different FTR auction structure. BoPP provides a vehicle for market participants to close out their open contracts to lock-in profits or limit potential losses, and a netting provision in FTR obligations will be included with BoPP to prevent double margining. Additionally, a mark-to-market methodology will be incorporated to reflect a more current value of the portfolio than exists today, along with some other improvements to valuing the collateral requirements for FTRs. A FERC filing of these changes was made on April 20, 2017, which the ISO subsequently withdrew. Further discussion and clarification was required with stakeholders, which took place in the latter part of 2017. A filing, reflecting the additional stakeholder input and the resulting design changes is anticipated in the first half of 2018.

The ISO will continue to work closely with its participants to reduce default risk, including minimizing the settlement cycle time.

## Various Market Services and Participation Data

Table 2 compares key settlement market information for the years ending 2017 and 2016 for the markets the ISO oversees.

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[17] FERC, *Market Participant's FCM Capacity Charge Requirements Under the Financial Assurance Policy*, letter order (April 7, 2017), https://www.iso-ne.com/static-assets/documents/2017/04/er17-1103.000.pdf.

[18] *ISO New England Inc. and New England Power Pool Participants Committee; Filing re CSO Transfer Improvements Docket No. ER18- -000*, FERC filing (December 15, 2017), https://www.iso-ne.com/static-assets/documents/2017/12/er18-455-000_cso_tansfer_improvements.pdf.

[19] FERC, *Order Accepting Tariff Revisions*, 162 FERC ¶ 61,175 (February 28, 2018), https://www.iso-ne.com/static-assets/documents/2018/02/er18-455-000_2-28-18_order_accept_art_rev.pdf.

[20] *ISO New England Inc., NEPOOL Participants Committee, and Participating Transmission Owners Administrative Committee; Filing of FTR Enhancements; Docket No. ER11-___-000*, FERC filing (May 13, 2011), https://www.iso-ne.com/static-assets/documents/regulatory/ferc/filings/2011/may/er11_3568_000_5_13_11_ftr_enhancements.pdf.

**Table 2**
**Key Settlement Market Information, 2017 and 2016 ($ Millions)[(a)]**

| | $ in Millions | |
|---|---|---|
| | **2017** | **2016** |
| **Energy markets total** | $4,522 | $4,152 |
| Day-Ahead Energy Market | $4,377 | $4,029 |
| Real-Time Energy Market | $144 | $123 |
| **Real-time load obligation**[(b)] | 127,903,485 MWh | 129,279,178 MWh |
| **Net Commitment-Period Compensation** | $52 | $73 |
| **Reserve markets total** | $70 | $70 |
| Forward Reserve Market, net | $40 | $53 |
| Real-time reserve payments | $30 | $17 |
| **Regulation Market** | $32 | $27 |
| **Forward Capacity Market payments** | $2,244 | $1,161 |
| **Financial Transmission Rights (FTRs) total** | $20 | $19 |
| FTRs—long-term auction | $11 | $10 |
| FTRs—monthly auction | $9 | $9 |
| ***Open-Access Transmission Tariff* charges total** | $2,195 | $2,075 |
| Regional network service/through or out | $2,163 | $2,039 |
| Blackstart | $12 | $15 |
| Volt-ampere-reactive capacity cost | $20 | $21 |
| **Demand-response payments** | $1 | $2 |

(a) The data reflect settlements for the operational days, January 1 through December 31 of the respective years. Due to the timing of the 90-day data reconciliation process, the final settled data may not be completely reflected in the table for 2017.

(b) The real-time load obligation shown in the table reflects load at all pricing locations in New England, including exports at the external nodes.

The following measures are key indicators of the cash that clears through the ISO:

- The ISO's aggregate customer base has increased by approximately 8% year over year (i.e., 472 customers in 2017: 436 customers in 2016), with the primary increase in the supplier sector. The ISO's customers include generators, suppliers, publicly owned entities, transmission owners, demand-response resources, alternative resources, and end users.
- The net cash cleared in 2017 was $5.4 billion, compared with $4.7 billion in 2016, which is an increase of approximately 14%.
- Energy market transactions that cleared through the ISO in 2017 increased approximately 1.5% from the 2016 level.

Figure 1 shows historical market-clearing activity from 1997 to 2016.

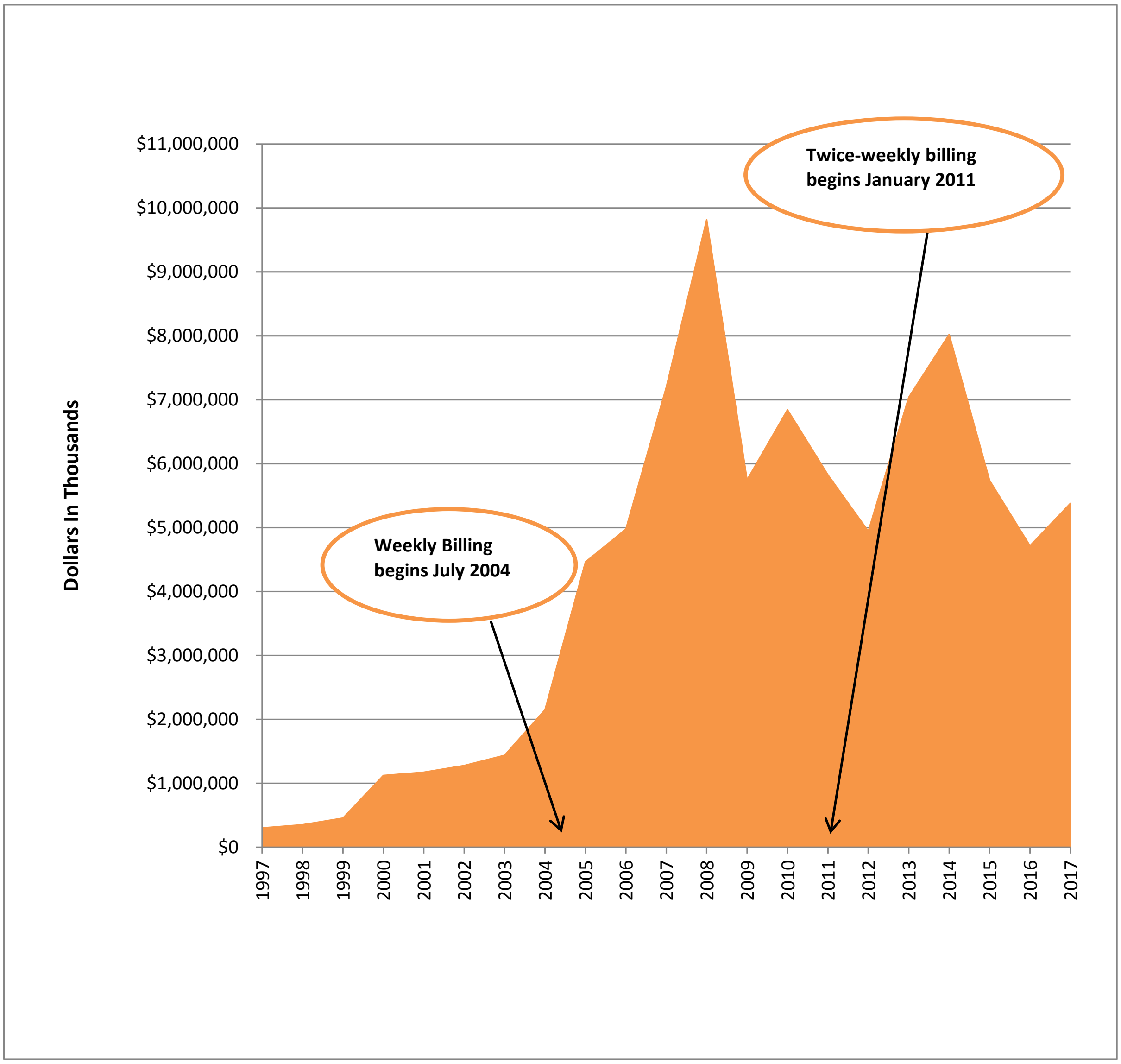


**Figure 1: Annual historical market-clearing activity, 1997 to 2017 ($ thousands).**

**Note:** Dollars are in thousands. Data for years 1997 and 1998 are estimated.

# Management's Responsibility for Financial Reporting

The management of ISO New England Inc. (ISO) is responsible for the preparation, objectivity, and presentation of the following financial statements, as well as for the integrity of these statements. These financial statements have been prepared to conform to accounting principles generally accepted in the United States and, where required, include amounts that represent management's best judgments and estimates. The ISO's management also is responsible for the preparation of other information in this annual report and for its accuracy and consistency with the financial statements.

To aid in carrying out this responsibility, we, along with all other members of management, maintain a system of internal accounting control modeled after the Committee of Sponsoring Organizations of the Treadway Commission, or the COSO framework. In the opinion of management, the overall system of internal accounting control provides reasonable assurance that the ISO's assets are safeguarded and that transactions are executed in accordance with the management's authorization and are properly recorded for the preparation of financial statements. In addition, management believes the overall system of internal accounting control provides reasonable assurance that, in the normal course of their duties, employees prevent or detect material errors or irregularities on a timely basis.

Any system of internal accounting control, no matter how well designed, has inherent limitations, including the possibility that controls can be circumvented or overridden and misstatements due to error or fraud can occur and not be detected. Also, because of changing conditions, the effectiveness of internal control can vary over time. Accordingly, even an effective system of internal control will provide only reasonable assurance about the preparation and reporting of financial statements.

The system of internal accounting control is supported by written policies and guidelines, the selection and training of qualified employees, an organizational structure that provides an appropriate division of responsibility, and a program of internal auditing. The ISO's written policies include a Code of Conduct that states management's policy on conflict-of-interest and ethical conduct. All personnel annually confirm their compliance with the Code of Conduct.

Gordon van Welie
President and Chief Executive Officer

Robert C. Ludlow
Vice President, Chief Financial and Compliance Officer

# ISO New England Inc.

**Financial Statements**
**For the Years Ended December 31, 2017 and 2016**
**(With Independent Auditors' Report Thereon)**

KPMG LLP
One Financial Plaza
755 Main Street
Hartford, CT 06103

# Independent Auditors' Report

The Board of Directors
ISO New England Inc.:

## Report on the Financial Statements

We have audited the accompanying financial statements of ISO New England 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 ISO New England Inc. as of December 31, 2017 and 2016, and the results of its operations and its cash flows for the years then ended in accordance with U.S. generally accepted accounting principles.

KPMG LLP

Hartford, Connecticut
March 19, 2018

# ISO New England Inc.
# Statements of Financial Position
# As of December 31, 2017 and 2016

| | 2017 | 2016 |
|---|---|---|
| | (In thousands) | |
| **Assets** | | |
| Current assets: | | |
| Cash and cash equivalents | $ 90,924 | $ 82,534 |
| Restricted cash on deposit | 11,663 | 15,305 |
| Security deposits | 162,282 | 146,346 |
| Unbilled receivable, net | 33,106 | 29,753 |
| Prepaid expenses and other assets | 5,341 | 2,924 |
| Regulatory assets - current | 381 | - |
| Noncurrent assets: | | |
| Property and equipment in-service, net | 85,120 | 89,884 |
| Work in process | 18,639 | 20,131 |
| Restricted cash on deposit | 716 | 438 |
| Deferred charges | 1,259 | 1,369 |
| Regulatory assets | 65,147 | 61,130 |
| Total assets | $ 474,578 | $ 449,814 |
| **Liabilities and Net Assets** | | |
| Current liabilities: | | |
| Accounts payable: | | |
| Settlement, net | $ 67,089 | $ 73,792 |
| Administration | 9,313 | 6,412 |
| Deposit payable | 183,941 | 163,395 |
| Interest payable | 439 | 398 |
| Accrued compensation | 21,411 | 20,246 |
| Regulatory liability - current | 26 | 612 |
| Restricted cash on deposit payable | 11,663 | 15,122 |
| Long-term debt - current portion | 3,180 | 3,180 |
| Long-term liabilities: | | |
| Pension and post retirement benefit liability | 65,147 | 60,749 |
| Restricted cash on deposit payable, net of current portion | 716 | 438 |
| Regulatory liability, net of current portion | 9,335 | - |
| Long-term debt | 102,318 | 105,470 |
| Total liabilities | 474,578 | 449,814 |
| Unrestricted net assets | - | - |
| Total liabilities and net assets | $ 474,578 | $ 449,814 |

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

# ISO New England Inc.
## Statements of Activities
## For Years Ended December 31, 2017 and 2016

| | 2017 | 2016 |
|---|---|---|
| | (In thousands) | |
| Changes in unrestricted net assets: | | |
| Revenues: | | |
| ISO tariff revenues | $ 184,066 | $ 181,272 |
| Fees and services | 259 | 251 |
| Interest income | 84 | 54 |
| Total unrestricted revenues | 184,409 | 181,577 |
| General and administrative: | | |
| Salaries and benefits | 106,178 | 105,037 |
| Depreciation and amortization expense | 32,601 | 32,091 |
| Computer services | 12,649 | 11,321 |
| Professional fees and consultants | 11,320 | 11,789 |
| NPCC/NERC dues and expenses | 5,896 | 5,847 |
| Insurance expense | 2,206 | 2,030 |
| Interest expense | 2,151 | 1,988 |
| Communication expense | 1,720 | 2,080 |
| Building services | 1,427 | 1,309 |
| Board of directors | 1,213 | 1,195 |
| Information services and industry memberships | 1,158 | 1,104 |
| Utilities | 1,182 | 1,168 |
| Rents and leases | 1,016 | 1,031 |
| Administrative and other | 3,692 | 3,587 |
| Total expenses | 184,409 | 181,577 |
| Change in unrestricted net assets | - | - |
| Unrestricted net assets, beginning of year | - | - |
| Unrestricted net assets, end of year | $ - | $ - |

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

# ISO New England Inc.
## Statements of Cash Flows
## For Years Ended December 31, 2017 and 2016

| | 2017 | 2016 |
|---|---|---|
| | (In thousands) | |
| 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 and amortization expense | 32,746 | 32,236 |
| Loss on disposal | 266 | 101 |
| Increase in unbilled receivable, net | (3,353) | (2,305) |
| Increase (decrease) in prepaid expenses and other assets | (2,417) | 120 |
| Increase in regulatory assets | - | (381) |
| (Decrease) increase in accounts payable: | | |
| Settlement | (6,703) | 50,493 |
| Administration | 3,011 | (461) |
| Increase in accrued compensation | 1,165 | 1,590 |
| Increase in interest payable | 41 | 67 |
| Increase (decrease) in regulatory liability | 8,749 | (871) |
| Net cash provided by operating activities | 33,505 | 80,589 |
| Cash flows from investing activities: | | |
| Capital expenditures | (26,728) | (24,612) |
| Net cash used in investing activities | (26,728) | (24,612) |
| Cash flows from financing activities: | | |
| (Increase) decrease in security deposits | (15,936) | 14,700 |
| Decrease (increase) in restricted cash on deposit | 3,364 | (3,236) |
| (Decrease) increase in restricted cash on deposit payable | (3,181) | 3,376 |
| Increase (decrease) in deposit payable | 20,546 | (12,975) |
| Repayment on long-term debt | (3,180) | (3,180) |
| Borrowing on revolving credit | 11,000 | 11,000 |
| Repayment on revolving credit | (11,000) | (11,000) |
| Net cash provided by (used) financing activities | 1,613 | (1,315) |
| Net change in cash and cash equivalents | 8,390 | 54,662 |
| Cash and cash equivalents at beginning of year | 82,534 | 27,872 |
| Cash and cash equivalents at end of year | $ 90,924 | $ 82,534 |
| Supplemental data: | | |
| Amounts included in Accounts Payable - Administration related to work in process | $ 3,653 | $ 3,763 |
| Cash paid during the year for interest, net of interest capitalized | $ 2,108 | $ 1,934 |
| Non-cash activity - Change in pension liability is offset by regulatory assets | $ 4,398 | $ (1,835) |

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

### 1. Summary of Significant Accounting Policies

**Description of Business**

ISO New England Inc. (the "Company" or "ISO") is the Regional Transmission Organization ("RTO") for New England in compliance with the requirements of the Federal Energy Regulatory Commission ("FERC"). On January 1, 2013, ISO NE became the central counterparty to market transactions that flow through the ISO. The change to central counterparty was the result of a FERC rulemaking designed to afford the ISO and market participants more protection in bankruptcy. The ISO's assumption of the central counterparty role did not have a material effect on the ISO's settlement of the Markets or on business operations.

On January 13, 2014, a new entity, Eastern Interconnect Data Sharing Network, Inc. ("EIDSN") was formed. EIDSN is a 501(c)(6), nonstock, nonprofit corporation that was established to, among other things, facilitate the secure, consistent, effective, and efficient sharing of important electric transmission and operational data among its members and/or other applicable parties to help improve electric industry operations and promote the reliable and efficient operation of the Eastern Interconnection (as that term is defined by the North American Electric Reliability Corporation ("NERC")). On the formation date, the ISO, along with several Eastern Interconnection Reliability Coordinators (as that term is defined by NERC), became a member of the corporation.

**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 accounting principles generally accepted in the United States of America 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 reported period. Significant items subject to such estimates and assumptions include the useful lives of fixed assets, assumptions utilized in the accounting for employee benefit obligations such as discount rates, return on assets and other contingencies.

**Cash and Cash Equivalents**

The Company considers cash on hand and 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 overnight repurchase agreements and also in direct and indirect obligations of the United States, with original maturities of three months or less.

**Restricted Cash on Deposit**

The balance of approximately $12,379,000 and $15,743,000 at December 31, 2017 and 2016, respectively, recorded as restricted cash on deposit, represents the Forward Capacity Market Forfeited Funds, the Congestion Revenue Fund, and FERC Order Funds. The balance has a corresponding liability on the Statements of Financial Position. The restricted cash on deposit at December 31, 2017 and 2016 was held in overnight repurchase agreements and also in direct and indirect obligations of the United States of America US treasuries, with original maturities of three months or less.

**Accounts Receivable and Accounts Payable**

In the course of bulk power transactions administered by the Company on behalf of the Market Participants ("Participants"), amounts for energy purchased and sold among Participants become payable to and receivable from such Participants. The Company summarizes and prices the energy transactions and provides an invoice or remittance advice to each Participant that summarizes the amount either receivable from or payable to each Participant twice each week.
Accounts payable on the Statements of Financial Position are segregated between (i) the amounts owed for energy transactions and transmission, for which the ISO functions as paying agent, which are included in accounts payable as "settlement, net," and (ii) the administrative expenses incurred by the Company in the course of operations. The reference to "settlement, net" is used due to the nature of billing and payment for the amounts owed for energy transactions and transmission markets, and represents the market participant's net amount due, less any amounts which may have been owed to them.

The net unbilled receivables, the majority of which have been determined as a result of the settlement process, include those amounts that will be billed and included in the invoice or remittance advice to Participants on subsequent invoices issued twice per week. The balance at the end of the year represents mainly ISO Tariff revenues. The net payables and receivables for those energy transactions stated above are settled with the Participants in the same week.

**Property and Equipment in Service and Work in Process**

Property and equipment is stated at cost, net of accumulated depreciation and amortization.

The Company capitalizes the interest and fees associated with borrowings that the Company has entered into for the acquisition of assets related to a project that has a material effect on the Company's financial position as required by the Accounting of Certain Types of Regulation Topic of the Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC").

In addition, the Company capitalizes internal software development costs as required by the Cost of Computer Service Software Development Topic of the FASB ASC.

**Depreciation and Amortization**

Depreciation is generally computed using the straight-line method over an estimated useful life ranging from three years to twenty-five years (e.g., computer hardware, software and accessories – three to five years; software development costs – three to five years; vehicles – three to seven years; furniture and fixtures and machinery and equipment – seven years; building and leasehold/building improvements - one to twenty-five years or remaining life of the lease or building; and building – twenty-five years). Capitalized interest and fees are amortized over the same useful life of the asset to which it pertains, principally software development costs and building. No depreciation is recorded for assets classified as work in process until the assets are placed into service (Note 3).

**Deferred Charges and Regulatory Assets and Liabilities**

As a regulated entity, the Company, in appropriate circumstances, establishes regulatory assets or liabilities, and thereby defers the income statement impact of certain charges or revenues because it is probable to be collected or refunded through future customer billings as required by the Accounting of Certain Types of Regulation Topic of the FASB ASC. ISO-NE'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.

The Company incurred costs with the purchase of land located at Sullivan Road and Helmsford Way. The cost of the land at both locations, which were deferred, are being amortized, and the current year amortization is included in the current year's filing pursuant to Section IV.A. of the Tariff (titled "Recovery of ISO Administrative Expenses"). The land located at Sullivan Road is fully amortized. The remaining cost for the land located at Helmsford Way, also deferred, will be collected in future filings.

During 2012, the Commission issued an order approving a Stipulation and Consent Agreement between the Commission's Office of Enforcement and Constellation Energy Commodities Group. The settlement resulted in Constellation paying fines and "disgorging of unjust profits." ISO New England received $1,000,000 from this settlement to be used for the purpose of purchasing computer hardware and/or software that improves its surveillance and analytic capabilities. As of December 31, 2017 and 2016, $0 and $129,000, respectively, are recorded as a regulatory liability.

The following table is a detail of the deferred charges, regulatory assets and liabilities balances as presented in the Statements of Financial Position:

| **Deferred charges** | **2017** | **2016** |
|---|---|---|
| Land located on Helmsford Way | $ 835,000 | $ 875,000 |
| Interest Rate Cap | 424,000 | 494,000 |
| | $ 1,259,000 | $ 1,369,000 |

| **Regulatory assets - current** | **2017** | **2016** |
|---|---|---|
| Actual 2016 under collection | $ 381,000 | $ - |
| | $ 381,000 | $ - |

| **Regulatory assets, net of current portion** | **2017** | **2016** |
|---|---|---|
| Actual 2016 under collection | $ - | $ 381,000 |
| Asset related to pension and postretirement benefit liabilities (Note 5) | 65,147,000 | 60,749,000 |
| | $ 65,147,000 | $ 61,130,000 |

| **Regulatory liability - current** | **2017** | **2016** |
|---|---|---|
| Actual 2015 over collection | $ - | $ 380,000 |
| Mark to Market Interest Rate Cap | 26,000 | 103,000 |
| Funds received from FERC | - | 129,000 |
| | $ 26,000 | $ 612,000 |

| **Regulatory liability, net of current portion** | **2017** | **2016** |
|---|---|---|
| Actual 2017 over collection | $ 9,335,000 | $ - |
| | $ 9,335,000 | $ - |

**Income Taxes**
The Company is an entity organized as a non-stock corporation under the General Corporation Law, as amended, of the State of Delaware. The Company has been recognized by the Internal Revenue Service as an organization described in Internal Revenue Code (IRC) 501(c)(3) and is generally exempt from income taxes under IRC Section 501(a).

The Company 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.

The Company recovers its operating expenses through a filed rate assessed to Participants via the Tariff. To the extent that transactional volumes under Tariff Section IV.A Rate Schedules 1, 2, and 3 exceed the amount expected when the rate schedule charges are established, the Company reflects a regulatory liability for the over collection amounts.

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 and their donors. The Company 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.

**Pension and Other Postretirement Plans**
The Company has two noncontributory defined benefit pension plans. The benefits are based on age, years of service and average compensation. The Company also sponsors a defined benefit health, dental and life insurance plan.

The Company 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 cost trend rates. The Company reviews its assumptions on an annual basis and makes modifications to the assumptions based on current rates and trends when it is appropriate to do so. The Company believes that the assumptions utilized in recording its obligations under its plans are reasonable based on its experience and market conditions.

**Security Deposits**
The market participants are required to comply with the Financial Assurance Policy under the ISO's Tariff. In certain cases, including non-investment grade rated Participants that meet certain criteria and all Participants participating in the Financial Transmission Rights market, the Company's Financial Assurance Policy requires these Participants to put in place alternate forms of financial assurance. There are several options allowed under the Company's Financial Assurance Policy for compliance, one of which is to post cash collateral. The collateral deposits at December 31, 2017 and 2016 were $162,282,000 and $146,346,000, respectively, and are recorded in deposits payable.

**Revenue Recognition**

The Company recovers its operating and debt service costs pursuant to Section IV of the ISO's Tariff, which provides for recovery of expenses through three schedules to Section IV.A. Scheduling, System Control and Dispatch Service (Schedule 1), Energy Administration Service (Schedule 2) and Reliability Administration Service (Schedule 3) recover related costs through a pre-approved rate applied to each month's activity. Schedules 1, 2, and 3 are subject to true-up through subsequent years' rates, and any over or under collection are recorded as regulatory assets or regulatory liabilities and will be recovered under future filings to recover the ISO's expenses.

**Concentrations**

The Company's top 10 Participants represented approximately 48% or $91,848,000 and 46% or $84,225,000 in Tariff revenues for the years ended December 31, 2017 and 2016, respectively. The Company's top 10 Participants with accounts receivable balances represented approximately 46% or $14,941,000 and 48% or $14,151,000 as of December 31, 2017 and 2016, respectively.

**Liquidity Information**

In order to provide information about liquidity, assets have been sequenced according to their nearness to conversion to cash, and liabilities have been sequenced according to the nearness of their resulting use of cash.

**Revised Classification**

The classification of certain amounts on the financial statements of the prior year has been revised to conform with the current year's basis of presentation.

**Recently Issued Accounting Standards**

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. The new standard impacts accounting and disclosure of leases such that the Company will need to recognize a right-of-use asset and a lease liability for virtually all of its leases (other than leases that meet the definition of a short-term lease). Operating leases will result in straight-line expense (similar to current operating leases) while finance leases will result in a front-loaded expense pattern (similar to current capital leases). For public entities and not-for-profit organizations that have issued, or are a conduit bond obligor for securities that are traded, listed or quoted on an exchange or an over-the-counter market, which the Company is a conduit bond obligor, ASU 2016-02 is effective for fiscal years beginning after December 15, 2018. The Company has not determined the impact to the financial statements in adoption of ASU 2016-02 in 2019.

In August 2016, FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments*. The new standard is intended to reduce diversity in how certain transactions are classified in the statement of cash flows. For non-public entities, ASU 2016-15 is effective for fiscal years beginning after December 15, 2018. The Company expects that the adoption of ASU 2016-15 in 2019 will not have a material impact on its financial statements.

In August 2016, FASB issued ASU 2016-18, *Statement of Cash Flows (Topic 230): Restricted Cash*. The new standard requires that the statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. The Company will be required to reconcile such total to amounts on the balance sheet and disclose the nature of the restrictions. For non-public entities, ASU 2016-18 is effective for fiscal years beginning after December 15, 2018. The Company is evaluating the impact on its financial statements based on the restricted cash at the time of the adoption of ASU 2016-18 in 2019.

In August 2016, FASB issued ASU 2016-14, *Not-for-Profit Entities (Topic 958): Presentation of Financial Statements of Not-for-Profit Entities.* The new standard requires temporarily restricted and permanently restricted assets to collapse into one net asset class. The Company will be required to reconcile such total to amounts on the balance sheet and disclose the nature of the restrictions. For non-public entities, ASU 2016-14 is effective for fiscal years beginning after December 15, 2018. The Company expects that the adoption of ASU 2016-14 in 2019 will not have a material impact on its financial statements.

In March 2017, FASB issued ASU 2017-07, *Statement of Cash Flows (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. The new standard requires that the service cost component is broken out from other components of the net benefit cost. The Company will be required to change the disclosures to adhere to the new standard. For non-public entities, ASU 2017-07 is effective for fiscal years beginning after December 15, 2018. The Company expects that the adoption of ASU 2017-07 in 2019 will not have a material impact on its financial statements.

## 2. Commitments and Contingencies

### Capital and Administrative Funding Tariff

FERC accepted the ISO's capital and administrative funding filings to recover administrative expenses for 2017 and 2016. These filings, made pursuant to Section IV of the Tariff, support the ISO’s loan arrangements with various banks and note holders to fund the capital and working capital requirements of the Company.

### Legal Proceedings

The Company is involved in various claims and legal proceedings of a nature considered normal to its business. The claims are in various stages and some may ultimately be brought to trial. While it is not feasible to predict or determine the outcome of these claims, it is the opinion of management that the final outcome of these claims will not materially impact the Company's financial position.

## 3. Property and Equipment In-Service, Net and Work in Process

| | December 31, 2017 | December 31, 2016 |
|---|---|---|
| Computer hardware, software and accessories | $ 217,806,000 | $ 209,909,000 |
| Software development costs | 82,747,000 | 76,686,000 |
| Furniture and fixtures | 4,312,000 | 4,253,000 |
| Machinery and equipment | 194,000 | 194,000 |
| Building and building improvements | 66,009,000 | 65,682,000 |
| Capitalized interest and fees | 8,338,000 | 8,052,000 |
| Vehicles | 19,000 | 39,000 |
| | 379,425,000 | 364,815,000 |
| Less: accumulated depreciation and amortization | (294,305,000) | (274,931,000) |
| Property and equipment in-service, net | **$ 85,120,000** | **$ 89,884,000** |
| Work in process ("WIP") | **$ 18,639,000** | **$ 20,131,000** |

Costs represented in WIP include Price-Responsive Demand, Forward Capacity Market (FCM) Pay for Performance, Internal Market Monitoring Data Analysis Phase I, Energy Storage Device, Update Enhanced Energy Scheduling Technical Architecture, and Balance of Planning Period Financial Assurance Project, which all began in 2016 and continued into 2017. Additionally, a number of new projects began in 2017, such as Situational Awareness – Video Wall Expansion Phase II, Data Archival and Storage, nGem Software Development, FCM Improvements, Customer Contact Center Solution, and various other market enhancement projects that have not been placed in service as of December 31, 2017.

As required by the Accounting of Certain Types of Regulation Topic of the FASB ASC, the interest capitalized from the revolving credit arrangement and the private financing is recorded on the Statements of Financial Position for the years ended December 31, 2017 and 2016 was $467,000 and $394,000, respectively. The amount of the interest capitalized and recorded on the Statements of Financial Position that was included in WIP for years ended December 31, 2017 and 2016 was $426,000 and $470,000, respectively.

As required by the FASB ASU 2015-03, S*implifying the Presentation of Debt Issuance Cost (subtopic 835-30)*, the applicable debt issuance costs of $327,000 and $355,000 have been reclassed from fixed assets and presented as a direct deduction from the carrying value of the associated term debt for years ended December 31, 2017 and 2016, respectively.

Depreciation and amortization expense was $32,601,000 and $32,091,000 for the years ended December 31, 2017 and 2016, respectively.

## 4. Credit Facilities

### Revolving Credit Arrangement

In June, 2015, the Company entered into a $20,000,000 revolving credit arrangement that expires on July 1, 2018, and any outstanding balance must be paid by this date. In April 2015, the Company filed under Section 204 with FERC to issue this new debt; the filing was approved in June 2015. Interest accrues on the revolving credit at either Base Rate or LIBOR of which the Company has the option of selecting the 30, 60, 90, or 180-day rate. Interest is paid at the earlier of the selected LIBOR term or 30 days. The Company is charged an annual fee of .10% on the unused amount on the line of credit.

The outstanding balance for each of the years ended December 31, 2017 and 2016 was $0. For the years ended December 31, 2017 and 2016, the weighted average interest rate was approximately 1.82% and 1.42%, respectively.

The Company entered into a $4,000,000 revolving credit arrangement in June 2015 that expires on July 1, 2018, and any outstanding balance must be paid by this date. In April 2015, the Company filed under Section 204 with FERC to issue this new debt; the filing was approved in June 2015. Interest accrues on the revolving credit at either Base Rate or LIBOR of which the Company has the option of selecting the 30, 60, 90, or 180-day rate. Interest is paid at the earlier of the selected LIBOR term or 30 days. The Company is charged an annual fee of .10% on the unused amount on the line of credit.

The outstanding balance for each of the years ended December 31, 2017 and 2016 was $0 for each year.

The Company incurred $24,000 in debt issuance costs as a result of refinancing the revolving credit arrangement in 2015. These costs have been capitalized and are being amortized on a straight-line basis over the remaining life of the arrangement. Total amortization expense for years ended December 31, 2017 and 2016 was approximately $8,000 for each year.

### Private Placement Debt Arrangement

In November 2012, the Company entered into an $11,000,000 private placement loan, which is made up of a twelve year 3.15% senior note. Payment is due in full on November 8, 2024 with mandatory prepayments and interest accrued and paid semi-annually. This loan is included in long-term debt on the Statements of Financial Position. The fair market value of the private placement loan at December 31, 2017 was estimated at $11,225,000. The fair value is estimated using discounted cash flow analysis based on the Company's incremental borrowing rates for similar types of borrowing arrangements which was 2.82% for December 31, 2017.

In 2012, the Company incurred $94,000 in debt issuance costs. These costs have been capitalized and are being amortized on a straight-line basis over the term of the loan. Total amortization expense for the years ended December 31, 2017 and 2016 was approximately $9,000 for each year.

In September 2013, the Company entered into an agreement for funding of a $39,000,000 private placement loan, which is made up of a ten year 4.49% senior note. Payment is due in full on November 8, 2024 with mandatory prepayments and interest accrued and paid semi-annually. Funding for this loan was received in May 2014 and is included in long-term debt on the Statements of Financial Position. The fair market value of the private placement loan at December 31, 2017 was estimated at $43,031,000. The fair value is estimated using discounted cash flow analysis based on the Company's incremental borrowing rates for similar types of borrowing arrangements, which was 2.82% for December 31, 2017.

In 2013, the Company incurred $180,000 in debt issuance costs. These costs have been capitalized and are being amortized on a straight-line basis over the life of the private placement loan. Total amortization expense for the years ended December 31, 2017 and 2016 was approximately $18,000 for each year.

**Tax-Exempt Bond Financing**

In February of 2005, the Company entered into tax exempt financing of $45,500,000 in the form of Multi-Mode Variable Rate Civic Facility Revenue Bonds (“Bonds”), which were issued by the Massachusetts Development Finance Agency. The proceeds of the Bonds were loaned to the Company to assist in financing and refinancing a construction project located at the Main Control Center. Principal payments of $455,000, paid quarterly, began in May 2007 with the final repayment due on February 1, 2032. The tax exempt financing is backed by a letter of credit that the Company entered into in February of 2005, which was replaced in August 2009 with an alternative credit facility not to exceed $41,609,688 that expired on August 31, 2012. On August 23, 2011 and August 31, 2015, the bank and the Company amended the expiration date of the letter of credit by three years, respectively. The letter of credit expires on August 21, 2018. The outstanding balance on the Bonds for each of the years ended December 31, 2017 and 2016 was $25,935,000 and $27,755,000, respectively.

Interest accrues quarterly on the $45,500,000 tax exempt bonds at a weekly variable rate based upon the Securities Industry and Financial Markets Association “SIFMA” Swap Index with a weighted average of 0.83% and 0.41% for the years ended December 31, 2017 and 2016, respectively. For the years ended December 31, 2017 and 2016, the weighted average floating interest rate on the Bonds was approximately 0.81% and 0.39%, respectively. The Company is charged an annual fee of 0.38% paid quarterly based on the maximum amount available to be drawn under the letter of credit including principal and interest commitments. There were no changes to the annual fee as a result of the amendment made on August 31, 2015.

The Company incurred $370,000 in debt issuance costs as a result of the financing of bond and refinancing of letter of credit. These costs have been capitalized and are being amortized on a straight-line basis over the remaining life of the Bonds. Total amortization expense was for the years ended December 31, 2017 and 2016 was approximately $16,000 for each year.

In December of 2012, the Company entered into tax exempt financing of $36,000,000 in the form of Multi-Mode Variable Rate Civic Facility Revenue Bonds (“CT Bonds”), which were issued by Connecticut Innovations Incorporated. The proceeds of the CT Bonds were loaned to the Company to assist in financing a project located in Windsor, Connecticut to acquire real property, construct an office building with data center and control center, including miscellaneous property and equipment to serve as a Back-up Control Center. In November of 2014, a redemption payment of $1,350,000 was made on the bonds as a result of under spending on the construction of the Back-up Control Center. Principal payments of $340,000 are paid quarterly, with the first payment being made in November 2014 for $680,000 and the final repayment due in November 2039. The tax exempt financing is backed by a letter of credit that the Company entered into in December of 2012, with an alternative credit facility not to exceed $36,579,946 that expired on December 13, 2015. On September 16, 2015, the bank and the Company amended the expiration date of the letter of credit to December 13, 2018. The outstanding balance on the CT Bonds for each of the years ended December 31, 2017 and 2016 was $29,890,000 and $31,250,000, respectively.

Interest accrues quarterly on the $36,000,000 tax exempt bonds, at a weekly variable rate based upon the SIFMA with a weighted average of 0.83% and 0.41% for the years ended December 31, 2017 and 2016, respectively. For the years ended December 31, 2017 and 2016, the weighted average floating interest rate on the CT Bonds was approximately 0.81% and 0.39%, respectively. The Company is charged an annual fee of .38% paid quarterly based on the maximum amount available to be drawn under the letter of credit including principal and interest commitments. There were no changes to the annual fee as a result of the amendment made on September 16, 2015.

The Company incurred $555,000 in debt issuance costs as a result of financing the CT bonds. These costs have been capitalized and are being amortized on a straight-line basis over the life of the CT Bonds. Total amortization expense for the years ended December 31, 2017 and 2016 was approximately $23,000 for each year.

The Company has entered into an interest rate cap to mitigate the interest rate risks associated with the tax-exempt debt. On October 31, 2013, the Company purchased an interest rate cap for $706,000 for predetermined notional amount to lock into a derivative arrangement whereby the Company will receive a payment whenever 74% of the one-month LIBOR exceeds 2.48%. The interest rate cap is recorded as another deferred asset on the Statements of Financial Position. The derivative arrangement is effective November 1, 2013 to February 1, 2024 with the notional amount of $32,215,000 which is amortized to zero as the floating rate debt is repaid. The fair market value of the interest rate cap as of December 31, 2017 and 2016 was $26,000 and $103,000, respectively. The fair market values were recorded as an other asset and regulatory liability in 2017 and 2016 on the Statements of Financial Position. The fair market values are derived from third party financial institutions.

| | December 31, 2017 | December 31, 2016 |
|---|---|---|
| Long-term debt | $ 105,825,000 | $ 109,005,000 |
| Less: applicable debt issuance cost | (327,000) | (355,000) |
| Total long-term debt | $ 105,498,000 | $ 108,650,000 |

The total long-term debt at December 31, 2017 and 2016 was $105,825,000 and $109,005,000, respectively. Principal payments on the private placement debt and tax-exempt bonds, excluding debt issuance cost, are due annually as follows:

| | |
|---|---|
| 2018 | $ 3,180,000 |
| 2019 | 3,180,000 |
| 2020 | 3,180,000 |
| 2021 | 3,180,000 |
| 2022 | 3,180,000 |
| Thereafter | 89,925,000 |
| | $ 105,825,000 |

Interest incurred on the revolving credit arrangement, private placement debt, and tax-exempt bonds for the years ended December 31, 2017 and 2016 was approximately $2,619,000 and $2,382,000, respectively.

5. **Pension and Other Employee Benefits**

The Company sponsors two defined benefit pension plans (one for union and the other for nonunion employees), each of which is funded solely by Company contributions. Benefits are determined based on years of service and average compensation. Effective January 1, 2014, the defined benefit pension plans were closed to all employees hired or rehired on or after January 1, 2014.

The Company sponsors a postretirement benefit plan other than pension that provides medical, dental and life insurance benefits for eligible employees and their beneficiaries. The medical benefits are contributory with participants' contributions adjusted annually, and participants are responsible for deductible and coinsurance amounts. Dental benefits are non-contributory but participants are responsible for deductible and coinsurance amounts. The life insurance benefits are noncontributory. The measurement date used to determine pension and other postretirement benefit obligations for the pension plans and the postretirement benefit plan is December 31. Effective January 1, 2016, the postretirement benefit plan other than pension was closed to employees hired or rehired on or after January 1, 2016.

The Company accounts for the plans as required in the Accounting for Defined Benefit Pension and Other Postretirement Plans Topic of the FASB ASC. Additionally, the Company discloses net periodic benefit cost for the Defined Benefit Pension and Other Postretirement Benefit Plan Assets for each annual period for which a statement of income is presented as required by the Employers' Disclosures about Postretirement Benefit Plan Assets Topic of the FASB ASC.

In 2010, the Patient Protection and Affordable Care Act and the Health Care and Education Reconciliation Act (collectively, the "Health Care Acts") were signed into law by President Obama. The Health Care Acts include several provisions that may affect a company's postretirement benefit plans, including imposing an excise tax on high cost coverage, eliminating lifetime and annual coverage limits, reducing subsidies to Medicare Advantage plans, and extending coverage for adult children until age 26. The Company has evaluated the effects of the Health Care Acts and concluded that as of December 31, 2017, none of the provisions have a material impact on its postretirement benefit plan. The Company does not provide benefits that are actuarially equivalent to the Medicare prescription drug benefit in its postretirement benefit plan.

The following table sets forth the plans' benefit obligations, fair value of the plans' assets, and the plans' funded status:

| | Pension Benefits | | Other Postretirement Benefits | |
|---|---|---|---|---|
| | Years Ended December 31, | | Years Ended December 31, | |
| | 2017 | 2016 | 2017 | 2016 |
| Change in benefit obligation: | | | | |
| Benefit obligation at beginning of year | $ 189,402,000 | $ 176,531,000 | $ 19,926,000 | $ 18,336,000 |
| Service cost | 8,647,000 | 9,082,000 | 1,326,000 | 1,346,000 |
| Interest cost | 7,445,000 | 7,233,000 | 749,000 | 713,000 |
| Benefits paid | (3,953,000) | (3,689,000) | (652,000) | (444,000) |
| Amendments | - | - | - | - |
| Plan participants' contributions | - | - | 120,000 | 95,000 |
| Actuarial loss(gain) | 19,561,000 | 245,000 | 762,000 | (120,000) |
| Benefit obligation at end of year | 221,102,000 | 189,402,000 | 22,231,000 | 19,926,000 |
| Change in plan assets: | | | | |
| Fair value of plan assets at beginning of year | 131,507,000 | 116,607,000 | 17,602,000 | 15,676,000 |
| Actual return on plan assets | 20,343,000 | 8,508,000 | 2,452,000 | 1,413,000 |
| Employer contributions | 10,068,000 | 10,081,000 | 699,000 | 862,000 |
| Plan participants' contributions | - | - | 120,000 | 95,000 |
| Benefits paid | (3,953,000) | (3,689,000) | (652,000) | (444,000) |
| Fair value of plan assets at end of year | 157,965,000 | 131,507,000 | 20,221,000 | 17,602,000 |
| Funded status at end of the year | (63,137,000) | (57,895,000) | (2,010,000) | (2,324,000) |
| Transition obligation | - | - | - | - |
| Net actuarial (gain) loss | - | - | - | - |
| Prior service cost | - | - | - | - |
| Net amount recognized as non-current liabilities | $ (63,137,000) | $ (57,895,000) | $ (2,010,000) | $ (2,324,000) |

The Company has determined that the pension liability is probable of recovery through Section IV.A. of the Tariff and has recorded a regulatory asset as of December 31, 2017 and 2016 in the accompanying Statements of Financial Position.

| | Pension Benefits Years ended December 31, 2017 | Pension Benefits Years ended December 31, 2016 | Other Postretirement Benefits Years ended December 31, 2017 | Other Postretirement Benefits Years ended December 31, 2016 |
|---|---|---|---|---|
| Components of net periodic benefit cost: | | | | |
| Service cost | $ 8,647,000 | $ 9,082,000 | $ 1,326,000 | $ 1,346,000 |
| Interest cost | 7,445,000 | 7,233,000 | 749,000 | 713,000 |
| Expected return on plan assets | (9,538,000) | (8,483,000) | (1,273,000) | (1,143,000) |
| Amortization of transition obligation | - | - | 28,000 | 56,000 |
| Amortization of net actuarial loss | 2,738,000 | 2,689,000 | - | 34,000 |
| Amortization of unrecognized prior service cost(credit) | 2,000 | 2,000 | (63,000) | (63,000) |
| Net periodic benefit cost | $ 9,294,000 | $ 10,523,000 | $ 767,000 | $ 943,000 |

| | Pension Benefits Years ended December 31, 2017 | Pension Benefits Years ended December 31, 2016 | Other Postretirement Years ended December 31, 2017 | Other Postretirement Years ended December 31, 2016 |
|---|---|---|---|---|
| Prepaid benefit cost at beginning of year | $ 61,000 | $ 503,000 | $ (584,000) | $ (503,000) |
| Employer contributions | 10,068,000 | 10,081,000 | 699,000 | 862,000 |
| Net periodic benefit cost | (9,294,000) | (10,523,000) | (767,000) | (943,000) |
| Prepaid benefit cost at end of year | $ 835,000 | $ 61,000 | $ (652,000) | $ (584,000) |

The following table sets forth the amount expected to be amortized into net periodic benefit cost over the next fiscal year ending December 31, 2018:

| | Pension Benefits | Other Postretirement Benefits |
|---|---|---|
| Expected amortization of transition obligation | $ - | $ - |
| Expected amortization of net actuarial loss | 3,241,000 | - |
| Expected amortization of prior service cost(credit) | 2,000 | (63,000) |

The primary economic assumptions used to value these liabilities are summarized in the following chart. These assumptions are selected as the measurement data based on prevailing economic conditions.

Weighted-average assumptions used to determine net periodic benefit cost for the following years ended:

| | Pension Benefits | | Other Postretirement Benefits | |
|---|---|---|---|---|
| | 12/31/2017 | 12/31/2016 | 12/31/2017 | 12/31/2016 |
| Discount rate | See Below | See Below | 3.88% | 4.03% |
| Expected long-term rate of return on plan assets | 7.25% | 7.25% | 7.25% | 7.25% |
| Rate of compensation increase | 3.75% | 3.75% | 3.75% | 3.75% |
| Health Care cost trend rates - initial | - | - | 8.00% | 8.00% |
| Health Care cost trend rates - ultimate | - | - | 4.50% | 5.00% |
| Ultimate year | - | - | 2032 | 2023 |

Separate discount rates are used in the pension calculations for the non-contract and contract plans. The December 31, 2017 discount rate for the non-contract and the contract plan was 4.13% and 4.29%, respectively. The December 31, 2016 discount rate for the non-contract and the contract plan was 4.29% and 4.47%, respectively.

Weighted-average assumptions used to determine benefit obligation for the following years ended:

| | Pension Benefits | | Other Postretirement Benefits | |
|---|---|---|---|---|
| | 12/31/2017 | 12/31/2016 | 12/31/2017 | 12/31/2016 |
| Discount rate | See Below | See Below | 3.41% | 3.88% |
| Rate of compensation increase | 3.75% | 3.75% | 3.75% | 3.75% |

Separate discount rates were used in the pension calculations for the non-contract and contract plans. The December 31, 2017 discount rate for the non-contract and the contract plan was 3.58% and 3.69%, respectively. The December 31, 2016 discount rate for the non-contract and the contract plan was 4.13% and 4.29%, respectively.

A one percentage point change in the assumed health care cost trend rates would either increase the Accumulated Post Retirement Benefit Obligation (“APBO”) as of December 31, 2017, by approximately $702,000 or decrease the APBO by approximately $642,000. Additionally, a one percentage point change in the assumed health care cost trend rates would increase or decrease the net post retirement cost as of December 31, 2017 by approximately $120,000 and $106,000, respectively. The methodology for selecting the discount rate for the plan is to match the plan’s expected benefit payments to that of a yield curve that provides the equivalent yield on zero-coupon corporate bonds and estimate a single interest rate that produces a present value equal to the present value produced by the full yield curve as of the annual measurement date, subject to change each year.

ISO's pension plan and postretirement benefit plan weighted-average asset allocations and expected returns by asset category are as follows:

**Pension and Postretirement Plan Assets**

| | Target Allocation 2018 | Percentage of Plan Assets at December 31 2017 | 2016 | Weighted Average Expected Long-Term Rate of Return - 2018 |
|---|---|---|---|---|
| Equity Securities | 59% | 59% | 59% | 5.31% |
| Debt Securities | 36% | 36% | 36% | 1.31% |
| Other | 5% | 5% | 5% | 0.38% |
| Total | 100% | 100% | 100% | 7.00% |

The forward-looking estimates of total return are generated through combined assessment of current valuation measures, income, economic growth and inflation forecasts, historical risk premiums, and universal capital market assumptions. The long-term bond forecast is derived from the expected long-term return of a portfolio of corporate, government and high yield debt instruments. The equity forecasts are based on the long-term real returns of a portfolio of US large cap, US small cap, international developed markets and emerging markets equity securities.

The plan's investment portfolio is to be invested to provide benefits for qualified employees of the ISO. Investments are to be compatible with the liquidity requirements determined by the plan's actuary. An optimal target allocation of 60/40 between equities and fixed income investments is to be kept with an allowance of fifteen percent (15%) over/under deviation from the optimal allocation target.

The fair values of the pension plan assets at December 31, 2017 and 2016 by asset category are as follows:

| | Market Value at 12/31/17 | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) |
|---|---|---|---|---|
| Long-term investment strategies: | | | | |
| Fixed income: | | | | |
| Long Duration Corporate Bonds | $ 49,780,000 | $ - | $ 49,780,000 | $ - |
| U.S. and global core fixed income funds | - | - | - | - |
| U.S. High Yield Bond Funds | 4,320,000 | 4,320,000 | - | - |
| Total | 54,100,000 | 4,320,000 | 49,780,000 | - |
| Domestic equities: | | | | |
| Traditional equity index funds | - | - | - | - |
| Total | - | - | - | - |
| Global (ex-U.S.) equities: | | | | |
| Developed markets | 20,349,000 | 20,349,000 | - | - |
| Emerging markets value (actively managed) | 5,015,000 | 5,015,000 | - | - |
| Total | 25,364,000 | 25,364,000 | - | - |
| Real assets: | | | | |
| U.S. real estate investment trust funds | - | - | - | - |
| Commodities - oil and energy | - | - | - | - |
| Total | - | - | - | - |
| Cash and cash equivalents | 1,326,000 | 1,326,000 | - | - |
| Total long-term investments | $ 80,790,000 | $ 31,010,000 | $ 49,780,000 | $ - |
| Investments redeemable at net asset value: | | | | |
| Traditional equity index funds | | | 62,256,000 | |
| U.S. real estate investment trust funds | | | 7,666,000 | |
| Commodities - oil and energy | | | 7,253,000 | |
| Total | | | 77,175,000 | |
| Total Portfolio | | | $ 157,965,000 | |

Certain investments are measured at fair value using NAV as a practical expedient and have not been classified in the fair value hierarchy. The NAV amounts have been presented to permit reconciliation of the fair value hierarchy to the amounts presented in the statements of financial position.

| | Market Value at 12/31/16 | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) |
|---|---|---|---|---|
| Long-term investment strategies: | | | | |
| Fixed income: | | | | |
| Long Duration Corporate Bonds | $ 40,485,000 | $ - | $ 40,485,000 | $ - |
| U.S. and global core fixed income funds | - | - | - | - |
| U.S. High Yield Bond Funds | 3,879,000 | 3,879,000 | - | - |
| Total | 44,364,000 | 3,879,000 | 40,485,000 | - |
| Domestic equities: | | | | |
| Traditional equity index funds | - | - | - | - |
| Total | - | - | - | - |
| Global (ex-U.S.) equities: | | | | |
| Developed markets | 16,691,000 | 16,691,000 | - | - |
| Emerging markets value (actively managed) | 3,764,000 | 3,764,000 | - | - |
| Total | 20,455,000 | 20,455,000 | - | - |
| Real assets: | | | | |
| U.S. real estate investment trust funds | - | - | - | - |
| Commodities - oil and energy | - | - | - | - |
| Total | - | - | - | - |
| Cash and cash equivalents | 1,004,000 | 1,004,000 | - | - |
| Total long-term investments | $ 65,823,000 | $ 25,338,000 | $ 40,485,000 | $ - |
| Investments redeemable at net asset value: | | | | |
| Traditional equity index funds | | | 52,730,000 | |
| U.S. real estate investment trust funds | | | 6,111,000 | |
| Commodities - oil and energy | | | 6,843,000 | |
| Total | | | 65,684,000 | |
| Total Portfolio | | | $ 131,507,000 | |

Certain investments are measured at fair value using NAV as a practical expedient and have not been classified in the fair value hierarchy. The NAV amounts have been presented to permit reconciliation of the fair value hierarchy to the amounts presented in the statements of financial position.

The fair values of the other postretirement benefit plan assets at December 31, 2017 and 2016 by asset category are as follows:

| | Market Value at 12/31/17 | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) |
|---|---|---|---|---|
| Long-term investment strategies: | | | | |
| Fixed income: | | | | |
| U.S. Treasury inflation-protected | $ - | $ - | $ - | $ - |
| U.S. and global core fixed income funds | 2,442,000 | 2,442,000 | - | - |
| U.S. High Yield Bond Funds | 526,000 | 526,000 | - | - |
| Total | 2,968,000 | 2,968,000 | - | - |
| Domestic equities: | | | | |
| Traditional equity index funds | - | - | - | - |
| Total | - | - | - | - |
| Global (ex-U.S.) equities: | | | | |
| Developed markets | 2,739,000 | 2,739,000 | - | - |
| Emerging markets value (actively managed) | 585,000 | 585,000 | - | - |
| Total | 3,324,000 | 3,324,000 | - | - |
| Real assets: | | | | |
| U.S. real estate investment trust funds | - | - | - | - |
| Commodities - oil and energy | - | - | - | - |
| Total | - | - | - | - |
| Cash and cash equivalents | 143,000 | 143,000 | - | - |
| Total long-term investments | $ 6,435,000 | $ 6,435,000 | $ - | $ - |
| Investments redeemable at net asset value: | | | | |
| U.S. Treasury inflation-protected | | | 848,000 | |
| U.S. and global core fixed income funds | | | 2,594,000 | |
| Traditional equity index funds | | | 8,634,000 | |
| U.S. real estate investment trust funds | | | 925,000 | |
| Commodities - oil and energy | | | 785,000 | |
| Total | | | 13,786,000 | |
| Total Portfolio | | | $ 20,221,000 | |

Certain investments are measured at fair value using NAV as a practical expedient and have not been classified in the fair value hierarchy. The NAV amounts have been presented to permit reconciliation of the fair value hierarchy to the amounts presented in the statements of financial position.

| | Market Value at 12/31/16 | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Observable Inputs (Level 2) | Significant Unobservable Inputs (Level 3) |
|---|---|---|---|---|
| Long-term investment strategies: | | | | |
| Fixed income: | | | | |
| U.S. Treasury inflation-protected | $ - | $ - | $ - | $ - |
| U.S. and global core fixed income funds | 2,326,000 | 2,326,000 | - | - |
| U.S. High Yield Bond Funds | 489,000 | 489,000 | - | - |
| Total | 2,815,000 | 2,815,000 | - | - |
| Domestic equities: | | | | |
| Traditional equity index funds | - | - | - | - |
| Total | - | - | - | - |
| Global (ex-U.S.) equities: | | | | |
| Developed markets | 2,072,000 | 2,072,000 | - | - |
| Emerging markets value (actively managed) | 540,000 | 540,000 | - | - |
| Total | 2,612,000 | 2,612,000 | - | - |
| Real assets: | | | | |
| U.S. real estate investment trust funds | - | - | - | - |
| Commodities - oil and energy | - | - | - | - |
| Total | - | - | - | - |
| Cash and cash equivalents | 137,000 | 137,000 | - | - |
| Total long-term investments | $ 5,564,000 | $ 5,564,000 | $ - | $ - |
| Investments redeemable at net asset value: | | | | |
| U.S. Treasury inflation-protected | | | 817,000 | |
| U.S. and global core fixed income funds | | | 2,398,000 | |
| Traditional equity index funds | | | 7,168,000 | |
| U.S. real estate investment trust funds | | | 885,000 | |
| Commodities - oil and energy | | | 770,000 | |
| Total | | | 12,038,000 | |
| Total Portfolio | | | $ 17,602,000 | |

Certain investments are measured at fair value using NAV as a practical expedient and have not been classified in the fair value hierarchy. The NAV amounts have been presented to permit reconciliation of the fair value hierarchy to the amounts presented in the statements of financial position.

The Company expects to contribute $10,000,000 to its pension plans and $760,000 to its postretirement benefit plan in 2018.

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

| | Pension Benefits | Other Postretirement Benefits |
|---|---|---|
| 2018 | $ 9,093,000 | $ 918,000 |
| 2019 | 9,136,000 | 951,000 |
| 2020 | 10,453,000 | 1,056,000 |
| 2021 | 8,913,000 | 1,171,000 |
| 2022 | 10,865,000 | 1,225,000 |
| Years 2023-2027 | 58,445,000 | 7,460,000 |
| Total | $ 106,905,000 | $ 12,781,000 |

## 6. Fair Value of Financial Statement Instruments

In determining fair value of financial assets and liabilities, the Company uses various valuation techniques. The availability of inputs observable in the market varies from instrument to instrument and depends on a variety of factors including the type of instrument, whether the instrument is actively traded, and other characteristics particular to the transaction. For many financial instruments, pricing inputs are readily observable in the market, the valuation methodology used is widely accepted by market participants, and the valuation does not require significant management discretion. For other financial instruments, pricing inputs are less observable in the market and may require management's judgment.

We assess the inputs used to measure fair value using the following three-tier hierarchy, which indicates the extent to which inputs used are observable in the market.

Level 1 Valuation is based upon unadjusted quoted prices for identical instruments traded in active markets.

Level 2 Valuation is based upon quoted prices for identical or similar instruments such as interest rates, foreign currency exchange rates, commodity rates and yield curves, and model-based valuation techniques for which all significant assumptions are observable in the market.

Level 3 Valuation is generated from model-based techniques that use at least one significant assumption not observable in the market. These unobservable assumptions include management's own judgments about the assumptions market participants would use in pricing the asset or liability. Valuation techniques include use of option pricing models, discounted cash flow models and similar techniques.

### 7. 401(k) Savings and Defined Contribution Plans

The Company has a 401(k) Retirement and Savings Plan open to substantially all employees. This savings plan provides for employee contributions up to specified limits. The Company matches employee contributions up to 3% of eligible compensation and provides a 50% match on the next 2% of eligible compensation. The matching contributions for the Company were $3,058,000 and $2,982,000 for the years ended December 31, 2017 and 2016, respectively. In 2014, the Company established a defined contribution plan for new employees hired after January 1, 2014. The Company funds the contribution into the plan based on a formula of employee's age, service and compensation. The contributions paid by the Company were $641,000 and $480,000 for the years ended December 31, 2017 and 2016, respectively.

### 8. Leases

The following is a schedule by year of future minimum rental payments for all non-cancelable operating leases:

| | | |
|---|---|---|
| 2018 | $ | 749,000 |
| 2019 | | 514,000 |
| 2020 | | 236,000 |
| 2021 | | 63,000 |
| Total minimum lease payments | $ | 1,562,000 |

The Company currently leases office equipment and computer hardware through 2021. For fiscal years 2017 and 2016, rental payments for operating leases were $1,016,000 and $1,031,000, respectively.

### 9. Subsequent Events

The Company has evaluated subsequent events from the balance sheet date through March 19, 2018, the date at which the financial statements were available to be issued, and determined that there are no items to disclose that occurred in the subsequent period.