

# ISO New England Proposed 2023 Operating and Capital Budgets

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*NEPOOL Budget & Finance Subcommittee  
Meeting*

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# Contents of Presentation

- The presentation includes:
  - Strategic Planning Process Overview (Slides 4-6)
  - Coordinating ISO Strategy and Budget (Slides 7-18)
  - 2023 Budget Overview (Slides 19-29)
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# Contents of Presentation *(cont.)*

- The following appendices are also included for reference:
  - Appendix 1: Other Operating Budget Details
  - Appendix 2: Compensation
  - Appendix 3: Trends & Metrics Driving 2023 Objectives
  - Appendix 4: Metrics for Measuring ISO-NE Performance and Progress
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# STRATEGIC PLANNING PROCESS OVERVIEW



# The Annual Process – Strategic Planning

ISO-NE is guided by a purposeful and integrated business planning approach that drives focus towards a common target that management teams and the entire organization can get behind, with the aim of creating value for ISO stakeholders

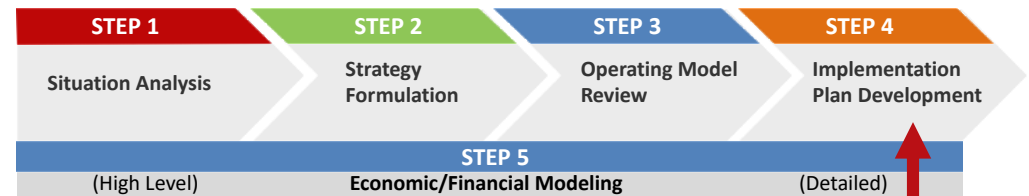


# The Strategic Planning Framework

The strategic planning annual cycle and the key steps in the process framework



## Strategic Planning Framework – Five-Step Approach



ISO-NE has integrated its budget and work plans with strategy to identify how the company is allocating resources in furtherance of its Strategic Goals

The strategic framework represents an ongoing process cycle to review and update strategy as necessary for implementation



# COORDINATING ISO STRATEGY & BUDGET



# Our Guidepost: The ISO New England Vision Statement

*The ISO-NE Vision Statement is an explicit statement about our intent to achieve a rapid and reliable transition to clean energy utilizing competitive markets and transmission planning*



## Vision Statement:

*To harness the power of competition and advanced technologies to reliably plan and operate the grid as the region transitions to clean energy*





# Our Responsibility to the Region: ISO's Mission

*The ISO-NE Mission Statement outlines the core role and responsibilities of the ISO's daily operations*



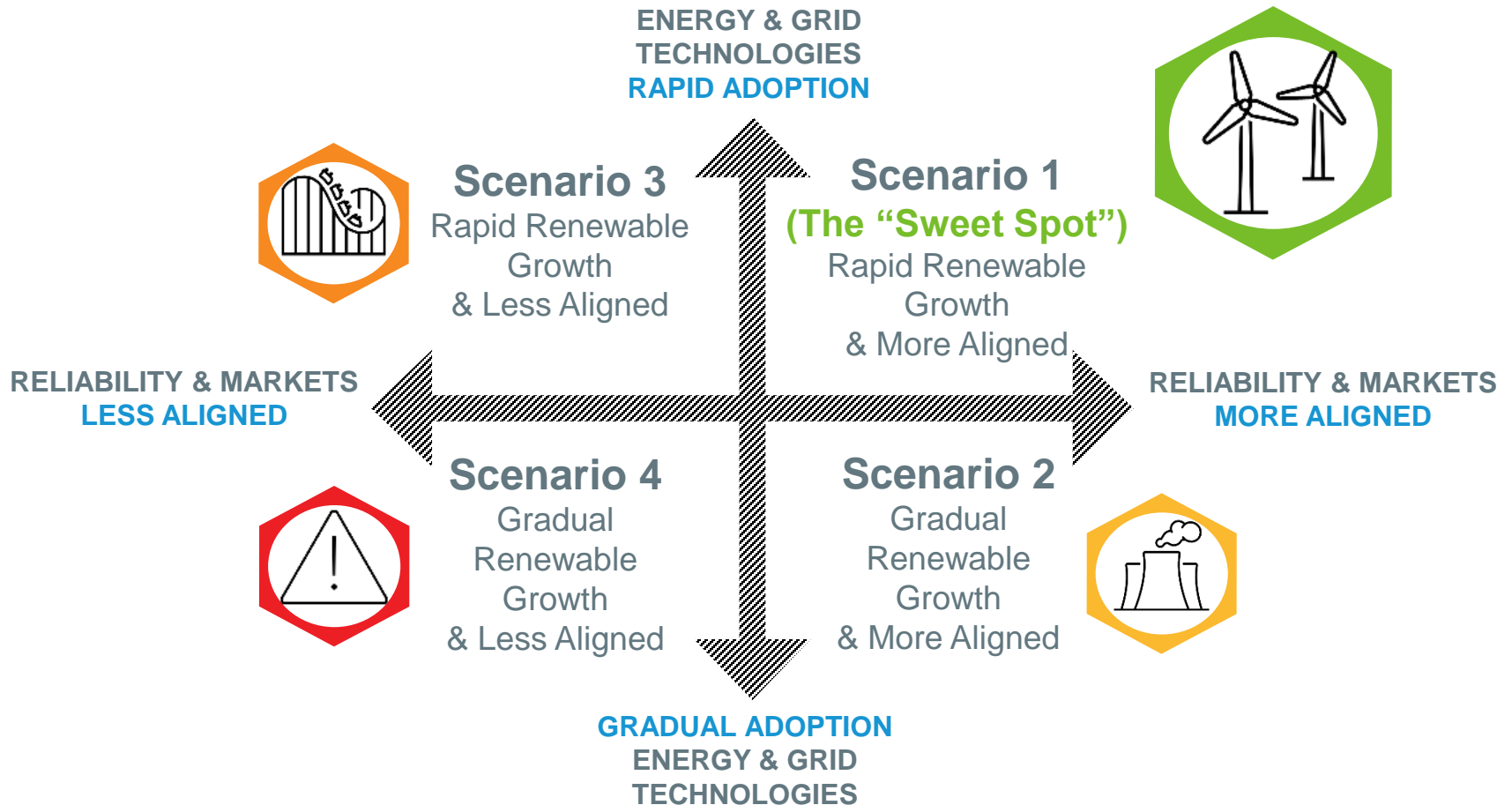
## Mission Statement:

*Through collaboration and innovation, ISO New England plans the transmission system, administers the region's wholesale markets, and operates the power system to ensure reliable and competitively priced wholesale electricity*



# Scenario Framework

*Scenario planning is a strategic method used for long-range planning, that charts Critical Uncertainties affecting the power industry in New England.*



**A scenario where all “Four Pillars of the Clean Energy Transition”, are robust and solidly support the region’s transition to clean energy represents the ideal scenario outcome for the region**

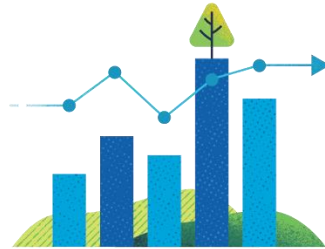
# Four Pillars Critical to Developing and Maintaining the Clean, Decarbonized Grid of the Future

*To be sure we're ready for the future, we've called upon our quarter century of experience planning the region's power system, as well as expertise from the industry at large, and identified four pillars that are critical to developing and maintaining a clean, decarbonized grid*



1

**Significant amounts of clean energy** to power the economy with a greener grid



2

**Balancing resources** that keep electricity supply and demand in equilibrium



3

**Energy adequacy**—a dependable energy supply chain and/or a robust energy reserve to manage through extended periods of severe weather or energy supply constraints



4

**Robust transmission** to integrate renewable resources and move clean electricity to consumers across New England



# ISO-NE's Strategic Goals

*The strategic goals of the organization are the broad primary outcomes of what the ISO seeks to achieve to fulfill the Mission and Vision, and support the “Four Pillars”; the ISO’s work effort is in furtherance of these Strategic Goals*

## ISO-NE Strategic Goals

- **Responsive Market Designs:** Improve the current market structure and continue to evolve and reposition the market design to reflect the states’ objectives and the transition to high levels of renewables and distributed resources. Maintain a robust fleet of balancing resources and preserve the ability of the market to attract new entry.
- **Progress and Innovation:** Evolve capabilities to support the grid as the region transitions to clean energy, including improved power system and market modeling. Support investments in transmission infrastructure to enable renewable energy. Facilitate the integration of distributed energy resources. Provide data and information-based services.
- **Operational Excellence:** Continuously improve operations and processes, with a focus on efficiency and effectiveness, business results, and continuity of reliable operations.
- **Stakeholder Engagement:** Collaboratively understand and anticipate needs, demonstrate thought leadership through high quality analysis and communication, and nurture productive relationships with FERC, the states and market participants.
- **Attract, Develop, and Retain Talent:** Develop a sense of community around our Core Values, Mission, Vision, and Goals; prepare the workforce; recognize and reward employee's success and innovation; and honor diversity and promote inclusion.

# Overview of Key 2023 Objectives & Initiatives

- The ISO's implementation of its strategic plan encompasses the slate of work across departments and considers projects that have multi-year timeframes
- The annual objectives for the organization summarize the work being done to support progress towards the five Strategic Goals
- Highlights for 2023 include:
  - Responsive Market Designs:
    - Follow-up work related to The Pathways Report, Resource Capacity Accreditation, and Day-Ahead Ancillary Services Improvements
  - Progress and Innovation:
    - The next Generation Energy Management (nGEM) platform that supports a system with a growing number/types of grid assets
  - Operational Excellence:
    - Cybersecurity and Cloud Computing Initiatives
  - Stakeholder Engagement:
    - Transmission planning for the clean energy transition and yet-to-be-defined/scope project on Energy Adequacy

See Appendix 3 for Trends & Metrics Driving 2023 Objectives

# Responsive Market Designs

- Objective: Promote New and Enhanced Market Designs for Non-Emitting Resources
  - Initiatives that focus on the ISO's work supporting market constructs for and participation of non-emitting resources
    - Follow-up to Pathways Report and develop a Preferred Path for Clean Energy Pricing
    - Storage Market Modeling Enhancements Assessment
    - Storage as a Transmission-Only Asset Implementation
- Objective: Support Reliability Through Competitive Market Mechanisms
  - Initiatives that help the ISO ensure system reliability via enhanced market incentives
    - Energy Shortage Pricing Assessment
    - Solar Do Not Exceed Dispatch Implementation
    - Resource Capacity Accreditation Design
    - Day-Ahead Ancillary Services Improvements Design

See Appendix 3 for Trends & Metrics Driving 2023 Objectives



# Progress & Innovation

- Objective: Implement New Technologies to Address Increased Power System Complexity
  - Initiatives that increase the ISO's ability to model and forecast for a grid with a growing number of assets and more complex market features
    - nGEM Phases 1, 2, and 3
    - Models and Simulators to Support Future Grid
- Objective: Improve Weather Forecasting Capabilities
  - Improving weather forecasting as a means of better forecasting for the increasing number of weather-dependent resources on the grid and modeling extreme weather impacts
    - Model Operational Impacts of Extreme Weather
    - Expanded Weather Analytics for 21-Day to Intra-Day Load-Forecasting

See Appendix 3 for Trends & Metrics Driving 2023 Objectives



# Operational Excellence

- Objective: Maintain IT Reliability
  - Cyber Security Initiatives
  - IT Management and Energy Market Applications Maintenance and Support
- Objective: Support Increased Workload and Complexity
  - Cloud Computing
  - Hybrid Workforce Support
  - Support Qualification and Participation of Increased Volume of Distributed Resources
- Objective: Assess FERC Orders and Stakeholder Requests
  - Address FERC Orders requiring changes to administration of markets, system operations, and system planning practices
  - Forward Capacity Market Enhancements

See Appendix 3 for Trends & Metrics Driving 2023 Objectives



# Stakeholder Engagement

- Objective: Facilitate Input into Annual Work Plan
  - Initiatives that promote active stakeholder engagement and prioritize requests to ISO for assessment of issues and resolution of concerns
    - Administer NEPOOL work requests
    - Active Stakeholder Outreach
- Objective: Inform on Power System and Wholesale Markets Performance and Needs
  - Informing stakeholders about challenges to the grid and ensuring they are appraised of concerns to daily operations and system planning challenges
    - Energy Adequacy work; Annual Economic Studies; and Implement any lessons learned from Outage Tabletop Exercise
    - Future Grid Reliability Study Phase 2 and Completion
- Objective: Administer Transmission Planning to Enable the Clean Energy Transition
  - The clean energy transition will be dependent on a substantial investment in transmission and the ISO is engaged in initiatives to address this pillar
    - Extended-Term Transmission Planning
    - 2050 Transmission Study
    - Addressing FERC NOPR and Orders

See Appendix 3 for Trends & Metrics Driving 2023 Objectives



# Attract, Develop, & Retain Talent

- Objective: Maintain Competitiveness in Labor Market
  - Initiatives for recruiting, providing competitive salaries, and administering benefits across the organization
    - Recruitment
    - Compensation Structure
    - Benefit Programs
    - Support Post-pandemic Posture
    - HR Policy and Program Administration
- Objective: Support the Professional Development of the ISO Workforce
  - Supporting employee trainings, ISO policies, and diversity, among a hybrid workforce as well as championing the ISO's strategy to address the clean energy transition
    - Council for Diversity and Inclusion
    - Championing Organizational Strategy and Vision
    - Administer Employee Training

See Appendix 3 for Trends & Metrics Driving 2023 Objectives



# 2023 BUDGET OVERVIEW



# 2023 Budget Overview

The following presentation provides information regarding ISO-NE's 2023 Operating Budget

- Working towards the implementation of market mechanisms to reflect the region's effort to transition to high levels of renewable and distributed resources while maintaining a robust fleet of balancing resources.
- Continuing to manage and adapt to the proliferation of new and an increased number of generating resources each of which result in increased complexity for system operations and planning.
- Managing an increasing number of external ad-hoc stakeholder requests and building stakeholder consensus on the prioritization of work.
- Increased funding to support hiring and retention in the tight and competitive labor market, reflecting the difficulty in acquiring and retaining highly skilled employees while remaining competitive within the limitations of the ISO's not-for-profit status.



## 2023 Budget Overview *(cont.)*

- Information Technology initiatives, including addressing increasingly complex and frequent cyber security threats; shifting technology to utilize increased levels of cloud infrastructure and virtualization technology in a coordinated manner to improve performance while maintaining IT system reliability; and improving power system modeling capabilities, for both reliability and planning purposes, reflecting the increasing levels of Distributed Energy Resources
- Managing the significant impacts of supply chain and inflationary pressures, including challenges in procuring IT assets and competing for IT staff augmentation consulting support.
- Resourcing to move forward with the goals and priorities of the region, regulators, and market participants while allowing the ISO to evolve operations, protect the ISO's assets and information, and maintain a highly skilled workforce to carry out the ISO's mission and strategic goals.

# 2023 Budget Overview *(cont.)*

## *Resourcing needs in budget*

- To support the objectives of Four Pillars of the Clean Energy Transition and to continue to maintain its ongoing responsibilities, the ISO anticipates the need for approximately 52 FTE additions between 2023 and 2024.
- The increased FTEs will better position the ISO to adeptly move forward with the major challenges facing the region.
- The FTE additions are primarily focused in key departments to support the markets and the planning of the transmission system. A small amount of additions are also included in a few back office departments. (See slides 43-45 for more details on 2023 FTE additions).
- Summary of planned 2023 and estimated 2024 FTE additions by year:

Planned FTE Additions		
2023*	2024	Total
32	20	52
*For 2023, the proposed budget includes the recruitment of 32 positions with funding for 23 that are expected to onboard throughout the year		

# 2023 Budget Overview *(cont.)*

## *Resourcing needs in budget (cont.)*

- The ISO evaluates each position that becomes vacant to determine the continued need in that area and for possible repurposing for use in other areas of the organization
  - Since 2018 this has resulted in 28 positions being repurposed for other work where a more urgent need existed
  - Positions repurposed since 2018 include: 6 for Information Technology for Software Development, Cyber Security, Power System Modeling, and Application Support; 5 for System Operations & Market Administration for Energy Security, Asset Registration & Auditing, Control Room Operations, and Operations Training; 4 for Market Development analysis and market design work; 3 for Human Resources for recruiting support and to replace contract positions; 2 for Advanced Technology Solutions; 2 for Market Monitoring; 1 for Load Forecasting to replace a contract position; 1 for Resource Studies & Assessments; 1 for Participant Support; 1 for Market & Credit Risk; 1 for Corporate Strategy; and 1 for Internal Auditing (IT audit work)

# 2023 Budget Overview *(cont.)*

The 2023 budget includes the following:

- The addition of 32 FTEs as noted on slide 22, with funding for approximately 23 positions due to onboarding throughout 2023 ([See specific net FTE additions by strategic goal on slides 33-41 \(blue font\)](#))
- Other Salary and Benefit related changes including:
  - 5.75% increase for annual merit and promotional increases, including targeted promotional amounts for specific positions or areas (larger increase than prior years to ensure competitive compensation to attract and retain necessary talent to support the ISO's mission and support the transition to clean energy)
  - increases for employee health and dental benefit costs
  - increases for defined contribution plan and post-retirement benefit contributions
  - funding for recruiting, retention, and succession planning
  - A reduction for an increase in the budgeted vacancy rate from 4% to 5%
- Professional Fees increases for studies and specialty work; a net increase of three consultant FTEs to augment staff in the areas of Information Technology, Forward Capacity Market Administration, and Finance; and various other increases including inflationary and rate increases across our consulting structure including staff augmentation consulting



# 2023 Budget Overview *(cont.)*

The 2023 budget includes the following *(cont.)*:

- Computer Service increases for cyber security product fees and maintenance related to the significant investment made in our cyber infrastructure; for expanded use of virtualization technology; for energy management and market system support; and for inflationary increases across multiple enterprise computer products. Computer Service increases partially offset with savings realized from the replacement of higher cost technology with lower cost products already in use.
- Inflationary increases for other line items, including Insurance Expense, NPCC and NERC Dues, and Interest Expense
- Depreciation Expense increases due primarily to the mid-year go-live of the nGEM Market Clearing Engine Implementation project <sup>(1)</sup>

(1) Upon completion of the nGEM Market Clearing Engine Implementation, scheduled for June 2023, the following associated Work-In-Progress projects will begin depreciating: CIMNET Simultaneous Feasibility Test with Data Transfer Enhancements, nGEM Value Added Development, nGEM Market Clearing Engine Implementation, nGEM Software Development Parts I and II, and nGEM Hardware Phases I and II.

# 2023 Budget Overview *(cont.)*

## *Changes Compared to Preliminary (Top-Down) Budget presented in June*

- The proposed 2023 budget presented today is the bottom-up detailed budget (prepared with input from each ISO business unit and refinements to preliminary estimates), compared to the top-down budget presented in June (that included preliminary estimates). The detailed bottom-up budget resulted in a \$1.06 million increase compared to the preliminary top-down version. Key changes consist of:
  - An estimated \$0.75 million added for a second phase of Pathways Study work
    - Funding will only be used for this work and not reallocated for other purposes
  - A \$0.46 million increase in the amounts budgeted for Northeast Power Coordinating Council (NPCC) and North American Electric Reliability Corporation (NERC) dues assessed to the ISO
    - The preliminary top-down budget was based on the estimated 2023 increases in each entity's 2022 Business Plan and Budgets; each entity has recently published its 2023 Business Plan and Budgets and the bottom-up budget reflects this updated information
  - Other changes that largely offset include:
    - Professional Fees increases for Mystic Cost of Service fuel supply audit work, Multi-Area Reliability Simulation tool consultant for Resource Capacity Accreditation integration, and a consultant to support Enterprise Application software
    - Computer Services increases for a new cybersecurity application and for the use of System Planning simulation software that was not included in the preliminary budget
    - Budget decreases from estimated increase in employee vacancy (from 4% to 5%) and lower availability of staff augmentation consulting
    - Increases, that also largely offset, for Interest Income and Interest Expense estimates due to current interest rate environment

# 2023 Budget Overview *(cont.)*

- In summary, the 2023 operating budget year-over-year increase before depreciation is \$20,172,500 or 10.7%; the increase, including depreciation is \$25,134,500 or 11.7%
  - The 2023 Revenue Requirement, taking into account the 2021 true-up (a \$14.6 million reduction for 2023 vs. a \$1.1 million increase in 2022), is an increase of \$9,475,500 or 4.4% over 2022
- The 2023 Capital Budget is \$33.5 million
  - Beginning in 2022 and through at least 2028, the capital budget is expected to increase by up to \$7M over the \$28M budget that had been in place for several years through 2021
    - The increased capital budget need is being driven by four primary drivers as explained in further detail on Slides 52 - 57
    - The increased capital spending will result in higher interest expense costs and depreciation expense in future years as capital projects go into production and are included in budgets and rates
  - The 2023 Capital Budget is an increase of \$1.5 million from the 2022 Capital Budget
  - A list of projects, by strategic goal, that are currently chartered and on-going or in planning/conceptual design is included (See Slides 60-62), as well as project descriptions (See Appendix 8)

Note: Throughout the presentation some schedules may appear inconsistent due to rounding

# Budget Process – Key Dates

- Review 2023 proposed Operating and Capital Budgets (the “Budgets”) with State Agencies on August 12
  - State Agencies may submit questions on ISO-NE’s proposed budget by August 19
  - ISO-NE responses to State Agencies’ questions are due within one week of receipt
  - State Agencies may submit comments regarding any proposed adjustments to the proposed budget by September 6
  - The ISO-NE Board of Directors will review the budgets, stakeholder feedback, and State Agencies’ comments on September 15
  - ISO-NE responses to State Agencies’ comments and proposed adjustments are due on or about September 22
- Review 2023 proposed Budgets at August 18 Audit & Finance Committee meeting
- Review 2023 proposed Budgets at the September 8 NEPOOL Participants Committee (NPC) meeting
- Review 2023 proposed Budgets at the September 15 Board of Directors Meeting, as noted above, with submitted State Agencies’ comments
- NPC vote on the ISO-NE 2023 proposed Budgets at the October 6 meeting
- ISO New England Board of Directors vote on the 2023 proposed Budgets after the NPC vote
- ISO New England filing of 2023 Budgets with FERC on or about October 14

# Summary Budget Information

	%		%		%		%		%		
(Budget Amounts are in Millions)	<u>2023</u>	<u>Change</u>	<u>2022</u>	<u>Change</u>	<u>2021</u>	<u>Change</u>	<u>2020</u>	<u>Change</u>	<u>2019</u>	<u>Change</u>	<u>2018</u>
Operating Budget Before Depreciation	\$209.2	10.7%	\$189.1	5.8%	\$178.6	1.8%	\$175.4	3.9%	\$168.9	2.9%	\$164.2
Capital Budget	33.5	4.7%	32.0	14.3%	28.0	0.0%	28.0	0.0%	28.0	0.0%	28.0
Total Cash Budget	\$242.7	9.8%	\$221.1	7.0%	\$206.6	1.6%	\$203.4	3.3%	\$196.9	2.5%	\$192.2
Operating Budget Before Depreciation	\$209.2	10.7%	\$189.1	5.8%	\$178.6	1.8%	\$175.4	3.9%	\$168.9	2.9%	\$164.2
Depreciation	31.0	19.1%	26.0	(1.2)%	26.3	0.2%	26.3	(9.6)%	29.1	(6.3)%	31.0
Revenue Requirement Before True-up	240.2	11.7%	215.1	4.9%	205.0	1.6%	201.7	1.9%	198.0	1.5%	195.2
True up	(14.6)		1.1		0.2		(2.9)		(9.3)		0.4
Revenue Requirement	\$225.6	4.4%	\$216.1	5.4%	\$205.1	3.2%	\$198.8	5.4%	\$188.7	(3.5)%	\$195.5
Forecast – TWhs (1)	143.0	(1.0)%	144.4	(2.0)%	147.4	1.0%	145.9	0.2%	145.6	2.5%	142.1
\$/KWh Rate	\$0.00158	5.4%	\$0.00150	7.5%	\$0.00139	2.1%	\$0.00136	5.1%	\$0.00130	(5.8%)	\$0.00138
Average Monthly Consumer Cost (2)	\$1.18		\$1.12		\$1.04		\$1.02		\$0.97		\$1.03

(1) 2023 Forecast based on May 2022 CELT Report (Schedule 1.5.2 - Net Annual Energy - Gross (without reductions)). All other years based on CELT Report for the applicable year, which can be found on [www.iso-ne.com](http://www.iso-ne.com).

(2) Based on average consumption of 750 kWh per month.

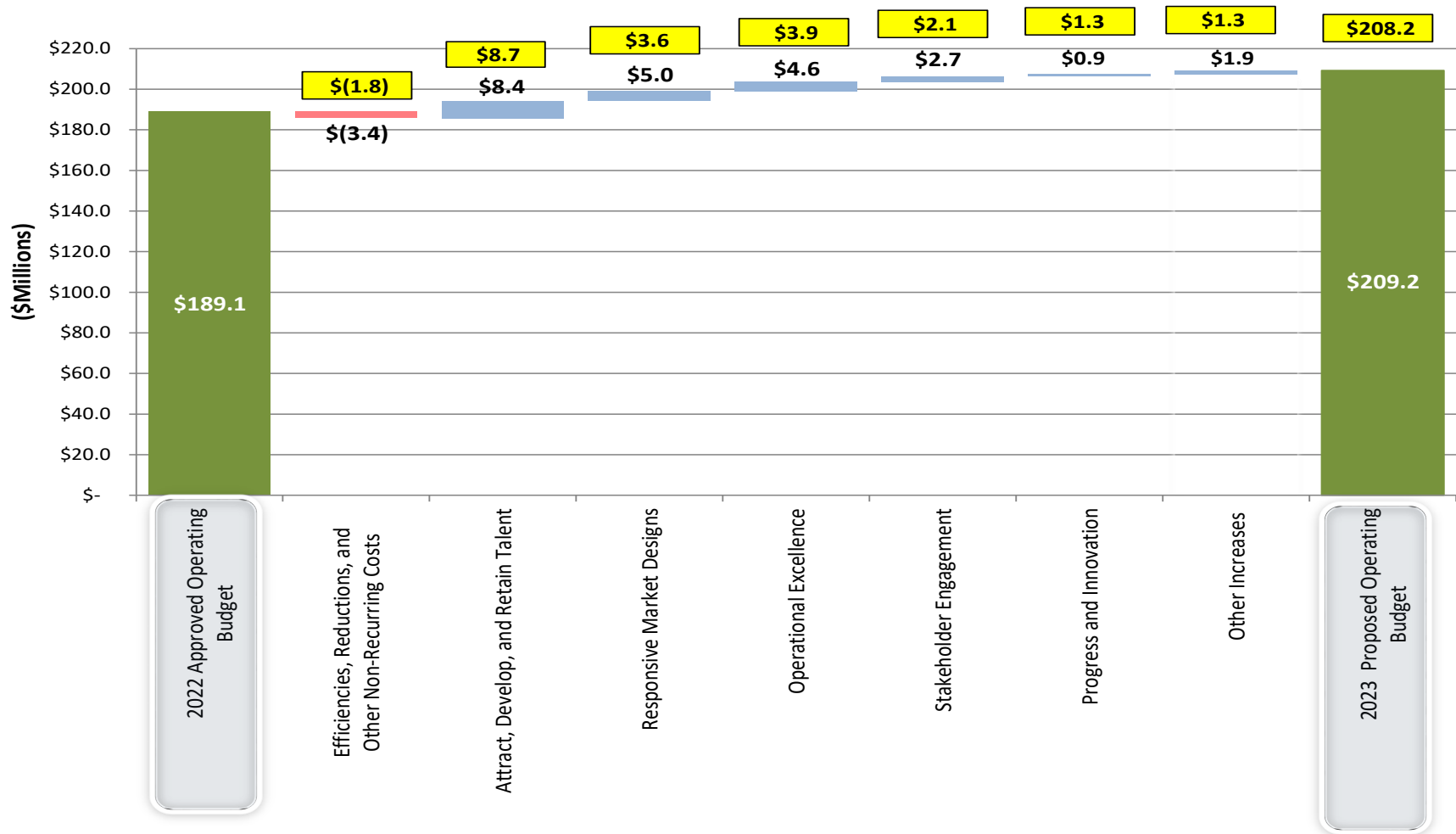
Note: Throughout the presentation some schedules may appear inconsistent due to rounding of amounts.

# 2023 BUDGET COMPONENTS AND KEY ASSUMPTION DETAILS



# 2023 Budget Changes by Strategic Goal Proposed vs. Projected

(net increase of 10.7% (vs. 10.1%) over 2022)



Note: Items in yellow above represent the estimate that was included in the 2023 preliminary budget presented in June 2022.

# 2023 Budget Details

*Efficiencies, Reductions, and Other Non-Recurring Costs*

## **Reductions include: (\$3.4M)**

- Lower salary rates due to employee turnover and retirements
- Lower software licensing costs for replaced technology
- Elimination of cyclical building maintenance from 2022 that isn't recurring in 2023
- Removal of increased Interest Expense, included in 2022 budget, for additional private placement loan borrowings not forecasted to be needed until 2024 based on current cash flow projections
- Reduction in Board of Directors search fees due to only one planned board member retirement in 2023
- A reduction due to the higher allocation of Interest Expense to in-progress capital projects in accordance with accounting guidelines
- A forecasted increase in Interest Income due to expected increase in interest rates
- Savings for efficiencies via process and reporting improvements in Market Operations Support allowing for the reallocation of 1.25 FTEs to Responsive Market Designs work



# 2023 Budget Details *(cont.)*

*Detailed allocation by Strategic Goal/2023 Initiatives*

## **Goal 5: Attract, Develop, and Retain Talent: \$8.4M**

- Annual merit and promotional increases by 5.75% (\$6.0M)
- Higher cost trend for providing level medical benefits (15% increase), defined contribution plan increase, and higher post-retirement medical plan contributions (\$1.5M)
- Funding for higher recruiting, retention, and succession planning (\$1.4M)
- Funding for 2 Human Resources FTEs for recruiting, benefits, and business partnering (\$0.3M)
- Funding for cyclical Board of Director evaluation work (\$0.1M)
- Increases were partially offset by a reduction for the increase in budgeted employee vacancy rate from 4.0% to 5.0% (savings of \$0.9M)

Note: FTE counts in this section are net funded amount for the 2023 budget which is 23. FTE counts on slides 44 and 45 are proposed gross additions for 2023 that total 32.



# 2023 Budget Details *(cont.)*

## *Detailed allocation by Strategic Goal/2023 Initiatives*

### **Goal 1: Responsive Market Designs: \$5.0M**

- Consulting support for Resource Capacity Accreditation (RCA) (\$0.8M)
- Consulting support for Pathways Study Phase II for the further evaluation of potential market frameworks to support the evolution of the New England power grid for a clean energy future (\$0.8M)
- 3 FTEs in Market Development to support continued market design and development of RCA, Day-Ahead Ancillary Services, Forward Capacity Market (FCM) evolution and parameters, and the integration of renewable resources in market designs (\$0.8M)
- 2 FTEs in Market Development for integration of new resource types including, large scale storage resources including batteries (\$0.4M)
- 1.5 FTEs in Resource Qualification to support a new resource category under FERC Order 2222, additional qualification reviews required under the MOPR removal, RCA changes to qualification, and changes to integrate Distributed Energy Resources (DERs) (\$0.3M)

Note: FTE counts in this section are net funded amount for the 2023 budget which is 23. FTE counts on slides 44 and 45 are proposed gross additions for 2023 that total 32.



# 2023 Budget Details *(cont.)*

## *Detailed allocation by Strategic Goal/2023 Initiatives*

### **Goal 1: Responsive Market Designs *(cont.)*:**

- Funding for work on portfolio of FCM initiatives, such as Retirement Reforms and other FCM-related initiatives that may stem from assessments (\$0.3M)
- Funding for Multi-Area Reliability Simulation tool support for RCA Integration (\$0.3M)
- Funding for Day-Ahead Ancillary Services review and certification by External Market Monitor (\$0.2M)
- Energy Management and Market System support due to increased maintenance with the introduction of additional resource types (DERs, solar, wind) (\$0.2M)
- 0.5 FTEs each in Advanced Technology Solutions related to the development of market design and in Planning Services due to workload related to RCA and increased use of probabilistic analysis in projects (\$0.2M)

Note: FTE counts in this section are net funded amount for the 2023 budget which is 23. FTE counts on slides 44 and 45 are proposed gross additions for 2023 that total 32.



# 2023 Budget Details *(cont.)*

## *Detailed allocation by Strategic Goal/2023 Initiatives*

### **Goal 1: Responsive Market Designs** *(cont.)*:

- An Operations Training & Integration FTE supporting corporate and departmental strategic initiatives and projects by working with internal business groups, external stakeholders, and vendors, where applicable, in business requirement design, product and procedure development, software testing, product and process integration, and development and maintenance of business tools (\$0.2M)
- An FTE in Market Development to address stakeholder priority issues (\$0.2M)
- Reallocation of 1.25 FTEs in Market Operations Support for efforts to implement Day-Ahead Ancillary Services, DERs, and Storage as a Transmission-Only Asset (\$0.2M)
- 0.5 FTE in IT Enterprise Application Development for contributions to Day-Ahead Ancillary Services and RCA efforts and impacted system updates (\$0.1M)

Note: FTE counts in this section are net funded amount for the 2023 budget which is 23. FTE counts on slides 44 and 45 are proposed gross additions for 2023 that total 32.



# 2023 Budget Details *(cont.)*

## *Detailed allocation by Strategic Goal/2023 Initiatives*

### **Goal 3: Operational Excellence: \$4.6M**

- Computer Services increases for cyber related products including those for security event management, ransomware data recovery, advanced phishing detection, enterprise monitoring software, cloud security software, endpoint security, and threat intelligence (\$1.4M)
- Cyber Security consulting for security tools development, continuous improvement efforts, and vendor risk management (\$0.5M)
- Increases for additional licensing for virtualizing computing and storage (\$0.3M)
- 1.5 FTEs in Information Technology Infrastructure to support network operations, and storage and backup management (\$0.3M)
- Addition of 1 FTE in IT Enterprise Application Support to support planned enhancements to the existing suite of applications and planned workflows for several business areas (\$0.2M)

Note: FTE counts in this section are net funded amount for the 2023 budget which is 23. FTE counts on slides 44 and 45 are proposed gross additions for 2023 that total 32.



# 2023 Budget Details *(cont.)*

## *Detailed allocation by Strategic Goal/2023 Initiatives*

### **Goal 3: Operational Excellence** *(cont.)*:

- Increases for licensing, fees, and taxes on corporate and control room phone systems, and due to additional market application licensing needs (\$0.2M)
- Finance support for environmental, social, and governance (ESG) reporting; accounting, and financial reporting system replacement; and additional Accounts Payable support (\$0.2M)
- Internal Audit support for data breach response, additional market system algorithm recertifications, and NERC CIP standard compliance (\$0.1M)
- Information Technology non-capital purchase of monitors and laptop docking stations in part due to the discontinuation of leasing of these items (\$0.1M)
- Other increases primarily inflationary and rate increases for Computer Service products, staff augmentation consultants, and Building Services (\$1.3M)



# 2023 Budget Details *(cont.)*

## *Detailed allocation by Strategic Goal/2023 Initiatives*

### **Goal 4: Stakeholder Engagement (\*\*): \$2.7M**

- Consultant audit support for the Mystic Cost of Service agreement (\$0.6M)
- Future Grid Reliability Study Part II (\$0.5M)
- Long-term transmission studies including further 2050 Transmission Study work (\$0.3M)
- 0.5 FTE in Participant Relations & Services and consulting support to assist in the gathering, managing, and supporting the assessment of participant proposals/requests for the ISO's Annual Work Plan (\$0.3M)
- 1.5 FTEs in Transmission Planning and Transmission Services for NERC standards compliance and to support volume increases in the interconnection queue (\$0.3M)
- 1.5 FTEs in Transmission Planning for long-term transmission planning related to the transition to a carbon free power system and for expected increase in RFPs for Competitive Transmission Solutions (\$0.2M)

\*\* As NEPOOL 2023 priorities are determined through the stakeholder process ISO-NE will allocate contingency funding or reallocate existing resources, as necessary, to address these priorities

Note: FTE counts in this section are net funded amount for the 2023 budget which is 23. FTE counts on slides 44 and 45 are proposed gross additions for 2023 that total 32.



# 2023 Budget Details *(cont.)*

## *Detailed allocation by Strategic Goal/2023 Initiatives*

### **Goal 4: Stakeholder Engagement** *(cont.)*:

- An FTE in External Affairs/Corporate Communications to expand interactions with New England states and the public on ISO initiatives, projects, issue positions, emergency communications, and other related regional efforts (\$0.2M)
- Funding for natural gas, solar, and wind dataset updates (\$0.1M)
- 0.5 FTE Participant Relations & Services to integrate several new initiatives and projects into market training and to begin development of training delivery methods that reduce the time burden on ISO staff subject matter experts (\$0.1M)
- Consultant support to develop and execute a communications plan that broadens our audience to include end-use consumers (\$0.1M)

Note: FTE counts in this section are net funded amount for the 2023 budget which is 23. FTE counts on slides 44 and 45 are proposed gross additions for 2023 that total 32.





# 2023 Budget Details *(cont.)*

## *Detailed allocation by Strategic Goal/2023 Initiatives*

### **Goal 2: Progress and Innovation: \$0.9M**

- 2 FTEs in IT for planning model engineering to support the increase of renewables, storage, and DERs in the region (\$0.3M)
- 1 FTE in IT for infrastructure cloud engineering support as a result of the current technology shift to cloud resources (\$0.2M)
- 0.5 FTE in Advanced Technology Solutions to support advanced modeling and simulation solutions to reflect industry trends such as increasing integration of renewable resources and DERs, uncertain and larger impact of extreme weather events, and transmission network expansion and new transmission technologies (\$0.2M)
- Increase in Computer Services for new energy market simulation software and related end user training costs (\$0.2M)

Note: FTE counts in this section are net funded amount for the 2023 budget which is 23. FTE counts on slides 44 and 45 are proposed gross additions for 2023 that total 32.



# 2023 Budget Details *(cont.)*

*Detailed allocation by Strategic Goal/2023 Initiatives*

## **Other Increases: \$1.9M**

- The allocation of NPCC and NERC dues (\$0.8M)
- An increase in Interest Expense due primarily to an increase in tax-exempt debt rates (\$0.6M)
- Insurance policy rate increase (\$0.5M)



# 2023 BUDGET RESOURCING NEEDS



# 2023 Budget Resourcing Needs

*In 2023 there are 32 FTE additions as follows:*

	Clean Energy Pillar(s) (*)	Strategic Goal(s)
<b>9.0 FTE's Market Development</b>		
For continued market design and development for Resource Capacity Accreditation (RCA), Day Ahead Ancillary Services (DA AS), and Forward Capacity Market (FCM) evolution and parameters; the integration of clean energy resources in market designs, including distributed and storage resources; to address energy adequacy; and to address stakeholder priority issues and FERC orders	Clean Energy Resources; Balancing Resources; Energy Adequacy	Responsive Market Designs; Stakeholder Engagement
<b>8.0 FTE's Information and Cyber Security Services</b>		
Infrastructure area resources for Network Operations and Cyber Security, information storage and backup management, and cloud engineering; Enterprise Application Support for planned enhancements to suite of applications and workflows for several business areas; and Enterprise Application Development for contributions to RCA and DA AS efforts and impacted system updates	Balancing Resources; Support	Responsive Market Designs; Progress and Innovation; Operational Excellence
<b>5.0 FTE's System Planning</b>		
Transmission Planning and Transmission Services for NERC Standards Compliance and to support volume increases in the interconnection queue; for Resource Qualification including a new resource category under FERC Order 2222, additional qualification reviews required under Minimum Offer Price Rule removal, RCA related changes to qualification, and changes to integrate Distributed Energy Resources; and for long-term transmission planning related to the transition to a carbon free power system and for expected increase in RFPs for Competitive Transmission Solutions	Clean Energy Resources; Balancing Resources Transmission	Responsive Market Designs; Stakeholder Engagement; Operational Excellence
<b>2.0 FTE's Participant Relations &amp; Services</b>		
To integrate several new initiatives and projects into market training and to begin development of training delivery methods that reduce the time burden on ISO staff subject matter experts over time, and to assist in the gathering, managing, and supporting the assessment of participant proposals/requests that the ISO will consider incorporating into our Annual Work Plans	Support	Stakeholder Engagement

(\*) See the Four Pillars of the Clean Energy Transition on Slide 11



# 2023 Budget Resourcing Needs (cont.)

In 2023 there are 32 FTE additions as follows (cont.):

		Clean Energy Pillar(s)	Strategic Goal(s)
<b>2.0 FTE's</b>	<b>Advanced Technology Solutions</b>		
	For solutions related to new market design and increased use of probabilistic analysis in projects, and industry trends such as increasing integration of renewable resources and Distributed Energy Resources; and to address operational impact of extreme events, transmission network expansion, and new transmission technologies that require advanced modeling and simulation solutions	Clean Energy Resources; Balancing Resources	Responsive Market Designs; Progress and Innovation
<b>2.0 FTE's</b>	<b>System Operations &amp; Market Administration</b>		
	Operations Training & Integration resources supporting corporate and departmental strategic initiatives and projects by working with internal business groups, external stakeholders, and vendors, where applicable, in business requirement design, product and procedure development, software testing, product and process integration, and development and maintenance of business tools	Clean Energy Resources; Balancing Resources	Responsive Market Designs
<b>2.0 FTE's</b>	<b>External Affairs &amp; Corporate Communications</b>		
	To expand interactions with New England states and the public on ISO initiatives, projects, issue positions, emergency communications, and other related regional efforts	Support	Stakeholder Engagement
<b>2.0 FTE's</b>	<b>Human Resources</b>		
	Additional support for recruiting, benefits, and business partnering	Support	Attract, Develop, and Retain Talent

## 32.0 Total 2023 Proposed FTE Additions

For 2023 an additional 23 FTEs are to explicitly address the changing resource mix and support the region's clean energy transition



# 2023 OPERATING BUDGET RISKS



# 2023 Operating Budget Risks

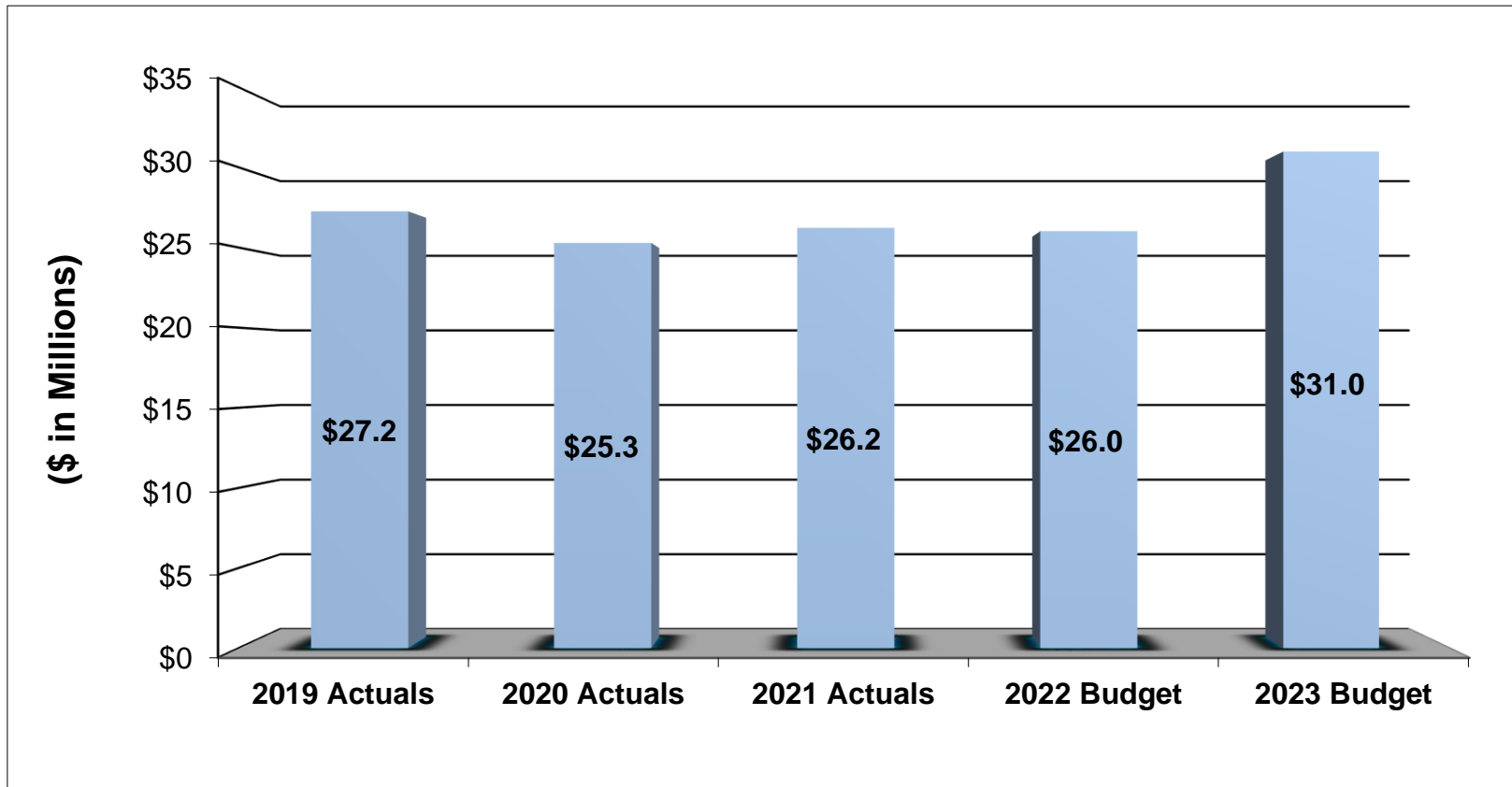
- Additional funding may be required to construct new models to study extreme weather and contingencies; and to conduct new studies related to the integration of variable resources and emerging technologies, including long-range transmission planning studies
- Information Technology software licensing and maintenance costs, and cloud migration costs may each require additional funding
- Insurance policy renewals may be higher than increases estimated in the budgets
- Mystic Cost of Service audit support may require additional funding
- Interest Rates may impact the ISO floating rates on tax-exempt debt, pension and post-retirement benefit plans liability costs, and interest income on settlement float balance
- Legal costs from material litigation that may arise during the course of the year would pose a risk to the ISO's ability to operate within the approved budget
- Federal and state policy directives/changing policies could result in additional cost associated with new requirements
- Workforce sourcing and related pay rates and supply chain disruption may each have budgetary impacts
- Increases across multiple expense lines due to inflationary pressures in the current economic environment



# DEPRECIATION



# ISO New England Depreciation



# ISO New England Depreciation *(cont.)*

- The Capitalization Policy – Highlights
  - Software development costs are capitalized as required by the Cost of Computer Service Software Development Topic of the FASB Accounting Standards Codification
  - The capitalized cost of new hardware or software includes the first year of maintenance for hardware and software
  - The Main Control Center and the Backup Control Center building costs were capitalized using the component methodology at the various asset category levels (as outlined on the next slide)
  - Time spent on project management and software testing for capital projects and business analysts' time in the Project Management department are capitalized and specifically noted in the Annual Administrative Costs Services and Capital Budget Filing



# ISO New England Depreciation *(cont.)*

Below is a table of the ISO's asset classes and depreciable lives.

Asset Class	Depreciable Life
Computer Hardware, Software, and Accessories	3-5 Years
Software Development Costs	3-5 Years
Furniture and Fixtures	7 Years
Machinery & Equipment	7 Years
Building Improvements	Useful life of the improvement
Leasehold Improvements	Useful life of the improvement or remaining life of the lease
Building	25 Years (economic useful life determined during bond offering)
Vehicles	3-7 Years

# Capital Budget Spending 2023-2028



# Capital Budget Spending 2023-2028

- The ISO expects the capital budget needs over the next five years will increase by up to \$7 million
  - This will increase the ISO annual capital budget incrementally from \$28M (2021 budget) to \$35M, with \$33.5M budgeted for 2023
  - Many of the priorities and projects are similar to last year
- This increase is necessitated by four primary drivers:
  - nGEM platform (which replaces the current market system)
  - Major market and reliability related efforts
  - Cyber security
  - IT asset and infrastructure replacement
- The ISO project expenses are dependent on various external factors, including various vendors and regulatory approvals, and therefore difficult to predict accurately
  - The ISO will continue with its current practice of providing a rolling two-year look-ahead window



# Capital Budget Spending 2023-2028 *(cont.)*

## nGEM Platform Replacement

- GE proposed the nGEM program (next Generation Markets) to upgrade the core market software, sharing the cost with three ISOs (ISO-NE, PJM, and MISO)
  - The portion of the software upgrade unique to each ISO will be shouldered by each ISO individually
- The GE development and implementation is spread across four phases, and is planned to run through 2027/2028
- Current estimate for the ISO-NE share of the GE platform development cost is approximately \$12M across the next five years
- However, the biggest cost for ISO-NE will be in implementing the new platform
  - This will require adapting the base software to unique ISO-NE functionality, testing, market trials with participants, new hardware and data models, and cutover
  - ISO-NE implementation will be in four phases between now and 2027/2028
  - ISO-NE expects the total implementation cost to be approximately \$55M - \$70M over the life of nGEM platform implementation

# Capital Budget Spending 2023-2028 *(cont.)*

## Major Market and Reliability Related Efforts

- Over the next five years, the ISO expects to build the following major market and reliability services, all of which will be complex and expensive efforts
  - Day-Ahead Ancillary Services: The day-ahead ancillary services project will seek to procure and transparently price the ancillary service capabilities needed for a reliable, next-day operating plan with an evolving generation fleet. The ISO plans to develop a day-ahead ancillary services proposal with two components – Energy Imbalance Reserves and Flexible Response Services (10 and 30 minute fast-start and fast-ramping capabilities).
  - FERC Order 2222: The ISO will be building software systems to integrate distributed energy resources into the wholesale market
  - Energy Storage Modeling
  - Various Capacity Market Reforms, including Resource Capacity Accreditation
  - Other Market enhancements as identified through the rolling annual work-plan process and FERC Orders
- Based on scope, these reforms are expected to cost approximately \$40M - \$55M over the next five years



# Capital Budget Spending 2023-2028 *(cont.)*

## Cyber Security

- ISO Cyber Security efforts will need to continue to evolve and adapt to emerging threats and new attack vectors
- The ISO expects that it will continue to invest in improved monitoring, detection, and recovery tools to keep pace with increasingly sophisticated attack threats
- This is expected to cost approximately \$12M - \$15M over the next five years





# Capital Budget Spending 2023-2028 *(cont.)*

## IT Asset and Infrastructure Upgrade

- Current ISO hardware is due for a major upgrade and the ISO has developed a plan to replace major components over the next five years
- The plan also includes developing pilot projects to move a portion of IT services to Amazon Web Services
- This is expected to cost approximately \$15M - \$20M over the next five years



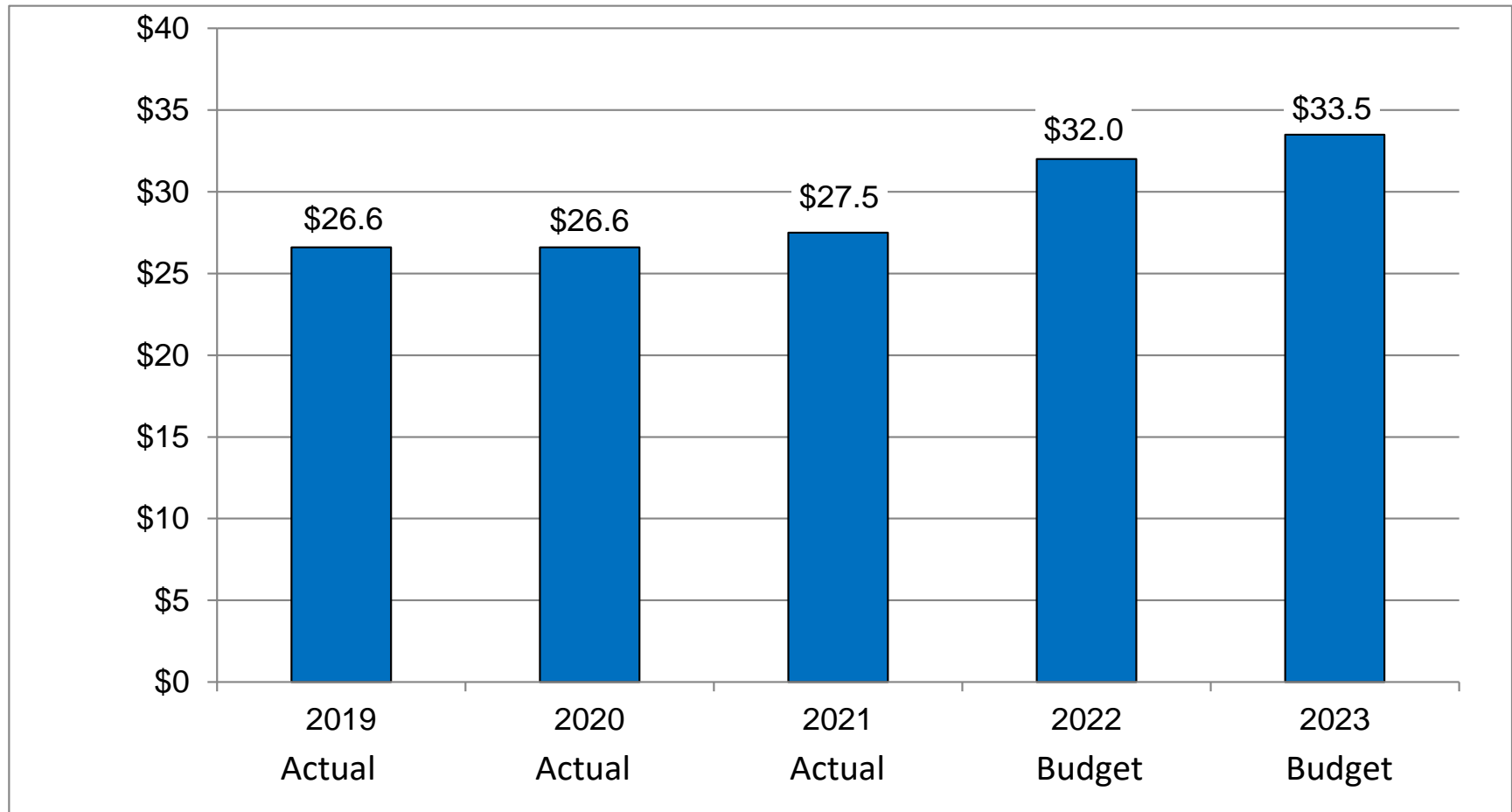
# CAPITAL BUDGET SUMMARY



# Capital Budget

## Historical Comparison Capital Expenditures

Average +/- \$29.2M



# Capital Budget

## 2023 Expenditures

Goal: Responsive Market Designs Project	2023 Budget	Total Project Cost	Estimated Completion Date	Project Stage
Day-Ahead Ancillary Services Improvements	\$3.5M	\$11.7M	10/24	Planning/Conceptual Design
FERC Order 2222	\$0.4M	\$7.4M	12/26	Planning/Conceptual Design
Elimination of Minimum Offer Price Rule	\$0.6M	\$1.5M	12/24	Planning/Conceptual Design
Solar Do Not Exceed Dispatch Phase II	\$1.0M	\$1.0M	12/23	Planning/Conceptual Design
PI Historian for Short-Term PMU Data Repository	\$0.5M	\$0.9M	09/23	In Development
Forward Capacity Market Order 2222	\$0.4M	\$0.5M	03/23	Planning/Conceptual Design
<b>Total:</b>	<b>\$6.4M</b>			

Goal: Progress and Innovation Project	2023 Budget	Total Project Cost	Estimated Completion Date	Project Stage
nGEM Market Clearing Engine Implementation (see Note 1)	\$1.3M	\$13.8M	06/23	In Development
nGEM Real-Time Market Clearing Engine Implem. (see Note 1)	\$3.0M	\$8.0M	06/25	Planning/Conceptual Design
nGEM Software Development Part II (see Note 1)	\$0.7M	\$4.8M	06/23	In Development
Forecast Enhancements	\$0.6M	\$1.9M	07/23	In Development
nGEM Software Development Part III (see Note 1)	\$1.5M	\$1.5M	12/23	Planning/Conceptual Design
Control Room Voice Recorder Upgrade	\$0.1M	\$0.2M	03/23	Planning/Conceptual Design
MIS Reporting by Sub Accounts	\$0.2M	\$0.2M	03/23	Planning/Conceptual Design
<b>Total:</b>	<b>\$7.4M</b>			

Note 1: nGEM related projects will advance multiple goals including Responsive Market Designs, Progress and Innovation, and Operational Excellence. For purposes of this presentation, nGEM projects have been grouped under the Progress and Innovation strategic goal.

See Appendix 8 for further detail on the 2023 Capital Budget



# Capital Budget

## 2023 Expenditures (cont.)

Goal: Operational Excellence				
Project	2023 Budget	Total Project Cost	Estimated Completion Date	Project Stage
Forward Capacity Tracking System Infrastructure Conversion Part III	\$0.7M	\$3.2M	04/23	In Development
Enterprise Resource Planning System Replacement	\$0.1M	\$3.1M	09/26	Planning/Conceptual Design
CIP Electronic Security Perimeter Redesign Phase II	\$2.0M	\$2.3M	01/24	Planning/Conceptual Design
Web to Cloud Migration Phase II	\$1.2M	\$1.6M	12/24	Planning/Conceptual Design
Microsoft 365 Service Adoption	\$0.5M	\$1.5M	06/24	Planning/Conceptual Design
Privileged Account Management Security Enhancements 2023	\$1.3M	\$1.3M	09/23	Planning/Conceptual Design
Physical Security Improvement Project	\$0.5M	\$1.2M	12/23	In Development
Inventoried Energy Program	\$1.0M	\$1.0M	09/23	Planning/Conceptual Design
Web to Cloud Migration Phase I	\$0.8M	\$0.8M	11/23	Planning/Conceptual Design
Windows Server 2019R2 Deployment	\$0.5M	\$0.8M	10/23	Planning/Conceptual Design
2023 Issue Resolution Project	\$0.7M	\$0.7M	12/23	Planning/Conceptual Design
E-mail List Server Technology Refresh	\$0.1M	\$0.7M	01/23	In Development
IT Asset Workflow Integration and Updates	\$0.5M	\$0.6M	01/24	Planning/Conceptual Design
Identity and Access Management Phase III	\$0.5M	\$0.6M	12/23	Planning/Conceptual Design
Replace Messaging Software	\$0.1M	\$0.6M	03/23	In Development
Non-Project Capital Expenditures	\$4.8M			Planning/Conceptual Design
<b>Total:</b>		<b>\$15.3M</b>		

See Appendix 8 for further detail on the 2023 Capital Budget

# Capital Budget

## 2023 Expenditures Summary

### 2023 Capital Budget Expenditure Summary

Allocation Category	2023 Budget
Goal: Responsive Market Designs	\$ 6.4M
Goal: Progress and Innovation	\$ 7.4M
Goal: Operational Excellence	\$15.3M
Other Emerging Work	\$ 3.8M
Capital Interest	\$ 0.6M
<b>Total:</b>	<b>\$33.5M</b>

See Appendix 8 for further detail on the 2023 Capital Budget

# CAPITAL STRUCTURE



# Capital Structure

- The ISO has a \$20M working capital line, used to cover the ISO's operational needs; this line currently expires on July 1, 2024
- Tax-Exempt Debt
  - In 2005, the ISO entered into tax-exempt financing in the form of Multi-Mode Variable Rate Civic Facility Revenue Bonds for \$45.5M to fund the construction of the Main Control Center in Holyoke, MA
  - In 2012, the ISO entered into a new tax-exempt financing in the form of Multi-Mode Variable Rate Civic Facility Revenue Bonds for \$36M to fund a new Backup Control Center
  - The tax-exempt bonds are auctioned weekly and amortize quarterly for 25 years





## Capital Structure *(cont.)*

- In November 2013, the ISO entered into an Interest Rate Cap (to mitigate the interest rate risks associated with the tax-exempt debt) for the notional value of \$32,215,000, which will expire in 2024 and amortizes as principal payments are made on the tax-exempt debt.
- Capital project costs are largely funded by \$50M in Private Placement Notes. The ISO has funded its capital needs with \$11M in Private Placement Notes entered into in 2013, and \$39M Private Placement Notes in 2014; both series of notes are set to expire in November 2024.
- For the six months ended June 30, 2022, the ISO's total weighted average cost of capital was 2.45%, excluding fees charged on the various debt financing; fees range from .075% to .38%.



# Capital Structure *(cont.)*

- Increased Future Capital Funding 2023-2028 and beyond
  - The ISO expects the capital budget needs to increase from the current capital program of \$32M to \$33.5M in 2023 and to \$35M in 2024 and beyond
  - As noted on Capital Budget Spending (See slides 52-57), the areas driving the increase in spending are dependent on various factors such as vendor and regulatory approvals, estimated range of spending, and longer lead times to complete
  - Longer lead time to complete results in a greater period of time from when ISO spends the capital funds to tariff recovery through depreciation expense of these projects
  - Beyond 2028, the ISO anticipates maintaining the \$35M level of capital spending to maintain current infrastructure, to continue making improvements in cyber security, and to support markets and reliability efforts



# Capital Structure *(cont.)*

- In order to support the future capital program, the ISO anticipates going out to market in 2024 for \$75M in Private Placement Notes to replace the \$50M set to expire in November 2024
- The banks have indicated to the ISO that pricing will be more advantageous to obtain a higher level of private placement notes, rather than renewing the \$50M and securing another form of debt
- To fund the increase in the capital program for 2022 and 2023, the ISO plans to use the operating cash flow, largely provided by system impact study deposits and the existing working capital line
- The ISO may need to secure a short-term working capital line to support the funding of the capital program in 2024 until the Private Placement Notes are in place
- Once the project charters have been developed, and the budgets are known, the ISO will refresh the 5 and 10 year projected cash flows
- The ISO will update the NEPOOL Budget & Finance Subcommittee of the Company's borrowing needs to fund the requisite level of capital spending as part of the regularly scheduled meetings

# CASH FLOW

# ISO New England - Sources and Uses of Cash (\$000's)

	2022 Forecast	2023 Budget	2024 Forecast	2025 Forecast	2026 Forecast
<b>Cash flows from operating activities:</b>					
Operating Cost Recovery *	\$ 189,172	\$ 193,392	\$ -	\$ -	\$ -
<b>Non Cash Items:</b>					
Depreciation & Loss on Disposals	25,567	30,936	33,079	35,129	34,673
Amortization Land	39	39	39	39	39
Amortization Term Loan Fees	136	115	46	37	37
Chg in Accrued Expenses & Deferred Revenue-Depreciation	407	-	-	-	-
Interest Expense	(2,137)	(3,023)	-	-	-
Operating Expenses *	(186,784)	(206,092)	-	-	-
<b>Net cash provided by operating activities</b>	<b>26,400</b>	<b>15,367</b>	<b>33,164</b>	<b>35,205</b>	<b>34,749</b>
<b>Cash flows from investing activities:</b>					
Capital expenditures	(32,000)	(33,500)	(35,000)	(35,000)	(35,000)
<b>Net cash used in investing activities</b>	<b>(32,000)</b>	<b>(33,500)</b>	<b>(35,000)</b>	<b>(35,000)</b>	<b>(35,000)</b>
<b>Cash flows from financing activities:</b>					
Net Proceeds/(Repayment) - Revolving Credit Line	-	3,500	(3,500)	-	-
Repayment of Principal - Private Placement	-	-	(50,000)	-	-
Proceeds - Private Placement	-	-	75,000	-	-
Repayment of Principal - Tax Exempt Bonds	(3,180)	(3,180)	(3,180)	(3,180)	(3,180)
<b>Net cash provided by (used by) financing activities</b>	<b>(3,180)</b>	<b>320</b>	<b>18,320</b>	<b>(3,180)</b>	<b>(3,180)</b>
<b>Net increase/(decrease) in cash</b>	<b>(8,780)</b>	<b>(17,813)</b>	<b>16,484</b>	<b>(2,975)</b>	<b>(3,431)</b>
<b>Cash &amp; Cash Equivalents on Hand - Beginning of Period</b>	<b>26,991</b>	<b>18,211</b>	<b>398</b>	<b>16,882</b>	<b>13,907</b>
<b>Change in Cash &amp; Cash Equivalents Available</b>	<b>(8,780)</b>	<b>(17,813)</b>	<b>16,484</b>	<b>(2,975)</b>	<b>(3,431)</b>
<b>Cash &amp; Cash Equivalents on Hand - End of Period</b>	<b>\$ 18,211</b>	<b>\$ 398</b>	<b>\$ 16,882</b>	<b>\$ 13,907</b>	<b>\$ 10,476</b>
<b>Debt Maturity Schedule</b>					
Tax Exempt Bond - BCC	1,360	1,360	1,360	1,360	1,360
Tax Exempt Bond - MCC	1,820	1,820	1,820	1,820	1,820
<b>Total Year Repayment</b>	<b>\$ 3,180</b>	<b>\$ 3,180</b>	<b>\$ 3,180</b>	<b>\$ 3,180</b>	<b>\$ 3,180</b>

\*= Operating Cost Recovery for 2022 has increased by an undercollection in 2020 of \$1,071 which was not amortized in 2021 but included in the 2022 tariff. The overcollection from 2021 of \$14,589 will be filed in the 2023 tariff and has been reflected in the Operating Cost Recovery for 2023. The Operating Cost Recovery for 2024-2026 is projected to offset Operating Expenses for 2024-2026. The Operating Cost Recovery amount for 2024-2026 has not yet been established at this point.

# APPENDIX 1: OTHER OPERATING BUDGET DETAILS



# Operating Budget Details - Budget Categories

(see next slides for detail on certain categories)

(\$ in thousands)	2019 Actual	2020 Actual	2021 Actual	2022 Budget	2023 Budget
<b>Salaries</b>	\$85,338	\$87,428	\$90,069	\$94,584	\$102,192
<b>Burden</b>	28,123	27,239	28,329	29,562	32,510
<b>Professional fees and consultants</b>	16,953	18,518	19,695	19,836	24,935
<b>Building services</b>	2,805	2,990	2,832	3,075	3,122
<b>Rents/leases</b>	954	948	777	930	898
<b>Network Operations</b>	2,092	2,379	2,802	3,181	3,270
<b>Computer services</b>	13,998	15,433	15,952	17,908	20,398
<b>Insurance expense</b>	1,951	2,226	2,153	2,586	3,140
<b>Board of Directors Expense</b>	1,274	1,206	1,592	1,481	1,517
<b>Meetings &amp; Related Expenses</b>	1,666	662	536	1,240	1,272
<b>Education &amp; Training</b>	1,103	828	891	1,208	1,327
<b>NPCC and NERC Dues</b>	6,159	6,364	6,062	6,446	7,296
<b>Interest Expense</b>	2,811	2,435	2,120	2,774	3,137
<b>Contingency Funds</b>	-	-	-	2,700	2,700
<b>Other Expense</b>	1,895	1,807	1,758	2,039	2,209
<b>Interest Income &amp; Other Revenue</b>	(1,106)	(405)	(443)	(493)	(694)
<b>Net Expense before Depreciation (1)</b>	<b>166,016</b>	<b>170,056</b>	<b>175,125</b>	<b>189,057</b>	<b>209,230</b>
<b>Depreciation</b>	27,249	25,278	26,221	26,013	30,975
<b>Total ISO Tariff Recovery</b>	<b>\$193,265</b>	<b>\$195,334</b>	<b>\$201,346</b>	<b>\$215,071</b>	<b>\$ 240,205</b>
<b>Revenue True-up</b>	(9,335)	(2,949)	151	1,071	(14,589)
<b>Revenue Requirement</b>	183,930	192,384	201,497	216,142	225,616
<b>Network Load (GWh)</b>	141,514	136,022	139,423	144,436	143,042
<b>Grid Market Charge \$/KWh</b>	<b>\$0.00130</b>	<b>\$0.00141</b>	<b>\$0.00145</b>	<b>\$0.00150</b>	<b>\$0.00158</b>
<b>Headcount (FTE's) (2) (3)</b>	587.0	577.5	573.5	593.0	614.5

- (1) Net Expense Before Depreciation of \$209.2 million for 2023 agrees to slide 29 of the presentation.
- (2) 2019, 2020 and 2021 reflect December 31 actual headcount for those years. 2022 and 2023 reflect planned headcounts of 622.5 and 654.5, respectively, less vacancy of 4.0% and 5.0% respectively, which equates to 24.5 FTE's in 2022 and 32.5 FTE's in 2023.
- (3) Funding of \$6.9 million of Salaries and \$2.6 million of Burden exists for 2023 internal capital development and reimbursable study time of ISO-NE Employees. Total Salaries and Burden including these and operating costs equal \$144.2 million.

# Operating Budget Details - Budget Categories *(cont.)*

The following are explanations of budgeted items that are included in the *Other Expense* and *Interest Income & Other Revenue* lines of the budget details by category (as shown on the previous slide):

- *Other Expense* – This line includes Data Services & Office expenses which include subscriptions for industry and general information, professional dues, printing, office supplies and equipment, and postage and courier. This line also includes payment in lieu of taxes, bank fees, and business & license fees.
- *Interest Income & Other Revenue* – This line includes interest income on accounts, purchase discount (primarily from utility expense), and miscellaneous service revenue.

The following are line items that contain budget increases in 2023 which are greater than 5% or \$500,000 and a brief explanation of what is driving the change:

- *Salaries (\$7.6M or 8.0%)* – Increases include salary related to annual merit and promotional increases, funding for the addition of 23 full-time equivalent positions, and increases for employee retention and succession planning efforts. These increases were partially offset by a reduction for employee rates due to employee turnover and retirements, and an increase in the vacancy rate (from 4.0% to 5.0%).
- *Burden (\$2.9M or 10.0%)* – Increases for payroll taxes related to annual merit and promotional increases, and for the portion of the additional 23 full-time equivalent positions in 2023. Increases also resulted from the impact of employee benefit cost increases (for medical trend, additional employees in the Defined Contribution Plan, and an increase in Post-Retirement Medical Benefit Plan funding).



# Operating Budget Details - Budget Categories *(cont.)*

- Professional fees and consultants (\$5.1M or 25.7%) – Funding for support of the Resource Capacity Accreditation (RCA) work to establish improvements to ISO-NE's accreditation processes in the Forward Capacity Market; funding for ongoing future-grid studies for a clean-energy future including the Future Grid Reliability Study Phase II, Pathways to the Future Grid Phase II, and the 2050 Transmission Study for long-term regional transmission planning. Additional increases include funding for a Mystic Cost of Service fuel supply audit, increases in Information Technology including increased consultant rates primarily in cybersecurity and power system modeling, and funding to support Cloud adoption strategy. Additionally, funding in the Finance area includes increases for environmental, social, and governance (ESG) reporting, accounting, time entry, and financial reporting system replacement, and additional Accounts Payable support; and funding for consultant support to develop and execute a communications plan that broadens our audience to include end-use consumers. Increases are partially offset by reductions for an increase in expected consultant vacancy, a reduction in temporary help as work will be absorbed by internal staff, and funds for a content management system software upgrade that will not be needed.
- Computer Services (\$2.5M or 13.9%) – Increased expenses include licensing and maintenance support related to the significant investment made in cyber infrastructure including those for security event management, ransomware data recovery, advanced phishing detection, enterprise monitoring software, cloud security software, endpoint security, and threat intelligence. Other increases include software storage requirements; increases due to the structuring of software contracts; and the addition and migration of some products to cloud computing solutions that offer quicker deployment of new systems. Increases were partially offset with savings realized from the replacement of higher cost technology with lower cost products already in use.
- Insurance Expense (\$0.6M or 21.4%) – Insurance expenses increased primarily due to increased premiums for Property and Liability coverage and Cyber Security insurance resulting from current market conditions.
- Education & Training (\$0.1M or 9.8%) – Increased expenses include additional funding to support leadership mentoring programs that have seen increased participation among staff, costs associated with student programs, and for technology related training.

# Operating Budget Details - Budget Categories *(cont.)*

- NPCC and NERC Dues (\$0.9M or 13.2%) - Increases for both Northeast Power Coordinating Council and North American Electric Reliability Corporation dues assessed to the ISO.
- Interest Expense (\$0.4M or 13.1%) - Increase in interest expense based on current market indicators as rates continue to rise, partially offset by a reduction due to the higher allocation of interest expense to in-progress capital projects.
- Other Expense (\$0.2M or 8.4%) – Increases in other expenses primarily driven by increased subscription rates including fuel pricing and market data in Market Monitoring, fuel data subscription for Market Settlements in support of the Mystic Cost of Service Agreement, Energy Transition Forum sponsorship, and a compliance training tool for the Reliability & Operations Compliance team.
- Interest Income & Operating Revenue (\$0.2M or 41.0%) – Increase in interest income due to higher interest rates.
- Depreciation Expense (\$5.0M or 19.1%) – Depreciation expense increases due primarily to the mid-year go-live of the nGEM Market Clearing Engine Implementation project. <sup>(1)</sup>

(1) Upon completion of the nGEM Market Clearing Engine Implementation, scheduled for June 2023, the following associated Work-In-Progress projects will begin depreciating: CIMNET Simultaneous Feasibility Test with Data Transfer Enhancements, nGEM Value Added Development, nGEM Market Clearing Engine Implementation, nGEM Software Development Parts I and II, and nGEM Hardware Phase I and II.



# Operating Budget Details - Budget Categories *(cont.)*

**The \$14.6 million true-up amount, that is decreasing the 2023 revenue requirement, is based on the following:**

The final 2021 revenue requirement was an over-collection of \$14.6 million, which will decrease the 2023 requirement. The over-collection resulted from higher collections in addition to lower expenses. Specifically, 2021 expenses were \$3.6 million lower than budgeted while final 2021 revenues collected under Section IV.A of the ISO-NE tariff were \$11.0M above what was included in the 2021 budget/tariff filing. Please see Slide 76 for further detail and a reconciliation making up the \$14.6 million over-collection.



# Operating Budget Details - Budget Categories *(cont.)*

The following is a reconciliation of the \$14.6 million true-up amount, that is decreasing the 2023 revenue requirement (\$ in thousands):

## Spending Variances (Dollars in thousands):

### Contingencies:

Board Contingency	\$ (700.0)
CEO Emerging Work Allowance	\$ (1,100.0)

### Net Savings in Contingencies

\$ (1,800.0)

**Salaries and Overhead** - lower due to salary rates for new hires compared to previous incumbents, reduced Post-Retirement Benefit plan expense, and higher vacancy rates; these were partially offset by higher overtime in certain business units

\$ (1,086.4)

**Meeting, Travel, and Training** - spending was lower than plan in 2021 due to continued COVID-19 restrictions on in-person meetings impacting travel related expenses and training

\$ (975.4)

**Computer Services** - reductions for products covered under capital budget spending, and for actual product renewals including reductions in license requirements or co-terming of contracts

\$ (624.9)

**Interest Expense** - lower than budgeted rates on tax-exempt debt and a decrease in interest expense on the working capital line due to lower rates and less borrowing during the year than expected

\$ (583.5)

**Data Services & Office Expense** - restructuring of a Cyber Security subscription that led to more favorable pricing, lower office supplies and copier usage due to the current remote workforce posture, and load forecasting subscription work reallocated to load forecasting Professional Fees work

\$ (295.6)

### Professional and Legal Fees Changes:

**Market Development** - funding studies to integrate clean energy into New England's wholesale electricity markets and grid operations, for Resource Capacity Accreditation work, and support for updating FCM parameters

\$ 2,480.9

**Legal** - regulatory work for FERC related matters that were lower than plan or were absorbed by in-house counsel

\$ (473.9)

**Information Technology** - reductions due primarily to higher than plan consultant vacancy

\$ (455.6)

### All Other Areas

\$ 8.6

### Net Changes in Professional and Legal Fees

\$ 1,560.0

**Board of Directors Expense** - increased quarterly retainer fees and meeting rates for videoconferences, funding for a new Information Technology Committee, for additional full board and committee meetings that were held, and funding for a one-year period of an additional board member.

\$ 365.1

**Interest Income** - lower rates compared to plan

\$ 316.3

### Net Change across all other Expense Lines:

\$ (493.1)

### Net Savings in Expenses:

\$ (3,617.5)

**Tariff Collections (over collection):** Tariff collections came in 5.6% higher than plan, which were driven primarily by lower than budgeted load related factors.

\$ (10,971.2)

### Total 2021 True-Up

\$ (14,588.7)



# Operating Budget Details

## Efficiencies, Reductions, and Other Non-Recurring Costs

The following are the components of Efficiencies, Reductions, and Other Non-Recurring Costs in the 2021, 2022, and 2023 budgets:

	2023	2022	2021
Salary Rates (due to Turnover, Retirements)	\$ (2.0)	\$ (0.6)	\$ (0.3)
FERC Order 1000 Support	-	-	(1.3)
Lower Post-Retirement Medical Plan funding and reduced Pension Benefit Premiums	-	(0.9)	-
Non-repetitive Study Work	-	(0.8)	(1.2)
Reallocation of Work/Absorbion by ISO Staff	(0.2)	(0.6)	(0.3)
Software Licensing Costs for Replaced Technology	(0.5)	(0.3)	-
Non-Repetitive Consulting Augmenting ISO Staff	(0.1)	-	(0.2)
Reduction in Employee Travel and Training	-	-	(0.2)
Other Consulting/Professional Services	-	-	(0.2)
Reduction for cyclical building maintenance	(0.2)	-	-
Interest Income	(0.2)	-	-
Other Miscellaneous Reductions	(0.2)	(0.4)	(0.1)
<b>Total</b>	<b>\$ (3.4)</b>	<b>\$ (3.6)</b>	<b>\$ (3.8)</b>

# Operating Budget Details

## Professional Fees

*(See next slides for details)*

	(\$ in Millions)	
	<u>2023</u>	<u>2022</u>
Corporate Center	\$ 5.3	\$ 4.6
Legal	3.3	2.9
Operations	16.3	12.3
<b>Total Professional Fees</b>	<b>\$ 24.9</b>	<b>\$ 19.8</b>

# Operating Budget Details

## Professional Fees – Corporate Center

	(\$ in Millions)	
	<u>2023</u>	<u>2022</u>
Corporate Center	\$ 5.3	\$ 4.6
Legal	3.3	2.9
Operations	16.3	12.3
<b>Total Professional Fees</b>	<b>\$ 24.9</b>	<b>\$ 19.8</b>

	(\$ in Millions)	
	<u>2023</u>	<u>2022</u>
Benefits and Hiring		
Recruiter Fees and Background Checks	\$ 0.4	\$ 0.5
Relocation	0.3	0.3
Temp Help	0.2	0.2
Compensation Surveys	0.3	0.3
Other Consulting for Pension & Benefits	0.9	0.7
Total Benefits and Hiring	2.1	2.0
Financial Support (Payroll processing, Temp Help, etc.)	0.5	0.3
Audits (i.e., SOC 1, financial statement, IT systems, benefit plans)	1.0	0.9
Corporate Communications (see following slide)	0.3	0.2
External Affairs (see following slide)	0.4	0.4
Enterprise Risk Management (Quality Management - Supporting other departments with Corrective Action/Preventative Action management, Causal Analysis Development, and Professional Consulting Support)	0.2	0.2
Market Monitoring and Mitigation (FCM Related Reviews, and Energy Market Consultation and Support)	0.7	0.7
<b>Total Included in Budget</b>	<b>\$ 5.3</b>	<b>\$ 4.6</b>

# Operating Budget Details

## Professional Fees – External Affairs/ Corporate Communications

	(\$ in Millions)	
	<u>2023</u>	<u>2022</u>
Corporate Center	\$ 5.3	\$ 4.6
Legal	3.3	2.9
Operations	16.3	12.3
<b>Total Professional Fees</b>	<b>\$ 24.9</b>	<b>\$ 19.8</b>

	(\$ in Millions)	
	<u>2023</u>	<u>2022</u>
State Educational Outreach / Legislative Monitoring	\$ 0.3	\$ 0.3
Media Relations / General Support	0.3	0.2
Federal Educational Outreach / Legislative Monitoring	0.1	0.1
<b>Total Included in Budget</b>	<b>\$ 0.7</b>	<b>\$ 0.6</b>



# Operating Budget Details

## Professional Fees – External Affairs

	(\$ in Millions)	
	<u>2023</u>	<u>2022</u>
Corporate Center	\$ 5.3	\$ 4.6
Legal	3.3	2.9
Operations	16.3	12.3
<b>Total Professional Fees</b>	<b>\$ 24.9</b>	<b>\$ 19.8</b>

- Purpose: To inform state and federal government stakeholders and policymakers on the performance and needs of the power system and wholesale markets
- Activities:
  - Timely information on the status of the power system including:
    - Emergency communications during power supply deficiencies
    - Continuous information on the current and future needs of the power system region-wide and on a state and sub-regional basis
  - Facilitate state regulatory input into the transmission system and market design processes
  - Monitor state energy initiatives to inform the wholesale market and transmission planning development processes



# Operating Budget Details

## Professional Fees – External Affairs *(cont.)*

	(\$ in Millions)	
	<u>2023</u>	<u>2022</u>
Corporate Center	\$ 5.3	\$ 4.6
Legal	3.3	2.9
Operations	16.3	12.3
<b>Total Professional Fees</b>	<b>\$ 24.9</b>	<b>\$ 19.8</b>

- Resources

- Internal staff resources are focused on providing information to regulatory commissions, governors' offices, state legislatures, federal congressional offices, consumer advocates, and business organizations
  - Seven professional staff
  - For the first seven months of 2022:
    - 37 utility commission / state agency meetings & briefings
    - 12 state policymaker meetings & briefings
    - 72 federal policymaker / regulator meetings & briefings
    - 51 industry conferences, speaking engagements & meetings supported / attended by ISO-NE staff
    - 9 academic group virtual visits or lecture series participated in / attended by ISO-NE staff
    - 2 Consumer Liaison Group meetings
- External resources are focused on monitoring state and federal legislation initiatives, organizing educational opportunities, and distributing timely information
  - Contract consultants in each state, and in Washington, DC



# Operating Budget Details

## Professional Fees – Legal

	(\$ in Millions)	
	<u>2023</u>	<u>2022</u>
Corporate Center	\$ 5.3	\$ 4.6
Legal	3.3	2.9
Operations	16.3	12.3
<b>Total Professional Fees</b>	<b>\$ 24.9</b>	<b>\$ 19.8</b>

	(\$ in Millions)	
	<u>2023</u>	<u>2022</u>
Independent Market Advisor	\$ 1.1	\$ 1.1
Market Rule and Tariff/OATT Proceedings	1.8	1.4
Labor Matters	0.1	0.1
Other	0.3	0.2
<b>Total Included in Budget</b>	<b>\$ 3.3</b>	<b>\$ 2.9</b>

# Operating Budget Details

## Professional Fees – Operations

	(\$ in Millions)	
	<b>2023</b>	<b>2022</b>
Corporate Center	\$ 5.3	\$ 4.6
Legal	3.3	2.9
Operations	16.3	12.3
<b>Total Professional Fees</b>	<b>\$ 24.9</b>	<b>\$ 19.8</b>

	(\$ in Millions)	
	<b>2023</b>	<b>2022</b>
Information Technology (SMS/SAS/EMS/CAMS Support, Network Model and Model-On-Demand, Energy Management System Support, Software License Management & Reporting Support, Website Support, Cyber Security and Vulnerability Testing, NERC CIP Compliance, Desktop and Database Services Support, RTU and NX9/NX12 Network Model Support, and other Temp Help)	\$ 9.1	\$ 8.6
FCM (including Auctioneer Costs, auction software maintenance, Show of Interest Reviews, Qualification package review, Impact on FCM Qualification Process Changes, FCA Pricing Rules Analysis, FCM Analysis, Initial Interconnection & De-List studies)	1.0	0.9
System and Transmission Planning (Elective Transmission Upgrade, Transmission Planning / Non-Transmission Alternatives, Interconnection Studies, Short Circuit Analysis), Integrating Emerging Technologies and Distributed Generation into Load Forecasting, and develop and execute long range transmission planning studies in conjunction with the states	1.9	0.8
Market Development ((Integration of Clean Energy)(Pathways Phase II, FGRS Phase II)) and Distributed Resources into Energy Markets, Inventoried Energy Program)	2.0	0.7
Resource Capacity Accreditation (contributions to resource adequacy)	1.3	0.5
Project Management (Impact Analysis, R&D, Project Work and Initiatives)	0.5	0.4
System Operations Support (Operations Instructional Training Designer and NERC Training Compliance)	0.2	0.2
Participant Support and Training	0.4	0.2
<b>Total Included in Budget</b>	<b>\$ 16.3</b>	<b>\$ 12.3</b>

# Operating Budget Detail

## 2023 Budget for Board Compensation

### 2023 Original Budget (1)

• Annual retainer (\$70K/Board Member, plus \$25K Chairman, \$10K Committee Chair)	\$0.7M
• Board Meetings (approximately 8 meetings at \$2,000/meeting/Board Member)	\$0.2M
• Committee Meetings (\$1,500/Board Member/Meeting) (2)	<u>\$0.4M</u>
Total Board Compensation (3)	\$1.3M
 • Meetings and Travel Expenses	 \$0.2M
Total Board Fees	<u><u>\$1.5M</u></u>

- (1) The budget contemplates 9 members for 2023
- (2) There are on average about 68 Board and committee meetings per year
- (3) Board Fees are reviewed against independent surveys of Board compensation, similar to process used for determining executive compensation

## APPENDIX 2: COMPENSATION

# Process for Establishing Salary Budget Increases

- Each year, ISO-NE reviews comprehensive salary budget planning data compiled by five nationally-recognized compensation consulting firms
  - The firms are Mercer, WorldatWork, the Conference Board, WillisTowersWatson, and Aon Hewitt
  - ISO-NE has utilized these surveys since its inception
- These surveys are typically published later in the summer and reflect planned salary budget increases of over 2,300 employers, including more than 100 utility companies
  - The data is presented by region, industry, and by employee group
    - executive, management, exempt, and non-exempt employees
  - Salary budget data is further classified into two categories: merit increases and promotional/equity increases

# Process for Establishing Salary Budget Increases *(cont.)*

- Merit Increases
  - Merit pools are the percentage of total employee salaries that companies intend to use for broad-based salary increases in the coming year
    - At ISO-NE, this pool funds the annual performance-based increases for eligible non-bargaining unit employees
    - Individual percentage increases vary based on employees' performance, with some receiving less than and some receiving more than the budget percentage
- Promotional/Equity Increases
  - A separate, much smaller pool of monies used in select circumstances to fund promotions and base salary adjustments for critical positions
    - Professionals with the highly specialized skills possessed, in particular, by our engineering and information technology populations are in high demand
    - Targeted compensation adjustments have enabled us to retain key talent



## Process for Establishing Salary Budget Increases *(cont.)*

- A summary of the survey results and management's recommendation is presented to the Compensation and Human Resources Committee of the Board of Directors
  - The Committee reviews the data at its September meeting and establishes the annual merit and promotional/equity adjustment increase percentages
- The table on the next slide compares annual survey data to ISO-NE's budgeted increases for the past ten years



# ISO New England Salary History

Comparison: Survey Data to ISO New England Salary Increase Budgets						
Year	Merit Increase Budgets			Promotion/Equity Increase Budgets		
	Survey Results		ISO-NE Budget	Survey Results		ISO-NE Budget
	Utility Industry	General Industry		Utility Industry	General Industry	
<b>2023</b>	Not yet available	Not yet available	<b>3.5%</b>	Not yet available	Not yet available	<b>2.25%</b>
<b>2022</b>	3.0% - 3.0%	3.0% - 3.0%	<b>3.0%</b>	0.5% - 1.0%	0.0% - 1.0%	<b>0.5%</b>
<b>2021</b>	2.9% - 3.1%	2.8% - 3.0%	<b>2.5%</b>	0.0% - 1.5%	0.15% - 1.1%	<b>0.5%</b>
<b>2020</b>	3.0% - 3.1%	2.9% - 3.2%	<b>3.0%</b>	0.5% - 1.0%	0.5% - 1.0%	<b>0.5%</b>
<b>2019</b>	2.8% - 3.1%	2.9% - 3.0%	<b>2.75%</b>	0.0% - 1.0%	0.0% - 1.0%	<b>0.75%</b>
<b>2018</b>	2.8% - 3.2%	2.9% - 3.0%	<b>2.75%</b>	0.5% - 0.8%	0.5% - 1.0%	<b>0.75%</b>
<b>2017</b>	2.8% - 3.1%	3.0% - 3.0%	<b>2.75%</b>	0% - .05%	0.5% - 0.5%	<b>0.75%</b>
<b>2016</b>	2.8% - 3.0%	3.0% - 3.0%	<b>2.75%</b>	0% - 0.8%	0.5% - 1.0%	<b>0.75%</b>
<b>2015</b>	2.9% - 3.0%	2.9% - 3.1%	<b>2.75%</b>	0.5% - 1.0%	0.5% - 1.0%	<b>0.75%</b>
<b>2014</b>	3.0% - 3.0%	3.0% - 3.0%	<b>3.0%</b>	0.6% - 1.4%	0.5% - 1.0%	<b>0.5%</b>
<b>2013</b>	3.0% - 3.0%	2.8% - 3.0%	<b>3.0%</b>	0.25% - 1.0%	0.5% - 1.0%	<b>0.9%</b>

Note: Survey results are typically published in late August

# Competitive Challenges

- As described in industry literature and shared with NEPOOL in the past, ISO-NE and utility employers face significant challenges associated with the retirement of a seasoned, technical workforce
  - Approximately 19% of the ISO-NE workforce is retirement-eligible
- One third of ISO-NE's workforce is comprised of IT professionals who are in increasingly high demand
  - Near full employment of these professionals has made the sourcing of replacements for open positions more challenging resulting in longer times-to-fill
  - Software development and cyber security skills are the most sought after as organizations invest in newer, faster technology and mobile networks; compensation for these professionals is escalating
- This competition will only intensify as the region becomes increasingly involved with new and emerging technologies



# Competitive Challenges *(cont.)*

- Prior to 2021 our voluntary turnover rate (excluding retirements) had been relatively stable at approximately 4% - 5%. In 2021 the turnover rate doubled to 9%. We expect the rate to remain at +/- 9% for 2022. The make-up of those departing is skewed towards staff possessing in-demand and unique skills who are often offered higher compensation, with some not needing to relocate due to fully remote work opportunities
  - Most of the individuals who have departed over the past few years were in positions within System Operations, Advanced Technology Solutions, System Planning, IT, and Market Operations, all areas that are critical to operating the grid and running our markets
    - The unemployment rate for these skills nationwide is under 3%; our salaries in these areas tend to be equal to or, in many cases, lower than the going market rate, making it particularly challenging to fill these roles
    - The local market does not typically have the required experience and relocation is sometimes challenging due to the company's location
- Coming off the COVID-19 pandemic, the job market is more competitive than it has been in decades. Demand for all jobs, let alone highly technical ones, is far outstripping supply. Employers across industries are grappling with how best to address this unprecedented lack of supply.
- For all of these reasons, it is essential that we maintain competitive compensation; doing so is a cost-effective measure that will help prevent additional turnover and ensure the Company does not experience vacancies that will hinder implementation of major initiatives or impact efficient operation of its systems and markets.

# Executive Compensation

- As a tax-exempt organization, ISO-NE's Board of Directors is required by the Internal Revenue Code Section 4958 to ensure that executive compensation falls within a reasonable range of compensation practices among functionally comparable positions at similarly-situated organizations, both taxable and tax-exempt
- ISO-NE's Board of Directors contracts with Mercer, an independent compensation consulting firm, to study each executive's total compensation for "reasonableness"
  - The analysis includes examining data from other ISOs, utilities, and as appropriate, the general industry
  - Considerations such as the complexities of the markets, the significance of maintaining the grid, and the multi-billion dollars in settlements handled by ISO-NE are also factored into the review
  - Following its analysis, Mercer issues a Reasonableness Opinion
- The Mercer Reasonableness Opinion has consistently concluded that ISO-NE's executive compensation is within the appropriate competitive range

## Executive Compensation *(cont.)*

- The Compensation and Human Resources Committee of the Board of Directors and the full Board of Directors review the Mercer Reasonableness Opinion and use it to finalize their decisions regarding each executive's compensation
- Executive compensation is reported in ISO-NE's annually filed IRS Form 990
  - This public filing is required for all tax-exempt companies and depicts officer compensation in detail
  - In addition to annual compensation, the data includes incremental increases in accrued pension benefits and other potential future compensation not yet received by the executive
- 2023 Budget for Executive Salaries \$4.7M
  - Executive Salaries comprise the base salaries of the 11 officers on the IRS Form 990

# Pension and Defined Contribution Benefit Plans in 2023

- Defined Contribution Pension Plan: In 2014, ISO-NE changed its retirement plan offering from a Defined Benefit Pension Plan (Pension Plan) to a Defined Contribution Pension Plan (DC Plan) for employees hired after 12/31/13 and closed its Pension Plan to new participants; the DC Plan provides predictable cost and reduced balance sheet liability, with no investment risk and minimal cost volatility for ISO-NE



## Pension and Defined Contribution Benefit Plans in 2023 *(cont.)*

- Defined Benefit Pension Plan: In 2016, for the Pension Plan, ISO-NE modified the funding approach that it had consistently employed since 1997
  - ISO-NE previously calculated the budgeted Pension Plan expense amount in accordance with the Financial Accounting Standards (FAS)
  - This amount was included in the filed rates and contributed to the Pension Plan
  - In 2014 ISO-NE began looking into a level funding approach for the Pension Plan; ISO-NE engaged its actuaries and its investment consulting firm to perform analyses on implementing a change to the current funding approach
  - In 2016, ISO-NE implemented the level funding approach for making contributions and for inclusion in the filed rates
  - ISO-NE's actuaries refreshed the analysis in 2019 and the conclusion was to continue to fund the Pension Plan at the originally established level funding amount of \$10,000,000 per year
  - The Pension Plan expense that is included in the 2023 budget is \$10,000,000 compared to the projected FAS expense of \$7,490,000
  - ISO-NE will request an update to the level funding approach if the underlying assumptions become materially different



## Pension and Defined Contribution Benefit Plans in 2023 *(cont.)*

The table below identifies the number of active ISO-NE employees, at each year-end, that are included in the Defined Benefit Pension Plan and the Defined Contribution Plan:

<b>Date</b>	<b>Defined Benefit Pension Plan</b>	<b>Defined Contribution Plan</b>
12/31/2019	387	197
12/31/2020	368	211
12/31/2021	328	246

Note: The Defined Benefit Pension Plan was closed to employees hired or rehired after December 31, 2013.

# Postretirement Medical Benefit Plan in 2023

- In 2014 ISO-NE looked at making changes to its benefit plan offerings; to better align with the industry, the decision was made to close the Postretirement Benefit Plan to new hires, effective January 2016; in addition, a modification was made to the criteria for when this benefit could start for those employees in the plan prior to January 1, 2016; the age and years of service requirements were increased, thereby reducing future benefits that could be paid
- Consistent with previous years' budgets, ISO-NE's actuaries prepared estimated 2023 Financial Accounting Standards (FAS) Expense for the Postretirement Benefit Plan
- Actuaries utilized the FTSE Pension Discount curve, and reflected the change in discount rates as of May 31, 2022 to estimate the discount rate used in the calculation of the Postretirement Benefit Plan; current rates approximate the forward curve rates
  - Discount Rates Selected:
    - Postretirement Benefit Plan 4.05%
  - Salary Scale assumption (weighted Avg.) 4.25%
  - Projected 2023 annual earnings rate 6.00% (approximately)
- The calculated FAS expense amount for the Postretirement Benefit Plan of \$1,000,000 is included in the 2023 budget

# Operating Budget Details

## Staffing - Salary and Benefits Costs

The \$10.6M increase in salary and burden costs is driven by the following factors:

2023 Merit & Promotion - (budgeted 5.75% increase, which will be finalized by the Board Compensation Committee)	\$	6.0
Salary Impact of Funding for 32 Additional FTEs <sup>(1)</sup>		4.7
Increase in Vacancy Rate (from 4.0% to 5.0%)		(0.9)
Other Salary Changes		(0.7)
Total Salary Impact	\$	9.0
Change in Employee Benefit Costs	\$	1.5
Total Salary and Burden Increase	\$	10.6

(1) The 2023 budget includes the recruitment of 32 additional positions, with funding for 23 full-time equivalents with onboarding expected to occur throughout the year.

# Operating Budget Details

## Staffing – Authorized, Budgeted, and Actual Headcount

The following is historical full-time equivalent (FTE) headcount information:

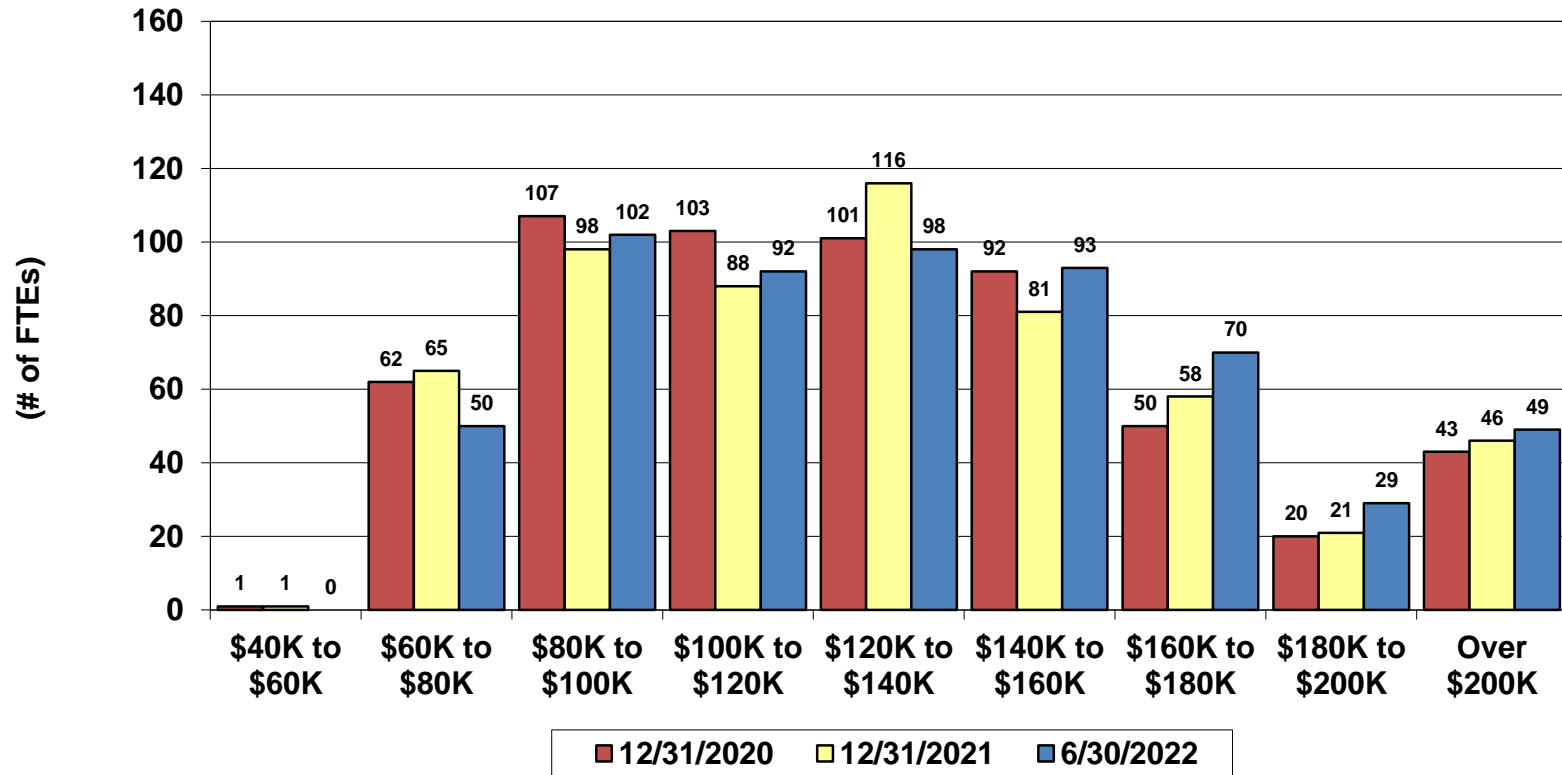
<u>Year</u>	<u>Authorized total FTE's</u>	<u>Budgeted FTEs</u>	<u>Actual FTEs (1)</u>	<u>Budgeted Vacancy %</u>	<u>Actual Average Vacancy</u>
2013	577.5	563.0	560.0	2.5%	4.5%
2014	585.5	568.0	567.5	3.0%	3.2%
2015	595.0	577.0	584.5	3.0%	3.2%
2016	603.5	585.5	572.5	3.0%	3.8%
2017	603.5	585.5	583.5	3.0%	4.1%
2018	608.0	587.5	584.5	3.4%	3.9%
2019	608.0	583.5	587.0	4.0%	3.5%
2020	608.0	583.5	577.5	4.0%	3.8%
2021	608.0	583.5	573.5	4.0%	4.1%
2022	622.5	593.0	581.5	4.0%	N/A
2023 <sup>(2)</sup>	654.5	614.5	N/A	5.0%	N/A

- (1) Actual FTEs is the number as of December 31<sup>st</sup> for each year with the exception of 2022 which represents the number as of June 30<sup>th</sup>
- (2) The 2023 budget includes the recruitment of 32 additional positions, with funding for 23 full-time equivalents with onboarding expected to occur throughout the year. All other existing positions have been budgeted with an estimated 5.0% vacancy.



# Operating Budget Details

## Staffing – Number of Employees by Salary Band



# Operating Budget Details

## Staffing - Salary and Benefits Cost Comparison

The following provides actual Salary and Benefit related costs compared to budget for the two most recent completed years, 2021 and 2020, by component (\$ in Thousands):

<u>Description</u>	2021			2020		
	Actual Expense	Approved Budget	Incr/(Dec)	Actual Expense	Approved Budget	Incr/(Dec)
Salaries and Wages - Base	\$ 73,821.6	\$ 74,707.6	\$ (886.0)	\$ 72,550.6	\$ 73,208.5	\$ (657.9)
Salaries and Wages - Overtime	3,387.8	2,670.0	717.8	2,431.0	2,452.9	(21.9)
Salaries and Wages - Incentive/Bonus	12,859.7	13,423.5	(563.8)	12,446.0	12,479.6	(33.6)
Employee Benefits - Pension <sup>(1)</sup>	10,878.2	10,643.8	234.4	11,224.4	10,909.6	314.8
Employee Benefits - Post-Ret Benefits	610.3	1,083.3	(473.0)	495.0	762.9	(267.9)
Employee Benefits - Health Insurance	6,712.0	6,697.2	14.8	6,221.8	6,388.2	(166.4)
Employee Benefits - Dental Insurance	502.1	494.0	8.1	432.6	469.2	(36.6)
Employee Benefits - 401(K) Match	2,915.9	3,004.0	(88.1)	2,779.9	3,010.6	(230.7)
Salary Burden - Payroll Taxes	6,156.0	6,184.9	(28.9)	5,607.3	5,704.4	(97.1)
Other Benefit/Burden <\$200K	554.8	576.6	(21.8)	477.6	533.2	(55.6)
<b>Total Salaries &amp; Burden Expense</b>	<b>\$ 118,398.4</b>	<b>\$ 119,484.8</b>	<b>\$ (1,086.4)</b>	<b>\$ 114,666.2</b>	<b>\$ 115,919.1</b>	<b>\$ (1,252.9)</b>

(1) Pension costs include funding for both the Defined Benefit and Defined Contribution plans.

## APPENDIX 3: TRENDS & METRICS DRIVING 2023 OBJECTIVES



# Trends & Metrics Driving 2023 Objectives

- Successful implementation of ISO New England's Strategy means making progress towards the Organizational Strategic Goals and Vision
- The upcoming work for 2023 has been prioritized because of trends & metrics that help outline a need and/or indicate progress towards the shared goals of the ISO and region
- The primary driver of work in 2023 is the need to support the clean-energy transition and changing resource mix, and the success of this work can be summarized by a set of metrics outlined in the coming slides





# Trends & Metrics Driving 2023 Objectives *(cont.)*

## *Responsive Market Designs*

- Across a range of metrics, the ISO-NE wholesale electricity markets are generally considered to be performing well and exhibiting competitive outcome. Quarterly and Annual Reports available at: [Internal Market Monitor \(iso-ne.com\)](https://www.iso-ne.com/markets-and-operations/internal-market-monitor)
- As the New England states move to reduce carbon emissions from the electric, heating, and transportation sectors, setting aggressive targets to increase renewable energy resources and reduce greenhouse gas emissions to nearly zero by 2050, there has been increased participation of wind, solar, battery and other non-emitting resources
- The ISO has set forth two objectives to establish market mechanisms and harness the power of competition in support of states' decarbonization efforts and to accommodate the changing resource mix:
  - “Promoting New Market Designs for Non-Emitting Resources” and
  - “Supporting Reliability Through Competitive Market Mechanisms”



# Trends & Metrics Driving 2023 Objectives *(cont.)*

## *Progress and Innovation*

- New England power system has been planned and operated in a highly reliable manner, with a high rate of compliance with NERC Reliability Standards. *See also* monthly COO NEPOOL reports and annual transmission outage coordination metrics, [Transmission Outage Scheduling \(iso-ne.com\)](https://www.iso-ne.com/transmission/outage-scheduling)
- Many of the non-emitting resources coming on-line, and scheduled to come on-line through the interconnection queue are weather-dependent and intermittent requiring ISO to develop improved capabilities and situational awareness.
  - Have an increased capability of weather forecasting
  - Sophisticated modeling and forecasting capabilities for a grid with a growing number of assets and more complex market features
    - Ramping analyses for behind-the-meter and intermittent resources, behavior of demand response resources, better load-forecasting, understanding the impacts of extreme weather, and preparing for difficult winter operations increase in priority with increased instances of extreme weather (*e.g.*, polar vortex) all help reach these objectives
- To address increasing complexity in forecasting and modeling, the ISO has set forth two objectives to address these factors:
  - “Implementing New Technologies to Address Increased Power System Complexity”
  - “Improving Weather Forecasting”



# Trends & Metrics Driving 2023 Objectives *(cont.)*

## ***Operational Excellence***

- “Maintaining IT Reliability”, “Supporting Increased Workload and Complexity”, and “Implementing FERC Orders and Stakeholder Requests” are company objectives to respond to the internal operational challenges that have arisen as a result the changing resource mix
- The ISO has prioritized cybersecurity initiatives and IT management of energy and market applications that are growing in complexity and number as the resource mix evolves
  - The increased volume of grid assets and complexity of forecasting and qualifying these new assets necessitates more robust internal processes
  - Cyber security needs to keep pace with the increasing threat capability of individuals, hacktivist groups, and nation-states; there has been an escalated threat due to the ongoing war in Ukraine
- Increasing penetration of DER has necessitated a broadening and deepening of capabilities to support the distributed nature of resources on the grid
- Evolving workforce expectations and increasing need for advanced technologies is driving initiatives for supporting a hybrid workforce (HR, Finance, Etc.), and Cloud Computing
- The clean energy transition requires a high level of responsiveness to state and stakeholder requests and FERC orders, which has increased the overall workload for the organization



# Trends & Metrics Driving 2023 Objectives *(cont.)*

## *Stakeholder Engagement*

- Supporting the clean energy transition necessitates more system planning work and coordination with states and stakeholders as the grid gains complexity; this drives the objectives of “Facilitating Input into Market Development and System Planning Work “Plan” & “Informing on Power System and Wholesale Markets Performance & Needs”
  - Compelling an increased level of work in the form of critical planning studies and stakeholder outreach
- Upgrading the region’s transmission system is necessary for the successful transition to clean energy resources and, in response to stakeholder requests, the ISO identified the explicit objective of “Administering Transmission Planning to Enable the clean energy transition”



# Trends & Metrics Driving 2023 Objectives *(cont.)*

## *Attract, Develop, and Retain Talent*

- In order to perform the company's Mission and advance the Vision, the ISO must respond to the challenging labor market, economic conditions, and social trends that impact the ISO workforce
- ISO seeks to “Maintain Competitiveness in Labor Market” and “Support the Professional Development of the ISO Workforce” through
  - salary benchmarking; taking into account broad economic trends like inflation; and tracking internal metrics on turnover, vacancies, and time-to-fill positions
- Retaining and developing employees also relies on supporting training, diversity, and hybrid work environment as well as championing the ISO's strategy to address the clean energy transition



## APPENDIX 4: METRICS FOR MEASURING ISO-NE PERFORMANCE AND PROGRESS



# Metrics for Measuring ISO-NE Progress and Performance

- System Reliability
  - Compliance requirements set in the North American Electric Reliability Corporation (“NERC”) Reliability Standards to measure system reliability performance and progress,
    - Inter-area Operating Standard that is based on a count of Interconnection Reliability Operating Limit (“IROL”) exceedances and time to clear above defined time thresholds
    - System regulating metrics, such as NERC balancing standards
    - Balancing Authority Area Control Error Limit
    - Ability to activate operating reserves to restore its ACE following large resource losses – Disturbance Control Standard
  - Transmission equipment outage coordination metrics – [Transmission Outage Scheduling \(iso-ne.com\)](https://www.iso-ne.com/transmission-outage-coordination). The Transmission Outage Coordination Working Group (“TOCWG”) annually reviews the trends, performance and challenges of the outage-coordination process, and proposes new goals for transmission outage-coordination metrics for the upcoming year to improve outage coordination and performance Imports & exports
  - Accuracy of ISO-NE’s estimation of congestion cost impacts
    - Long-term impacts on ISO-NE’s rescheduling of transmission-outage requests
    - The provision of information to the Participating Transmission Owners (“PTOs”) to facilitate their identification of opportunities to improve outage coordination, reduce congestion costs, or increase operational flexibility
    - A long-term planning metric to measure the successful submittal of outages into the long-term outage process that could have an impact on economic dispatch and system reliability
    - 90-day metric to measure the submittal of requests for outages that could have an impact more than 90 days before the planned outage date
    - A planned outage goal to improve coordination of all planned transmission outages
    - An outage cancellation goal to improve timely notifications to ISO-NE for cancelling a transmission equipment outage by a specified time
    - Metrics that tracked outage coordination performance over the past three years
  - Metrics on system reliability performance are reflected in the [monthly reports of ISO-NE’s Executive Vice President and Chief Operating Officer to the NEPOOL Participants Committee](#)
    - Accuracy in load forecasting for all hours in the day and the peak hour of the day
    - Load curve trends

# Metrics for Measuring ISO-NE Progress and Performance *(cont.)*

- The wholesale markets (capacity, energy, and ancillary)
  - ISO-NE's Internal Market Monitor ("IMM") publishes [quarterly and annual markets reports](#) that assess the state of competition in the wholesale electricity markets operated by ISO-NE
    - The IMM has regularly found the ISO-NE capacity, energy, and ancillary services markets performed well and exhibited competitive outcomes
  - ISO-NE's External Market Monitor ("EMM"), Potomac Economics, publishes an Annual Assessment of the Electricity Markets in New England
    - The EMM has regularly found that ISO-NE's wholesale electricity markets performed competitively; that market power concerns have diminished in Boston and New England; and the markets performed with little evidence of significant market power abuses or manipulation
- Operational efficiency and effectiveness
  - Measuring compliance with NERC standards
  - Cyber security audits and reporting
  - Forecasting and study preparation
  - Forward Capacity Market milestones
  - Outage Requests and Other Market Initiatives
  - Measures of budget accuracy
  - Information technology systems
  - Employee training requirements
  - The NEPOOL technical committee process
  - *The performance against these metrics is measured and reported to senior management on a monthly basis and is regularly published internally*



# Metrics for Measuring ISO-NE Progress and Performance *(cont.)*

- Cybersecurity
  - On a monthly basis, ISO-NE senior management reviews ISO-NE's cyber security performance against the [NIST "Framework Core"](#)
    - *Management's monthly review has indicated that ISO-NE's cyber security controls are functioning adequately and Appropriately*
  - The functioning of the cybersecurity program is regularly reviewed and audited
    - ISO-NE's Internal Audit Department actively reviews ISO-NE's processes and systems and maintains a particular focus on cyber security risks, including internal cyber security risks and third party risks
    - Audits regarding cyber security risks have indicated ISO-NE has an adequate cyber security posture and in some instances, maintains above-average cyber security controls
    - ISO-NE has procured various external cyber security reviews and audits that have confirmed ISO-NE has a solid cyber security foundation



# Metrics for Measuring ISO-NE Progress and Performance *(cont.)*

- Incorporating State Policy Goals
  - ISO-NE reflects state-specified metrics into its annual regional system planning process
  - State energy efficiency goals and program spending and photovoltaic resource development
  - Forecasting the electrification of transportation and heating
  - State policy goals as inputs to regional wind and solar forecasting, tracking, and dispatch procedures
  - Plans to incorporate new ancillary services that support greater amounts of variable and distributed resources, and other flexible products
- Transmission system interconnections and upgrades
  - [Quarterly performance metrics](#) for Interconnection Requests in compliance with FERC's Order No. 845
  - Processing time for each Interconnection Study
  - Statistics on Interconnection Requests withdrawn from the interconnection queue at different phases of the interconnection process
  - Metrics track the number of completed Interconnection Studies and the number of those studies for which ISO-NE exceeded the deadlines specified in the tariff for completion of the studies (without accounting for allowable Reasonable Efforts)
  - *Since ISO-NE began calculating and reporting on the Interconnection Study timeline metrics, it has observed continuous improvements for the Feasibility Study timeline*



## APPENDIX 5: CYBER SECURITY AND CIP COMPLIANCE HISTORY AND COSTS



# Cyber Security and CIP Compliance

- Background

- Information technology has become an indispensable tool for efficiently and reliably operating the increasingly complex regional power system, administering the billion-dollar markets where wholesale electricity is bought and sold in New England, and engaging and collaborating with our stakeholders
- The energy sector faces significant risk of attempted cyber intrusion. ISO-NE is committed to making sure power grid and market operations remain secure and will continue to build on our already extensive process controls, advanced detection and response systems, and redundancy in systems and control centers
- Our Security Operations Center monitors the ISO-NE environment and multiple new state-of-the-art cyber security capabilities were deployed in 2022, including best in class endpoint detection and response, network detection and response, software vulnerability detection, and cyber threat hunting
- A prominent corporate objective requires all ISO-NE employees to participate in annual cyber security training

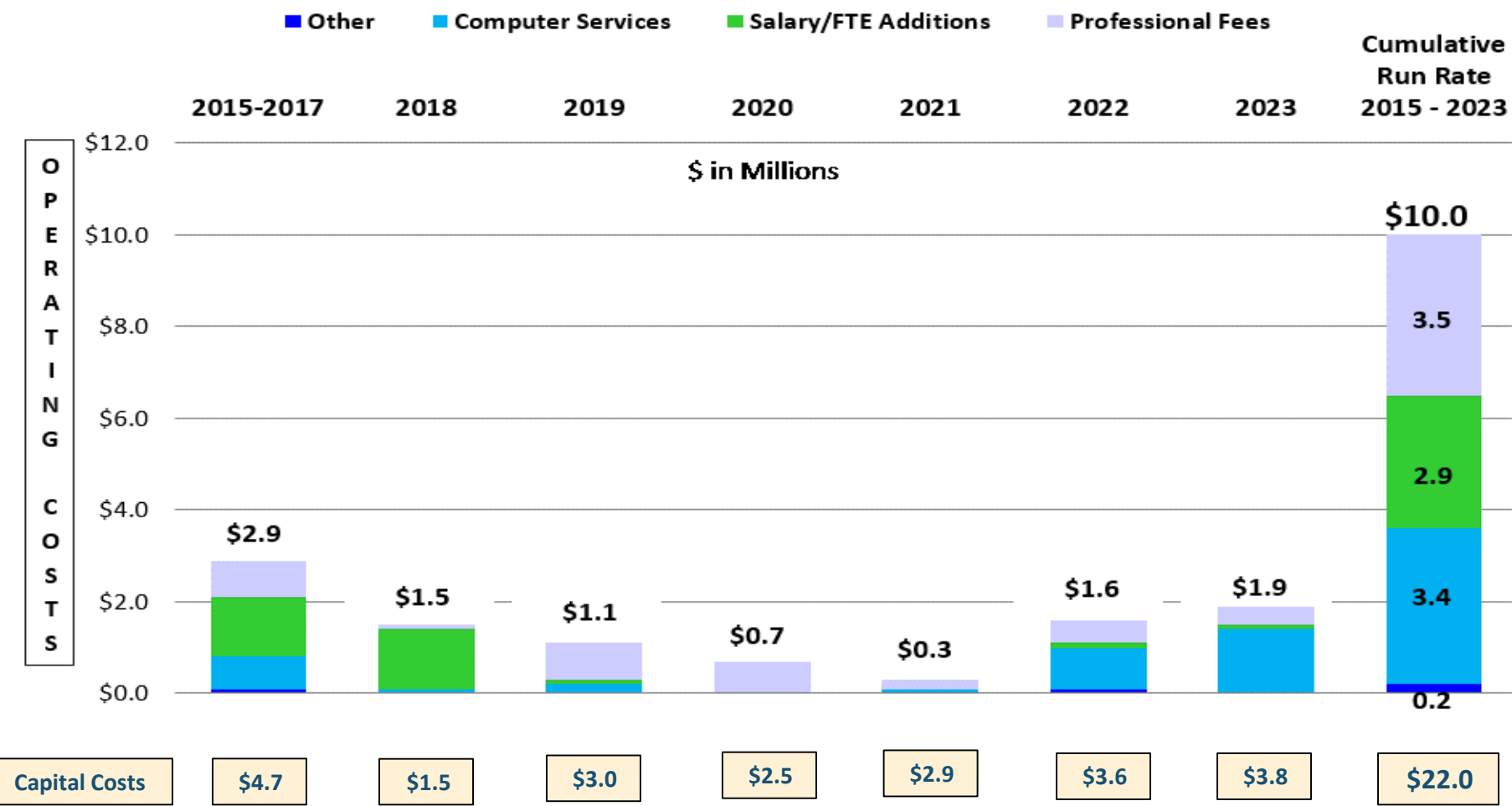


# Cyber Security and CIP Compliance *(cont.)*

- A CIP and Systems Compliance Operations Group provide day-to-day support of highly complex infrastructure and cybersecurity compliance functions required by North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) standards - Version 5
- ISO-NE has tightened security controls for cyber assets and visitors to ISO facilities in compliance with revised NERC CIP cybersecurity standards
- ISO-NE developed and implemented a third-party cyber security risk management program that includes compliance with the new CIP standard (CIP-013) related to Supply Chain Cyber Security Risk
- During 2021 ISO-NE replaced our old system for modeling and tracking physical and electronic access to systems and applications; the new Identity and Access Management system added cloud-service access tracking, privileged access management, automated implementation of accounts, and enhanced reporting to address NERC CIP compliance



# Cyber Security and CIP Compliance Annual Capital and Incremental Operating Costs 2015-2023



Above amounts represent cumulative annual costs for cyber security that have been added in the 2015 through 2023 budgets and are ongoing and included in the 2023 proposed budget. An additional \$1.2 million of incremental non-recurring cyber security costs were incurred from 2015 through 2022 that are not included above.

# 2023 Budget Components

## Cyber Security and CIP Compliance Annual Incremental Operating Costs 2015 - 2023 *(cont.)*

The following represents a breakdown of cumulative incremental resources and related costs for cyber security monitoring and compliance that are on-going and included in the 2023 budget and the original year it was added in the budget:

Budget Year Added	Description	Amount (\$ in millions)
2023	Funding includes Computer Services increases for cyber related products including those for security event management, ransomware data recovery, advanced phishing detection, enterprise monitoring software, cloud security software, endpoint security, and threat intelligence; and Cyber Security consulting for newly acquired security tools development and maintenance, continuous improvement efforts, and vendor risk management.	\$ 1.9
2022	Licensing and maintenance for new security information and event management software technology to provide reporting and forensics about security incidents and security alerts based on analytics; increase for 2.5 security engineer consultant FTEs to optimize use of cyber monitoring tools and create and manage custom dashboards for use by cyber security compliance teams and funding for cyber security training to counter growing cyber risks; An additional employee FTE to add to our 24x7 security center rotation to provide security center employees adequate training time with changes in reporting requirements combined with the occurrence of more sophisticated attacks; funding for specialized technical training needed to counter the growing cyber risks by nation states and organized cyber criminals, and increase for individuals attending cyber related conferences and workshops.	\$ 1.6

# 2023 Budget Components

## Cyber Security and CIP Compliance Annual Incremental Operating Costs 2015 - 2023 *(cont.)*

Budget Year Added	Description	Amount (\$ in millions)
2021	Funding for 1.5 FTE consulting resources to support Cyber Security team for work related to a 2021 CIP audit; funding for threat detection software; and increased maintenance for replacement security event and log monitoring software.	\$ 0.3
2020	To ensure compliance with NERC CIP standards and prepare defenses for the continuing and varying cybersecurity threats, the ISO has added 4.0 FTE consultants. These consultants will work with regional and national entities to share information; enhance incident response and reporting; enhance vendor monitoring, including compliance with CIP-013 for Supply Chain Management; ensure robust controls are in place to address and comply with CIP standards; and ensure up-to-date software patching of ISO-NE infrastructure assets.	\$ 0.7
2019	Funding for support and maintenance related to implementation of software to perform critical functions to model, request, approve, and implement access to information technology assets; maintenance for software provisioning, configuration management, and application deployment; the reallocation of 1 FTE from Program Management to IT Enterprise Application Support for systems maintenance related to identity and access management; for consulting support to supplement ISO staff to ensure NERC CIP compliance related to system administration, documentation, and data backup (\$0.3M or 2 FTEs); consulting support to continue the development of processes/procedures to ensure adequate controls for protecting cyber assets and complying with NERC CIP requirements (\$0.2M or 2 FTEs); and external vendor support to supplement ISO-NE Internal Audit Department with cyber security related audits and reviews (\$0.1M or 1 FTE).	\$ 1.1



# 2023 Budget Components

## Cyber Security and CIP Compliance Annual Incremental Operating Costs 2015 - 2023 *(cont.)*

Budget Year Added	Description	Amount (\$ in millions)
2018	Funding to continue Cyber Security Work Plan to ensure robust cyber security effectiveness and framework to combat continued threats and ensure compliance with NERC CIP standards and FERC supply chain standards. Increases include nine headcount positions within Information Technology's Cyber Security areas, including five additions and four positions being reallocated from other areas of the organization (\$1.4M or 9 FTEs); consulting for responding to cyber security incidents (\$0.05M or 0.5 FTE); and maintenance expense for new software to be procured for a system to track and grant employees' access to all ISO cyber assets and systems and physical access to the Company (\$0.05M).	\$ 1.5
2015 – 2017	Funding of resources for: Funding includes a Compliance Analyst in Network Support for ensuring compliance with IT Security policy for over 1000 assets, patch management, document maintenance, and preparation and documentation for internal and NERC audits; the addition of Distributed Denial of Service (DDoS) mitigation software that was added to protect systems and networks; funding for the addition of six cyber security positions to provide around the clock surveillance of systems and networks, for new or enhanced monitoring software, and for cyber security insurance; Desktop Segregation and Identity and Access Management funding; necessary enhancements to the asset and license management function; Linux and Windows Audit & Security administration; Electronic and Communications specialist for cyber review and compliance with NERC CIP standards; improvements to cyber security procedures (6.5 consultant FTEs); participation in regional and national security initiatives; reallocation of internal resources (2.5 FTEs) for cyber monitoring and NERC CIP standard compliance; and cyber prevention and detection software tools.	\$ 2.9
<b>Total</b>		<b>\$ 10.0</b>

## APPENDIX 6: 2023 BUDGET RESOURCES BY FUNCTIONAL AREA



# 2023 Budget Resources By Functional Area

ISO-NE provides a vast array of services to market participants and the New England region. Slides 123 through 147 include a description of the most significant services by area and provide the costs for Salaries and Burden, Professional Fees, and Computer Services for each area. Below is a reconciliation of the costs for each area and other support costs that make up the 2023 Operating Budget.

<u>Area/Item</u>	<u>Amount</u> <u>in millions</u>	<u>Area/Item</u>	<u>Amount</u> <u>in millions</u>
System Operations & Market Administration	30.4	Rents & Leases	0.9
System Planning	14.7	Network Operations	3.3
Market Development & Settlements	16.4	Computer Services	20.4
Information Services	45.0	Data Services & Office Expenses (1)	2.0
Program Management, Adv Tech Solutions, and NEPOOL Relations	12.8	Insurance Expense	3.1
Market Monitoring & Mitigation	6.1	Board of Directors Expense	1.5
Legal Services	7.6	Meeting & Related Expense	1.3
External Affairs and Corporate Communications	4.9	Education & Training	1.3
Compliance, Risk Management, Finance, and Internal Audit	11.6	Taxes, Permits, Licenses & Fees (1)	0.2
Human Resources	6.5	NPCC Dues	7.3
CEO and COO and Support Staff	2.9	Interest Expense	3.1
Building Services	3.9	CEO Emerging Work Allowance and Board Contingency	2.7
		Misc. Revenues, Interest Income, and Purchase Discounts	(0.7)
		<b>Total Operating Budget</b>	<b>\$ 209.2</b>

(1) Comprises the \$2.2 million total of *Other Expense* on Slide 71

# 2023 Budget Resources By Functional Area

The table below lists full-time equivalent (FTE) headcount by area. The *20XX Budgeted FTEs* represent estimated net headcount by area after the budgeted vacancy % is applied. Actual vacant positions will vary by area.

	2020	2020	Positions	2021	2021	Positions	2022	2022	Positions	2023	2023
	Total	Budgeted	Filled	Total	Budgeted	Filled	Total	Budgeted	Filled	Total	Budgeted
Area	FTEs	FTEs	12/31/2020	FTEs	FTEs	12/31/2021	FTEs	FTEs	6/30/2022	FTEs	FTEs
System Operations & Market Administration	135.0	129.5	126.0	135.0	129.5	122.0	135.0	127.5	129.0	137.0	128.5
System Planning	64.0	61.5	58.0	65.0	62.0	60.0	66.0	62.5	59.0	70.0	65.5
Market Development & Settlements	53.0	51.0	48.5	52.0	50.0	48.0	55.0	51.5	51.0	64.0	60.0
Information Services	178.5	171.5	174.5	178.5	171.0	172.0	184.0	175.5	173.0	193.0	181.0
Prog Mgt, Adv Tech Solutions, & NEPOOL Relations	51.5	49.5	50.5	52.5	50.5	50.5	54.5	52.0	48.5	58.5	55.0
Market Monitoring & Mitigation	22.0	21.0	21.0	21.0	20.0	21.0	21.0	20.0	19.0	21.0	19.5
Legal Services	15.0	14.5	16.0	16.0	15.5	16.0	18.0	17.5	18.0	18.0	17.0
Ext Affairs and Corp Comm	19.0	18.0	16.0	19.0	18.0	18.0	19.0	18.0	17.0	21.0	19.5
Compliance, Risk Mgt, Finance & Internal Audit	44.0	42.0	41.0	43.0	41.5	41.0	44.0	43.0	41.0	44.0	41.5
Human Resources	16.0	15.0	16.0	16.0	15.5	15.0	16.0	15.5	16.0	18.0	17.0
CEO and COO Support Staff	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Building Services	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
<b>Totals</b>	<b>608.0</b>	<b>583.5</b>	<b>577.5</b>	<b>608.0</b>	<b>583.5</b>	<b>573.5</b>	<b>622.5</b>	<b>593.0</b>	<b>581.5</b>	<b>654.5</b>	<b>614.5</b>

Budgeted Vacancy %'s are as follows: 2020 through 2022 – 4.0% for all years; 2023 is 5.0%.

# 2023 Budget Resources By Functional Area

The table below lists expense \$'s and full-time equivalent (FTE) amounts for outside consultants by area with Information Services broken out separately for Cyber Security and Compliance. Actual amounts are reflected for 2020 and 2021, current forecasted amounts for 2022, and proposed budget amounts for 2023.

Area	2020		2021		2022		2023	
\$ amounts in thousands	Expense	FTE Equiv	Expense	FTE Equiv	Expense	FTE Equiv	Expense	FTE Equiv
System Operations & Market Adm.	\$ 125.9	0.9	\$ 109.6	0.8	\$ 321.0	2.3	\$ 873.0	6.0
System Planning	2,236.8	11.3	2,382.7	12.0	2,064.6	10.1	2,120.6	9.9
Market Development & Settlements	1,774.5	7.6	2,961.2	12.6	1,919.5	7.9	2,247.5	8.9
Information Services	3,967.5	19.8	4,773.3	23.9	5,209.0	25.2	5,643.8	26.2
Info. Services - Cyber Security	2,063.2	10.3	2,321.1	11.6	2,669.7	12.9	3,450.3	16.0
Prog Mgt, Adv Tech Solutions, & NEPOOL Relations	507.4	2.1	686.3	2.9	1,643.3	6.7	1,972.0	7.7
Market Monitoring	1,582.2	8.5	1,608.2	8.6	1,786.4	9.3	1,830.0	9.1
Legal Services	2,568.1	9.9	1,115.2	4.3	1,780.5	6.6	2,234.5	8.0
Ext Affairs & Corp Comm	597.0	3.2	574.7	3.1	692.9	3.6	717.2	3.6
Compl., Risk Mgt, Finance & Int Audit	1,457.1	7.4	1,204.1	6.1	1,387.8	6.8	1,734.9	8.2
Human Resources	1,638.3	6.6	1,958.1	7.8	2,184.7	8.4	2,111.7	7.8
CEO & COO & Support	-	-	-	-	-	-	-	-
Building Services	-	-	-	-	-	-	-	-
<b>Total</b>	<b>\$ 18,518.0</b>	<b>87.6</b>	<b>\$ 19,694.5</b>	<b>93.8</b>	<b>\$ 21,659.5</b>	<b>99.7</b>	<b>\$ 24,935.4</b>	<b>111.5</b>

Note: Outside consulting in the capital budget is done per project and not by functional area. Consultant spending on all capital projects totaled \$12,134.7 or approximately 53 FTEs for 2020 and \$11,616.2 or 49 FTEs for 2021. Budgeted/forecasted amounts for 2022 or 2023 cannot be provided since several projects are in the Planning/Conceptual Design phase and their specific requirements have not been fully established.

# 2023 Budget Components By Functional Area

## System Operations & Market Administration – 137.0 FTEs

Salaries (fully burdened) \$ 29.5M

Professional Fees \$ 0.9M

System Operations is responsible for the 24/7/365 reliable and efficient operation of New England's Bulk Electric System (BES) and coordination with NERC Reliability Coordinators. System Operations provides near term engineering and outage coordination services, market transaction management as well as wind, solar and load forecasting services, and asset commitment services. The control room performs all Reliability Coordination (RC), Balancing (BA), and Transmission Operation (TOP) services under the NERC Standards for the New England Participants.

Market Administration is responsible for the day-to-day operations of the wholesale electricity markets in New England as well as the completion of asset registration, new generation coordination, and asset capability auditing. This includes developing market operating procedures to ensure compliance with FERC requirements. In addition, System Operations & Market Administration performs training, project integration, and analytical and auditing services for the corporation and its participants.

### Description

- Control Room Operations – Around the clock operation of the BES and ISO real-time markets. This includes the Reliability Coordination, Balancing Authority and Transmission Operator for the New England Region including services for 350 Generating Stations and 9000 miles of transmission assets. Develop the New England Operating Plan including forecasting load, as well as resource scheduling, contract management, dispatch services and transmission operations services for the New England Participants.



# 2023 Budget Components By Functional Area

## System Operations & Market Administration *(cont.)*

### Description

- *Design, Develop and Deliver Engineering Operating Guides and Studies* – Design, develop, and deliver engineering operating guides, studies, and services regarding voltage, stability, and thermal constraints for use by the Company and Local Control Centers to reliably and efficiently operate the BES.
- *Transmission & Generation Outage Coordination* - Includes both short-term and long-term outage scheduling and coordination services looking out 2 years.
- *Training* – System Operations provides new and ongoing training and simulation for system operators (+-160 hours per year, per operator), Designated Entities, and all Local Control Center Operators on an ongoing basis.
- *Procedure and Process Development and Maintenance* – All ISO Operating Procedures, Master Local Control Center Procedures, Control Room Operating Procedures, System Operating Procedures, Transmission Operating Guides, Operating Manuals, and the Open Access Same-Time Information System (OASIS). This activity includes the committee approval processes at the RC, MC, PC, and MLCC.
- *Integration* - Operations works with multiple ISO departments to integrate new market, software and technologies into the control room environment to meet all reliability and market functions.
- *Gas-Electric Coordination and Fuel Assessments* - Coordination and information sharing with gas pipelines, running capacity analysis scenarios across different seasons and in real-time based on information gathered from fuel surveys and pipelines, establishing operating plans to deal with different system conditions, and communicating with stakeholders and regulators on a regular basis regarding all fuel types.
- *NERC/NPCC/FERC Compliance* - Ensure operational compliance with new and existing federal, regional, and New England Standards. Review and update processes, procedures, and training to ensure compliance.
- *NERC/NPCC/NATF and ISO Committee* – System Operations represents the ISO on national, regional, and New England task forces.

# 2023 Budget Components By Functional Area

## System Operations & Market Administration *(cont.)*

### Description

- Reliability Coordination- System Operations implements all reliability coordinating agreements with Hydro Quebec, NYISO, and New Brunswick System Operator and staffs the coordinating committee(s) to maintain the agreements.
- Market Administration – Administers the Hourly and Monthly markets including Day-Ahead, Financial Transmission Rights (FTR), Forward Reserve and Forward Capacity annual and monthly reconfiguration markets; administering the Forward Capacity Auctions and supporting related FERC filings; and Real-Time price monitoring and finalization.
- Support and Compliance – Corporate project support including the integration and testing of market design changes into wholesale electricity markets; and development and maintenance of business procedures and operating manuals to ensure continuous compliance with the ISO New England Transmission, Markets, and Services Tariff.
- Asset Registration – Performs the tasks associated with the registration of assets as defined in the New England Markets, such as Generation, Loads, Tie Lines, Asset Related Demand, Real-Time Demand Response, Alternative Technology Regulation Resources, and On-Peak and Seasonal Peak Demand.
- Auditing – Performs the tasks associated with the various types of audits as defined in the New England Markets, such as Passive On-Peak and Seasonal Peak Demand Resources, Active Demand Response Assets, Generation CCA (Establish & Seasonal) and Dual Fuel Audits, Blackstart, Claim 10/30, Reactive Power. In addition perform the continuous review of meter data quality for Demand Response Assets and periodic review of Measurement and Verification documentation for On-Peak and Seasonal Peak Demand Resources.
- New Gen Coordination – Manages and performs the tasks associated with the new generation coordination, modeling changes to existing generators and pnode activations/deactivations processes.





# 2023 Budget Resources By Functional Area

## System Planning – 70.0 FTEs (7.5 FTEs are allocated to reimbursable studies)

Salaries (fully burdened)	\$ 12.6M
Professional Fees	\$ 2.1M

System Planning is responsible for development of the Regional System Plan, implementing the regional transmission planning process, administration of the generator interconnection process, developing findings for allocating transmission costs, interregional planning with our neighbors, and supporting New England's capacity markets. A more detailed breakdown of services is provided below.

### Description

- Transmission Planning Studies – Study and support for requests to add or change interconnection and transmission service and ensure compliance with federal and regional reliability criteria as it pertains to planning of the New England Power System. Support regional transmission owners in state siting proceedings for major transmission projects. Issue and support RFP's for competitive transmission per FERC Order 1000. Review and enhance generator interconnection policies and practices; continue to support state agencies on their RFPs for clean energy resources. Develop and execute long-range transmission planning studies in conjunction with the states (e.g., 2050 Study).
- Forward Capacity Market Administration – Includes establishing regional and zonal capacity requirements; reviewing show-of-interest applications; qualifying new resources (generation, demand resources, and imports); supporting administration of the Forward Capacity Auctions and supporting related FERC filings; performing all reliability analysis in review of retirement requests, de-list bids, reconfiguration auctions, and bilateral contracts.
- Eastern Interconnection Planning Collaborative (EIPC) – Model Roll-up and Evaluation (contingency analysis and/or transfer analysis); participation in all levels of the EIPC structure including Technical Team, Economic Analysis Working Group, Coordination Committee, and Executive Committee. Support EIPC in management of the Multi-regional Modeling Working Group process.
- Attachment K Economic Studies – Carry out the regional economic planning process as requested by stakeholders on an annual basis for up to three economic studies per year.

# 2023 Budget Resources By Functional Area

## System Planning *(cont.)*

### Description

- Energy-Efficiency (EE) Programs - Develop annual EE forecasts across the ten-year planning horizon and work with the EE Forecast Working Group to review and refine the EE forecast process for development of future forecasts.
- Solar PV Forecast - A similar process for state investments in distributed generation is now in place, and an annual forecast of solar PV across the ten-year planning horizon is developed annually.
- Electrification Forecast - Annually develop a forecast that predicts the increase in demand due to the adoption of air-source heat pumps (ASHPs) in the winter months and use of electric vehicles. This forecast is incorporated into the ten-year load forecast used for the FCM and transmission planning.
- Installed Capacity and Local Sourcing Requirements - Develop the regional Installed Capacity Requirement, and Zonal Local Sourcing Requirement and Maximum Capacity Limit values that establish the requirements within the Forward Capacity Market. These values are reviewed within the NEPOOL committee structure; advisory input is provided by the Reliability Committee and Participants Committee, and the values are subsequently filed with FERC.
- Regional System Plan - Initiate a biennial planning report that documents all regional and interregional planning activities, and identifies resources and transmission facilities needed to maintain the reliable operation of New England's bulk electric power system over a ten-year horizon. ISO administers much of the regional planning process through interaction with the Planning Advisory Committee. Continue regional dialogue on Grid Transformation.

# 2023 Budget Resources By Functional Area

## System Planning *(cont.)*

### Description

- Interregional Planning - Participate in joint planning activities with NYISO and PJM through the Inter-Area Planning Stakeholder Advisory Committee stakeholder process. This process results in development of a periodic report of activities in the Northeast Coordinated System Plan. This process has been updated in compliance with FERC Order 1000. Active participation in various NERC committees and standard drafting teams, and provide leadership to the EIPC.
- Compliance - Active involvement in NERC and NPCC Committees and related activities in support of compliance with established federal and regional reliability standards and interregional planning activities.
- Training - Support ISO-led training activities for the Forward Capacity Market, State Regulator, and Market Participant training on the overall System Planning Process, and State Regulator Training on Transmission Planning criteria and analysis.
- Other - Conduct ten-year forecasting of seasonal peak demand and energy requirements and support operations daily forecast models including the solar PV forecast; support regional dialogue on strategic planning issues through various types of system operations analysis; develop annual marginal emissions report; process and maintain Generating Availability Data System database; monitor and evaluate emerging state and federal environmental and renewable energy standards; support the North American Energy Standards Board standards development process; and support individual state planning activities.

# 2023 Budget Resources by Functional Area

## Market Development & Settlements - 64.0 FTEs (2.1 FTEs are allocated to the capital budget)

Salaries (fully burdened)	\$ 14.1M
Professional Fees	\$ 2.3M

Market Development & Settlements is responsible for the design and development of Wholesale Electricity Markets and Wholesale Markets Strategy, Demand Resources Strategy, administering and settling the markets, reporting market results, and developing market operating procedures to ensure compliance with FERC requirements.

### Description

- Market Assessment – Development of enhancements to the current markets to address existing problems or emerging issues identified by ISO staff, the market monitors, stakeholders, and FERC. Work with impacted parties, both internal and external to the company, to shape appropriate solutions that will be filed with FERC to implement approved design changes.
- Tariff Updates and Compliance – Analysis of necessary updates to the ISO New England Transmission, Markets, and Services Tariff.
- Demand Response – Development and maintenance of Demand Resource programs that allow customers to respond to reliability or high price events when called upon.
- Market Analysis and Settlements – Settlement and clearing of electricity market activity including Day-Ahead and Real-Time markets, Virtual and Bilateral transactions, FTR and Congestion Revenue accounting, Net Commitment Period Compensation Calculation and Payments, Ancillary Services, Forward Capacity Market, and charges and payments due under the Open Access Transmission Tariff.

\*Note: Direct Market Development & Settlement costs for Internal Capital Development are included in the Capital Budget. The cost noted above only includes operating costs.



# 2023 Budget Components By Functional Area

## Market Development & Settlements *(cont.)*

### Description

- Market Reports – Weekly and monthly reports of market activities and results including load cost reports; and providing support for ad hoc requests of market activity and data from market participants, FERC, and other government officials.
- Market Operations Support and Compliance – Corporate project support including the integration and testing of market design changes into wholesale electricity markets; and development and maintenance of business procedures and operating manuals to ensure continuous compliance with the ISO New England Transmission, Markets, and Services Tariff.



# 2023 Budget Resources By Functional Area

## Information Services – 193.0 FTEs (26.5 FTEs are allocated to the capital budget)

Salaries (fully burdened)*	\$ 35.9M
Professional Fees	\$ 9.1M

The ISO’s Information Services group is responsible for the information and data integrity of the organization as well as all information systems functions, including data centers, technical service centers, cyber security, production scheduling, software development, and systems operations. Total IT license and maintenance fees support 1,925 product versions, 1,910 servers, 985 desktop systems, 715 network devices, and 675 appliances.

Description	Amount (\$ in Millions)
-------------	-------------------------

### Information Technology (IT) Software Development and Power System Support (68.0 FTEs)

Staff perform the following functions:

- Application Architectural Design, Technology Evaluation, and Selection.
- Corporate, Markets and Energy Management System Support including:
  - Power System Network Modeling and Maintenance.
    - Includes NX9 (Transmission) and NX12 (Generation) Systems.
  - Energy Management Systems Maintenance and Support.
    - Includes Inter-Control Center Communications Protocol (ICCP).

See  
following  
slide

\*Note: Direct Information Services costs for Internal Capital Development are included in the Capital Budget. The Information Services costs noted on Slides 134 through 137 only include operating costs.



# 2023 Budget Resources By Functional Area

## Information Services *(cont.)*

Description	Amount (\$ in Millions)
-------------	----------------------------

### Information Technology (IT) Software Development and Power System Support, cont.

- Energy Market Applications Maintenance and Support.
  - Includes Day-Ahead and Real-Time Energy Markets, Financial Transmission Rights (FTRs), the Testing and Training Simulator Environment (TTSE), the Dispatcher Training Simulator (DTS), and ISO specific specialized systems (FCM Tracking System, Wind Integration, and Synchrophasor Monitoring).

<b>Total IT Software Development and Power System Support:</b>	<b>\$ 13.0M</b>
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# 2023 Budget Resources By Functional Area

## Information Services *(cont.)*

Description	Amount (\$ in Millions)
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### Information Technology (IT) Infrastructure and Enterprise Support Services (95.0 FTEs)

Staff and Consultants perform the following functions:

- Desktop, Host Computer hardware/software, and networking hardware support.
- Data Communications including Main Control Center, Backup Control Center, and communications with Local Control Centers and other external touch points.
- System Administration for Unix and Windows.
- IT Asset and License Management.
- Data Architecture, Database Administration, and Business Intelligence.
- Web Application Support.
- Software and Maintenance support for Market Administration, Market Monitoring, Settlements, Transmission Planning, Finance/Payroll, and Human Resources.

<b>Total IT Infrastructure and Enterprise Support Services:</b>	<b>\$ 22.1M</b>
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# 2023 Budget Resources By Functional Area

## Information Services *(cont.)*

Description	Amount (\$ in Millions)
<b>Information Technology (IT) Management, Cyber Security, and Software Testing (30.0 FTEs)</b>	
Staffing and Consultants perform the following functions:	
<ul style="list-style-type: none"> <li>• Direct Management of Software Development &amp; Power System Support, Infrastructure &amp; Enterprise Support, Cyber Security, and Software Testing (including change management).</li> <li>• Cyber Security, including: <ul style="list-style-type: none"> <li>– Policy and Procedure Development.</li> <li>– Controls Assessment.</li> <li>– Security Compliance &amp; Reporting.</li> <li>– Virus/Malware Response &amp; Reporting.</li> <li>– Intrusion Monitoring &amp; Response.</li> <li>– Security Software Tools Maintenance &amp; Support.</li> <li>– Critical Infrastructure Protection Compliance &amp; Monitoring.</li> <li>– Security Metrics Collection &amp; Reporting.</li> <li>– Change Control Testing &amp; Reporting.</li> <li>– Security Awareness &amp; Training, Software Change Management, and Quality Assurance Control.</li> </ul> </li> <li>• Software Testing Control.</li> </ul>	
<b>Total IT Management, Cyber Security, and Software Testing:</b>	<b>\$ 9.9M</b>
<b>Total Information Services Staffing, Consulting, and Computer Services:</b>	<b>\$45.0M</b>



# 2023 Budget Resources By Functional Area

## Program Management, Advanced Technology Solutions, and Participant Relations & Services – 58.5 FTEs (12.0 FTEs are allocated to the capital budget)

Salaries (fully burdened)\* \$ 10.8M

Professional Fees \$ 2.0M

The Program Management Office (PMO) is responsible for oversight and management of the Capital Budget. PMO and Advanced Technology Solutions are responsible for implementing program and system changes for the broad range of services and related applications that run the New England bulk electric power system, the wholesale electricity markets, and other supporting ISO New England Systems. The Participant Relations & Services (PRS) Department is responsible for outreach and engagement with industry stakeholders on proposed changes to and implementation of ISO's planning, operational, and market functions.

### Description

- Evaluation of New Projects – Review and determine need and possible solutions for proposed emerging work requirements to be presented to senior management for approval.
- Project Management – Develop formal processes and procedures for the evaluation of capital project work including the value of proposed projects and determination of impacted business users; develop project scope and necessary resources; development and ongoing analysis of project budget, timeline, progression, risks and opportunities; and ensure proper project testing and business user acceptance.

\*Note: Direct Project Management costs for Internal Capital Development are included in the Capital Budget. The cost noted above only include operating costs.



# 2023 Budget Resources By Functional Area

## Program Management, Advanced Technology Solutions, and NEPOOL Relations *(cont.)*

### Description

- *Business Analysis and Product Management* – Work with all business units to assess and review issues and opportunities for improvement, and manage implementation issues identified under the Corrective Action/ Preventative Action program to minimize disruption to business and system process.
- *Advanced Technology Solutions* – Develop both short-term and long-term solutions for market and system technology improvements, market clearing models to implement various market designs and improve market efficiency, algorithms and tools to improve system reliability, auction clearing software for forward capacity market, and simulation software.
- *PRS: NEPOOL Relations* - Administers the NEPOOL Technical Committees and related working groups, and leads the ISO's engagement with market participants and other stakeholders to collaborate on projects.
- *PRS: Participant Support & Solutions* – Manages and supports user experiences in the ISO markets, transmission planning processes, and other business functions to resolve stakeholder issues.
- *PRS: Participant Training Services* – Develops and delivers the ISO's external training programs for industry stakeholders to participate in ISO systems and do business within ISO New England's footprint.

# 2023 Budget Resources By Functional Area

## Market Monitoring & Mitigation – 21.0 FTEs

Salaries (fully burdened) \$ 4.3M

Professional Fees \$ 1.8M

Market Monitoring is a FERC-mandated function of each Regional Transmission Organization (RTO). Per FERC, RTO Market Monitors must report directly to the Board of Directors to assure independence from management.

### Description

The ISO's Internal Market Monitoring area is responsible for:

- Analysis of and report to stakeholders, FERC, and ISO Management on market performance.
- Administer market power mitigation and other mitigation provisions in the Tariff.
- Monitor for and identify instances of rule violations (including uncompetitive participant behavior), investigate and refer potential violations to FERC Office of Enforcement.
- Identify issues with current and proposed market design and provide recommendations for improvement.

Additionally, ISO-NE retains an External Market Monitor that also reports to the Board of Directors on its review of market outcomes and market design changes. External Market Monitor funding is included in the Legal and Professional Fees budget; however for purposes of Functional Area presentation it is included in the Market Monitoring & Mitigation amount above.



# 2023 Budget Resources By Functional Area

## Legal Services - 18.0 FTEs

Salaries (fully burdened) \$ 5.4M

Legal Fees \$ 2.2M

The ISO New England Legal Services budget includes funding for staff attorneys, a paralegal, support staff, and external counsel to augment ISO Legal staff or for use where a particular expertise is needed.

### Description

Both internal and external counsel cover work for:

- Development of market rule, Tariff and operating/planning procedure changes; support for the stakeholder process; and related regulatory and appellate litigation.
- Support for the market monitoring department.
- Tracking federal and state legal developments.
- Negotiating interconnection agreements and supporting the qualification of new assets.
- Refining the financial assurance and billing policies.
- Filing and supporting the administrative and capital funding tariffs.
- Advising on finance, tax, intellectual property, and contract matters.
- Handling labor, employment, and ERISA matters.
- Support for NERC and NPCC rulemakings and other compliance support.
- Responsible for corporate governance, including support for the Board of Directors and standing committees.

# 2023 Budget Components By Functional Area

## External Affairs and Corporate Communications - 21.0 FTEs

Salaries (fully burdened)	\$ 4.2M
Professional Fees	\$ 0.7M

ISO New England's External Affairs and Corporate Communications are responsible for outreach to and communications with public officials, consumer representatives, the media, ISO employees, and the general public.

### Description

The Department:

- Responds to media inquiries and communicates regional electric grid and wholesale markets information to media outlets.
- Develops and coordinates ISO publications (e.g., Regional Electricity Outlook, Regional System Plan) and conference presentations.
- Manages Web Design, Web Content, ISO Newswire, the ISO App and Twitter account.
- Informs public officials on the performance and needs of the power system and wholesale markets.
- Manages emergency and crisis communications to public officials, stakeholders, and the media, including the status of the power system during abnormal and emergency situations.
- Facilitates state input into the transmission system and market design processes.
- Monitors state and federal policy initiatives to inform the market development and system planning process.
- Manages the Consumer Liaison Group, including meetings, presentations and the annual report.
- Manages internal employee communications, including the company's intranet.
- Assists other departments with communications materials (e.g., Human Resources recruitment marketing).



# 2023 Budget Resources By Functional Area

**Compliance, Risk Management, Finance/Market and Credit Risk, and Internal Audit - 44.0 FTEs**

Salaries (fully burdened) \$ 9.9M

Professional Fees \$ 1.7M

Reliability & Operations Compliance, Enterprise Risk Management, Finance, and Internal Audit provide services in support of the ISO's mission as described below.

## Description

- Compliance – Works to ensure compliance with FERC approved tariffs; NERC and NPCC compliance, certifications, and audits; and coordination with and support of national and regional compliance reliability standard-setting authorities and related committees.
- Enterprise Risk Management – Programs and processes include corporate-level risk identification, assessment, monitoring and reporting; administration of Corrective Action/Preventive Action (“CAPA”) Program and Operation Excellence activities; Business Process Documentation Standards and Change Management; Records Management and Retention policy; Business Continuity planning; Corporate Strategy; tariff change coordination; and information governance.
- Finance/Market and Credit Risk – Responsible for payroll administration, procurement, accounts payable, budgeting and forecasting, accounting, financial statement and financial filings, corporate tax reporting, treasury, cash management, capital adequacy, settlement billing and cash clearing, development and administration of the Financial Assurance Policy; financial reporting; and Insurance Program Management.
- Internal Audit - Conducts and coordinates audits and reviews across the organization, at key vendors, and at LCC's to ensure compliance with company policy and a sound system of internal controls, maintain certifications for market system changes, and meet assurance requirements for external parties. Audits conducted by internal staff include internal controls and compliance audits in the areas of operations, IT and cyber security, system development projects, and adherence to company finance and human resources administrative policies. Coordination activities for external audits and reviews include the System and Organization Controls (SOC 1) engagement, the Financial Statements Audit, the Benefits Plans Audits, and market system software certifications.

# 2023 Budget Resources By Functional Area

## Human Resources - 18.0 FTEs

Salaries (fully burdened) \$ 4.4M

Professional Fees \$ 2.1M

The ISO's Human Resource group is tasked with attracting, retaining, and developing the company's uniquely qualified and highly skilled workforce.

### Description

Responsibilities include:

- Recruiting candidates for full-time, part-time, and temporary positions. The department recruits at all levels from summer interns to executives. Recruitment costs include expenses for the company's formal university relations, summer intern, and co-op programs. They also include costs for external recruiter fees, background checks (initial and required updates), drug screening, visa processing, and testing of potential new hires (for certain positions).
- Determining an appropriate compensation structure for the organization and appropriate compensation levels for all new and existing hires. HR participates in ongoing benchmarking surveys and works with external compensation consultants to benchmark remuneration for executives and the Board of Directors. HR annually benchmarks and administers pools for merit and promotional increases, as well as the company's incentive programs.
- Establishing and administering competitive benefit programs. This includes the selection, design, and administration of all health and welfare benefits (e.g., medical, life insurance, etc.) including work with providers and brokers, and the design and administration of the company's 401k and pension plans. The department benchmarks all benefits on an ongoing basis. Relocation benefits for new hires (for certain positions) are administered from HR and associated costs are contained in the HR budget.



# 2023 Budget Resources By Functional Area

## Human Resources *(cont.)*

### Description

- Designing, benchmarking, and administering general Human Resource policies and programs, including those for annual performance reviews and development plans, employee recognition, and employee issue resolution. The department supports the company's union employees and negotiates the union contract every three years. The HR department also manages all succession processes and programs to ensure the work environment is diverse and inclusive.
- Supporting organizational effectiveness through the alignment of strategy, goals, scorecards, performance and rewards as well as consultation on enhancing employee engagement.
- Designing, developing, and delivering both industry-specific, leadership, and general training that is provided both as "live" (virtual and in person) classroom and self-paced web-based courses. The department manages the company's tuition reimbursement program, and all employee development and organizational design efforts.
- Designing and facilitating programs to embrace and celebrate the diversity of our ISO community and to educate employees on the value of maintaining a workplace that is diverse, equitable, and inclusive. The department oversees the ISO New England Council for Diversity & Inclusion, Employee Resource Groups, and diversity recruitment efforts.
- Managing the ISO Reception function, including registration of numerous stakeholders and visitors to our secure facility.

### Description

#### **CEO, COO, and Support Staff – 5.0 FTE's**

Salaries (Fully Burdened)

\$ 2.9M



# 2023 Budget Resources By Functional Area

## Building Services

**\$3.9M**

Building Services includes funding for physical security including compliance with relevant NERC standards and building services for both the Main Control Center and Backup Control Center including: utilities, maintenance, upkeep, cleaning, landscaping, snow, and trash removal.

Description	Amount (\$ in Millions)
• Salary and benefits – 5.0 FTEs.	\$ 0.8
• Utilities.	1.4
• Repairs and Maintenance, Cleaning Services, Snow Removal, Landscaping, and Trash Removal.	0.9
• Security.	0.8
<b>Total Building Services</b>	<b>\$ 3.9</b>



# 2023 Budget Resources By Functional Area

## Meetings & Related Expenses and Education & Training \$2.6M

Includes travel, meals, lodging, incidentals, and course/seminar fees (where applicable) for stakeholder meeting costs, travel for regulatory meetings (FERC/NERC/NPCC), state agency meetings, technical and general training costs, attendance at industry and other conferences, education reimbursement, and offsite ISO-sponsored market training for participants.

Description	Amount (\$ in Millions)
• <u>Corporate Training</u> – Enterprise wide training programs including supervisory leadership development, professional development, Power System Engineering Program, and business skills.	\$ 0.4
• <u>Technical and NERC Certification Training</u> – NERC certification training and other job required training for the development, administration, or maintenance of IT Systems.	0.5
• <u>Industry and Other Conference Attendance</u> – Attendance to speak, or provide industry expertise, attend joint ISO/RTO conferences, and attend other miscellaneous conferences.	0.1
• <u>Regulatory</u> – Travel and related expense for regulatory meetings and support including FERC, NERC, NPCC, and state agencies.	0.3
• <u>Stakeholder Meetings</u> – Travel and related expense for ISO employees to attend stakeholder meetings throughout the region.	0.3
• <u>Market Training</u> - Costs for offsite ISO sponsored market participant training classes. Includes facility and equipment rental and meals for participants. These costs are fully reimbursed by participant attendance fees (fees are included in Interest Income and Other Revenue line).	0.1
• <u>Education Reimbursement</u> – Reimbursement for employment related degree programs approved by the Human Resources department and other job-related certification exams approved by the employees' manager.	0.2
• <u>Other</u> – Includes miscellaneous travel reimbursement and employee service recognition.	0.7
<b>Total Meetings &amp; Related Expenses and Education &amp; Training</b>	<b>\$2.6M</b>

## APPENDIX 7: INTEREST RATE RISK

# Interest Rate Risk

- 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 post-retirement benefit plans
  - ISO-NE earns interest on the settlement account float
    - Historically, the average float in the settlement account has been consistently higher than the outstanding principal of the tax-exempt debt and therefore has been an effective hedge against interest expense rates. Since 2021, the settlement float continues to increase primarily due to higher clearing prices in the energy markets along with higher load and as such continues to exceed the outstanding debt
    - In November 2013, ISO-NE entered into an interest rate cap to mitigate the risks associated with tax-exempt debt and specifically related to the expected “uncovered hedge” (due to reduced settlement float). The interest-rate cap is a 10-year cap, which amortizes as the tax-exempt debt principal is repaid
    - Interest income rates are also dependent on market conditions with rate fluctuations impacting the effectiveness of the settlement float hedge. In 2020, there were a couple of weekly tax-exempt debt rates that were very close to the maximum rate cap of 6% at the onset of the pandemic, however during the majority of 2020-2021, the interest income rates exceeded floating debt rates. In recent months we have seen multiple rate increases with the rise in tax exempt debt outpacing interest income rates. As of June 30, 2022, the tax-exempt debt rate is .9% and settlement float rate is .6%
      - These costs could exceed what’s predicted on Slide 71
  - ISO-NE pays a floating interest rate on its tax-exempt bonds
  - ISO-NE utilizes interest rate assumptions in establishing liabilities and related costs for its postretirement benefit plans (See Slide 98)



# APPENDIX 8: CAPITAL EXPENDITURES BUDGET DETAIL



# Capital Budget – 2023 Capital Projects Schedule

(\$000's)

## Capital Projects - Approved Charters

- nGEM Market Clearing Engine Implementation
- nGEM Software Development Part II
- Forward Capacity Tracking Syst Infra Conv Part III
- Forecast Enhancements
- Physical Security Improvement Project
- PI Historian for Short-Term PMU Data Repository
- E-mail List Server Technology Refresh
- Replace Messaging Software

## Sub Total Projects with Approved Charters

## Planning/Conceptual Design [2]

- Day-Ahead Ancillary Service Project
- nGEM Real-Time Market Clearing Engine Implementation
- FERC Order 2222
- Enterprise Resource Planning System Replacement
- CIP Electronic Security Perimeter Redesign Phase II
- Microsoft 365 Service Adoption
- nGEM Software Development Part III
- Elimination of Minimum Offer Price Rule
- Privileged Account Management Security Enhancements 2023
- Web to Cloud Migration Phase II
- Inventoried Energy Program
- Solar Do-Not-Exceed Dispatch Phase II
- Long-term FTRs
- Web to Cloud Migration Phase I
- Windows Server 2019R2 Deployment
- 2023 Issue Resolution Project
- Identity and Access Management Phase III
- IT Asset Workflow Integration and Updates
- Forward Capacity Market Order 2222
- MIS Reporting by Sub Accounts
- Control Room Voice Recorder Upgrade
- Other Emerging Work
- Sub-Total Conceptual Design
- Non-Project Capital Expenditures
- Capitalized Interest and Loan Fees

## Total Capital Projects (Including Capitalized Interest)

Project-To-Date	Current Year (2022) Cost to Complete [1]	2023 Cost to Complete	Future Cost to Complete	Total Project Costs	Estimated Complete Date
\$10,231.5	\$ 2,314.3	\$ 1,254.7	\$ -	\$ 13,800.5	06/23
2,925.3	1,229.9	650.0	-	4,805.2	06/23
1,691.9	774.9	685.0	-	3,151.8	04/23
555.7	709.4	615.0	-	1,880.1	07/23
102.4	664.8	455.0	-	1,222.2	12/23
189.1	172.2	525.0	-	886.3	09/23
378.6	260.6	90.0	-	729.2	01/23
193.1	334.3	61.1	-	588.5	03/23
16,267.6	6,460.4	4,335.8	-	27,063.8	
-	150.0	3,500.0	8,000.0	11,650.0	10/24
191.3	303.7	3,000.0	4,500.0	7,995.0	06/25
-	-	400.0	7,000.0	7,400.0	12/26
-	-	135.0	3,000.0	3,135.0	09/26
0.9	299.1	2,000.0	-	2,300.0	01/24
-	-	500.0	1,000.0	1,500.0	06/24
-	-	1,500.0	-	1,500.0	12/23
-	-	650.0	800.0	1,450.0	12/24
-	-	1,300.0	-	1,300.0	09/23
-	-	1,200.0	400.0	1,600.0	12/24
-	-	1,000.0	-	1,000.0	09/23
-	-	1,000.0	-	1,000.0	12/23
907.5	-	-	-	907.5	[3] TBD
-	25.0	800.0	-	825.0	11/23
91.8	165.2	500.0	-	757.0	10/23
-	-	750.0	-	750.0	12/23
-	100.0	500.0	-	600.0	12/23
53.8	-	500.0	-	553.8	01/24
78.5	36.5	400.0	-	515.0	03/23
40.7	0.3	200.0	-	241.0	03/23
9.7	40.3	100.0	-	150.0	03/23
-	-	3,829.2	-	3,829.2	
1,374.2	1,120.1	23,764.2	24,700.0	50,958.5	
-	-	4,800.0	-	4,800.0	
-	-	600.0	-	600.0	
\$17,641.8	\$ 7,580.5	\$ 33,500.0	\$24,700.0	\$ 83,422.3	

[1] The amounts under the "Current Year (2022) Cost to Complete" list only includes those projects with budgeted costs in 2023 and beyond.

[2] The 2023 Budget for Projects in Planning and Conceptual Design is not final. Once the project scope and timeline have been determined the budget will be finalized.

[3] The Long-term FTRs project has been indefinitely deferred pending the development of appropriate credit requirements.

# Capital Budget

## 2023 Expenditures/Major Projects in Development

### nGEM Market Clearing Engine Implementation \$1.3M

ISO-NE's Market Management System (MMS) is based on GE Grid Solution's suite of market applications known as the Next Generation Markets (nGEM) program. GE is redeveloping the Market Clearing Engine (MCE), a central component of the MMS.

This new suite of applications will provide a modern, open, and supported architecture for ISO-NE's market clearing engines. ISO-NE customizations must be added to the GE MCE product to meet ISO-NE business requirements in the multi-hour (Day-Ahead) MCE.

The targeted completion date for this project is June 2023.





# Capital Budget

## 2023 Expenditures/Major Projects in Development

### nGEM Software Development Part II

**\$0.7M**

ISO-NE is co-funding the core product development for GE Grid Solutions' nGEM software development. The nGEM Software Development project will enhance data transfer technology, Day-Ahead and Real-Time market clearing engines, and bidding micro services. It will also include various software upgrades. Part I delivery, completed in October 2020, included enhanced data transfer technology and the elimination of the Habitat platform. Part II delivery will include Day-Ahead market clearing engine enhancements, bidding micro services, and Real-Time market clearing engine replacements.

The targeted completion date for this project is June 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Development

### **Forward Capacity Tracking System Infrastructure Conversion Part III      \$0.7M**

The Forward Capacity Tracking System (FCTS) Infrastructure Conversion project is a multi-part project focused on the conversion of the FCTS application (ISO-NE's online system for managing information related to resources participating in the Forward Capacity Market) to a new framework.

Parts I and II of the FCTS Infrastructure Conversion project (completed in May 2020 and March 2021) converted multiple applications including the Coordinated Transaction Scheduling Management, Capacity Supply Offer Bilateral Contract, Capacity Supply Offer Bilateral Management, FCTS CORE application library, Forward Capacity Auction, Substitution Auction, and Commitment Period Management applications. Part III of this project will complete the FCTS conversion efforts and include FCTS external facing applications to support customer submission of information necessary for resources to qualify for participation in the Forward Capacity Auction.

The targeted completion date for this project is April 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Development

### Forecast Enhancements

**\$0.6M**

ISO-NE provides regional weather forecasts for eight cities in the New England region. Currently, the weather concepts (e.g., temperature, dew point, etc.) for each of these cities are weighted, using static weighting factors, to derive a representative regional weather forecast with a single value for each variable that represents the region. The Forecast Enhancements project will expand the number of weather forecasts to twenty-three cities and add two additional weather concepts to improve the forecast accuracy of the zonal and regional load forecast models. The project will also implement a behind-the-meter photovoltaic (BTM PV) forecasting blending process, which will eliminate reliance on a single vendor forecast for BTM PV forecasting data to increase accuracy.

The targeted completion date for this project is July 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Development

### Physical Security Improvement Project

**\$0.5M**

The current camera security platforms at both the Main Control Center and Backup Control Center are obsolete, it is difficult to obtain replacement parts, and the systems are costly to maintain.

Under the Physical Security Improvement Project, ISO-NE will partner with a technology company to deliver a next generation physical security system, providing enhanced video capabilities, cross-line analytics for real-time alerts of area breach and movement, and additional software monitoring and analytics.

The targeted completion date for this project is December 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Development

### **PI Historian for Short-Term Phasor Measurement Units Data Repository      \$0.5M**

ISO-NE's infrastructure supporting synchrophasor technology collects Phasor Measurement Unit (PMU) data from both Transmission Owners and external Reliability Coordinators within a wide coverage area of the New England region. The Phasor Point system is the main repository for PMU data. Several applications at ISO-NE rely on short-term PMU data, currently housed in Phasor Point's three-year repository. The stability and performance of Phasor Point quickly degrades when subject to frequent, real-time, large-scale data retrieval.

This project will implement a solution that will create a short-term, scalable historian using the PI Historian to store temporary data for real-time, large-scale retrieval, while leaving the Phasor Point historian intact for offline, infrequent queries.

The targeted completion date for this project is September 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Development

### E-mail List Server Technology Refresh

**\$0.1M**

ISO-NE relies on mass email technology to communicate with external participants, internal groups, and various other interested parties. These technologies include email list services, public distribution lists and private contact groups, and ISO-NE developed automated emails sent from the Customer Asset Management System and other systems. The current systems are all part of aging email distribution tools.

The E-Mail List Server Technology Refresh project will refresh the email list server technology and implement core improvements to automate updates to contacts across platforms. Newer technology enables increased end-user integration that facilitates self-management by empowering the recipients to manage subscribing, unsubscribing, and searching archives with current browser offerings. In addition, increased security options will be realized by allowing mass mailing originating from the iso-ne.com domain to remain compliant with internet standards for anti-spam scanning.

The targeted completion date for this project is January 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Development

### Replace Messaging Software

**\$0.1M**

ISO-NE's current messaging software, used to pass Desired Dispatch Points from the Markets Database to the Communications Front End and to resources in the field, will be replaced with new messaging software.

In order to reduce cyber security vulnerabilities and maintain Electronic Dispatch capability, this messaging software must be replaced. This project will replace the existing software with messaging software currently in use on other ISO-NE systems. The replacement choice was based on a vendor assessment, desired functionality, and ISO-NE's experience with the product. The project scope includes the purchase of new servers for multiple environments, design and configuration for the infrastructure and software architecture of the new servers on all environments, and required testing.

The targeted completion date for this project is March 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Day-Ahead Ancillary Services Improvements

**\$3.5M**

The Day-Ahead Ancillary Services Improvements project seeks to develop a market design for procuring and transparently pricing the ancillary service capabilities needed for a reliable, next-day operating plan with an evolving generation fleet.

One component of the project involves procuring a new day-ahead ancillary service to cover the “gap” when the day-ahead market’s physical energy supply awards are below the ISO’s forecast real-time load. The second component is to procure day-ahead flexible response services to ensure the system is prepared to recover from sudden source-loss contingencies and can respond quickly to fluctuations in net load during the operating day.

The targeted completion date for this project is the October 2024.





# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### **nGEM Real-Time Market Clearing Engine Implementation**

**\$3.0M**

As explained on Slide 152, ISO-NE's Market Management System (MMS) is based on GE Grid Solution's suite of market applications known as the Next Generation Markets (nGEM) program. GE is redeveloping the Market Clearing Engine (MCE), a central component of the MMS.

Pursuant to a separate capital project, the Day-Ahead MCE is being developed and implemented. The nGEM Real-Time Market Clearing Engine (RT MCE) project will develop and deploy the RT MCE (as apposed to the Day-Ahead MCE), including ISO-NE customizations.

The target completion date for this project is June 2025.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### FERC Order 2222

**\$0.8M**

FERC's Order 2222 requires that ISOs and RTOs remove barriers to the participation of distributed energy resource aggregations (DERAs) in wholesale electricity markets. In accordance with Order 2222, ISO-NE proposes to expand its current energy market models and add two new energy market participation models for DERAs: Settlement Only Distributed Energy Aggregation, and Demand Response Distributed Resource Aggregation. Additionally, the introduction of a new resource type, Distributed Energy Capacity Resource, will allow DERAs to participate in the Forward Capacity Market.

Compliance with Order 2222 will span two projects. The first project will implement the necessary software changes to support the qualification and participation of Distributed Energy Capacity Resources in the Forward Capacity Market. The second project will include the software changes to allow for the integration of DERAs in the wholesale markets and operations systems and any remaining compliance obligations of the

*Forward Capacity Market Order 2222* with a targeted completion date of March 2023      \$0.4M

*FERC Order 2222* with a targeted completion date of December 2026      \$0.4M



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Enterprise Resource Planning System Replacement

**\$0.1M**

ISO-NE's current Financial Enterprise Resource Planning (ERP) system reaches end-of-life in April 2026 and will need to be replaced. ISO-NE's ERP system provides the core framework for recording and reporting financial transactions and is a key component of settling the wholesale electricity markets, securing the necessary funding for ISO-NE operations, and maintaining strict compliance with reporting and filing requirements (including FERC reporting requirements).

The targeted completion date for this project is September 2026.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### CIP Electronic Security Perimeter Redesign Phase II

**\$2.0M**

This multi-phase project will redesign ISO-NE's electronic security perimeter (ESP) networks to enhance ISO-NE's overall network security posture to align with industry best practices regarding resiliency, recovery, and change management. This project will also facilitate compliance with NERC CIP standards. Phase I completed in July of 2021, involved the reconfiguration of both ISO-NE facility data centers, the isolation and protection of management control functions, changes to network designs and firewalls to reduce complexity, and installation of conduit encryption for all inter-physical security perimeter connections.

The second phase will improve ESP network CIP compliance and will enhance our overall network security posture.

The targeted completion date for this project is January 2024.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Microsoft 365 Service Adoption

**\$0.5M**

The capabilities and resiliency of ISO-NE's on-premise enterprise software (e.g., directories, file shares, and mail servers) can be improved and consolidated using the cloud-based Microsoft 365 Services. Adoption of Microsoft 365 Services for certain enterprise software will significantly increase ISO-NE's business continuity posture and will allow employees to work more productively with natively built-in tools and features.

The migration to Microsoft 365 will improve employee collaboration, streamline IT operations with new management tools and automation, improve protection of end users and information with platform-wide security solutions, and reduce overhead associated with maintaining physical IT infrastructure.

The targeted completion date for this project is June 2024.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### nGEM Software Development Part III

**\$1.5M**

ISO-NE is co-funding the core product development for GE Grid Solutions' nGEM software development. The nGEM Software Development project will enhance data transfer technology, Day-Ahead and Real-Time market clearing engines, and bidding micro services. It will also include various software upgrades. Part I delivery, completed in October 2020, included enhanced data transfer technology and the elimination of the Habitat platform. Part II, as explained on Slide 153 includes Day-Ahead market clearing engine enhancements, bidding micro services, and Real-Time market clearing engine replacements.

Part III will implement advanced storage support in the nGEM Market Clearing Engine (MCE) and Market CIMNet Simultaneous Feasibility Test software; enhance the nGEM MCE to further support real-time study modes and other components; and replace the Oracle based workflow controller with software designed as part of the Part II phase of the project.

The targeted completion date for this project is December 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Elimination of Minimum Offer Price Rule

**\$0.6M**

FERC has accepted ISO-NE's proposal to remove the Minimum Offer Price Rule (MOPR) from the region's Forward Capacity Market. The accepted proposal allows for a graduated removal of the MOPR over a three-year period, with an immediate exemption of the rule for a significant amount of renewable resources during the transition. The MOPR will be removed completely for Forward Capacity Auction (FCA) 19, scheduled for 2025. Once the MOPR is removed, ISO-NE has proposed a new methodology to measure buyer-side market power. As part of this project, ISO-NE will develop, test, and implement the software changes for the MOPR elimination beginning in FCA 19.

The targeted completion date for this project is December 2024.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### **Privileged Account Management Security Enhancements 2023** **\$1.3M**

ISO-NE continually monitors the changing landscape with respect to threats related to phishing and email attacks. With advances in ransomware and persistent threats from nation states, privileged accounts are at higher risk and, if compromised, may have a significant impact on the organization's operations. Ransomware groups and nation-state advanced persistent threat (APT) teams have targeted multiple electric sector companies with cyber attacks. Recent improvements to enterprise credential and access management have led to development of technology and practices available to companies called Privileged Access Management (PAM) systems. PAM systems support use and management of credentials used in enterprise desktops and servers.

The PAM Security Enhancements 2023 project will continue 2022 efforts to develop technology and processes to protect and reduce the risk of these cyber attacks for key accounts with the highest exposure.

The targeted completion date for this project is September 2023.





# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Web to Cloud Migration

**\$2.0M**

ISO-NE's current external web platform is hosted on premise in the ISO-NE data center on ISO-NE server hardware. The web platform software and server hardware need to be upgraded and moving to a cloud-hosted environment would allow ISO-NE to upgrade key content management software and provide cost savings from eliminating onsite maintenance. This project will occur in phases and will leverage the work done by the Amazon Web Services (AWS) Cloud Foundational project.

Phase I with a targeted completion date of November 2023

**\$0.8M**

Phase II with a targeted completion date of December 2024

**\$1.2M**



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Inventoried Energy Program

**\$1.0M**

The inventoried energy program is a program that compensates participants with eligible resources for 'stored' energy that they deliver during the 2023-24 and 2024-25 winter months of December, January, and February. The program is designed to incent those resources that maintain inventoried energy during stressed winter conditions. The Inventoried Energy Program project will modify ISO-NE's settlement software, as needed, to reflect the requirements of this program.

The targeted completion date for this project is September 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Solar Do Not Exceed Dispatch Phase II

**\$1.0M**

The quantity of in-front-of-the-meter solar generation in the New England region is increasing and expected to continue to increase. Integration of solar resources will require development of rules, processes, forecasts, and tools necessary to incorporate these resources into the Do-Not-Exceed (DNE) dispatch processes. Phase I of this project, scheduled to be completed in December 2022, will develop and implement enhancements to ISO-NE's Renewable Plan (RPlan) software, to allow market participants to submit their medium-term and long-term data for the availability of future power generation.

As modeled PV installations grow in number and total megawatts, they may contribute to transmission constraints. In order to operate the transmission system safely, ISO-NE may need to periodically reduce the output of modeled PV installations. Phase II of this project will convert modeled PV installations to Do-Not-Exceed Dispatchable Generators and update all impacted systems accordingly.

The targeted completion date for this project is December 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Windows Server 2019R2 Deployment \$0.5M

The ISO-NE Windows Support team is responsible for providing consistent, standard, and modern deployments of the Microsoft (MS) Windows Server Operating System in support of ISO-NE business objectives. The current system is reaching the end of support on October 10, 2023.

The Windows Server 2019R2 Deployment project will enable the deployment of the more modern and supported Windows operating system, extend the support life cycle, and enhance internet security practices.

The targeted completion date for this project is October 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### 2023 Issue Resolution Project

**\$0.7M**

ISO-NE uses a corrective action/preventative action (CAPA) approach to identify and track needed enhancements to existing systems and processes to more efficiently administer the market rules and procedures.

The 2023 Issue Resolution Project will focus on resolving CAPAs that enhance various software systems. Software changes can span a wide range of functionality including user interface improvements, internal and external reporting modifications, and other market related improvements.

The targeted completion date for this project is December 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Identity and Access Management Phase III

**\$0.5M**

The access rights and employee request applications perform critical identity and access management functions enabling workforce members to model, request, approve, and implement access to information technology assets (servers, systems, shared drives, badged physical access, etc.). These systems required new functionality to bring them into alignment with cyber security best practices, and address multiple corrective action/preventative action recommendations that have been made by ISO-NE staff. Phase I of this project included the purchase and implementation of required hardware and software to update the current access rights process. Phase II integrated the new hardware/software with ISO-NE systems, implemented new authorization roles, and provided functionality to protect the system from unauthorized access.

Phase III of this project will replace the current employee and pager application, and will develop one or more applications to improve system capabilities and identify potential automation efficiencies.

The targeted completion date for this project is December 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### IT Asset Workflow Integration and Updates

**\$0.5M**

The IT Asset Workflow (ITAW) system is used for the business processes associated with procurement, installation, and deployment of assets at ISO-NE. ITAW provides all necessary tracking, controls, and audit trails. ITAW workflows need to be updated to query and maintain data in ISO-NE's configuration management database.

Additionally, this project will update the ITAW system's compliance controls, including alignment with NERC CIP standards.

The targeted completion date for this project is January 2024.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Management Information Server Reporting by Sub Accounts \$0.2M

ISO-NE has received market participant feedback requesting that ISO-NE upgrade the settlements data delivery mechanism to allow market participants' internal divisions or related business entities to access subaccounts.

As part of this project, ISO-NE will develop a mechanism to deliver the subaccount specific settlement information to market participants and allow market participants the opportunity to share this information with relevant entities.

The targeted completion date for this project is March 2023.





# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Control Room Voice Recorder Upgrade

**\$0.1M**

ISO-NE's control room voice recorder deployment needs to be upgraded. This project will upgrade the systems and replace the current version that has an end-of-life of October 2023. To move to this newer operating system, new voice recorder hardware is required. Enhancements to the current voice recorder platform will include a backup server at the Backup Control Center to help safeguard voice recordings from corruption and loss if there is a site failure and improve capabilities to search and review voice recordings.

The targeted completion date for this project is March 2023.



# Capital Budget

## 2023 Expenditures/Major Projects in Conceptual Design

### Non-Project Capital Expenditures

**\$4.8M**

Non-Project capital expenditures fund external and internal capitalized labor necessary to program System Improvement Requests (\$2.3M); non-project related hardware purchases (\$2.0M); and Building Improvements, Machinery & Equipment, and Furniture & Fixtures (\$0.5M).

### Other Emerging Work

**\$3.8M**

This category is primarily intended to address emerging work requests during 2023 that result from operational needs, compliance obligations, or stakeholder feedback.

Refer to the following slide for further detail on Non-Project Capital Expenditures



# Capital Budget

## 2023 Non-Project Capital

The budget forecast for each of the non-project capital categories is informed by historical level expenditures and an assessment of planned investments for the upcoming year. The budgeted expenses for Non-Project Capital Expenditures, like the ISO-NE operating budget categories, are zero-based each year. The 2023 amounts and description of funding included for each category is provided as follows:

- **\$2.3 million – System Improvement Requests:** Annually, ISO-NE’s Information Services (“IS”) department addresses several hundred small requests to improve existing software infrastructure. The IS department deploys a combination of ISO-NE internal employees, consultants, and vendors to address the list of open system improvements. Each year, the forecasted budget is reviewed to ensure the resources dedicated to this effort are not in conflict with slated major projects.
- **\$2.0 million – Non-Project Hardware:** ISO-NE has a critical investment in servers, storage, networking, and monitoring systems in our data center environment that support ISO-NE’s critical roles of Grid Operation, Market Administration, and Power System Planning; as well as general corporate needs. ISO-NE is required to ensure that existing deployed infrastructure is current with vendor established end-of-support and end-of-life timelines. These continual refresh activities are essential to ensure ISO-NE data center services remain supported with security and maintenance contracts, as well as meet IT reliability service levels. In 2023, ISO-NE will continue to replace and upgrade IT Infrastructure as required. Projects include: (1) to continue refreshing ISO-NE’s virtualization server infrastructure to replace servers reaching end-of-life; (2) replace aging storage infrastructure supporting database and virtualization workloads; and (3) upgrades to the network security infrastructure that support remote access, including firewall replacements and security controls integration.
- **\$0.5 million - Building Improvements, Machinery & Equipment, and Furniture & Fixtures:** Annually, ISO-NE’s Building Services department invests in the upkeep and upgrading of ISO-NE’s Main Control Center and Backup Control Center facilities. The 2023 budget funding includes the planned update of cafeteria furniture with more modern and functional items; renewing the Board and CEO conference room for main and overflow seating; renovation of the Main Control Center Control room kitchen including appliances, cabinets, counter, and flooring; and replacement of the North Building boilers.

# Capital Budget

## Resource Allocation for 2023 Projects with Approved Charters

The following projects included in the 2023 budget have approved charters with specific funding requirements established. For each project the breakdown of costs and full-time equivalent (FTE) positions is provided by year and between internal labor and outside consultants. Amounts include actual and future forecast/budget.

Capital Projects - Approved Charters	2020 Actual Results				2021 Actual Results				2022 Actual & Remaining Forecast (1)				2023 Budget (2)			
	Int Labor \$	FTE Equiv	Consult \$	FTE Equiv	Int Labor \$	FTE Equiv	Consult \$	FTE Equiv	Int Labor \$	FTE Equiv	Consult \$'s	FTE Equiv	Int Labor \$	FTE Equiv	Consult \$	FTE Equiv
. nGEM Market Clearing Engine Implementation	\$ 440,105	2.4	\$ 2,737,458	12.0	\$ 611,746	3.3	\$ 4,244,175	18.5	\$ 596,739	3.2	\$ 3,895,598	17.0	\$ 560,000	3.0	\$ 694,701	3.0
. nGEM Software Development Part II	20,730	0.1	106,611	0.5	246,494	1.3	1,596,001	7.0	217,220	1.2	1,929,123	8.4	30,000	0.2	620,011	2.7
. Forward Capacity Tracking Infrastructure Conversion Part III	-	-	-	-	150,052	0.8	47,160	0.2	343,930	1.8	1,925,658	8.4	-	-	685,000	3.0
. Forecast Enhancements	-	-	-	-	64,475	0.3	14,538	0.1	481,294	2.6	704,811	3.1	233,099	1.2	381,793	1.7
. Physical Security Improvement Project (2)	-	-	-	-	21,855	0.1	-	-	43,006	0.2	58,897	0.3	12,500	0.1	442,500	1.9
. PI Historian for Short-Term PMU Data Repository	75,496	0.4	3,072	0.0	54,345	0.3	52,704	0.2	68,765	0.4	106,920	0.5	225,000	1.2	300,000	1.3
. E-Mail List Server Technology Refresh	-	-	-	-	207,270	1.1	-	-	385,659	2.1	46,070	0.2	5,000	0.0	85,000	0.4
. Replace Messaging Software	-	-	-	-	24,123	0.1	-	-	207,550	1.1	295,912	1.3	-	-	61,100	0.3

**Assumptions for FTE Equiv = Int Labor Fully Burdened = \$90/hr., Consultants = \$110/hr.**

(1) 2022 includes actual results through June as well as the remaining forecast for the rest of the year. Actual amounts through June are: nGEM Market Clearing Engine Implementation - (Int Labor \$210.3K, Consult \$1,987.8K); nGEM Software Development Part II (Int Labor \$105.6K, Consult \$810.9K); Forward Capacity Tracking Infrastructure Conversion Part III (Int Labor \$163.0K, Consult \$1,331.8K); Forecast Enhancements (Int Labor \$201.7K, Consult \$274.9K); Physical Security Improvement project (Int Labor \$26,369K, Consult \$46.9K); PI Historian for Short-Term PMU Data Repository (Int Labor \$3.5K); E-Mail List Server Technology Refresh (Int Labor \$171.1K); Replace Messaging Software (Int Labor \$49.1K, Consult \$119.9K)

(2) The nGEM Software Development Part II project includes \$39.0K of hardware purchased in 2021 not included in the above costs. The nGEM Market Clearing Engine Implementation project includes \$20.0K of estimated hardware funds for 2022 not included in the above costs. The Physical Security Improvement Project includes \$7.3K of hardware purchased in 2022, and \$636.1K of estimated hardware and software funds for 2022, not included in the above costs.

# APPENDIX 9: EMERGING WORK ALLOWANCE & PURCHASING POLICIES AND CONTROLS



# Emerging Work Allowance

- ISO New England does not have “equity” or reserves to utilize but must fund unforeseen and newly defined work that arises after the budget is established
- The CEO Emerging Work Allowance (the Fund) is used to fund requests for required activities that were not specifically funded in the original budget and changes to initial cost estimates
- A risk is recorded on the Risks and Opportunities Report (R&O Report) when (i) unbudgeted new work is identified, or (ii) when staff becomes aware that budgeted work may exceed the original estimate; likewise, when potential savings on a budgeted item are anticipated, an opportunity is identified
- The R&O report contains information about the item and the probability of the occurrence of the item and is updated at least monthly

# Emerging Work Allowance – Process for Deposits and Withdrawals

- During the quarterly updates to the forecasts, cost center managers review the current amounts forecasted to determine the continued accuracy of their forecasts for the subsequent six months
- Cost center managers will integrate into their updated forecasts highly probable risks or savings that may have been previously identified on the R&O report or may be newly defined
- An explanation is required by the cost center manager for why amounts are being deposited to the Fund (from savings identified) or why there is a need for a withdrawal from the Fund
- All information pertaining to potential deposits to the Fund or withdrawals from the Fund, stemming from the updated quarterly forecast, is compiled and the detail is reviewed by the Supervisor of Budgeting and Financial Reporting and the Director, Finance & Market Risk for reasonableness and/or the need for additional explanation

# Purchasing Policies and Controls

- The Company has established a Purchasing Policy with guidelines to follow when committing the funds of the ISO to any vendor, including the placing and handling of purchase orders, requests for proposals and quotes, contracts, and approval limits
- The Purchasing Department is responsible for all purchasing decisions related to materials, equipment, and services
- The Purchasing Department will minimize costs of purchased goods and services where possible, while maximizing quality
- All purchases require a purchase order unless a specific exception is noted in the Purchasing Policy (e.g., utility bills and regulatory fees); regardless of whether a purchase is exempt from the purchase order requirement, a rigorous review of the validity and accuracy of the charges is performed
- The Purchasing Department is the only department with agency to purchase goods and/or services for the ISO and all contracts must be approved by the ISO legal department (with limited exceptions)
- The Purchasing Policy is available on the ISO's web site



# APPENDIX 10: 2023-2026 PRO-FORMA STATEMENTS

# 2023 - 2026 Pro-Forma Budgets

(Dollars in Millions)	2023	2024	2025	2026
Operating Budget <sup>(1)</sup>	\$209.2	\$219.5	\$226.1	\$232.8
Capital Project Budget	\$33.5	\$35.0	\$35.0	\$35.0
<b>Total</b>	<b>\$242.7</b>	<b>\$254.5</b>	<b>\$261.1</b>	<b>\$267.8</b>
Operating <sup>(1)</sup>	\$209.2	\$219.5	\$226.1	\$232.8
Depreciation <sup>(1)</sup>	\$31.0	\$33.1	\$35.2	\$34.7
True-Up	\$(14.6)	\$(1.0)	\$(1.0)	\$(1.0)
<b>Revenue Requirement</b>	<b>\$225.6</b>	<b>\$251.6</b>	<b>\$260.3</b>	<b>\$266.5</b>
TWh Forecast <sup>(2)</sup>	143.0	145.9	148.2	150.7
<b>\$/KWh Rate</b>	<b>\$0.00158</b>	<b>\$0.00172</b>	<b>\$0.00176</b>	<b>\$0.00177</b>

(1) 2024 – 2026 assumes an inflationary increase in Operating costs, however, there is no inflationary increase for interest expense and interest income, and the budgets do not contemplate new mandated activities.

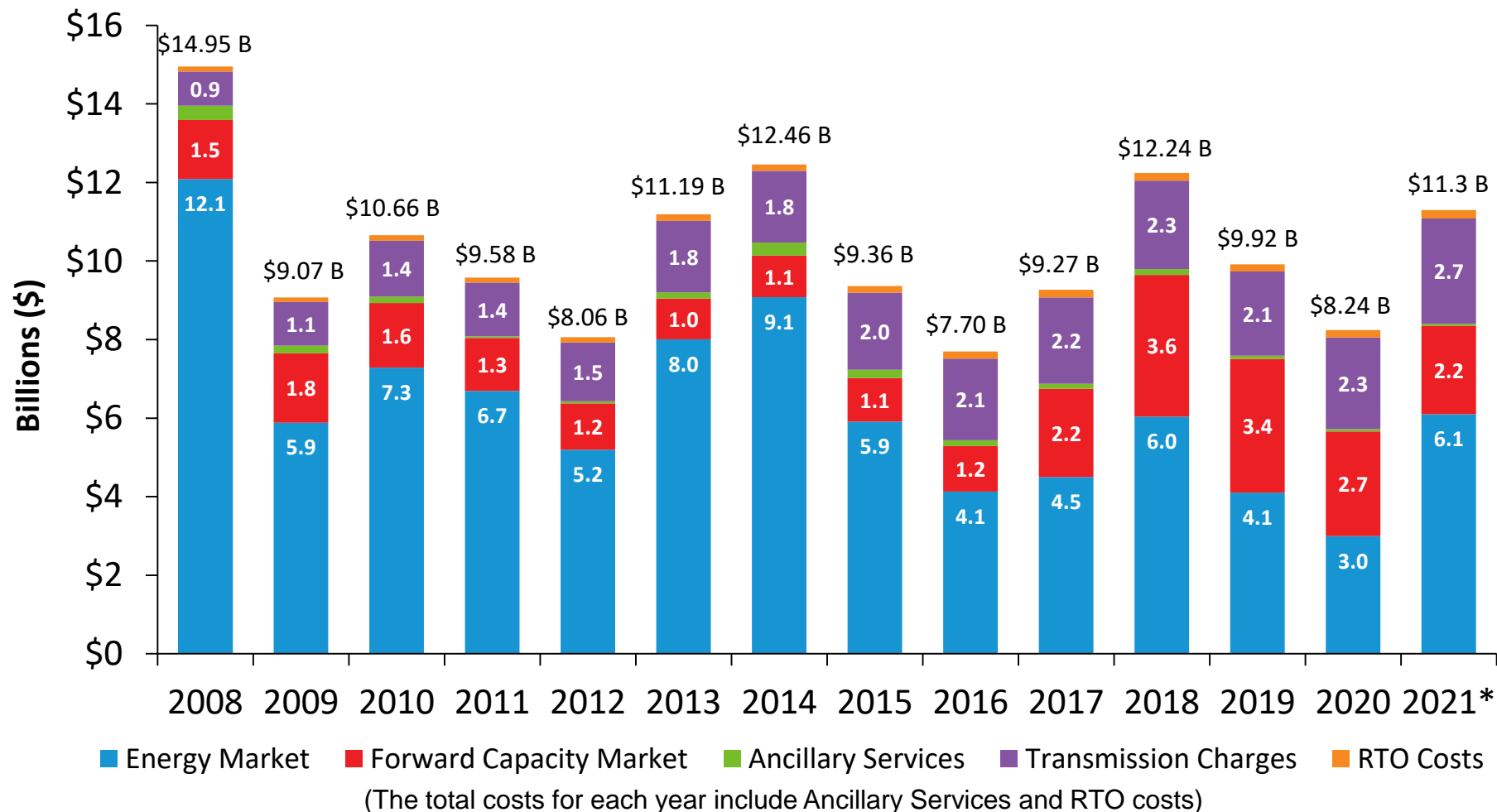
(2) For 2023 – 2026, the May 2022 CELT Report was used.

# APPENDIX 11: NEW ENGLAND WHOLESALE ELECTRICITY COSTS AND RETAIL ELECTRICITY RATES



# New England Wholesale Electricity Costs

Annual wholesale electricity costs have ranged from \$7.7 billion to \$15 billion



Source: 2021 Report of the Consumer Liaison Group; \*2021 data is preliminary and subject to resettlement

Note: Forward Capacity Market values shown are based on auctions held roughly three years prior to each calendar year.

# New England Wholesale Electricity Costs<sup>(a)</sup>

	2017		2018		2019		2020		2021*	
	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh
<b>Wholesale Market Costs</b>										
<b>Energy (LMPs)<sup>(b)</sup></b>	\$4,498	3.5	\$6,041	4.7	\$4,105	3.3	\$2,996	2.4	\$6,101	4.8
<b>Ancillaries<sup>(c)</sup></b>	\$132	0.1	\$147	0.1	\$83	0.1	\$62	0.1	\$52	0.0
<b>Capacity<sup>(d)</sup></b>	\$2,245	1.8	\$3,606	2.8	\$3,401	2.7	\$2,662	2.2	\$2,243	1.8
<b>Subtotal</b>	\$6,875	5.4	\$9,794	7.6	\$7,589	6.0	\$5,720	4.7	\$8,396	6.6
<b>Transmission charges<sup>(e)</sup></b>	\$2,199	1.7	\$2,250	1.7	\$2,146	1.7	\$2,331	1.9	\$2,687	2.1
<b>RTO costs<sup>(f)</sup></b>	\$193	0.2	\$196	0.2	\$184	0.1	\$191	0.2	\$216	0.2
<b>Total</b>	<b>\$9,267</b>	<b>7.3</b>	<b>\$12,240</b>	<b>9.4</b>	<b>\$9,918</b>	<b>7.9</b>	<b>\$8,242</b>	<b>6.7</b>	<b>\$11,299</b>	<b>8.9</b>

(a) Average annual costs are based on the 12 months beginning January 1 and ending December 31. Costs in millions = the dollar value of the costs to New England wholesale market load servers for ISO-administered services. Cents/kWh = the value derived by dividing the dollar value (indicated above) by the real-time load obligation. These values are presented for illustrative purposes only and do not reflect actual charge methodologies. **\*The wholesale values for 2021 are preliminary and subject to resettlement.**

(b) Energy values are derived from wholesale market pricing and represent the results of the Day-Ahead Energy Market plus deviations from the Day-Ahead Energy Market reflected in the Real-Time Energy Market.

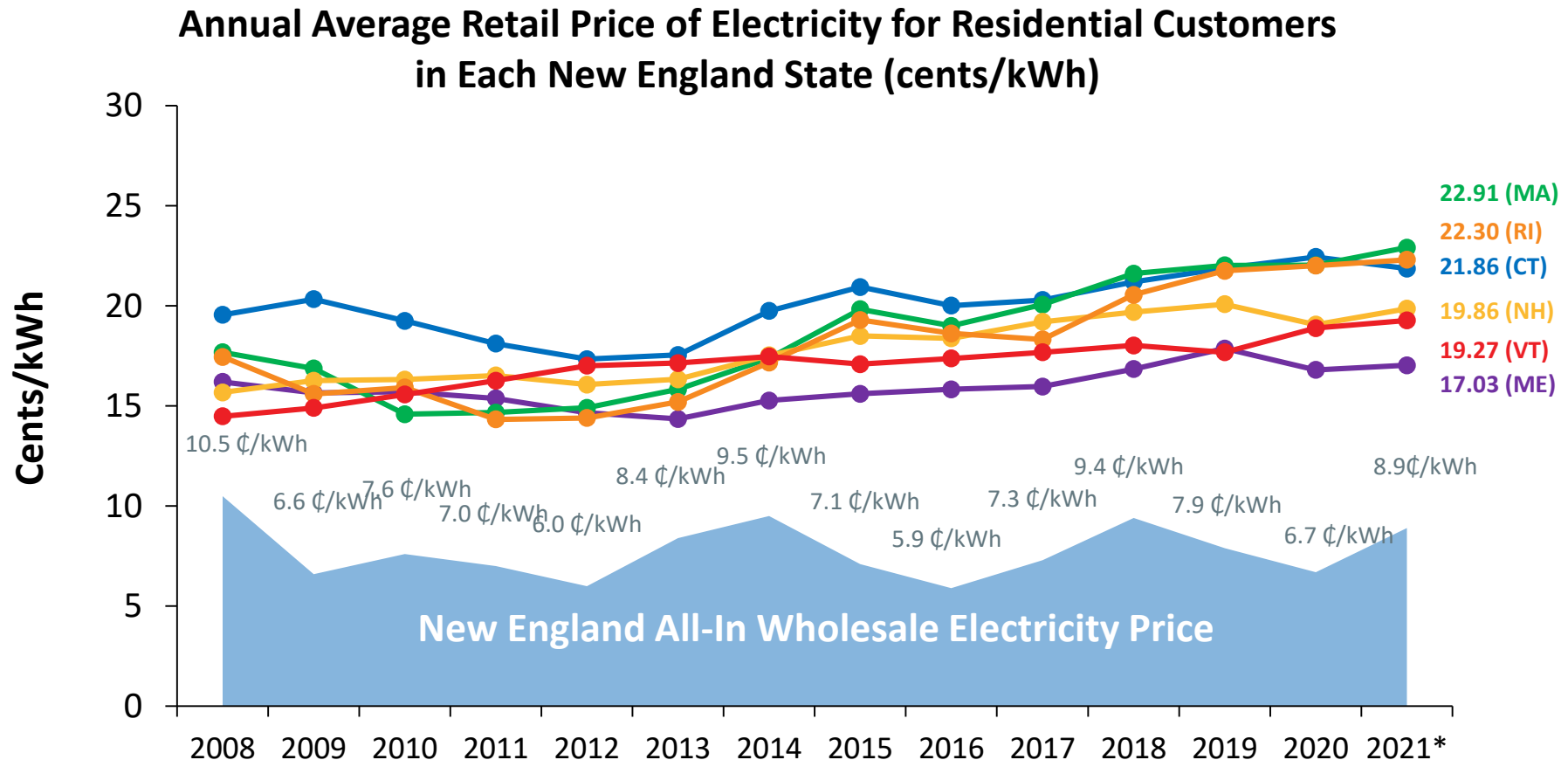
(c) Ancillaries include first- and second-contingency Net Commitment-Period Compensation (NCPC), forward reserves, real-time reserves, regulation service, and a reduction for the Marginal Loss Revenue Fund.

(d) Capacity charges are those associated with the Forward Capacity Market (FCM).

(e) Transmission charges reflect the collection of transmission owners' revenue requirements and tariff-based reliability services, including black-start capability, voltage support, and FCM reliability.

(f) RTO costs are the costs to run and operate ISO New England and are based on actual collections, as determined under Section IV of the *ISO New England Inc. Transmission, Markets, and Services Tariff*.

# Retail Electricity Prices Follow Wholesale Prices, But Are Also Influenced by Individual State Policies



**Source:** U.S. Energy Information Administration, *Electric Power Monthly*, Table 5.6.B Average Retail Price of Electricity to Ultimate Customers by End-Use Sector, by State (Through Dec. 2021); *2021 Report of the Consumer Liaison Group*, the New England all-in wholesale electricity price is derived by dividing total wholesale electricity costs by real-time load obligation (presented for illustrative purposes; does not reflect actual charge methodologies)

# APPENDIX 12: ISO/RTO FINANCIAL COMPARISON



# Financial Results Summary

## ISO/RTO Financial Summary - 2021 Actual Results

Operating Expense and Capital Expenditures for Calendar Year 2021, and Outstanding Debt as of December 31, 2021 <sup>(1)</sup>

(Amounts in Millions)

	ISO-NE <sup>(2)</sup>	NYISO	CAISO	IESO <sup>(3)</sup>	PJM	MISO	SPP	ERCOT
Operating Expense - 2021	\$ 201.7	\$ 192.1	\$ 223.1	\$ 230.0	\$ 380.9	\$ 395.0	\$ 201.3	\$ 233.3
Less: Amortization & Depreciation	(26.2)	(25.3)	(30.6)	(23.9)	(35.6)	(32.5)	(17.5)	(27.9)
Regulatory Fees	(6.1)	(15.5)	-	-	(72.1)	(64.1)	(27.0)	-
Grant Expenses	-	-	-	-	-	-	-	-
Net Operating Expense - 2021	\$ 169.4	\$ 151.3	\$ 192.5	\$ 206.1	\$ 273.2	\$ 298.5	\$ 156.8	\$ 205.4
Other Financial Data								
Capital Expenditures for 2021	\$ 27.5	\$ 15.8	\$ 25.9	\$ 50.3	\$ 35.3	\$ 38.9	\$ 14.0	\$ 33.3
Outstanding Debt as of 12/31/21	\$ 92.9	\$ 78.7	\$ 174.4	\$ 120.0	\$ 10.8	\$ 274.3	\$ 192.8	\$ 843.0
Actual full-time equivalent headcount as of 12/31/21	573.5	544.0	635.0	770.0	754.0	964.0	625.0	767.0

(1) Applicable amounts were taken from each entity's 2021 audited financial statements.

(2) ISO-NE Amortization & Depreciation and Capital Expenditures are presented on a cash-flow basis

(3) Amounts are in Canadian dollars



## APPENDIX 13: 2020 AND 2021 ACTUAL TO BUDGET VARIANCE ANALYSIS

## ISO New England Actual-to-Budget Variance Analysis for 2020 and 2021

The following pages provide actual-to-budget variance analysis for 2020 and 2021. The information provided includes overall results, a table that breaks down salary into base salaries and wages, overtime wages, incentive or bonus payments, and each employee benefit program with an annual cost greater than \$200,000. Professional fees and consultant costs are stated separately by department, and an explanation is provided for each variance in excess of \$1,000,000.

Amounts in the tables below are in thousands.

### 2020 (Overall Results)

<u>Description</u>	<b>2020 Actuals</b>	<b>2020 Original Budget</b>	<b>Variance Inc/(Dec)</b>
<b>Operating Expense</b>			
<b>Salaries and Overheads</b>	\$ 114,666.3	\$ 115,918.9	(1,252.6)
<b>Professional Fees &amp; Consulting</b>	14,919.9	15,841.1	(921.2)
<b>Professional Fees &amp; Consulting - Legal</b>	3,598.0	3,522.0	76.0
<b>Building Services</b>	2,990.0	2,826.1	163.9
<b>Rents &amp; Leases</b>	947.7	1,020.4	(72.7)
<b>Network Operations</b>	2,378.6	2,735.0	(356.4)
<b>Computer Services</b>	15,433.2	15,726.0	(292.8)
<b>Data Services &amp; Office Expenses</b>	1,610.2	1,699.6	(89.5)
<b>Insurance Expense</b>	2,226.1	2,079.7	146.5
<b>Board of Directors Expense</b>	1,205.7	1,226.7	(21.0)
<b>Meeting &amp; Related Expenses</b>	661.9	1,442.9	(781.0)
<b>Education &amp; Training</b>	828.2	1,192.8	(364.6)
<b>Taxes, Permits, Licenses &amp; Fees</b>	196.4	194.1	2.3
<b>Total Operating Expense</b>	<b>161,662.2</b>	<b>165,425.3</b>	<b>(3,763.0)</b>
<b>Revenues, Other Income</b>	<b>(405.0)</b>	<b>(1,129.6)</b>	<b>724.6</b>
<b>Operating Expenses net of Revenue</b>	<b>161,257.2</b>	<b>164,295.7</b>	<b>(3,038.4)</b>
<b>CEO Emerging Work Allowance</b>	-	1,100.0	(1,100.0)
<b>Board Contingency</b>	-	700.0	(700.0)
<b>NPCC/NERC Dues &amp; Expense</b>	6,363.9	6,405.0	(41.1)
<b>Interest Expense</b>	2,435.1	2,949.2	(514.1)
<b>Net Expense Before Depreciation</b>	<b>170,056.2</b>	<b>175,449.9</b>	<b>(5,393.6)</b>
<b>Depreciation Expense</b>	24,848.7	26,226.8	(1,378.1)
<b>Gain/Loss on Fixed Asset Disposal</b>	428.6	60.0	368.6
<b>Total Depreciation</b>	<b>25,277.3</b>	<b>26,286.8</b>	<b>(1,009.6)</b>
<b>Total Expense for ACT Recovery</b>	<b>\$ 195,333.5</b>	<b>\$ 201,736.7</b>	<b>\$ (6,403.2)</b>

## 2020 (Salaries & Burden)

<u>Description</u>	<u>Actual 2020 Expense</u>	<u>Approved Budget 2020</u>	<u>Incr/(Dec)</u>
Salaries and Wages - Base	\$ 72,550.6	\$ 73,208.5	\$ (657.9)
Salaries and Wages - Overtime	2,431.0	2,452.9	(21.9)
Salaries and Wages - Incentive/Bonus	12,446.0	12,479.6	(33.6)
Employee Benefits - Pension	11,224.4	10,909.6	314.8
Employee Benefits - Post-Ret Benefits	495.0	762.9	(267.9)
Employee Benefits - Health Insurance	6,221.8	6,388.2	(166.4)
Employee Benefits - Dental Insurance	432.6	469.2	(36.6)
Employee Benefits - 401(K) Match	2,779.9	3,010.6	(230.7)
Salary Burden - Payroll Taxes	5,607.3	5,704.4	(97.1)
Other Benefit/Burden <\$200K	477.6	533.2	(55.6)
<b>Total Salaries &amp; Burden Expense</b>	<b>\$ 114,666.2</b>	<b>\$ 115,919.1</b>	<b>\$ (1,252.9)</b>

## 2020 (Professional Fees)

<u>Department</u>	<u>2020 Actual</u>	<u>2020 Original Budget</u>	<u>Variance Inc/(Dec)</u>
System Operations	\$ 125.9	\$ 158.0	\$ (32.1)
System Planning	2,236.8	1,507.8	729.0
Market Monitoring	552.3	370.0	182.3
Information Technology	6,030.7	7,325.2	(1,294.5)
Market Development	1,774.5	1,460.5	314.0
Human Resources	1,638.3	1,970.9	(332.6)
Finance Operations	568.2	211.7	356.5
Internal Audits	888.9	907.5	(18.6)
Corp Comm and Public Affairs	597.0	591.9	5.1
All Other	507.4	1,337.6	(830.2)
<b>Total</b>	<b>14,920.0</b>	<b>15,841.1</b>	<b>(921.2)</b>
<b>Legal Professional Fees</b>	<b>3,598.0</b>	<b>3,522.0</b>	<b>76.0</b>
<b>Total Professional Fees</b>	<b>\$ 18,518.0</b>	<b>\$ 19,363.1</b>	<b>\$ (845.1)</b>

## **2020 Actual vs. Budget variance explanations for items > \$1,000,000**

- Salaries and Overheads were \$1,252,600 lower than the original budget. Significant decreases included higher allocation of employee time for internal capital development work, higher than forecasted vacancy, and reduced intern hiring due to COVID-19 related restrictions.
- Professional Fees & Consulting were \$921,200 lower than the original budget. The Information Technology segment was \$1,294,500 lower than due to higher than budgeted consultant vacancies and reallocation of consultant work for internal capital development.
- Because ISO-NE is a non-profit organization with no equity available there is \$1,100,000 of funds (the “CEO Emerging Work Allowance”) built into the budget to cover unknown or unforeseen costs that emerge during the year. Additional funding needs can be created as a result of refined estimates for work, new activities, or changes in accounting estimates. Similarly, to the extent that these changes result in an “under” expenditure, the CEO Emerging Work Allowance is increased. Requests for funds from the Emerging Work Allowance are reviewed by senior management, and require CFO and CEO approval prior to the spending authorization. No actual amounts are charged to this line item as it is only used for budget/forecast purposes.
- Depreciation expense was lower by \$1,378,100 as a result of changes in capital project in-service dates and actual project expenditures compared to assumptions used in the original budget. Savings include those on projects for Energy Management Platform 3.2 Upgrade Parts I & II, Identity and Access Management Phase II, Change Request System Replacement, CIMNET Simultaneous Feasibility Test with Data Transfer Enhancements, Internal Market Monitoring Data Analysis Phase II, and Sub-accounts for Financial Transmission Rights Market.

**2021 (Overall Results)**

<b><u>Description</u></b>	<b>2021 Actual</b>	<b>2021 Original Budget</b>	<b>Variance Inc/(Dec)</b>
<b>Operating Expense</b>			
<b>Salaries and Overheads</b>	\$ 118,398.4	\$ 119,484.8	(1,086.4)
<b>Professional Fees &amp; Consulting</b>	17,296.4	15,262.5	2,033.9
<b>Professional Fees &amp; Consulting - Legal</b>	2,398.1	2,872.0	(473.9)
<b>Building Services</b>	2,831.6	2,923.6	(92.0)
<b>Rents &amp; Leases</b>	777.1	967.8	(190.7)
<b>Network Operations</b>	2,801.5	2,766.7	34.9
<b>Computer Services</b>	15,952.2	16,577.1	(624.9)
<b>Data Services &amp; Office Expenses</b>	1,554.1	1,849.7	(295.6)
<b>Insurance Expense</b>	2,152.5	2,272.2	(119.7)
<b>Board of Directors Expense</b>	1,591.6	1,226.5	365.1
<b>Meeting &amp; Related Expenses</b>	536.5	1,221.9	(685.5)
<b>Education &amp; Training</b>	891.2	1,181.1	(289.9)
<b>Taxes, Permits, Licenses &amp; Fees</b>	204.1	189.8	14.3
<b>Total Operating Expense</b>	<b>167,385.3</b>	<b>168,795.7</b>	<b>(1,410.4)</b>
<b>Revenues, Other Income</b>	<b>(442.9)</b>	<b>(817.3)</b>	<b>374.5</b>
<b>Operating Expenses net of Revenue</b>	<b>166,942.4</b>	<b>167,978.4</b>	<b>(1,036.0)</b>
<b>CEO Emerging Work Allowance</b>	-	1,100.0	(1,100.0)
<b>Board Contingency</b>	-	700.0	(700.0)
<b>NPCC/NERC Dues &amp; Expense</b>	6,061.8	6,140.1	(78.2)
<b>Interest Expense</b>	2,120.4	2,703.9	(583.5)
<b>Net Expense Before Depreciation</b>	<b>175,124.7</b>	<b>178,622.3</b>	<b>(3,497.6)</b>
<b>Depreciation Expense</b>	26,221.4	26,280.9	(59.6)
<b>Gain/Loss on Fixed Asset Disposal</b>	(0.3)	60.0	(60.3)
<b>Total Depreciation and Debt Services</b>	<b>26,221.0</b>	<b>26,340.9</b>	<b>(119.9)</b>
<b>Total Expense for ACT Recovery</b>	<b>\$ 201,345.7</b>	<b>\$ 204,963.3</b>	<b>(3,617.5)</b>

## 2021 (Salaries & Burden)

<u>Description</u>	<u>Actual 2021 Expense</u>	<u>Approved Budget 2021</u>	<u>Incr/(Dec)</u>
Salaries and Wages - Base	\$ 73,821.6	\$ 74,707.6	\$ (886.0)
Salaries and Wages - Overtime	3,387.8	2,670.0	717.8
Salaries and Wages - Incentive/Bonus	12,859.7	13,423.5	(563.8)
Employee Benefits - Pension	10,878.2	10,643.8	234.4
Employee Benefits - Post-Ret Benefits	610.3	1,083.3	(473.0)
Employee Benefits - Health Insurance	6,712.0	6,697.2	14.8
Employee Benefits - Dental Insurance	502.1	494.0	8.1
Employee Benefits - 401(K) Match	2,915.9	3,004.0	(88.1)
Salary Burden - Payroll Taxes	6,156.0	6,184.9	(28.9)
Other Benefit/Burden <\$200K	554.8	576.6	(21.8)
<b>Total Salaries &amp; Burden Expense</b>	<b>\$ 118,398.4</b>	<b>\$ 119,484.8</b>	<b>\$ (1,086.4)</b>

## 2021 (Professional Fees)

<u>Department</u>	<u>2021 Actual</u>	<u>2021 Original Budget</u>	<u>Variance Inc/(Dec)</u>
System Operations & Market Admin.	\$ 109.6	\$ 158.0	\$ (48.4)
System Planning	2,382.8	1,687.4	695.4
Market Monitoring	325.4	670.0	(344.6)
Information Technology	7,094.4	7,550.0	(455.6)
Market Development & Settlements	2,961.2	480.3	2,480.9
Human Resources	1,721.7	2,241.5	(519.8)
Finance Operations	701.9	223.8	478.1
Internal Audits	738.6	915.7	(177.1)
Corp Comm and Public Affairs	574.7	591.9	(17.2)
All Other	686.3	743.9	(57.6)
<b>Total</b>	<b>17,296.4</b>	<b>15,262.5</b>	<b>2,033.9</b>
 Legal Professional Fees	 2,398.1	 2,872.0	 (473.9)
 <b>Total Professional Fees</b>	 <b>\$ 19,694.5</b>	 <b>\$ 18,134.5</b>	 <b>\$ 1,560.0</b>

## **2021 Actual vs. Budget variance explanations for items > \$1,000,000**

- Salaries and Overheads were \$1,086,400 lower than the original budget. Significant decreases included lower salary rates for new hires compared to previous incumbents, reduced Post-Retirement Benefit plan expense, and higher vacancy rates; these were partially offset by higher overtime in certain business units.
- Professional Fees & Consulting were \$2,033,900 higher than the original budget. The Market Development & Settlements segment was \$2,480,900 higher due to funding studies to integrate clean energy into New England's wholesale electricity markets and grid operations including an economic evaluation of a Forward Clean Energy Market to review the most effective approaches to meeting targets to decarbonize the electricity system, and a study to evaluate key economic issues associated with integration of net carbon pricing into economic dispatch. Additional funding was also utilized for Resource Capacity Accreditation work, and support for updating Forward Capacity Market parameters.
- Because ISO-NE is a non-profit organization with no equity available there is \$1,100,000 of funds (the "CEO Emerging Work Allowance") built into the budget to cover unknown or unforeseen costs that emerge during the year. Additional funding needs can be created as a result of refined estimates for work, new activities, or changes in accounting estimates. Similarly, to the extent that these changes result in an "under" expenditure, the CEO Emerging Work Allowance is increased. Requests for funds from the Emerging Work Allowance are reviewed by senior management, and require CFO and CEO approval prior to the spending authorization. No actual amounts are charged to this line item as it is only used for budget/forecast purposes.