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ISO New England Proposed 2024 Operating and Capital Budgets

NEPOOL Budget & Finance Subcommittee Meeting



Robert Ludlow

VP, CHIEF FINANCIAL OFFICER | ISO NEW ENGLAND



Contents of Presentation

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The following appendices are also included for reference:

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- Appendix 11: ISO/RTO Financial Comparison
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EXECUTIVE SUMMARY



Executive Summary

- The 2024 budget represents the organization's commitment to supporting the region as it transitions to clean energy and ensuring that its continued operations are efficient and reliable
- The clean energy transition is creating increased grid complexity and competition for in-demand talent
 - The 2024 budget represents the continued investments needed to address these challenges
 - ISO management believes these increases are measured and in-line with the trends seen across the industry and at other ISOs
- The 2024 budget represents the needed ramping-up of organizational capacity to carry out the organization's mission of planning the transmission system, administering the region's wholesale markets, and operating the power system to ensure reliable and competitively priced wholesale electricity; as well as developing new capabilities that will be necessary for supporting the grid of the future
 - As indicated during last year's budgeting process, after years of keeping headcount flat or with minimal additions, the organization has seen the need to begin increasing headcount more substantially in order to support the clean energy transition



Executive Summary

- Public impetus around addressing climate change through clean energy investments and electrifying transportation and heating sectors is driving substantial changes to the New England power system:
 - Substantial increases to the number of interconnected and behind-the-meter (BTM) generating assets are changing how the transmission and distribution system operate and interact with each other
 - A shift from larger, dispatchable resources to smaller non-dispatchable, weather-dependent ones is changing the complexity involved in dispatching resources to meet demand
 - New daily and seasonal demand patterns are changing the types of resources are needed and the timing of such needs
- The changes to the grid represent a step-up in system complexity that the ISO needs to be prepared to address beginning in 2024 and throughout the remainder of the decade
 - This step-up in complexity represents a considerable increase to ISO workload



Executive Summary

- The proposed budget represents what is needed for the ISO to address increased workload, remain competitive in the labor market, and keep pace with inflationary effects on employee compensation in order to attract and retain experienced personnel necessary to support the clean energy transition
- The ISO conducted a job-specific market competitiveness analysis that outlined the need for the ISO to “catch-up” on salary commitments to both attract new talent and retain existing employees
 - Turnover rate has increased since the pandemic, and remains high
 - In 2022, the ISO engaged a compensation consulting firm to conduct 1-for-1 job-specific benchmarking to establish competitive rates of pay for our highly skilled and in-demand workforce
- Lastly, the budget reflects additional investment in information technology (IT) to address inflationary and renewal costs for IT infrastructure and licensing, cybersecurity, and the transition to cloud-based infrastructure

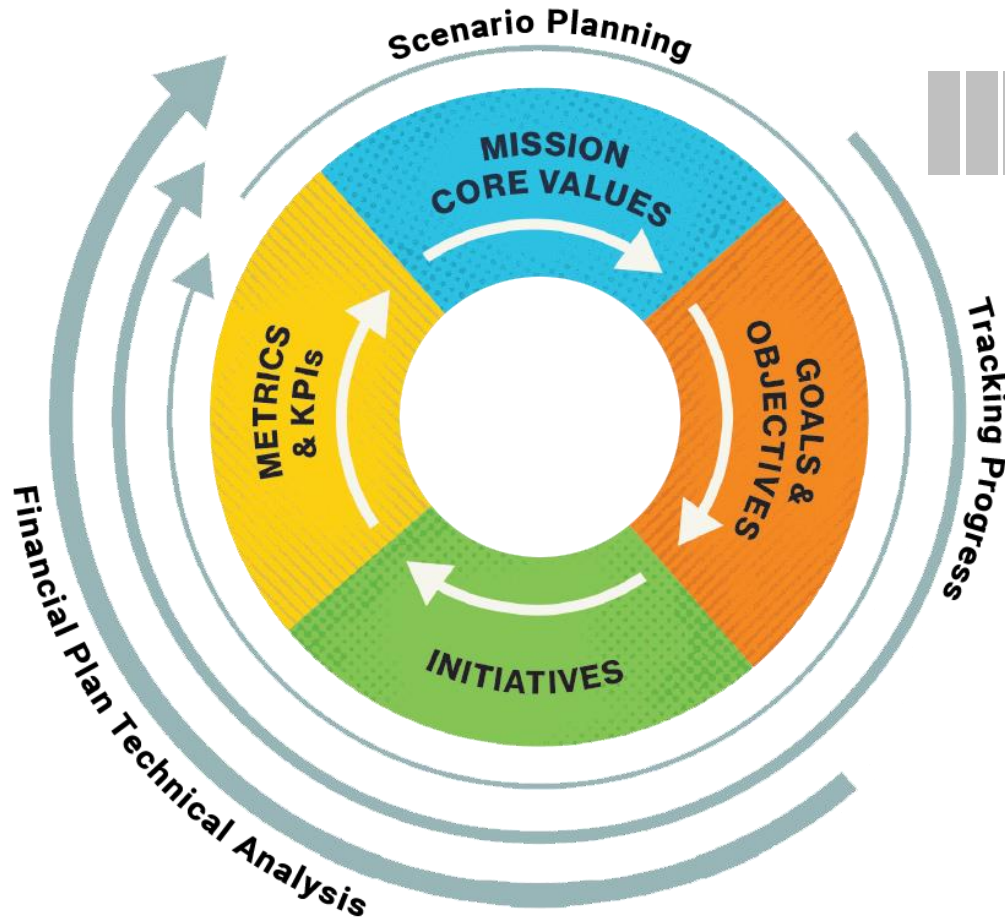
THE STRATEGIC PROCESS

ISO-NE's integrated business and strategic planning framework

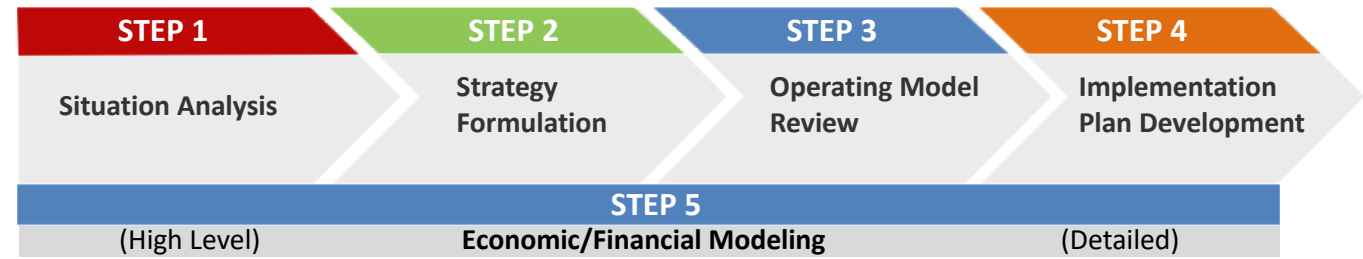


Strategic Planning Framework

The 2024 ISO-NE budget represents the needs for the organization's strategy in supporting the region on its path to a decarbonized grid



Strategic Planning Framework – Five-Step Project Approach



The 2024 budget responds to the region's goal of decarbonizing the electric grid

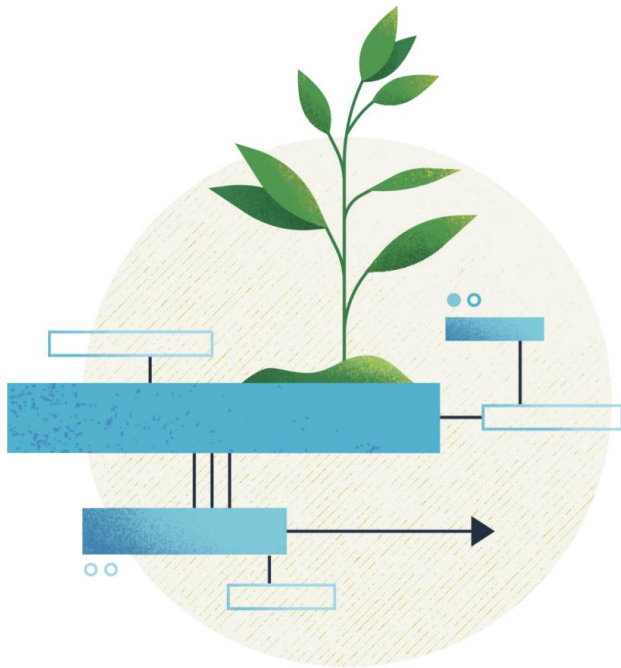
Annual Process – Business and Strategic Planning

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



Our Guidepost: The ISO New England Vision Statement

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



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

The ISO's Vision represents the company's commitment to work with FERC, the states, and market participants to support the clean energy transition (within the limits of our jurisdiction)

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



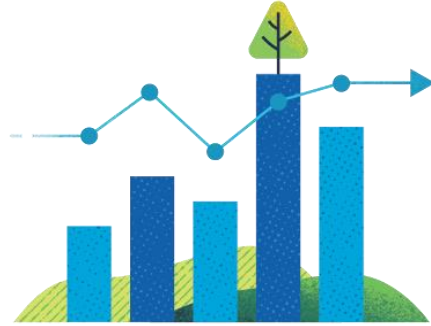
Four Pillars of Supporting a Successful Energy Transition

When the ISO looks toward the future, these are the objectives the ISO, states, market participants, and regulators need to advance in order to support the clean energy transition



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

TRENDS AND DRIVERS IMPACTING THE 2024 ISO-NE BUDGET



Supporting Decarbonization of the New England Power System Will be the Primary Driver of ISO Work Over the Next Decade

- Decarbonization will change the composition of the power system
 - Increasing numbers of inverter-based resources looking to connect to the New England grid
 - Additional resources are connecting to the distribution system, outside of the ISO's current visibility, that contribute to load variability and forecasting challenges
- Changing load characteristics will exacerbate operational complexity
 - Increased load anticipated through electrification of heating and transportation
 - Increased variability through proliferation of behind-the-meter (BTM) generation
 - Increasing load-dependence on weather at a time when weather is becoming more erratic



ISO Planning New Investments to Support Clean Energy Transition

The region has embarked on a major grid transformation that the ISO is well-positioned to support

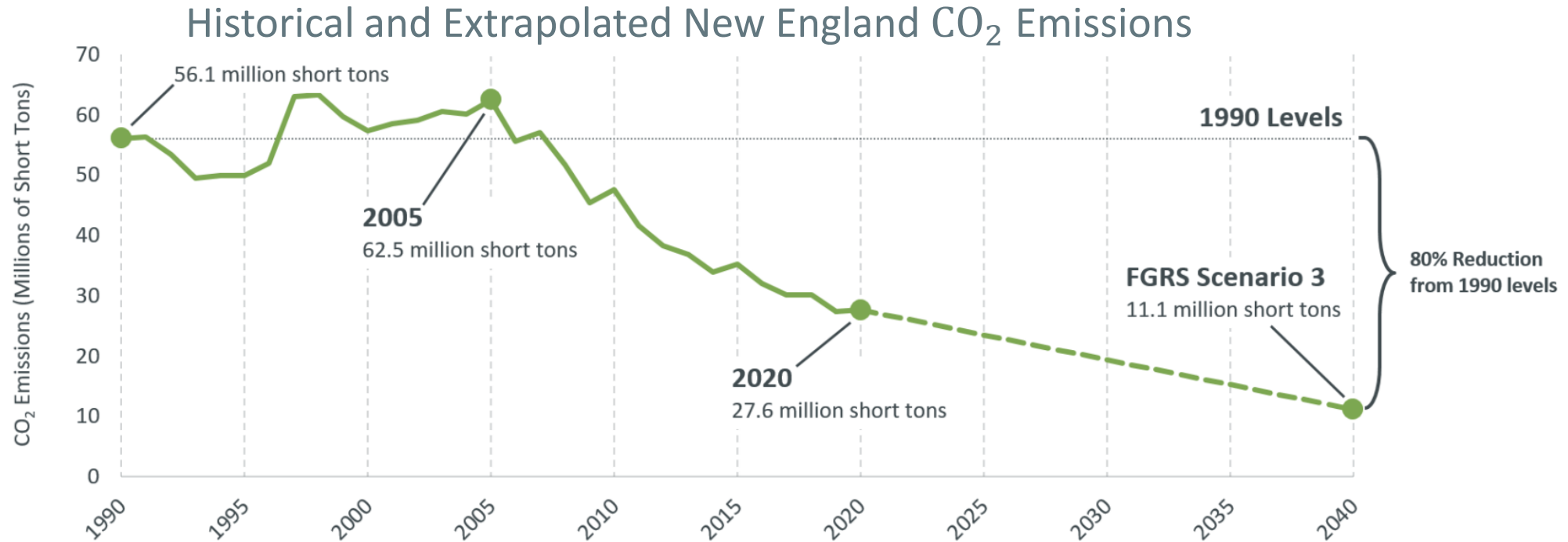
Public policies driving decarbonization represent the largest catalyst for change to the New England power system

Decarbonization goals will lead to a 2040 grid with much higher loads, load-variability, and a much greater number of variable supply resources

More employees, with different skillsets will be needed to address the volume of market design changes and operational/planning complexities

Major investments in new technologies to create and support the core business applications and processes, including increased computational capacity to deal with increased grid complexity

Emissions Reduction of the New England Grid through Decarbonization of the Resource Fleet is the Catalyst for Change to the New England Grid

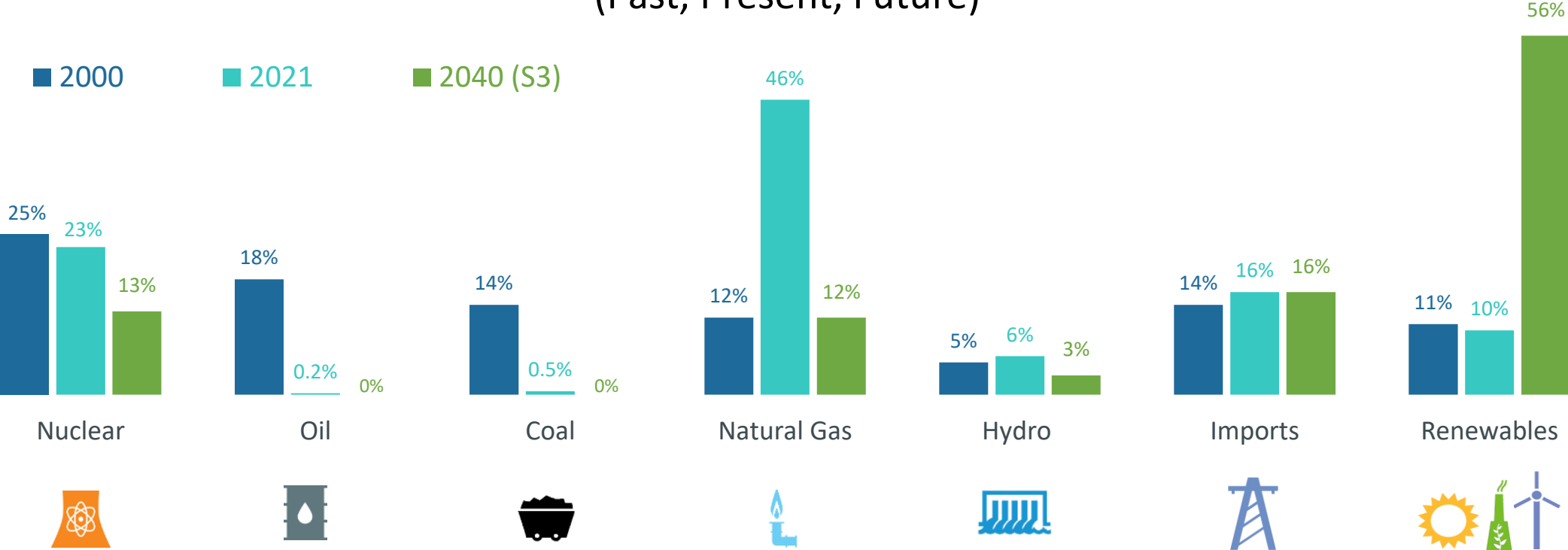


Note: The dashed line between 2020 and 2040 illustrates the difference between the known emissions in 2020 and the simulated emissions in 2040 from FGRS Scenario 3. We are not predicting what the annual emissions levels or rate of reduction will be between those two years

- State policies to address climate change through emissions reduction outline, for the most part, an **80% reduction from 1990 levels by 2040**
- These policies will result in a drastically different generation profile for the region

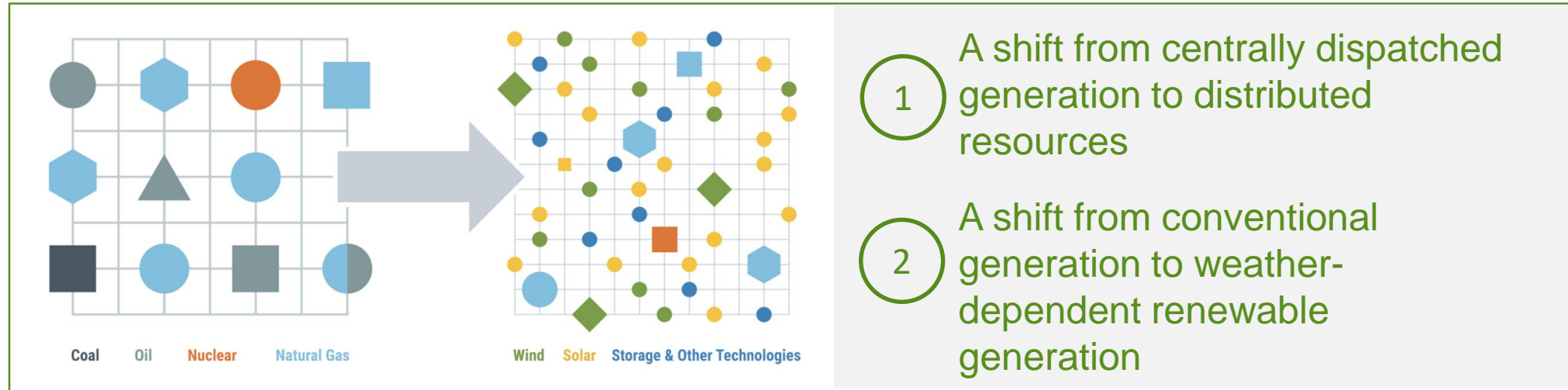
Just as Natural Gas Displaced Oil/Coal-Fueled Resources Over the Last 20 Years, Renewables will Displace Natural Gas-Fired Resources Over the Next 20 Years

Percent of Total **Electric Energy** Production by Source
(Past, Present, Future)



Source: ISO New England [Net Energy and Peak Load by Source](#); data for 2021 is preliminary and subject to resettlement; data for 2040 is based on Scenario 3 of the ISO New England [2021 Economic Study: Future Grid Reliability Study Phase 1](#). Renewables include landfill gas, biomass, other biomass gas, wind, grid-scale solar, behind-the-meter solar, municipal solid waste, and miscellaneous fuels.

Two Dimensions to the Transition to Clean Energy that Contribute to Increased Grid Complexity



The changing resource mix **will increase ISO workload** in both the long- and short-term

- The number of assets in New England will grow into hundreds of thousands/one-million-plus in number, leading to increased administrative burden and computational capacity requirements
- Growing generation and fuel uncertainty will lead to increased focus on energy adequacy efforts
- The resource mix will likely require different market designs
- Urgency around the transition to clean energy will increase, leading to greater focus on ISO actions and the need for more and different types of public and regulatory engagement
- **Additional ISO staff and new capabilities will be needed to support these efforts**

By 2030 the ISO Expects to See Substantial Changes to the New England Power System

The ISO needs to plan to administer, operate, and make market design changes for a power system that, by 2030, is projected to be very different than the grid today

- **Doubled installed capacity of solar resources** (both on the grid and on the distribution system)
- **Thousands of MW of planned offshore wind**
- **Substantial new transmission investment**
 - Supporting inter- and intra-regional transfers, upgrading condition of existing assets, and addressing increasing interaction between transmission and distribution system
- **Substantial increase in number of energy resources** integrated into ISO markets – pursuant to FERC Order 2222
- **Enhanced market structures** – accounting for resource mix with different operating characteristics

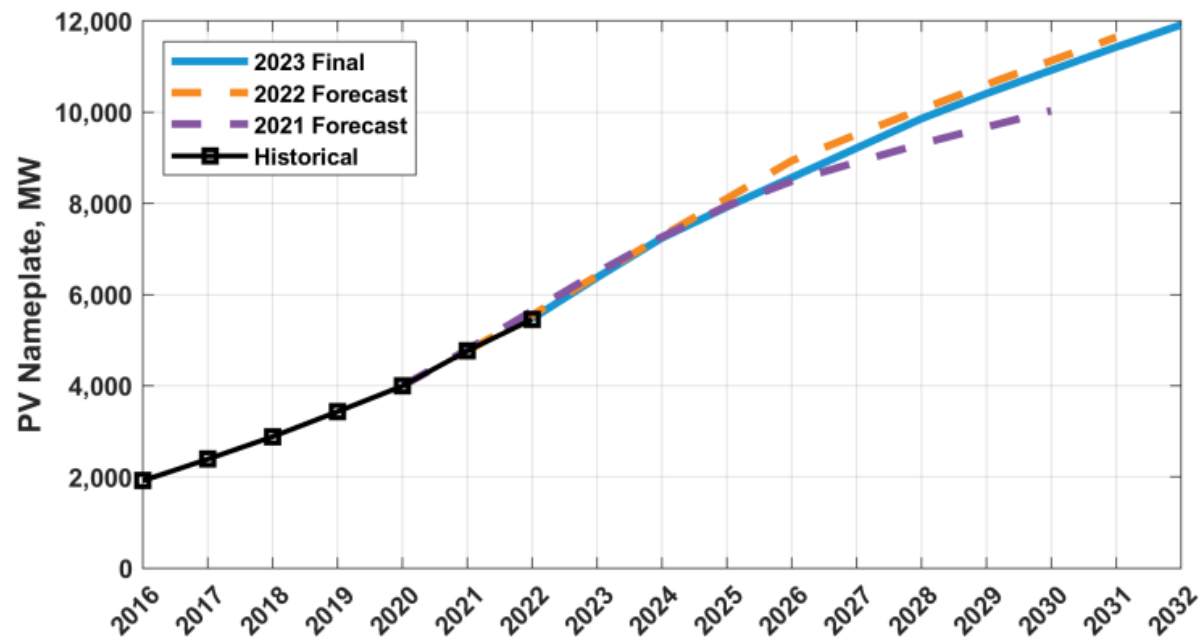
To support these efforts, the ISO will engage in a slate of work in 2024 and beyond that directly addresses these developments, including but not limited to:

- Market design focused on forward market overhauls for Resource Capacity Accreditation and assessments for auction format (prompt-seasonal), planning for Order 2222, FCA reforms, initiatives to improve forecasting and modeling, continued work on the 2050 Transmission Study, and extended/longer-term transmission planning

ISO Forecasts Strong Growth in Solar Photovoltaic (PV) Resources

Regional PV Nameplate Capacity Growth

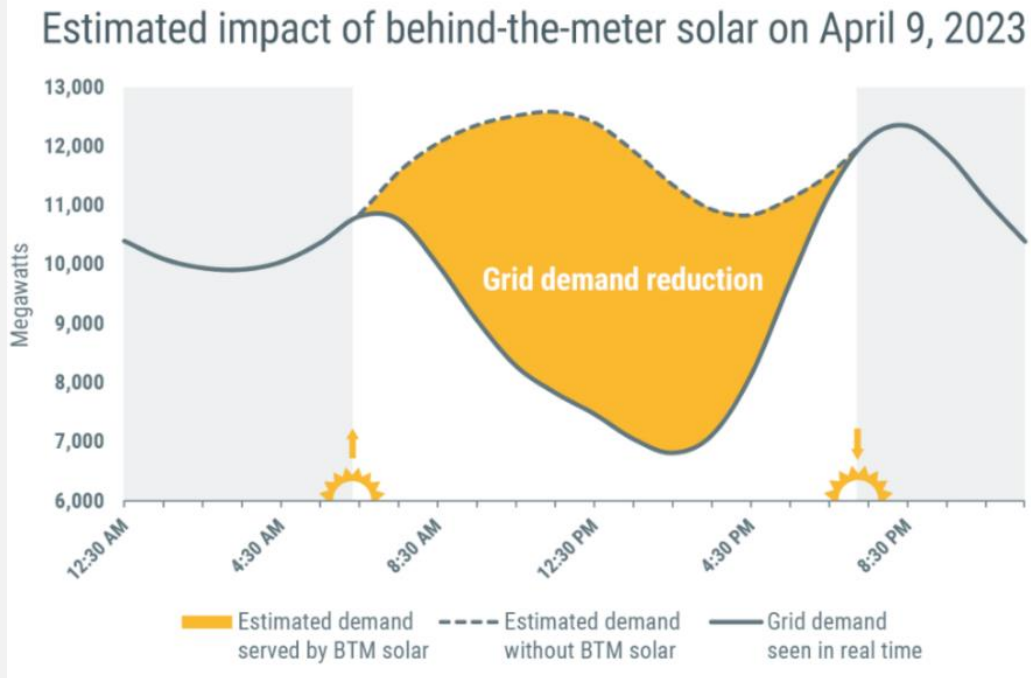
Historical vs. Forecast



Source: 2023 Final PV Forecast, NEPOOL Distributed Generation Forecast Working Group (Apr. 2023)

- Investments in ISO forecasting capabilities have improved our ability to forecast PV capacity growth, and further investments will be needed
 - ISO started forecasting electrification (both heating and transportation) as part of CELT 2020 and has since devoted increased attention to each forecast in terms of inputs and methodological enhancements
 - Each year, additional sub-trends and data emerge, and are expected to warrant continuous refinements/enhancements over time

The Region Increasingly Relies on Variable, Weather-Dependent Resources Outside of ISO's Visibility

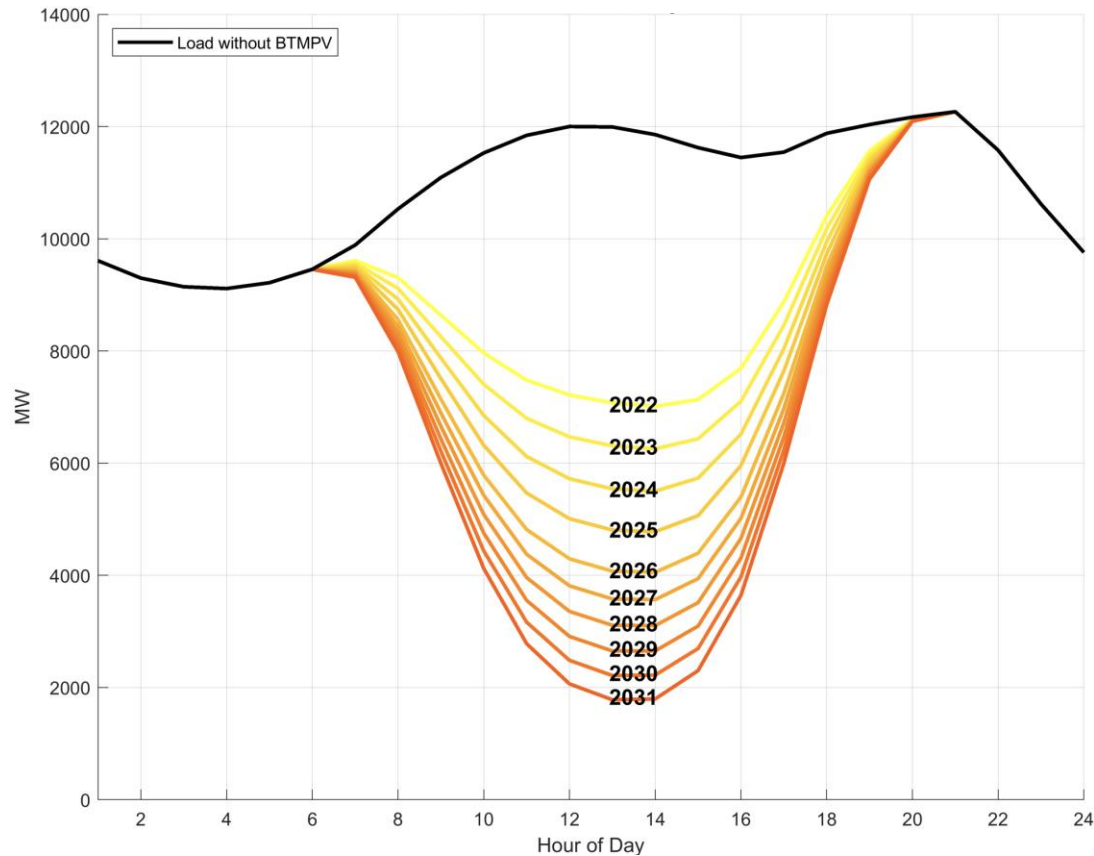


The 2024 budget increases represent initiatives and personnel to help address the changing system dynamics illustrated above

- Midday loads are driven by non-dispatchable, weather-dependent resources, outside of ISO's purview, whose output changes on a **second-to-second basis**
- This changing load profile, and impact on transmission system operations and generation dispatch, drive 2024 initiatives and work in the latter part of decade
 - Work with transmission owners and distribution companies to manage transmission system voltage/stability and develop new operating protocols
 - Allocate internal resources for deriving and implementing EMS solutions
 - Study implications for generator dispatch as load reaches minimum generation levels
 - Study a bulk electric system that can work at very low load levels (e.g., sunny, spring days) and at very high levels (as electrification increases)
 - Enhance market rules to compensate balancing resources needed to address steep load changes

Moving Towards 2030, Operational Impacts Will Become More Pressing as BTM Proliferation Continues

Projected NE Load Profile with Increasing BTM PV
("Duck Curve" transitions to "Canyon")



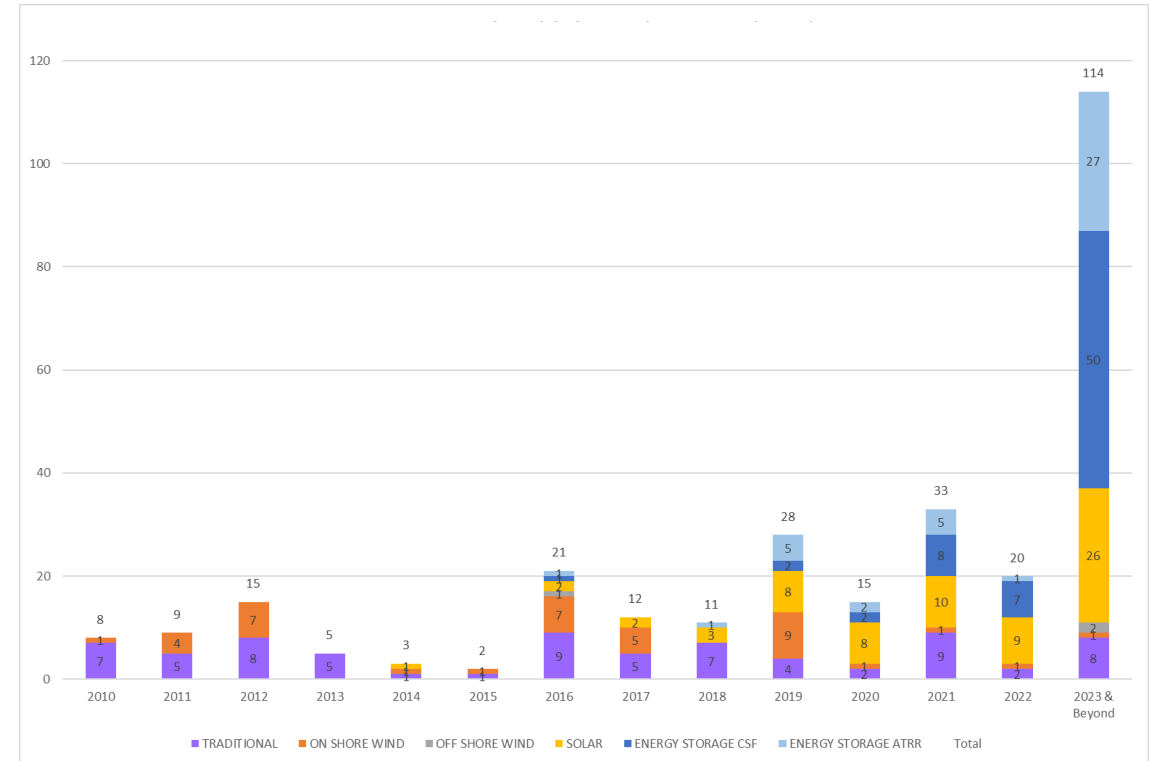
- Trends in electrification and Distributed Energy Resources also warrant continuous methodological enhancements to both long- and short-term load forecasting processes to prepare for future changes in grid operation:
 - Acquisition of new or improved data sources and the use of increasing volumes of data needed as model inputs
 - Improved modeling capabilities and related data analytics
 - Need to move to increasing levels of granularity in our processes and overall accounting
 - Greater emphasis on probabilistic forecasting to quantify and provide situational awareness regarding the time-varying amounts of uncertainty in planning and operating our system

Source: ISO Load Forecasting, May 2023

Commercial Modeled Assets Have Grown Substantially, Requiring a Substantial Increase in Asset Registration Workload

- The number of projects being coordinated per year has increased, while both the average and median size of Modeled Assets (MW) has decreased
- These new assets (greater than 1MW) consist of primarily solar and energy storage connecting to 115 kV lines that are visible and controllable by the ISO
 - ISO expects to administer registration for an increasing number of new modeled assets
- The registration effort is mostly the same regardless of size of the project
- The change in market asset mix shows a shift from large controllable generation to smaller, weather-dependent generation

New Commercial Modeled Assets by Category (Count)



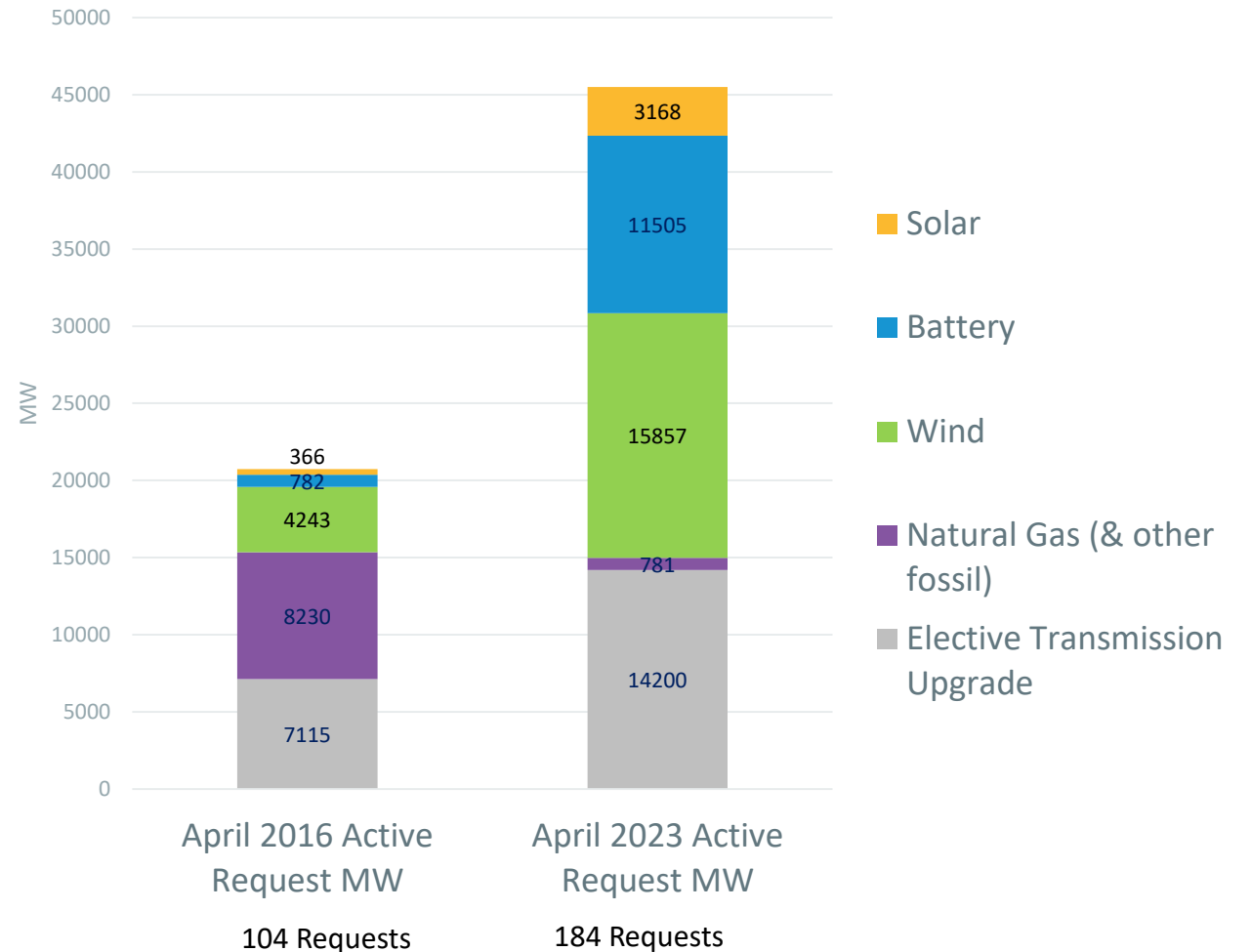
The numbers from 2023-2025 include any projects that are being coordinated with the ISO-NE Asset Registration team and working towards Commercial Operation in the market.

Source: ISO Asset Registration, June 2023

Administering More Resources Connecting to Transmission System

- Significant increase in applications to be studied (mainly solar, wind, & battery)
 - Number of requests in the ISO Queue is approx. 80% higher now than seven years ago
- Substantial increase in capacity being proposed to interconnect to grid requires analysis addressing a material revamping of supply & grid operations
- ISO is allocating resources while also taking into account policy changes (i.e., FERC Interconnection rulemaking – “first ready, first served”) that will ameliorate some of the queue backlog

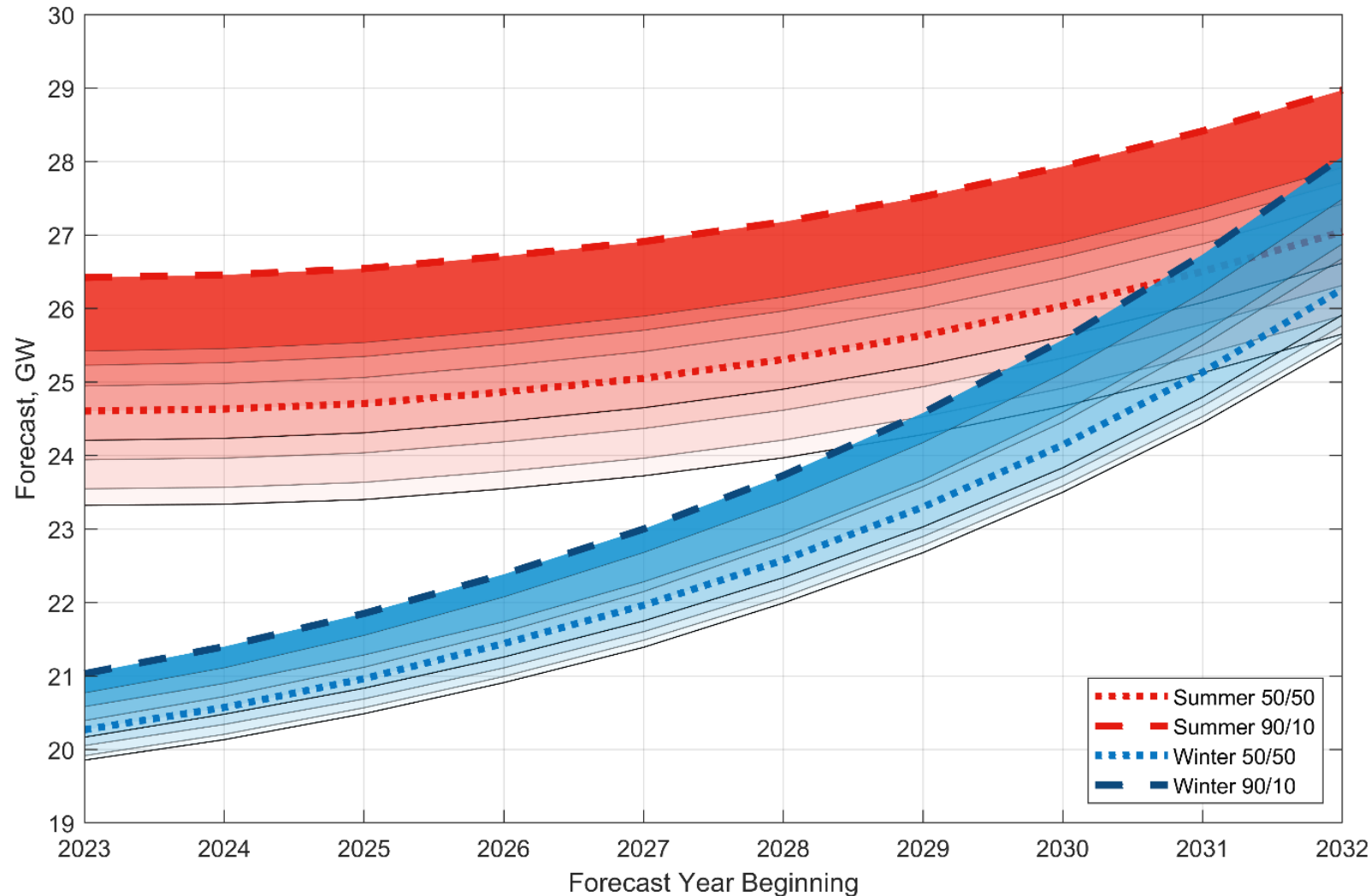
ISO-NE Interconnection Request Activity



Source: ISO Transmission Services & Resource Qualification, May 2023

Electrification of Heating and Transportation Cause Winter and Summer Peak Convergence, Expected in the Early-Mid 2030s

- Plot shows “peak” portion of probabilistic net load forecast distribution for both winter and summer
- By 2031, the 90/10 net winter demand forecast exceeds the 50/50 net summer demand forecast
- Beyond the forecast horizon, by the mid-2030s, electrification will cause winter demand to become the typical, prevailing peak season



Source: ISO Load Forecasting, May 2023

The Grid is Increasingly Reliant on Non-Dispatchable, Weather-Dependent Generators that Have Already Begun to Stress ISO Forecasting and Interconnection Capabilities

Over the next 15 years, the region needs to add almost double the amount of new generation as was added to the system in the last 25 years

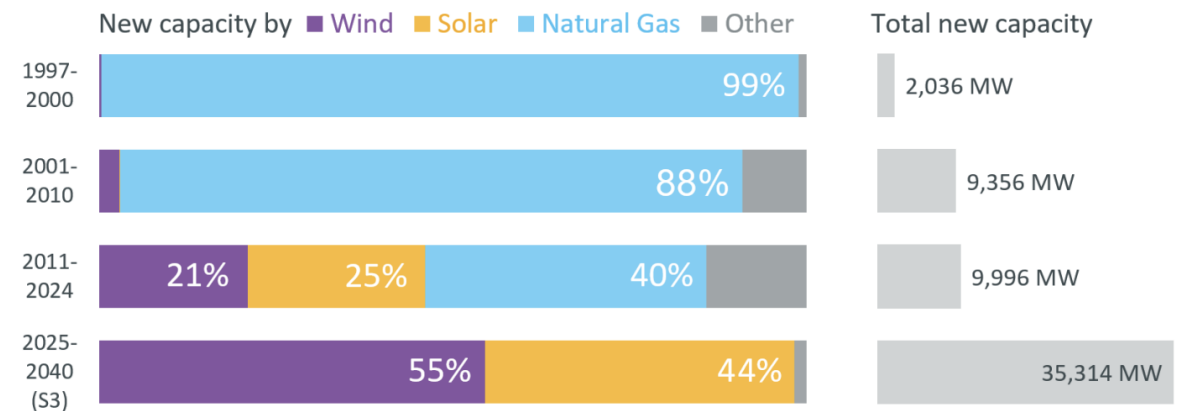
2040 grid projection:

- **Potential for 1 Million+** non-dispatchable/weather-dependent generators
- **Addition of 17,000 MW** of offshore wind
- **Addition of 28,000 MW** of solar power

Compared to the grid of today:

- **Approx. 350 dispatchable generators** with **approx. 32,600 MW** of generating capability
- **About 270,000 solar power installations** totaling about **5,500 MW** (nameplate), with most connected “behind the meter”

Historical and Anticipated New Resource Capacity by Fuel Type, 1997 Baseline



Source: Future Grid Reliability Study

ISO Planning New Investments to Support Clean Energy Transition

The region has embarked on a major grid transformation that the ISO is well-positioned to support

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Decarbonization goals will lead to a 2040 grid with much higher loads, load-variability, and a much greater number of variable supply resources

More employees, with different skillsets will be needed to address the volume of market design changes and operational/planning complexities

Major investments in new technologies to create and support the core business applications and processes, including increased computational capacity to deal with increased grid complexity

Successfully Achieving the Goals Outlined by the Region Will Require Substantial Investment in ISO Workforce, Systems, and Processes

- In order to keep pace with the needs of the transition to cleaner generating resources, the ISO **must begin ramping-up its capabilities and operational capacity now**
- **The 2024 budget increases represent increases that explicitly support the clean energy transition** through:
 - Addressing the expanding interconnection queue and related FERC interconnection order
 - Investments in cloud capabilities to support data requirements for increased number of resources
 - Incorporating hybrid, storage, renewable, and smaller generating assets into ISO markets
 - Assessment of a conceptual framework for a prompt/seasonal capacity market
 - Assessment and implementation of tools for improving ISO capabilities for modeling and maintaining situational awareness of distributed and limited energy resources and changing load behavior
 - Increasing granularity of weather forecasting for weather-dependent resources
 - Supporting states' policy/project preferences & NEPOOL prioritization process
 - Addressing forthcoming FERC order on long-term transmission planning for asset condition-based replacement and future-sizing of the transmission system
 - Developing and retaining in-demand skillsets for IT advancements and for clean energy transition
 - Commensurate increases to ISO support staff to ensure continued efficient operations

Clean Energy Transition and Adjustment to Salaries

Addressing the clean energy transition is impacting all aspects of industry nationwide, leading to a **tight labor market; inflation is also impacting new and existing employees' compensation expectations**

- **Addressing inflationary effects and increased competition in labor market:**
 - For many years, the ISO's annual budgets have focused on creating efficiency through keeping expenses and headcount flat, which has caused the organization to fall behind in offering competitive salaries
 - The ISO engaged the consulting firm, Mercer, to conduct a 1-for-1 job-specific market competitiveness analysis in addition to our historical national compensation surveys to ensure we have the data needed to budget and offer competitive wages for staff
 - The ISO expects continued upward pressure on compensation with remote flexibility creating additional opportunities for highly-valued talent

2024 FTE Additions to Address the Clean Energy Transition

- As the clean energy transition is taking hold, **ISO is experiencing a step-change in work** to enable/support the changing resource mix:
 - Associated operational/market design complexity; FERC directives; and related state and participant work requests
- In 2024, the ISO needs to continue ramping up headcount to address the increased system complexity presented by the changing resource mix
 - To support the objectives of the Four Pillars of the clean energy transition and to continue making progress on the ISO's strategic goals, there are 41 proposed FTE additions in 2024
 - 35 of the 2024 FTE additions, or 85%, are related to the clean energy transition, spread across departments
- Budget increases for 2024 are in-line with the observed trends of other ISOs and ISO-NE management believes it is taking a measured, gradual approach to a major shift in the energy industry

2024 BUDGET OVERVIEW



2024 Budget Overview

- There are **three key drivers supporting the proposed 2024 budget increase** (see further details on the following slides):
 - Continued preparation for the clean energy transition
 - Inflationary and continued operations increases
 - Net change in revenue requirement true-up
- The 2024 Proposed Budget reflects the resources needed to support the clean energy transition and to continue carrying out the work to fulfill ISO's mission and continuing operations
- The proposed 2024 revenue requirement *before true-up* is \$276.9M, an increase of 15.3% over 2023, including the net true-up of \$11.6M, the total revenue requirement increase is 21.4% year over year

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

2024 Budget Overview *(cont.)*

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

- The proposed 2024 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 \$(0.3) million decrease compared to the preliminary top-down version; key changes consist of:
 - A \$(0.9) million reduction in Depreciation Expense due to adjustments to capital project spending for which project in-service dates impacted this line item
 - \$0.8 million added for Computer Services upon refinement of details in the bottom-up budget
 - Increases include maintenance costs on capital project additions (primarily related to Cyber Security), a tool for Transmission System congestion management, and for various additional licensing needs
 - Other changes that largely net with each other include:
 - Professional Fees increases to address ISO-NE's decreased spending power from the combined effects of inflation and scarcity of in-demand skillsets, these were offset by partial estimated reductions in funding for the assessment of a Prompt Seasonal Capacity Market and Transmission Planning study work
 - Small dollar adjustments across several other line items

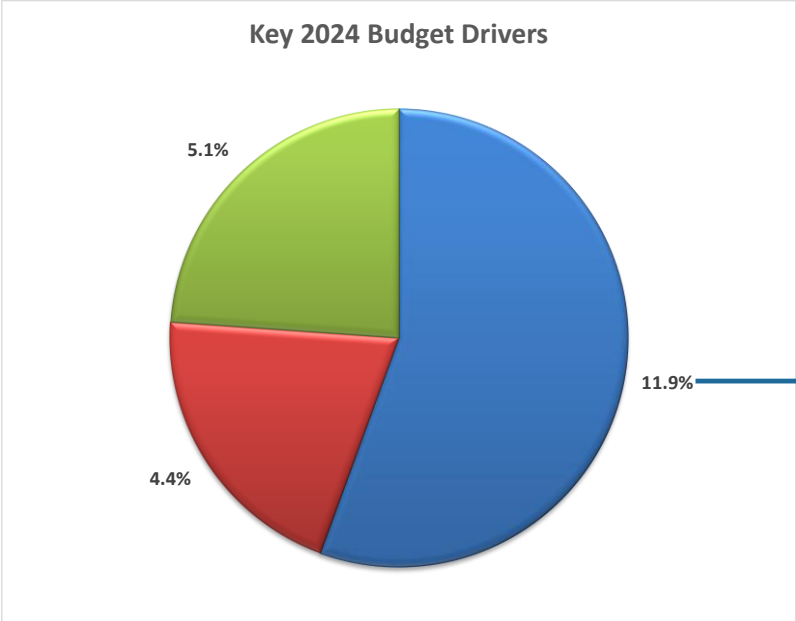
For the ISO to Meet Region’s Objectives for Transitioning to Clean Energy, a Significant Investment is Required in the Near-Term

There are three main drivers for the increases to the 2024 ISO budget.

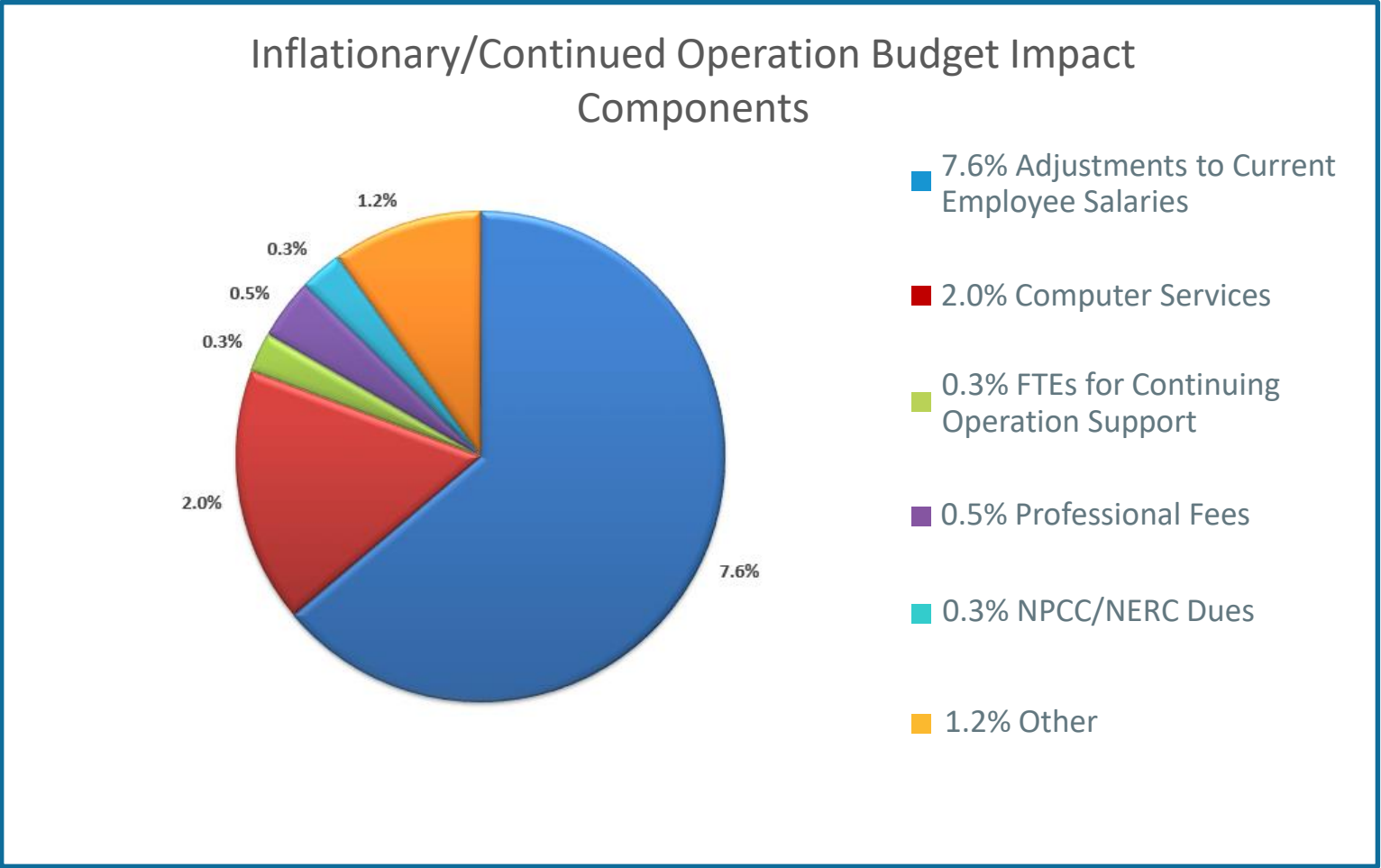
1. Adding full-time employees (FTEs) and other resources to address work directly related to the transition to clean energy and related indirect support
2. Inflationary and continued operations drivers:
 - “Catch-up” on salary increases to retain and attract employees by keeping pace with labor market
 - Additional investment in information technology (IT) to address inflationary and renewal costs for IT infrastructure and licensing, cybersecurity, and the transition to cloud-based infrastructure
3. Net change in the annual revenue true-up

Driver	Increase as a % of Total Revenue Requirement	\$ Amount
Clean Energy Transition	4.4 %	\$ 9,952,500
Inflationary/ Continued Operations	11.9 %	\$26,739,000
Net Change in Rev Req True-Up	5.1 %	\$11,582,500
Total:	21.4 %	\$48,274,000

Key Drivers to the 2024 ISO-NE Budget



- 11.9% Inflationary/Continued Operations
- 5.1% Net Change in Rev Req True-Up
- 4.4% Clean Energy Transition



- 7.6% Adjustments to Current Employee Salaries
- 2.0% Computer Services
- 0.3% FTEs for Continuing Operation Support
- 0.5% Professional Fees
- 0.3% NPCC/NERC Dues
- 1.2% Other

Continued Preparation for the Clean Energy Transition

- Continued preparation for the clean energy transition requires the ISO to maintain current operations (markets, grid, and systems) while incorporating new models, redesigning and implementing new systems, and planning the transmission systems for the new mix of clean energy resources
 - Resources for market design focused on forward market overhauls for Resource Capacity Accreditation and assessments for auction format (prompt-seasonal); Day-Ahead Ancillary Services; Forward Capacity Market evolution and parameter updates; and Inverter-Based Resources
 - Will require utilization of the nGEM system for the next generation of the markets
 - Market & Credit Risk must design collateral requirements for the evolving markets and continually perform risk assessments for sufficiency
 - Funding will also include professional fees and computer services to support the continuing efforts towards the region's transition to high levels of renewable and distributed resources while maintaining a robust fleet of balancing resources
 - Improving power system modeling capabilities for both reliability and planning
 - Integrating new and enhanced systems for the Clean Energy Transition, reflecting the increasing levels of Distributed Energy Resources and Inverter-Based Resources
 - Depreciation Expense is also budgeted to increase in 2024 due primarily to the 2023 mid-year go-live of the nGEM Market Clearing Engine Implementation project resulting in a full year of depreciation expense in 2024
- 35 of 41 FTEs proposed for 2024 (with funding allocated throughout the year*) are to address the Clean Energy Transition

*See slide 67 for details on FTE funding impacts with allocating FTE additions throughout the year.

Inflation and Ensuring Continued Operations

- Address Employee Salaries and Recruiting Efforts:
 - Increased funding to align employee compensation in a tight labor market and to reduce turnover rates, particularly employees with mid-range experience (5-10 years) fulfilling critical roles, funding to reflect the impact of job specific benchmarking to level set the base salaries commensurate with the market, for incentive compensation to align with market, and for increases to expand recruiting efforts (within the industry and the broader market)
 - 8.0% increase (in 2024) for the annual merit and equity/promotion budgets (4.0% targeted for annual merit and 4.0% for standard and targeted equity/promotions); and the full-year impact of additional targeted equity increases given in 2023 (2.0%), that were funded primarily by the CEO emerging work allowance during 2023
 - The past several years have been challenging in hiring and retention requiring the ISO to offer higher salaries to attract and retain employees
 - The ISO has been conducting compensation studies in phases to determine the appropriateness of compensation in roles across the organization; phase I was completed in 2023 with compensation increases funded by the emerging work allowance as noted above; compensation increases resulting from the results of the future study phases will be funded, as needed, in the 2024 budget
 - Increases for employee incentive compensation target amounts including adjustments based on compensation study review
 - Funding for recruiting related costs including relocation and recruiter fees

Inflation and Ensuring Continued Operations *(cont.)*

- Computer Services and Cyber Security Technology:
 - Providing additional resources to continue efforts to combat cyber security threats that have become more complex and frequent
 - Moving forward with technology shifts to utilize increased levels of cloud infrastructure and virtualization technology in a coordinated manner to improve performance while maintaining IT system reliability
 - Impacts of supply chain pressures and inflationary increases in procuring IT assets, renewal costs for IT licensing, and maintenance support
- A net increase of three consultant FTEs to augment staff in the area of Cyber Security; and various other increases including inflationary and rate increases across our consulting structure
- NPCC and NERC Dues which are increasing by 11.7% and 7.3%, respectively, due to many similar reasons as ISO-NE budgetary increases, including reliance on technology professionals and tools, decarbonization initiatives, cyber risks, criteria evaluation activity, and recruiting and retention of technically skilled employees
- Inflationary increases (in 2024) for other line items including Insurance Expense, Utilities, Network Operations, Data Services, Meetings and Related expenses, and Employee Training

2024 Budget Overview *(cont.)*

- The 2024 Capital Budget is also presented in summary form
 - Beginning in 2022 the capital budget has increased by \$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 Slides 74 through 79
 - The increased capital spending will result in higher interest expense costs and depreciation expense in future years as capital projects go into service and are included in budgets and rates
 - The 2024 Capital Budget is an increase of \$1.5 million from the 2023 Capital Budget
 - The 2024 proposed capital budget of \$35.0 million is provided with a list of projects by strategic goal that are currently chartered and on-going or in planning/conceptual design (See Slides 82-85)
 - Detailed project descriptions are presented in Appendix 7

2024 Budget Process – Key Dates

- Review 2024 proposed Budgets at the meeting with State Agencies on August 11
 - State Agencies may submit questions on ISO-NE’s proposed budget by August 18
 - 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 5
 - The ISO-NE Board of Directors will review the budgets, stakeholder feedback, and State Agencies’ comments on September 14
 - ISO-NE responses to State Agencies’ comments and proposed adjustments are due on or about September 21
- Review 2024 proposed Budgets at the August 17 Audit & Finance Committee meeting
- Review 2024 proposed Budgets at the September 7 NEPOOL Participants Committee (NPC) meeting
- Review 2024 proposed Budgets at the September 14 Board of Directors Meeting, as noted above, with submitted State Agencies’ comments
- NPC vote on the ISO-NE 2024 proposed Budgets at the October 5 meeting
- ISO New England Board of Directors vote on the 2024 proposed Budgets after the NPC vote
- ISO New England filing of 2024 Budgets with FERC on or about October 13

2024 Budget – 5 Year Comparison

		%		%		%		%	
(Budget Amounts are in Millions)	<u>2024</u>	<u>Change</u>	<u>2023</u>	<u>Change</u>	<u>2022</u>	<u>Change</u>	<u>2021</u>	<u>Change</u>	<u>2020</u>
Operating Budget Before Depreciation	\$244.3	16.8%	\$209.2	10.7%	\$189.1	5.8%	\$178.6	1.8%	\$175.4
Capital Budget	35.0	4.5%	33.5	4.7%	32.0	14.3%	28.0	0.0%	28.0
Total Cash Budget	\$279.3	15.1%	\$242.7	9.8%	\$221.1	7.0%	\$206.6	1.6%	\$203.4
Operating Budget Before Depreciation	\$244.3	16.8%	\$209.2	10.7%	\$189.1	5.8%	\$178.6	1.8%	\$175.4
Depreciation	\$32.6	5.1%	31.0	19.1%	26.0	(1.2)%	26.3	0.2%	26.3
Revenue Requirement Before True-up	276.9	15.3%	240.2	11.7%	215.1	4.9%	205.0	1.6%	201.7
True up	(3.0)		(14.6)		1.1		0.2		(2.9)
Revenue Requirement	\$273.9	21.4%	\$225.6	4.4%	\$216.1	5.4%	\$205.1	3.2%	\$198.8
Forecast – TWhs (1)	140.7	(1.6)%	143.0	(1.0)%	144.4	(2.0)%	147.4	1.0%	145.9
\$/KWh Rate	\$0.00195	23.4%	\$0.00158	5.4%	\$0.00150	7.5%	\$0.00139	2.1%	\$0.00136
Average Monthly Consumer Cost (2)	\$1.46		\$1.18		\$1.12		\$1.04		\$1.02

(1) 2024 Forecast based on May 2023 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.

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

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

2024 STRATEGIC GOAL INITIATIVES



2024 Initiatives: Responsive Market Designs

Ensure sufficient balancing resources to support reliability

1. Assess options for Alternative FCM Commitment Horizons (Prompt/Seasonal)
2. Continued work on Resource Capacity Accreditation
3. Implement Day-Ahead Ancillary Services
4. Implement FCM Reforms in advance of FCA 19 (Bid Flexibility & Return to Service; File FCM Parameters updates supporting MOPR Reforms)

Integrate distributed and storage assets into ISO markets

1. Develop business requirements and software design for Order No. 2222

Other Initiatives:

1. Implement Inventoried Energy Program (winters of 23/24 & 24/25)
2. Design storage modeling market enhancements



2024 Initiatives: Progress and Innovation

Improve modeling for emerging technology resources

1. Implement nGEM Real-Time Market Clearing Engine
2. Enhance data collection for co-located and hybrid resources to improve modeling/visibility
3. Improve modeling and validation to integrate inverter-based resource models

Develop forecasting and load-management solutions for weather-dependent resources

1. Load, Solar, Wind Forecast Improvements – Seeks to improve the wind, solar, and load forecasts through a continuous improvement method including more sophisticated forecast models, increasing the number of weather stations
2. Distribution congestion management
 - Develop a plan for aggregators that will be critical for Order 2222 implementation and settlement-only resource (SOR) enhancements or elimination

2024 Initiatives: Operational Excellence

Continue to modernize IT assets, technologies, and tools to mitigate cybersecurity threats

1. Modernizing tools for escalating cybersecurity threats
2. IT Asset Workflow (ITAW) Integration and Updates
3. IT Support for specific projects (e.g., market design evolution; enhancements to system operator situational awareness/modeling tools)
4. Cloud Computing

Assess near-term impacts of BTM and DER resources on the distribution system

1. Assess voltage issues related to minimum loads
2. Assessing solutions for legacy distributed energy resources tripping on the distribution system

Implement internal process and technology improvements to address increasing grid complexity

1. Enhance reliability assessment software and processes to reflect uncertainty of intermittent resources, energy storage, and hybrid resources
2. Coordinate with PJM and NYISO to initiate study on 1,200 MW single source limit
3. Report on evaluation of tie-benefits to Power Supply Planning Committee
4. Develop and test software for planned 2025 implementation of ambient adjusted line ratings (per FERC Order 881)



2024 Initiatives: Stakeholder Engagement

Working with stakeholders on power system needs for the Clean Energy Transition

1. Extended Term/Longer Term Transmission Planning Phase 2
2. Assist States with RFPs for transmission proposals
3. Coordinate asset replacement for the clean energy transition

Provide high-quality services to stakeholders

1. Finalize Communication Plan in support of ISO Initiatives
2. Survey stakeholders' satisfaction for ISO services

Assessing energy adequacy solutions for the clean energy transition

1. Support the ongoing development of initiatives that promote and ensure energy adequacy in the region (EPRI follow-up)
2. Implementation of Economic Planning for Clean Energy Transition (EPCET)



2024 Initiatives: Attract, Develop, and Retain Talent

Maintain Competitiveness in Labor Market

1. Advance competitive pay benchmarking and associated salary adjustments and structure
2. Continue critical talent retention strategies inclusive of pay, development, and succession planning
3. Additional investment in early career talent - intern, rotation, and network programs
4. Improve employee experience- onboarding, coaching and development, flexible work (hybrid)
5. Deliver competitive benefit programs with a focus on emotional, physical, and financial wellness

Support the Professional Development of the ISO Workforce

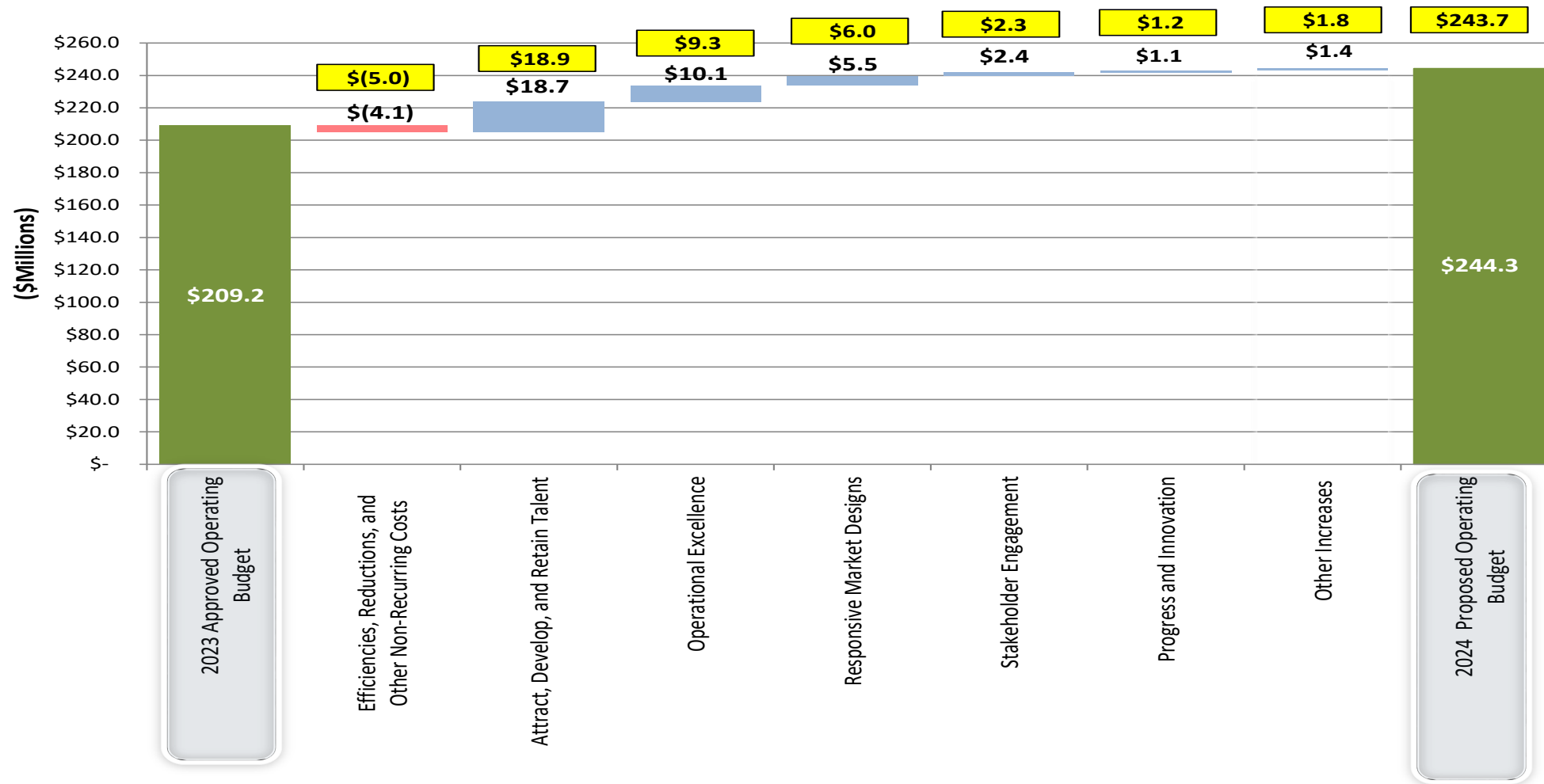
1. Advance Diversity and Inclusion- raising awareness, employee networks, reducing bias
2. Meet identified training needs through design and delivery of all mandatory and requested training
3. Effectively administer all HR core processes to achieve required results- annual/interim performance review process, development plans, etc.
4. Refresh and administer HR policies and programs
5. Operations training for departments beyond control room

2024 Detailed Budget Changes by Strategic Goal



2024 Budget

Changes in budget by Strategic Goal



Note: Items in yellow above represent the estimate that was included in the 2024 preliminary budget presented in June 2023.

2024 Budget Details

Efficiencies, Reductions, and Other Non-Recurring Costs

Reductions include: (\$4.1M)

- Reduction from non-recurring markets study work, including Future Grid Phase II study; Inventoried Energy Program; and Day-Ahead Ancillary and FCA 19 Parameter update reviews
- Reductions for Resource Capacity Accreditation Parameters and Design, and Pathways Study Phase II work (Pathways Study Phase II work will be included in EPCET effort)
- Reduction for Mystic Cost of Service agreement fuel supply management work with agreement ending in mid-2024
- 2050 Transmission Study Work to be completed in 2023
- A forecasted increase in Interest Income due to rates and settlement account balances
- Reduction for participant proposal support work to largely be covered by internal staff
- Reduction in board of director related expenses: No board search required in 2024 based on current turnover dates and non-recurring board evaluations in 2024
- Information Technology patching staff augmentation to be covered by internal staff
- Transmission Planning and Analysis tool maintenance absorbed by internal staff
- Reduction in communications campaign work in 2024, with funding only included for periodic updates

2024 Budget Details *(cont.)*

Detailed allocation by Strategic Goal/2024 Initiatives

Goal 5: Attract, Develop, and Retain Talent: \$18.7M

- Merit and Promotion increases: for annual merit (4.0%) and for standard and targeted equity/promotions (4.0%); 2.0% impact for additional targeted equity increases in 2023 that were funded primarily by contingency funding during that year that will have an impact on 2024 budget (\$14.1M)
- Increase for employee incentive target amounts including adjustments based on compensation study review (\$2.6M)
- Increases in employee benefit costs, primarily for increased number of employees in Defined Contribution Benefit Plan and payroll taxes (\$0.8M)
- Higher recruiting related expenses including relocation, recruiter fees, and background checks (\$0.4M)
- 2.5 FTEs for early career technical talent FTE's to meet future talent needs with continued investment in attracting, developing, and retaining talent (\$0.3M)
- Increase of intern program funding for both number of interns and higher pay rates (\$0.3M)
- 0.75 FTE in Human Resources for talent program manager to lead and support the design and improvement of HR programs (\$0.1M)
- Increase in board member retainers based on compensation firm recommendation (\$0.1M)

Note: FTE counts in this section and in blue font are the net funded amount for the 2024 budget which is 29. FTE counts on Slides 64 through 66 (equaling 41 FTEs) are proposed gross additions.

2024 Budget Details *(cont.)*

Detailed allocation by Strategic Goal/2024 Initiatives

Goal 3: Operational Excellence: \$10.1M

- Computer Services infrastructure increases for operating system support including extended coverage for unsupported versions while completing the version upgrades; additional backup storage needs; for backup recovery software; and for additional virtualization licensing (\$1.2M)
- Professional Fees to support Information Technology reliability and cyber defenses including the development of a cyber security framework, an engineer to support cyber security network monitoring and detection software, increases for cyber related social engineering assessment work, and a network reliability engineer (\$1.0M)
- Support for a regional study with PJM and NYISO for 1,200MW single source contingency limit appropriateness and determine upgrades required to support 2,000MW single source limit (\$0.9M)
- Increases for application maintenance on new products including those for Cyber Security, Information Technology Infrastructure, and Information Technology Architecture and Development (\$0.8M)
- Professional Fees for Distributed Energy Resource and minimum load studies for assistance in determining requirements on how to ensure reliability on the system under conditions where the system is powered solely by inverter-based resources (\$0.5M)

Note: FTE counts in this section and in blue font are the net funded amount for the 2024 budget which is 29. FTE counts on Slides 64 through 66 (equaling 41 FTEs) are proposed gross additions.

2024 Budget Details *(cont.)*

Detailed allocation by Strategic Goal/2024 Initiatives

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

- Computer Services cyber security costs for cloud enterprise software to provide visibility and management of the growing portfolio of SaaS applications and for impacts of increased cyber security tool enhancements (\$0.5M)
- Increases for various other Computer Service costs across multiple areas including Enterprise Application Support and Architecture & Data Governance (\$0.4M)
- 1.25 FTE in IT Cyber Security support to address threats quickly and the addition of identity and access management functions, ransomware concerns, and additional monitoring for cloud technologies (\$0.2M)
- 1.0 FTE in IT Enterprise Application Support for settlements support due to Day-Ahead Ancillary Services and Resource Capacity Accreditation projects and for continued integration and delivery of new software products (\$0.2M)
- Increases in various software products due to licensing needs to accommodate the ISO's larger workforce (\$0.1M)
- Building Services increases for facility updates and cyclical maintenance (\$0.1M)

Note: FTE counts in this section and in blue font are the net funded amount for the 2024 budget which is 29. FTE counts on Slides 64 through 66 (equaling 41 FTEs) are proposed gross additions.

2024 Budget Details *(cont.)*

Detailed allocation by Strategic Goal/2024 Initiatives

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

- Power System Modeling license increase due to software vendor no longer providing product discount (\$0.1M)
- 1.0 FTE in Strategy, Risk, and Operations Compliance to support ISO-NE resiliency program (\$0.1M)
- 1.0 FTE in Internal Audit primarily to support Information Technology, Cyber Security, and CIP related audits (\$0.1M)
- 0.75 FTE in Information Technology Infrastructure to alleviate understaffing pressures that impact the whole organization as new technologies are implemented (\$0.1M)
- 0.75 FTE in Participant Relations & Services to continue effort to convert in-person training and webinar modules to self-paced micro-learning modules that provide time and cost savings to the ISO and participant companies (\$0.1M)
- 0.5 FTE in Advanced Technology Solutions for re-architecting and deployment of Integrated Market Simulator in cloud environment (\$0.1M)

Note: FTE counts in this section and in blue font are the net funded amount for the 2024 budget which is 29. FTE counts on Slides 64 through 66 (equaling 41 FTEs) are proposed gross additions.

2024 Budget Details *(cont.)*

Detailed allocation by Strategic Goal/2024 Initiatives

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

- 0.5 FTE in Resource Qualification for increased workload of RCA requirements starting with FCA 19 (increased qualification steps and activities, fuel contracting reviews, and customer interactions and training) (\$0.1M)
- 0.5 FTE in IT Energy Management Systems to support development as multiple markets related projects progress (\$0.1M)
- 0.5 FTE in IT Architecture to support critical Market Monitoring analytics data management platforms (\$0.1M)
- Professional Fees to support the enhancement and utilization of Human Resource systems including employee benefit program applications (\$0.1M)
- Funding for market software algorithm certifications to provide parallel testing as the ISO transitions to a new vendor performing this work (\$0.1M)
- Reallocation of 0.5 FTE to support Transmission Planning and Analysis tool maintenance (\$0.1M)
- Inflationary increases for Computer Services and Network Operations costs for which the ISO has seen a steep increase across our portfolio of products (\$1.8M)
- Other increases primarily inflationary, and rate increases for staff augmentation consulting, utilities and building maintenance, meetings and related expenses and training, and data services (\$1.2M)

Note: FTE counts in this section and in blue font are the net funded amount for the 2024 budget which is 29. FTE counts on Slides 64 through 66 (equaling 41 FTEs) are proposed gross additions.

2024 Budget Details *(cont.)*

Detailed allocation by Strategic Goal/2024 Initiatives

Goal 1: Responsive Market Designs: \$5.5M

- Consulting support for assessment of Prompt Seasonal Capacity Market and Resource Capacity Accreditation market mechanisms (\$2.5M)
- Funding for FCA 21 Cost of New Entry (CONE) parameter updates (\$0.8M)
- 3.0 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 (\$0.7M)
- 2.0 FTEs in Market Development for integration of distributed energy resources, and large scale storage resources including batteries (\$0.4M)
- 1.0 FTE in Energy Management Systems for integration and utilization of nGEM as market mechanisms get built into the system and to ensure a market structure that will support clean energy and reliability throughout the green energy transition (\$0.3M)
- Consulting support for build out of new margin model for Real-Time, Day-Ahead, and Prompt Seasonal Capacity Markets (\$0.2M)

Note: FTE counts in this section and in blue font are the net funded amount for the 2024 budget which is 29. FTE counts on Slides 64 through 66 (equaling 41 FTEs) are proposed gross additions.

2024 Budget Details *(cont.)*

Detailed allocation by Strategic Goal/2024 Initiatives

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

- 1.0 FTE in Market & Credit Risk for developing, designing, and testing the risk-based adequacy of market participant collateral obligations and supporting implementation of new Market Development projects (\$0.2M)
- 0.5 FTE 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)
- 0.5 FTE in IT Application Software Development to add software development staff to contribute to the Day Ahead Ancillary Services and Resource Capacity Accreditation projects (\$0.1M)
- 0.25 FTE in Resource Adequacy to support work including: Order 2222 and requirements related to a new resource category; additional qualification reviews regarding Sponsored Policy Resources as a result of the MOPR removal; and qualification changes related to Resource Capacity Accreditation (\$0.1M)

Note: FTE counts in this section and in blue font are net funded amount for the 2024 budget which is 29. FTE counts on Slides 64 through 66 (equaling 41 FTEs) are proposed gross additions.

2024 Budget Details *(cont.)*

Detailed allocation by Strategic Goal/2024 Initiatives

Goal 4: Stakeholder Engagement: \$2.4M

- To provide support for New England States' requests (\$0.9M)
- Funding for a medium term energy adequacy assessment (\$0.5M)
- Funding for a Maine Interconnection Cluster Study (\$0.2M)
- 1.0 FTE in Participant Relations & Services to assist in the gathering, managing, and supporting the assessment of participant proposals/requests for the ISO's Annual Work Plan (\$0.2M)
- 1.25 FTE in Transmission Planning resources to support expected increases in transmission RFPs, to move project work forward (document RAS limitations, load interruption thresholds), and support stakeholder requests for long-term transmission studies (\$0.2M)
- 1.0 FTE in Corporate Communications for communications on initiatives, projects, issue positions, emergency communications, and other related regional efforts (\$0.1M)
- 0.5 FTE in Market Development for efforts on energy adequacy that may require significant assessment and novel market initiatives (\$0.1M)
- 0.5 FTE in Transmission Services to support volume increases in the interconnection queue (\$0.1M)
- 0.25 FTE in Planning Services to accommodate evolving economic study needs and environmental outlook efforts (\$0.1M)

Note: FTE counts in this section and in blue font are the net funded amount for the 2024 budget which is 29. FTE counts on Slides 64 through 66 (equaling 41 FTEs) are proposed gross additions.

2024 Budget Details *(cont.)*

Detailed allocation by Strategic Goal/2024 Initiatives

Goal 2: Progress and Innovation: \$1.1M

- 1.5 FTE in Power System Modeling - the increase of renewables, storage, and DERs in the region has resulted in a significant increase in the demand for power system modeling – both for reliability and planning purposes (\$0.3M)
- 1.0 FTE in Planning Services for evolving forecast needs and increased complexity/risk associated with the industry's clean energy transition (\$0.2M)
- 0.75 FTE in IT Architecture for leveraging cloud technology benefits, including greater agility and reduced time to deploy infrastructure, infinitely scalable computing performance, and reduced hardware maintenance (\$0.2M)
- 0.75 FTE in Advanced Technology Solutions for research and development needs in advanced modeling and simulation of inverter-based resources, probabilistic planning and operations, impact of climate change and extreme weather on power system reliability, and the development of a more efficient market clearing algorithm (\$0.1M)
- 0.5 FTE in Market Development for continuing work on integration of DERs and large scale storage integration (\$0.1M)
- 0.25 FTE in Transmission Services to support increased requirements to review, validate, and integrate inverter-based resource models (\$0.1M)
- Increase in Computer Services for higher utilization and related fees for cloud storage through Amazon Web Services (\$0.1M)

Note: FTE counts in this section and in blue font are the net funded amount for the 2024 budget which is 29. FTE counts on Slides 64 through 66 (equaling 41 FTEs) are proposed gross additions.

2024 Budget Details *(cont.)*

Detailed allocation by Strategic Goal/2024 Initiatives

Other Increases: \$1.4M

- The allocation of NPCC and NERC dues (\$0.8M)
- An increase in Interest Expense and fees due primarily to an increase in borrowings on the working capital line resulting from increases in the operating and capital budgets (\$0.3M)
- Corporate insurance policy premium increases (\$0.3M)



2024 BUDGET RESOURCING NEEDS



2024 Budget Resourcing Needs

Repurposed Positions

- 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 34 positions, including 5 to-date in 2023, being repurposed for other work where a more urgent need existed
 - Positions repurposed since 2018 include: 8 for Information Technology for Software Development, Cyber Security, Power System Modeling, Application Support, Infrastructure and Digital Transformation; 6 for System Operations & Market Administration for Energy Security, Asset Registration & Auditing, Control Room Operations, and Operations Training; 6 for Market Development analysis and market design work; 4 for Human Resources for recruiting support and to replace contract positions; 2 for Advanced Technology Solutions; 2 for Market Monitoring; 2 for Market & Credit Risk; 1 for Load Forecasting to replace a contract position; 1 for Resource Studies & Assessments; 1 for Participant Support; and 1 for Corporate Strategy

2024 Budget Resourcing Needs *(cont.)*

In 2024 there are 41 FTE additions as follows:

	Clean Energy Pillar(s) (*)	Strategic Goal(s)
<p>13.0 FTE's Information and Cyber Security Services</p> <p>Resources for Energy Management System; Power System Modeling; and Development for efforts including the nGEM system, the integration of increasing renewables, storage and distributed energy resources modeling and integration, and integration of Day Ahead Ancillary Services and Resource Capacity Accreditation projects. Resources for Cyber Security; IT Architecture to support leveraging cloud technologies; support for critical Market Monitoring analytics data management platforms; infrastructure support to alleviate understaffing pressures; and retaining the best early career technical talent to meet our future needs.</p> <p>(12 FTE's Support the Clean Energy Transition)</p>	Clean Energy Resources; Balancing Resources	Operational Excellence; Responsive Market Designs; Progress and Innovation; and Attract, Develop and Retain Talent
<p>12.0 FTE's System Planning</p> <p>Resources to support Resource Capacity Accreditation and use of probabilistic analysis, to accommodate evolving study and forecasting needs and increased complexity associated with the clean energy transition, a resource to support interconnection study requests, a resource for modeling and validation to integrate inverter-based resource models, resources to support expected increases in transmission RFPs, to address deferred projects due to a lack of staff (document RAS limitations, load interruption thresholds, etc.), support stakeholder requests for long-term transmission studies, to address forthcoming FERC order on long-term transmission planning for asset condition based replacement and future-sizing of the transmission system, and retaining the best early career technical talent to meet our future needs.</p> <p>(12 FTE's Support the Clean Energy Transition)</p>	Clean Energy Resources; Balancing Resources; Robust Transmission	Stakeholder Engagement; Progress and Innovation; Operational Excellence; and Attract, Develop and Retain Talent

(*) See the Four Pillars of the Clean Energy Transition on Slide 13



2024 Budget Resourcing Needs *(cont.)*

In 2024 there are 41 FTE additions as follows: (cont.)

	Clean Energy Pillar(s)	Strategic Goal(s)
4.0 FTE's Market Development Resources for market design focused on forward market overhauls for RCA and assessments for auction format (prompt-seasonal); efforts regarding energy adequacy will likely require significant assessment and novel market initiatives; continued progress on integrating large-scale storage, intermittent, and distributed resources for the future grid transition. (4 FTE's Support the Clean Energy Transition)	Clean Energy Resources; Balancing Resources; Energy Adequacy	Responsive Market Designs; Stakeholder Engagement; Progress and Innovation
3.0 FTE's Participant Relations and Services Resources to continue effort to convert in-person training and webinar modules to self-paced micro-learning modules that provide time and cost savings to the ISO and participant companies; continue effort for the gathering, managing, and supporting the assessment of participant proposals/requests that the ISO will consider incorporating into our Annual Work Plans; and an additional resource to support NEPOOL committee meetings including expanded work for RCA in Power Supply Planning Committee. (2 FTE's Support the Clean Energy Transition)	Support	Stakeholder Engagement; Operational Excellence
3.0 FTE's Advanced Technology Solutions Resources for R&D needs in advanced modeling and simulation of inverter-based resources, probabilistic planning and operations, and impact of climate change and extreme weather on power system reliability; Re-architecting and deployment of Integrated Market Simulator in cloud environment; new market design to deal with increasing risk of operational uncertainty, investigation of energy adequacy definition/metrics, the development of a more efficient market clearing algorithm, and integration of new technologies. (3 FTE's Support the Clean Energy Transition)	Clean Energy Resources; Balancing Resources; Energy Adequacy	Progress and Innovation; Responsive Market Designs; Operational Excellence

2024 Budget Resourcing Needs *(cont.)*

In 2024 there are 41 FTE additions as follows: (cont.)

	Clean Energy Pillar(s)	Strategic Goal(s)
2.0 FTE External Affairs and Corporate Communications One resource to focus on marketing communications/graphics/employee communications (including support for Human Resources internal employee communications (diversity and inclusion)) and recruiting communications; and one resource to focus on environment policies and community affairs (See Note *) (1 FTE Supports the Clean Energy Transition)	Support	Stakeholder Engagement; Operational Excellence
1.0 FTE Market & Credit Risk Resource for developing, designing, and testing the risk-based adequacy of market participant collateral obligations and support the design, IT implementation, and risk reporting required for all new market development projects (IEP, Day-Ahead Ancillary Services, Distributed Energy Resources, Prompt Seasonal Capacity Market). (1 FTE Supports the Clean Energy Transition)	Clean Energy Resources; Support	Responsive Market Designs
1.0 FTE Strategy, Risk, and Operations Compliance Support ISO-NE resiliency program. Primary responsibilities will include the collection of data, analysis of information, and enhancements of plans related to Disaster Recovery for IT applications and related technology supporting essential company functions.	Support	Operational Excellence
1.0 FTE Human Resources For a Talent Program Manager to lead and support the design and improvement of HR programs including diversification of talent, employee advancement, succession planning, and business knowledge transfer.	Support	Attract, Develop, and Retain Talent
1.0 FTE Internal Audit Audit plan includes higher focus on IT and Cyber area including the nGEM implementations, Cloud Technology adoption, and data/cyber security testing; and the onboarding of Pennsylvania Power and Light to the ISO grid network requires additional IT and operations audit field work which will utilize audit resources and CIP readiness audits.	Support	Operational Excellence

41.0 FTE's Total 2024 Proposed FTE Additions

* Environmental policy and community affairs FTE is a placeholder as ISO-NE management evaluates the 8/1/2023 request from New England State Agencies and the responsibilities and role of this position



2024 Budget Resourcing Needs *(cont.)*

2024 Gross and Net FTE Funding

In budgeting for FTE additions the ISO has only partially funded new FTEs in the year they are authorized in the budget while deferring a portion due to length of time to recruit and onboard these additional positions. In the 2023 budget 9 FTE positions were deferred that are largely expected to be onboarded in 2024. For 2024 the gross FTE proposed additions are 41, and of those, funding of only 20 are included in the 2024 budget with the remainder deferred to the following year. See the table below to illustrate the deferment “layering” effect.

Year	FTE Impacts					\$ Impacts			
	A Net Current Year FTEs Budget	B Previous Year FTEs Deferrals Included in Current Year Budget	= A and B Total Funded FTEs Included in Current Year Budget	C Current Year FTEs Deferred to Following Year	= A and C Gross FTEs Authorized for Recruiting - Current Budget Year	D \$ Impact of A Net Current Year FTE \$'s	E \$ Impact of B Previous Year FTEs Deferrals \$ Impacts to Current Year Budget	= D and E Gross \$ Impact to Budget	\$ Impact of C FTE Costs Deferred to Following Year
2023	23	5	28	9	32	3,885,600	867,000	4,752,600	1,733,700
2024	20	9	29	21	41	3,582,878	1,733,700	5,316,578	4,006,798
2025	TBD	21	TBD	TBD	TBD	TBD	4,006,798	TBD	TBD

2024 OPERATING BUDGET RISKS



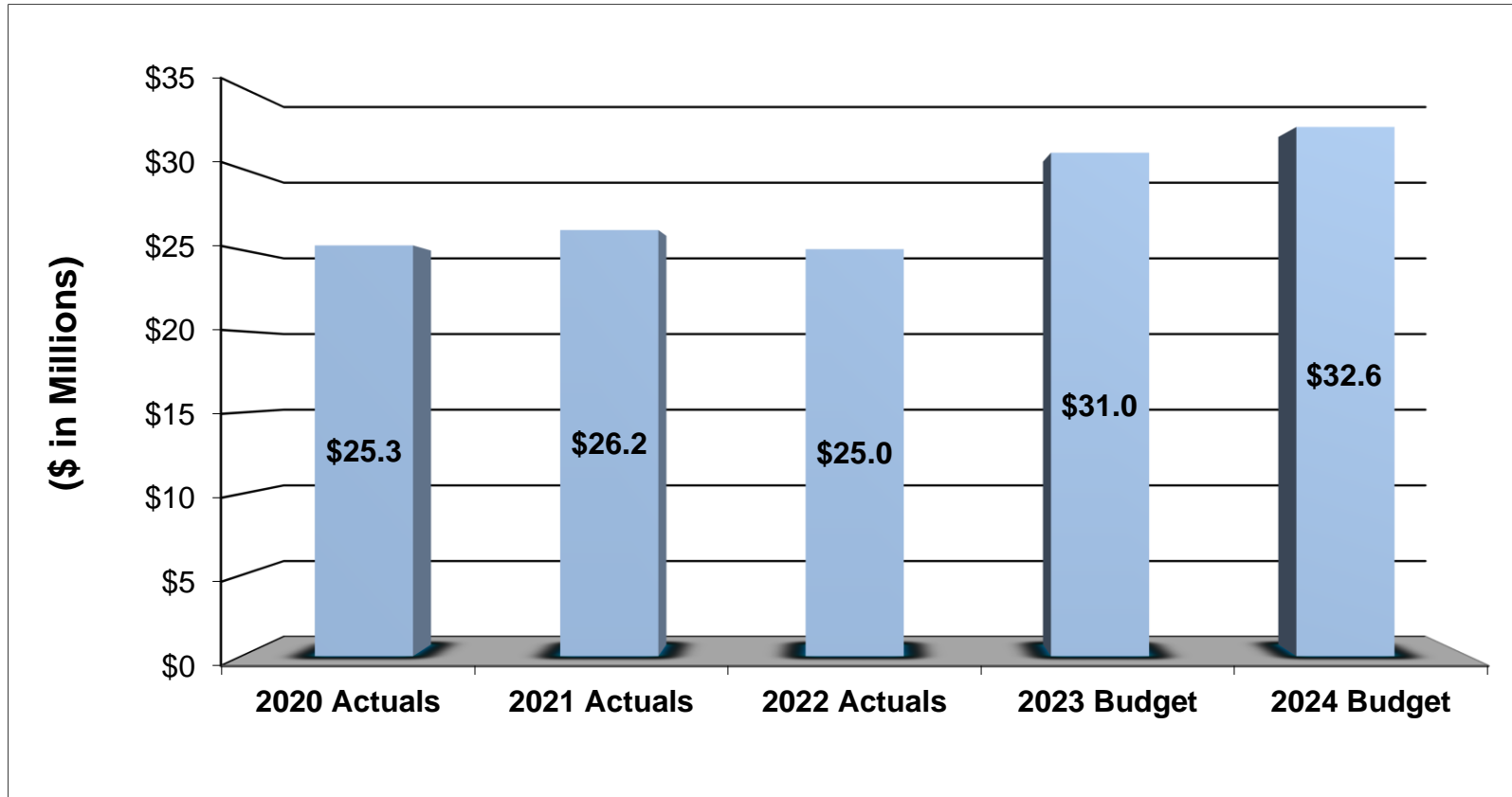
2024 Operating Budget Risks

- 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
- Resources may be needed as operations evolve (e.g., energy forecasting, load management) due to the changing resource mix occurring
- Information Technology costs including software licensing and maintenance, cloud migration, backup and storage, and desktop peripherals, may each require additional funding
- Insurance policy renewals may be higher than increases estimated in the budgets
- 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 (See Appendix 6 Interest Rate Risk)
- 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.)*

Depreciation expense is an accounting method used to allocate the cost of a tangible or physical asset over its useful life. 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

ISO New England Depreciation *(cont.)*

- The Capitalization Policy – Highlights
 - Costs are capitalized when dollar threshold has been met and the item has a useful life beyond one year
 - Interest and fees associated with borrowings that the Company has entered into for the acquisition of assets related to a project that has a material effect on the Company's financial position as required by the Accounting of Certain Types of Regulation Topic of the Financial Accounting Standards Board ("FASB") Accounting Standards Codification
 - 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
 - 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

Forward Looking Capital Budget Spending



Forward Looking Capital Budget Spending

- The capital budget over the next five years and beyond will continue to support the Company's strategic goals with specific focus on four primary drivers:
 - nGem platform (replacing the current market system)
 - Major market and reliability related efforts
 - Cyber security
 - IT asset and infrastructure replacement
- In order to achieve these goals, ISO has increased the capital spending over the last few years with spending of \$33.5M in 2023, \$35M in 2024 and projected increase to \$40M in 2025 and beyond; the capital costs are dependent on various factors, including regulatory orders and approvals and the use of professional services or internal staff
 - The ISO will continue with its current practice of providing a rolling two-year look-ahead window

Forward Looking Capital Budget Spending *(cont.)*

nGEM Platform Replacement

- The nGEM program (next Generation Markets Management) will upgrade the core market software by supporting a system with a growing number and type of grid assets, new and more complex market features, multiplying security threats, and advancing IT technologies
 - GE Solutions is developing nGEM in collaboration with ISO-NE, MISO, and PJM; the portion of the software upgrade unique to each ISO will be funded by each ISO individually
- The ISO has been working, for the last few years, on the complex processes for customizing and implementing the day-ahead version of the new market clearing engine (MCE) software and infrastructure, which went into service in the middle of 2023
- The ISO expects to continue work on the next phases, which include a real-time version of the MCE; this work is expected to continue over the next few years with an estimated cost of up to \$54M

Forward Looking Capital Budget Spending *(cont.)*

Major Market and Reliability Related Efforts

- The capital budget will support ISO's market design objective for 2024 and beyond of moving toward clean energy, balancing resources, energy adequacy, and robust transmission
- Many of these market and reliability projects are complex efforts that will have long lead times to complete and have dependencies of stakeholder and regulatory approval; the following projects have been identified for 2024 and beyond but may fluctuate depending on stakeholder/FERC priorities:
 - Day-Ahead Ancillary Services Improvements Design: This project seeks to develop market constructs for procuring and transparently pricing ancillary service capabilities needed for a reliable, next-day operating plan with an evolving resource mix; the ISO plans to develop day-ahead flexible response services to enable the system to recover from sudden source-loss contingencies and respond quickly to fluctuations in net load during the operating day
 - FERC Order 2222: The ISO will be building software systems to integrate distributed energy resources into the wholesale markets
 - Energy Storage Modeling: The ISO filed a set of enhancements with FERC to improve the modeling of energy storage in wholesale markets; the ISO plans to make substantial improvements to the modeling of storage over the next few years

Forward Looking Capital Budget Spending *(cont.)*

Major Market and Reliability Related Efforts *(cont.)*

- Significant Capacity Market Reforms: The ISO is currently assessing the feasibility of moving from a forward capacity auction construct to a prompt and seasonal capacity auction construct; this is a substantial scope of work that will better position the ISO to mitigate energy adequacy risks as the power system evolves
- Resource Capacity Accreditation (RCA): This is a major project that accredits resources on their marginal reliability contributions during reliability hours; this project is currently being discussed with stakeholders
- Transmission Line Ratings Enhancements: This project is in response to recent FERC orders and will require substantial IT and database work to collect and appropriately use data in planning and operations
- Market Simulator, 21 Day Energy Simulator, Inverter-Based Resource Modeling: There are various research and development efforts at the ISO that are expected to result in significant improvements to ISO modeling capabilities and situational awareness
- Stakeholder Priorities: The ISO has embarked on an improved prioritization process with stakeholders; each year, the ISO expects stakeholders to highlight three key priorities; some of these priorities will require the development of new software and associated applications
- Other Market Design Projects Identified in the ISO's Multi-Year Work Plan: The ISO plans to continue to make improvements to existing ancillary services and design new ancillary services products; new ancillary products may include replacement reserves and ramping products
- Based on the complexity of the projects, the ISO expects the cost for market and reliability efforts will range from approximately \$45M - \$65M over the next five plus years

Forward Looking Capital Budget Spending *(cont.)*

Cyber Security & IT Asset and Infrastructure Replacement

- Capital spending on improvements to cyber security and IT assets and infrastructure will support the ISO's strategic goals of Operational Excellence and Progress and Innovation
- The ISO expects that it will continue to invest capital funding in cyber security over the next 3-5 years by improved monitoring, detection, and recovery tools to keep pace with increasingly sophisticated attack threats
- The ISO's transition to a cloud environment began in 2022 and is expected to be a major capital effort over the next several years
 - Reliability of operating a modern system comprised of renewable and storage resources requires the processing, transfer, and storing of vast amounts of data; in multiple phases, the ISO will be implementing cloud-computing infrastructure and virtualization technology to reduce reliance on energy-heavy data centers and enable more dynamic expansion of computing capability, while maintaining reliability
- The cost for IT and cyber security initiatives will vary depending on the use of professional services or internal staff; the cost will range from approximately \$20M - \$40M over the next several years

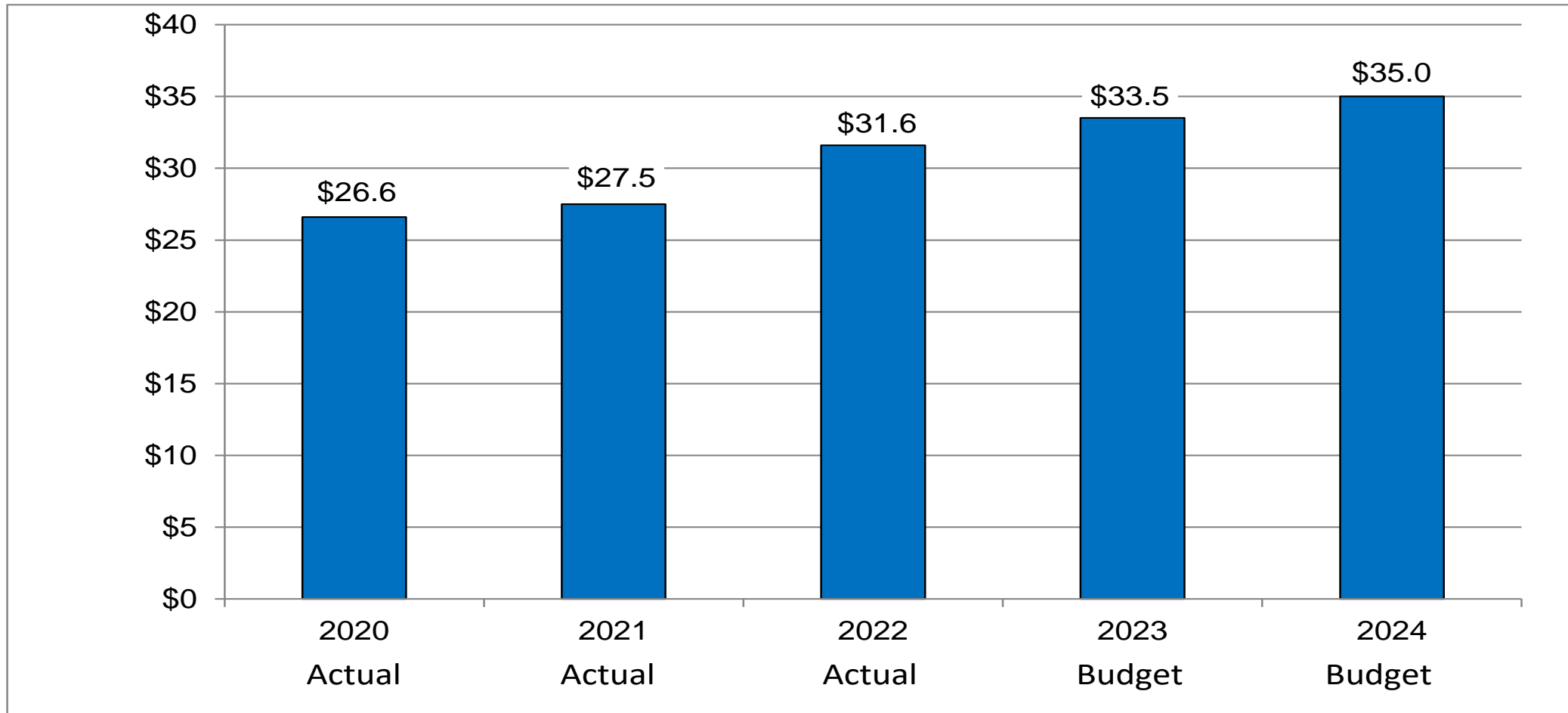
CAPITAL BUDGET SUMMARY



Capital Budget

Historical Comparison Capital Expenditures

Average +/- \$30.8M



Capital Budget

2024 Expenditures

Goal: Responsive Market Designs

Project	2024 Budget	Total Project Cost	Estimated Completion Date	Project Stage
Day-Ahead Ancillary Services Improvements	\$3.8M	\$9.1M	3/25	In Development
FERC Order 2222	\$0.5M	\$7.2M	12/26	Planning/Conceptual Design
Resource Capacity Accreditation	\$1.0M	\$3.2M	12/25	Planning/Conceptual Design
Solar Do Not Exceed Dispatch Phase II	\$0.9M	\$1.8M	10/24	In Development
Total:	\$6.2M			

Goal: Progress and Innovation

Project	2024 Budget	Total Project Cost	Estimated Completion Date	Project Stage
nGEM Real-Time Market Clearing Engine Implem. (see Note 1)	\$6.0M	\$16.9M	06/25	Planning/Conceptual Design
nGEM Software Development Part III (see Note 1)	\$2.5M	\$4.5M	03/25	In Development
Internal Market Monitoring Data Analysis Phase IV	\$0.5M	\$1.2M	05/24	In Development
Energy Management System Short-term Load Forecast Replacement	\$0.4M	\$1.2M	07/24	In Development
Total:	\$9.4M			

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.

Capital Budget

2024 Expenditures *(cont.)*

● Goal: Operational Excellence

Project	2024 Budget	Total Project Cost	Estimated Completion Date	Project Stage
FERC Order 881 Compliance	\$3.3M	\$7.8M	06/25	Planning/Conceptual Design
CIP Electronic Security Perimeter Redesign Phase II	\$2.0M	\$2.5M	12/24	Planning/Conceptual Design
Enterprise Resource Planning System Replacement	\$1.6M	\$2.5M	03/25	Planning/Conceptual Design
Operating System Server Upgrade Phase I	\$1.2M	\$2.4M	07/24	In Development
Microsoft 365 Service Adoption	\$1.0M	\$2.1M	09/25	Planning/Conceptual Design
IT Asset Workflow Integration and Updates	\$0.2M	\$1.1M	05/24	In Development
2024 Issue Resolution Project	\$1.0M	\$1.0M	12/24	Planning/Conceptual Design
Settlement Technology Improvements Project	\$0.1M	\$0.5M	03/24	In Development

Continued on Next Slide

Capital Budget

2024 Expenditures *(cont.)*

● Goal: Operational Excellence *(cont.)*

Project	2024 Budget	Total Project Cost	Estimated Completion Date	Project Stage
Privileged Account Management Security Enhancements Phase II	\$0.5M	\$0.5M	12/24	Planning/Conceptual Design
Energy Management System Host Monitoring Software Replacement	\$0.1M	\$0.3M	01/24	In Development
Non-Project Capital Expenditures	\$5.3M			
Total:		\$16.3M		

Capital Budget

2024 Expenditures Summary

- 2024 Capital Budget Expenditure Summary

Allocation Category	2024 Budget
Goal: Responsive Market Designs	\$ 6.2M
Goal: Progress and Innovation	\$9.4M
Goal: Operational Excellence	\$16.3M
Other Emerging Work	\$ 1.6M
Capital Interest	\$ 1.5M
Total:	\$35.0M



CAPITAL STRUCTURE AND CASH FLOW



Capital Structure and Cash Flow

- In order to support the markets and reliability efforts, ISO will increase the capital spending from \$33.5M in 2023 to \$35M in 2024 and \$40M in 2025 and beyond
 - As noted last year and on slide 75 regarding Capital Budget Spending, the areas driving the increase in spending are dependent on various factors such as regulatory approvals, use of professional services versus internal staff, estimated range of spending, inflationary cost and longer lead times to complete
 - Longer lead time to complete capital projects results in a greater period of time from when the ISO spends capital funds to tariff recovery through depreciation expense of these projects
- Capital project costs are largely funded by \$50M in Private Placement Notes set to expire in November 2024; in order to support the future capital program, we have determined that another \$25M in available capital project funding is needed to support a higher sustained level of capital spend at \$40M shown on the ten-year cash flow on the next slide

Capital Structure and Cash Flow *(cont.)*

The ISO will be going out to market in 2024 for \$75M 10 year Private Placement Note to be issued and available by the time the \$50M balloon payment on the current note is due in November. The Company has been advised that entering into a one time note at the higher dollar value will generate more interest within the market and will result in lower closing costs.

ISO New England 2023 - 2032 Debt Service Cash Flow

	2023 Forecast	2024 Budget	2025 Forecast	2026 Forecast	2027 Forecast	2028 Forecast	2029 Forecast	2030 Forecast	2031 Forecast	2032 Forecast
Cash flows from operating activities:										
Operating Cost Recovery *	\$ 191,123	\$ 232,834	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Non Cash Items:										
Depreciation & Loss on Disposals	30,236	32,520	38,502	39,600	42,828	43,432	46,224	42,786	42,061	41,073
Amortization Land	39	39	39	39	39	39	39	39	39	39
Amortization Term Loan Fees	128	78	106	106	106	106	106	106	106	106
Chg in Accrued Expenses & Deferred Revenue-Depreciation	700	-	-	-	-	-	-	-	-	-
Interest Expense	(2,838)	(3,382)	-	-	-	-	-	-	-	-
Operating Expenses *	(205,513)	(240,878)	-	-	-	-	-	-	-	-
Net cash provided by operating activities	13,875	21,211	38,647	39,745	42,973	43,577	46,369	42,931	42,206	41,218
Cash flows from investing activities:										
Capital expenditures	(33,500)	(35,000)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)
Net cash used in investing activities	(33,500)	(35,000)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)	(40,000)
Cash flows from financing activities:										
Net Proceeds/(Repayment) - Revolving Credit Line	-	-	-	2,000	-	(2,000)	-	-	-	-
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)	(3,180)	(3,180)	(3,180)	(3,180)	(1,815)
Net cash provided by (used by) financing activities	(3,180)	21,820	(3,180)	(1,180)	(3,180)	(5,180)	(3,180)	(3,180)	(3,180)	(1,815)
Net increase/(decrease) in cash	(22,805)	8,031	(4,533)	(1,435)	(207)	(1,603)	3,189	(249)	(974)	(597)
Cash & Cash Equivalents on Hand - Beginning of Period	23,098	293	8,324	3,791	2,356	2,149	546	3,735	3,486	2,512
Change in Cash & Cash Equivalents Available	(22,805)	8,031	(4,533)	(1,435)	(207)	(1,603)	3,189	(249)	(974)	(597)
Cash & Cash Equivalents on Hand - End of Period	\$ 293	\$ 8,324	\$ 3,791	\$ 2,356	\$ 2,149	\$ 546	\$ 3,735	\$ 3,486	\$ 2,512	\$ 1,915
Debt Maturity Schedule										
Tax Exempt Bond - BCC	1,360	1,360	1,360	1,360	1,360	1,360	1,360	1,360	1,360	1,360
Tax Exempt Bond - MCC	1,820	1,820	1,820	1,820	1,820	1,820	1,820	1,820	1,820	455
Total Year Repayment	\$ 3,180	\$ 3,180	\$ 3,180	\$ 3,180	\$ 3,180	\$ 3,180	\$ 3,180	\$ 3,180	\$ 3,180	\$ 1,815

*= Operating Cost Recovery for 2023 has decreased by an overcollection in 2021 of \$14,589 which was not amortized in 2022 but included in the 2023 tariff. The overcollection from 2022 of \$3,006 will be filed in the 2024 tariff and reflected in the Operating Cost for 2024. The Operating Cost Recovery for 2025-2032 is projected to offset Operating Expenses for 2025-2032. The Operating Cost Recovery amount for 2025-2032 has not yet been established at this point.

Capital Structure and Cash Flow *(cont.)*

- The ISO currently has a \$20M working capital line which is set to expire on July 1, 2024; based on the projected 2024 cash flow on the next slide and increase spending in capital projects not covered by the \$50M Private Placement Notes, the ISO has determined that additional working capital is required to meet its needs; the ISO will look to obtain a working capital line up to \$40M which can be dropped back to \$20M once the \$75M private placement note is in place
 - Projected SOFR (Secured Overnight Financing Rate) plus negotiated basis points on our working capital line along with the unused fees will remain the same for the new working capital line
 - Projected rates for private placement note if obtained in 2023 would be higher than the projected SOFR rates for 2024
 - ISO will be filing 204 application with FERC in 2023 for the working capital line to be in effect March 2024
- For the six months ended June 30, 2023, the ISO's total weighted average cost of capital was 3.67%, excluding fees charged on the various debt financing; fees ranged from .075% to .38%

Capital Structure and Cash Flow *(cont.)*

2024 Budget Cash Flow (000's)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	2024
	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget	Budget
Operating Cost Recovery (1)	14,166	15,652	20,600	18,714	18,555	16,144	18,493	22,408	25,384	25,670	19,876	17,173	232,834
Non-Cash Items:													
Depreciation	2,977	2,764	2,741	2,729	2,581	2,603	2,611	2,622	2,608	2,672	2,821	2,790	32,520
Amortization Land	3	3	3	4	3	3	4	3	3	4	3	3	39
Amortization Term Loan Fees	6	6	6	6	6	6	6	6	7	7	8	8	78
Chg in Deferred Revenue - Depreciation	-	-	-	-	-	-	-	-	-	-	-	-	-
Chg in Accrued Expenses (2)			(14,143)	5,000	3,500							5,643	-
Interest Expense	(286)	(369)	(166)	(366)	(373)	(132)	(370)	(371)	(78)	(341)	(378)	(150)	(3,382)
Operating Expenses	(19,723)	(15,315)	(31,256)	(17,998)	(20,990)	(16,583)	(16,017)	(22,954)	(18,266)	(17,460)	(17,012)	(27,304)	(240,878)
Net cash provided by (used in) operating activities	(2,858)	2,740	(22,215)	8,088	3,282	2,040	4,728	1,713	9,658	10,552	5,318	(1,837)	21,211
Cash flows from investing activities:													
Capital expenditures	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(35,000)
Net cash used in investing activities	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(2,917)	(35,000)
Cash flows from financing activities:													
Net Proceeds/(Repayment) - Revolving Credit Line	6,500	-	26,000	(5,000)	-	1,000	(2,000)	2,000	(6,500)	(8,000)	(14,000)	-	-
Net Proceeds/(Repayment) - Private Placement	-	-	-	-	-	-	-	-	-	-	25,000	-	25,000
Repayment of Principal (3)	-	(795)	-	-	(795)	-	-	(795)	-	-	(795)	-	(3,180)
Net cash provided by (used in) financing activities	6,500	(795)	26,000	(5,000)	(795)	1,000	(2,000)	1,205	(6,500)	(8,000)	10,205	-	21,820
Net increase (decrease) in cash	726	(971)	868	172	(430)	124	(189)	2	241	(364)	12,607	(4,753)	8,031
Cash & Cash Equivalents on Hand - Beginning of Period	293	1,018	47	915	1,087	657	781	592	594	835	471	13,077	293
Change in Cash & Cash Equivalents Available	726	(971)	868	172	(430)	124	(189)	2	241	(364)	12,607	(4,753)	8,031
Cash & Cash Equivalents on Hand - End of Period	1,018	47	915	1,087	657	781	592	594	835	471	13,077	8,324	8,324

APPENDIX 1: OTHER OPERATING BUDGET DETAILS



Operating Budget Details - Budget Categories

(see next slides for detail on certain categories)

(\$ in thousands)	2020 Actual	2021 Actual	2022 Actual	2023 Budget	2024 Budget
Salaries	\$87,428	\$90,069	\$94,438	\$102,192	\$122,140
Burden	27,239	28,329	30,117	32,510	36,069
Professional fees and consultants	18,518	19,695	19,833	24,935	29,257
Building services	2,990	2,832	3,348	3,122	3,430
Rents/leases	948	777	696	898	781
Network Operations	2,379	2,802	2,958	3,270	3,652
Computer services	15,433	15,952	17,482	20,398	25,373
Insurance expense	2,226	2,153	2,633	3,140	3,394
Board of Directors Expense	1,206	1,592	1,674	1,517	1,607
Meetings & Related Expenses	662	536	1,015	1,272	1,511
Education & Training	828	891	1,062	1,327	1,332
NPCC and NERC Dues	6,364	6,062	6,437	7,296	8,052
Interest Expense	2,435	2,120	2,249	3,137	3,459
Contingency Funds	-	-	-	2,700	2,700
Other Expense	1,807	1,758	1,931	2,209	2,498
Interest Income & Other Revenue	(405)	(443)	(1,267)	(694)	(917)
Net Expense before Depreciation (1)	170,056	175,125	184,606	209,230	244,337
Depreciation	25,278	26,221	25,046	30,975	32,559
Total ISO Tariff Recovery	\$195,334	\$201,346	\$209,652	\$ 240,205	\$ 276,897
Revenue True-up	(2,949)	151	1,071	(14,589)	(3,006)
Revenue Requirement	192,384	201,497	210,723	225,616	273,891
Network Load (GWh)	136,022	139,423	142,463	143,042	140,711
Grid Market Charge \$/KWh	\$0.00141	\$0.00145	\$0.00148	\$0.00158	\$0.00195
Headcount (FTE's) (2) (3)	577.5	573.5	589.5	614.5	644.5

(1) Net Expense Before Depreciation of \$244.3 million for 2024 agrees to slide 42 of the presentation.

(2) 2020, 2021 and 2022 reflect December 31 actual headcount for those years. 2023 and 2024 reflect planned headcounts of 654.5 and 698.5, respectively, less vacancy of 5.0%, which equates to 32.5 FTE's in 2023 and 40.5 FTE's in 2024.

(3) Funding of \$6.6 million of Salaries and \$2.2 million of Burden exists for 2024 internal capital development and reimbursable study time of ISO-NE Employees. Total Salaries and Burden including these and operating costs equal \$167.0 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 2024 which are greater than 5% or \$500,000 and a brief explanation of what is driving the change:

- *Salaries (\$19.9M or 19.5%)* – Increases include salary related to annual merit and promotional increases to align compensation in a tight labor market, funding for the addition of 29 full-time equivalent positions including funding for 20 in 2024 and carryover of 9 FTE's from 2023, for employee incentive target amounts including adjustments based on compensation study review, and increased funding for additions to the intern program
- *Burden (\$3.6M or 11.0%)* – Increases for payroll taxes related to noted salary increases including for the additional 29 full-time equivalent positions funded in 2024; also contributing to increased expenses is higher employee benefits including those for the defined contribution plan due to both higher salaries and increased participants

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

- Professional fees and consultants (\$4.3M or 17.3%) – Funding to support an assessment of Prompt Seasonal Capacity Market, support to fund Information Technology reliability and cyber defenses, support to meet New England State’s requests, to support a regional study with PJM and NYISO on single source limit studies, for FCA 21 Cost of New Entry (CONE) parameter updates, various other initiatives including energy adequacy assessment, and Distributed Energy Resource and minimum load studies on the necessary requirements to ensure system reliability when the system is powered solely by inverter-based resources; increased funding was partially offset by the reduction of non-recurring market study work, including Future Grid Phase II study; Inventoried Energy Program; and Day-Ahead Ancillary and FCA 19 parameter update review; other reductions include 2023 work for Resource Capacity Accreditation Parameters and Design, for Mystic Cost of Service agreement fuel supply management as agreement ends mid-2024, 2050 Transmission Study work to be completed in 2023, and Information Technology patching staff augmentation that will now be absorbed by internal staff
- Building Services (\$0.3M or 9.9%) – Primarily resulting from increased utility rates for both the Main Control and Backup Control centers; other smaller increases are for miscellaneous items as part of the facility upgrades, and cyclical facility maintenance
- Network Operations (\$0.4M or 11.7%) – Increased expense primarily related to inflationary costs on existing network lines, and the impact from the migration of Control Room communication technology to existing modern network infrastructure
- Computer Services (\$5.0M or 24.4%) – Increases include inflationary expense related to licensing and maintenance support driven by a steep increase in recent history across ISO’s portfolio of products, infrastructure increases for operating system support including extended coverage for unsupported versions while completing version updates, additional backup storage needs, backup recovery software, and additional virtualization licensing; other increased expense resulting from application maintenance on new products, cyber security costs for cloud enterprise software, increased licensing needs due to larger workforce, and increased costs across multiple areas including Enterprise Application Support and Architecture and Data Governance

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

- Insurance Expense (\$0.3M or 8.1%) – Increased premiums across insurance lines
- Board of Directors (\$0.1M or 5.9%) – Increase in board member retainers based on compensation firm recommendation
- Meetings & Related Expenses (\$0.2M or 18.8%) – Meetings & related expenses increased primarily due to higher volume of post-COVID travel; higher costs for air, hotel and other travel related costs; and training related travel expense for new full-time employees
- NPCC and NERC Dues (\$0.8M or 10.4%) - Increases for both Northeast Power Coordinating Council and North American Electric Reliability Corporation dues assessed to the ISO
- Interest Expense (\$0.3M or 10.3%) - Increase in interest expense due primarily to an increase in borrowings on the working capital line resulting from increases in the operating and capital budgets
- Other Expense (\$0.3M or 13.1%) – Increases in other expenses primarily driven by dues and subscription expense including subscription based training to prepare the cyber security team for increased threats, subscriptions to monitor regional and national policy initiatives, and inflationary increases for existing subscriptions; additional increases include bank fees due to wire fees as a result of a shift to increasing electronic payments; these increases were partially offset by reductions in office equipment lease expense and printing needs
- Interest Income & Operating Revenue (\$0.2M or 32.1%) – Increase in interest income due to higher interest rates and settlement account balances
- Depreciation Expense (\$1.6M or 5.1%) – Depreciation expense increases due primarily to a full year of depreciation for nGEM projects that went live mid-2023, partially offset by decreases driven by changes in project completion dates and projects that came in under budget

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

ISO True-Up Mechanism

Description of True-Up Mechanism:

As set forth in Section IV.A.2.2 of the ISO's Tariff, the 2024 revenue requirement will include an adjustment for deviations between actual collections and expenses for calendar year 2022. In general, the amount of the true-up is added to (in the case of a revenue shortfall) or subtracted from (in the case of a revenue over-recovery) the ISO's total estimated budgeted amounts for the upcoming budget year.

The \$3.0 million true-up amount, that is decreasing the 2024 revenue requirement, is based on the following:

The final 2022 revenue requirement was an over-collection of \$3.0 million, which will decrease the 2024 requirement. The over-collection resulted from lower expenses that were partially offset by lower collections. Specifically, 2022 expenses were \$5.4 million lower than budgeted while final 2022 revenues collected under Section IV.A of the ISO-NE tariff were \$2.4M below what was included in the 2022 budget/tariff filing. Please see the next slide for further detail and a reconciliation making up the \$3.0 million over-collection.

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

The following is a reconciliation of the \$3.0 million true-up amount, that is decreasing the 2024 revenue requirement (\$ in thousands):

2022 Revenue Requirement True-Up Reconciliation - ISO New England Inc.

(Dollars in thousands)

	\$ Amounts (credits are savings)	Totals (credits are savings)
<u>Spending Variances (Dollars in thousands):</u>		
Contingencies:		
Board Contingency	\$ (700.0)	
CEO Emerging Work Allowance	<u>\$ (2,000.0)</u>	
Net Savings in Contingencies		\$ (2,700.0)
Depreciation Expenses - lower primarily due to a change in planned implementation dates and/or project budgets including for: Amazon Web Services Cloud Foundation; Replacement of Locational Marginal Price Monitor; Security Information and Event Log Monitoring Replacement; Secure Lightweight Directory Access Protocol Channel Binding Adaption; and Time Entry System Upgrade		\$ (967.5)
Interest Income - increase due to higher average balances in Settlement and Operating fund accounts as a result of the frequency of Forward Capacity Market settlements (implemented under the FCM Cost Allocation & Accelerated Billing project), and higher energy market prices		\$ (833.5)
Interest Expense - lower than budgeted rates on tax exempt debt, lower borrowings on the existing working capital line, and no need for an increase in the existing working capital line in 2022 that was anticipated due to an increase in the 2022 capital budget		\$ (525.3)
Net Change across all other Expense Lines:		<u>\$ (392.2)</u>
Net Savings in Expenses:		\$ (5,418.5)
Tariff Collections (over collection): Tariff collections came in 1.4% lower than plan, which were driven primarily by lower than budgeted load related factors.		<u>\$ 2,412.3</u>
Total 2022 True-Up		<u>\$ (3,006.2)</u>

Operating Budget Details

Professional Fees

(See next slides for details)

	(\$ in Millions)			
	<u>2024</u>		<u>2023</u>	
Corporate Center	\$	6.0	\$	5.3
Legal		3.2		3.3
Operations		20.0		16.3
Total Professional Fees	\$	29.3	\$	24.9

Operating Budget Details

Professional Fees – Corporate Center

	(\$ in Millions)	
	2024	2023
Corporate Center	\$ 6.0	\$ 5.3
Legal	3.2	3.3
Operations	20.0	16.3
Total Professional Fees	\$ 29.3	\$ 24.9

	(\$ in Millions)	
	<u>2024</u>	<u>2023</u>
Benefits and Hiring		
Recruiter Fees and Background Checks	\$ 0.4	\$ 0.4
Relocation	0.5	0.3
Temp Help	0.3	0.2
Compensation Surveys	0.4	0.3
Other Consulting for Pension & Benefits	1.0	0.9
Total Benefits and Hiring	2.5	2.1
Financial Support (Payroll processing, Temp Help, etc.)	0.5	0.5
Audits (i.e., SOC 1, financial statement, IT systems, benefit plans)	1.2	1.0
Corporate Communications (see following slide)	0.2	0.3
External Affairs (see following slide)	0.5	0.4
Market and Credit Risk Support (New margin models)	0.3	0.0
Strategy, Risk and Operation Compliance (Professional Consulting Support for the Governance/Risk/Compliance tool, Record Storage and Destruction, and Procedure Writing)	0.2	0.2
Market Monitoring and Mitigation (FCM Related Reviews, and Energy Market Consultation and Support)	0.8	0.7
Total Included in Budget	\$ 6.0	\$ 5.3

Operating Budget Details

Professional Fees – External Affairs/Corporate Communications

	(\$ in Millions)	
	2024	2023
Corporate Center	\$ 6.0	\$ 5.3
Legal	3.2	3.3
Operations	20.0	16.3
Total Professional Fees	\$ 29.3	\$ 24.9

	(\$ in Millions)	
	2024	2023
State Educational Outreach / Legislative Monitoring	\$ 0.3	\$ 0.3
Media Relations / General Support	0.2	0.3
Federal Educational Outreach / Legislative Monitoring	0.1	0.1
Total Included in Budget	\$ 0.7	\$ 0.7



Operating Budget Details

Professional Fees – External Affairs

	(\$ in Millions)	
	2024	2023
Corporate Center	\$ 6.0	\$ 5.3
Legal	3.2	3.3
Operations	20.0	16.3
Total Professional Fees	\$ 29.3	\$ 24.9

- 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)	
	2024	2023
Corporate Center	\$ 6.0	\$ 5.3
Legal	3.2	3.3
Operations	20.0	16.3
Total Professional Fees	\$ 29.3	\$ 24.9

- Resources

- Internal staff resources are focused on providing information to regulatory commissions, governors’ offices, state legislatures, federal congressional offices, consumer advocates, and business organizations
 - Eight professional staff
 - For the first seven months of 2023:
 - 39 utility commission / state agency meetings & briefings
 - 21 state policymaker meetings & briefings
 - 7 federal policymaker / regulator meetings & briefings
 - 39 industry conferences, speaking engagements & meetings supported / attended by ISO-NE staff
 - 2 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>2024</u>	<u>2023</u>
Corporate Center	\$ 6.0	\$ 5.3
Legal	3.2	3.3
Operations	20.0	16.3
Total Professional Fees	\$ 29.3	\$ 24.9

	(\$ in Millions)	
	<u>2024</u>	<u>2023</u>
Independent Market Advisor	\$ 1.3	\$ 1.1
Market Rule and Tariff/OATT Proceedings	1.4	1.8
Labor Matters	0.1	0.1
Other	0.4	0.3
Total Included in Budget	\$ 3.2	\$ 3.3

Operating Budget Details

Professional Fees – Operations

	(\$ in Millions)	
	2024	2023
Corporate Center	\$ 6.0	\$ 5.3
Legal	3.2	3.3
Operations	20.0	16.3
Total Professional Fees	\$ 29.3	\$ 24.9

	(\$ in Millions)	
	2024	2023
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)	\$ 9.7	\$ 9.1
FCM (including FCM Parameters (CONE) recalculation for FCA21, 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)	1.6	1.0
System and Transmission Planning Regional study with PJM and NYISO on single source transmission limits, DER and Minimum Load Studies, 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	4.0	1.9
Market Development Integration of Clean Energy Pathways Phase II, and Distributed Resources into Energy Markets.	1.4	2.0
Resource Capacity Accreditation (contributions to resource adequacy)	1.0	1.3
Project Management (Impact Analysis, R&D, Project Work and Initiatives)	0.7	0.5
Assessment of Prompt Seasonal Capacity Market	1.5	-
System Operations Support (Operations Instructional Training Designer and NERC Training Compliance)	0.0	0.2
Participant Support and Training	0.3	0.4
Total Included in Budget	\$ 20.0	\$ 16.3

Operating Budget Detail

2024 Budget for Board Compensation

2024 Original Budget (1)

• Annual retainer (\$70K/Board Member, plus \$25K Chairman, \$10K Committee Chair)	\$0.7M
• Board Meetings (approximately 10 meetings at \$2,000/meeting/Board Member)	\$0.2M
• Committee Meetings (\$1,500/Board Member/Meeting) (2)	<u>\$0.5M</u>
Total Board Compensation (3)	\$1.4M
• Meetings and Travel Expenses	<u>\$0.2M</u>
Total Board Fees	<u><u>\$1.6M</u></u>

(1) The budget contemplates 9 members for 2024

(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 nationally-recognized compensation consulting firms
 - The firms used for 2024 are Mercer, WorldatWork, WillisTowersWatson, Aon, and the Conference Board
 - 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
- ISO-NE will also review expected salary increases of other ISOs/RTOs

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
 - Historically, a separate, much smaller pool of monies used in select circumstances to fund promotions and base salary adjustments for critical positions
 - At ISO-NE, this pool more recently has been increased to fund any required salary adjustments based on our benchmarking initiative and to allow for targeted compensation adjustments to enable us to retain key talent

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

- In 2022, to address competitive challenges related to the clean energy transition, particularly those specified on Slides 112 and 113, ISO engaged a compensation consulting firm to conduct more discrete, 1-for-1 job-specific benchmarking to establish competitive rates of pay for our highly skilled and in-demand workforce
- Supplementing the salary budget survey data with job-specific benchmarking allows us to better ensure that we are providing competitive rates of pay to our current employees, as well as attracting the necessary talent to be successful in the future
 - In 2022, we assessed compensation levels for our most technical engineering and IT roles, approximately 1/3 of our organization
 - In 2023, we are assessing another 1/3 of the organization, with continued focus on IT and other roles requiring significant technical expertise
 - Later in 2023 or in early 2024, we plan to assess the remainder of the roles in the organization

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 <i>(survey results represent averages of all participating companies)</i>			Promotion/Equity Increase Budgets <i>(survey results represent averages of all participating companies)</i>		
	Survey Results		ISO-NE Budget	Survey Results		ISO-NE Budget
	Utility Industry	General Industry		Utility Industry	General Industry	
2024	3.7% - 4.0%	3.5% - 3.7%	4.0%	0.0% - 0.5%	0.5% - 1.0%	4.0%
2023	3.5% - 4.0%	3.1% - 4.0%	4.0%	0.5% - 1.0%	1.0% - 1.2%	1.75%
2022	3.0% - 3.0%	3.0% - 3.0%	3.0%	0.5% - 1.0%	0.0% - 1.0%	0.5%
2021	2.9% - 3.1%	2.8% - 3.0%	2.5%	0.0% - 1.5%	0.15% - 1.1%	0.5%
2020	3.0% - 3.1%	2.9% - 3.2%	3.0%	0.5% - 1.0%	0.5% - 1.0%	0.5%
2019	2.8% - 3.1%	2.9% - 3.0%	2.75%	0.0% - 1.0%	0.0% - 1.0%	0.75%
2018	2.8% - 3.2%	2.9% - 3.0%	2.75%	0.5% - 0.8%	0.5% - 1.0%	0.75%
2017	2.8% - 3.1%	3.0% - 3.0%	2.75%	0% - .05%	0.5% - 0.5%	0.75%
2016	2.8% - 3.0%	3.0% - 3.0%	2.75%	0% - 0.8%	0.5% - 1.0%	0.75%
2015	2.9% - 3.0%	2.9% - 3.1%	2.75%	0.5% - 1.0%	0.5% - 1.0%	0.75%
2014	3.0% - 3.0%	3.0% - 3.0%	3.0%	0.6% - 1.4%	0.5% - 1.0%	0.5%

Note: Because of the competitive challenges explained on the next two slides, the proposed merit and promotion/equity budgets are in line with the salary adjustments that we believe will be required based on the consultant's competitive benchmarking project and as a result, the proposed increases are higher than the national survey results. Additionally, the promotional/equity results in the surveys likely reflect a narrower adjustment pool (e.g., for company promotions) versus the competitive equity adjustments that the ISO will need to make in 2024.

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 often 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
 - More employees, with different skillsets will be needed to address the volume of market design changes and operational/planning complexities
 - Major investments in new technologies to create and support the core business applications and processes, including increased computational capacity to deal with increased grid complexity, which will require the requisite staff to complete this work

Competitive Challenges *(cont.)*

- Prior to 2021 our voluntary turnover rate (including retirements) had been approximately 7%. In 2021 the turnover rate spiked to 10.5%, and remained high at 9% in 2022. We expect the rate to remain at +/- 9% for 2023; 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
- Addressing the clean energy transition is impacting all aspects of industry nationwide, leading to a tight labor market and inflation on new and existing employees' compensation expectations
- 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
- 2024 Budget for Executive Salaries \$5.0M
 - Executive Salaries comprise the base salaries of the 11 officers on the IRS Form 990

Pension and Defined Contribution Benefit Plans in 2024

- 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 2024 *(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 2024 budget is \$10,000,000 compared to the projected FAS expense of \$5,950,000
 - ISO-NE will request an update to the level funding approach in 2024

Pension and Defined Contribution Benefit Plans in 2024 *(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:

Date	Defined Benefit Pension Plan	Defined Contribution Plan
12/31/2020	368	211
12/31/2021	328	246
12/31/2022	306	286

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

Postretirement Medical Benefit Plan in 2024

- 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 2024 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, 2023 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 4.85%
 - Salary Scale assumption (weighted Avg.) 4.25%
 - Projected 2024 annual earnings rate 6.00% (approximately)
- The calculated FAS expense amount for the Postretirement Benefit Plan of \$1,020,000 is included in the 2024 budget

Operating Budget Details

Staffing - Salary and Benefits Costs

The \$23.5M increase in salary and burden costs is driven by the following factors:

2024 Merit & Promotion - (budgeted 8.0% increase, which was approved by the Board Compensation and Human Resources Committee, and the full-year impact of 2.0% targeted equity increases given in 2023 funded by the CEO emerging work allowance in that year)		\$	14.2
Salary Impact of Funding for 29 Additional FTEs ⁽¹⁾			5.4
Increase for employee incentive compensation target amounts including adjustments based on compensation study review			2.6
Other Salary Changes			0.5
Total Salary Impact		\$	22.7
Change in Employee Benefit Costs		\$	0.8
Total Salary and Burden Increase		\$	23.5

(1) The 2024 budget includes the recruitment of 41 additional positions, with funding for 29 full-time equivalents (see slide 67 for FTE funding by 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>
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%	5.8%
2023	654.5	614.5	616.5	5.0%	7.0%
2024 ⁽²⁾ ⁽³⁾	698.5	644.5	N/A	5.0%	N/A

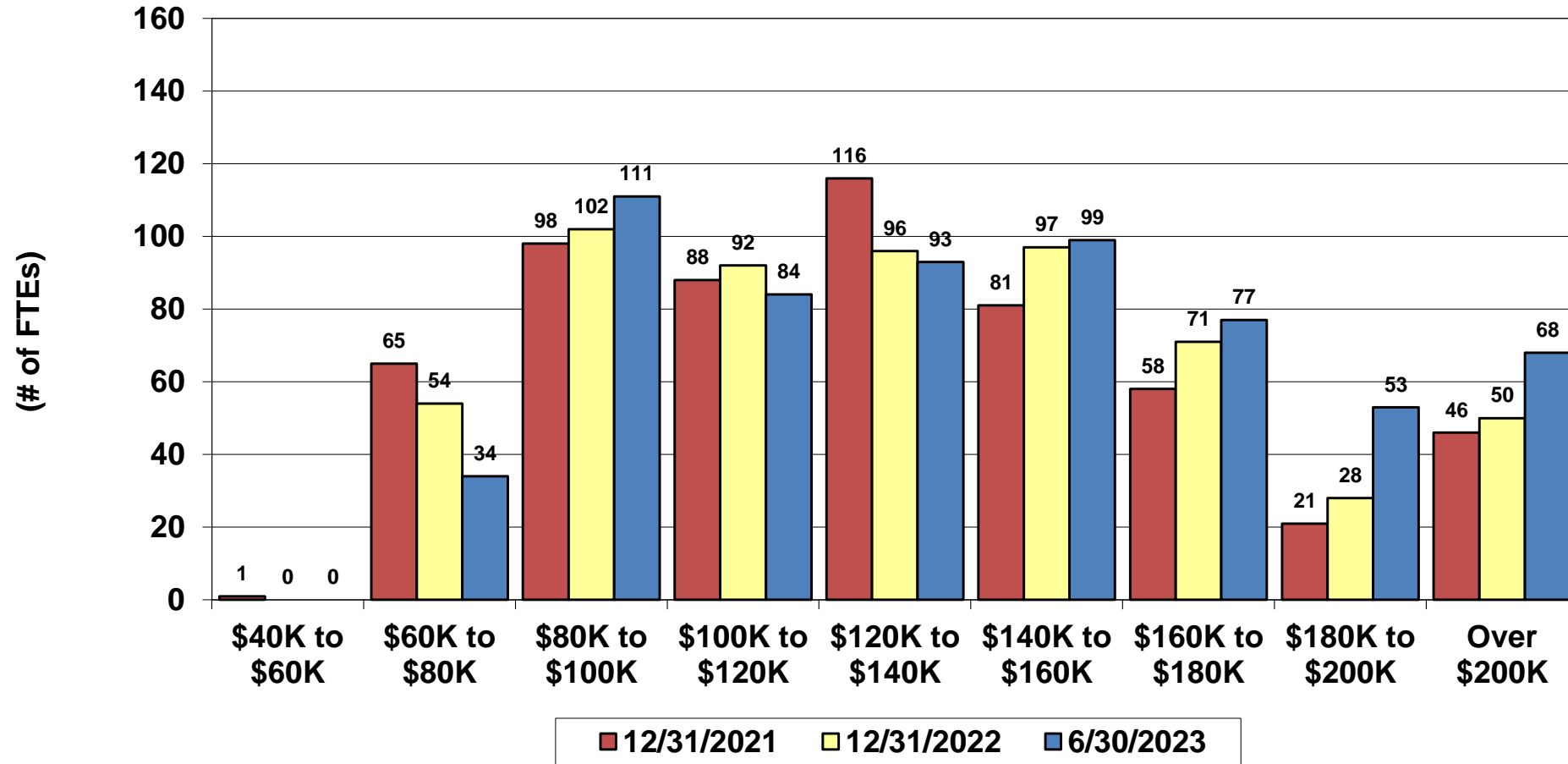
(1) Actual FTEs is the number as of December 31st for each year with the exception of 2023 which represents the number as of June 30th

(2) The 2024 budget includes the recruitment of 41 additional positions, with funding for 20 full-time equivalents with onboarding expected to occur throughout the year. All other existing positions have been budgeted with an estimated 5.0% vacancy.

(3) The 2024 budget includes the conversion of 3 FTE consultant positions to ISO-NE employees (FTE's) with no overall \$ impact on the 2024 budget (compared to 2023)

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, 2022 and 2021, by component (\$ in Thousands):

Description	2022			2021		
	Actual Expense	Approved Budget	Incr/(Dec)	Actual Expense	Approved Budget	Incr/(Dec)
Salaries and Wages - Base	\$ 76,075.0	\$ 78,194.8	\$ (2,119.8)	\$ 73,821.6	\$ 74,707.6	\$ (886.0)
Salaries and Wages - Overtime	3,325.6	2,666.7	658.9	3,387.8	2,670.0	717.8
Salaries and Wages - Incentive/Bonus	15,037.5	13,723.0	1,314.5	12,859.7	13,423.5	(563.8)
Employee Benefits - Pension ⁽¹⁾	11,299.3	10,821.3	478.0	10,878.2	10,643.8	234.4
Employee Benefits - Post-Ret Benefits	328.0	554.0	(226.0)	610.3	1,083.3	(473.0)
Employee Benefits - Health Insurance	7,189.2	7,300.5	(111.3)	6,712.0	6,697.2	14.8
Employee Benefits - Dental Insurance	481.7	485.5	(3.8)	502.1	494.0	8.1
Employee Benefits - 401(K) Match	3,071.2	3,174.8	(103.6)	2,915.9	3,004.0	(88.1)
Salary Burden - Payroll Taxes	7,207.4	6,659.1	548.3	6,156.0	6,184.9	(28.9)
Other Benefit/Burden <\$200K	540.5	566.8	(26.3)	554.8	576.6	(21.8)
Total Salaries & Burden Expense	\$ 124,555.4	\$ 124,146.6	\$ 408.8	\$ 118,398.4	\$ 119,484.8	\$ (1,086.4)

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

APPENDIX 3: 2022 DELIVERABLES AND SELECT METRICS



ISO Tracks Metrics to Monitor Progress and Efficiency in Upholding its Regional Responsibilities

- To carry out the ISO's mission and keep track on its strategic goals, the organization tracks a number of metrics to gauge progress; those metrics are listed in the subsequent slides
- ISO-NE Five strategic goals:
 - Responsive Market Designs
 - Progress and Innovation
 - Operational Excellence
 - Stakeholder Engagement
 - Attract, Develop, and Retain Talent



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

The ISO in 2022 took on a large number of complex and novel initiatives addressing the clean energy transition

A subset of 2022 initiatives illustrates the effort the ISO has dedicated to supporting the region in their efforts to decarbonize the New England grid:

- Support NE States' policy initiatives
 - Completed the Pathways Study: Evaluation of Pathways to a Future Grid
 - Obtained FERC approval to administer capacity markets without a Minimum Offer Price Rule (MOPR)
 - Completed the Future Grid Reliability Study Phase 1
 - Initiated the 2050 Transmission Study
 - Respond to inquiries about 2022/23 Winter Reliability Program
 - Provided technical support to the states for their procurements of renewable and clean energy resources
- Enhance market design to improve pricing and resource accreditation to promote reliability and manage resource uncertainty
 - Delivered a detailed design proposal for Resource Capacity Accreditation (RCA, also known as effective load carrying capability) to stakeholders and held numerous discussions with them regarding design elements
 - Developed and proposed to stakeholders the Day-Ahead Ancillary Services Initiative (DASI) for reserve markets and to support fuel security
- Enhance ISO modeling and situational awareness to address changing resource mix
 - Improved system software and analytic methods for inverter-based resources (through developing a unique simulation scheme that will enable time-efficient electromagnetic transient simulation of multiple inverter based resources projects in the Eastern Interconnection system)
 - Completed a prototype of a scenario engine tool to support the modeling and assessment of operational impacts of extreme weather events
 - Developed a sub-hourly simulation model for the integrated market simulator (IMS)

Responsive Market Design

Improve the current market structure and continue to evolve and reposition the market design to support the states' objectives and transition to high levels of renewables and distributed resources. Maintain a robust fleet of balancing resources and preserve the ability of the market to guide the orderly entry and exit of resources.

Wholesale energy market is structurally competitive

- Operating reserve margins remain relatively high
- Residual Supply Index (RSI) scores meet expectations
- Energy market mitigation is relatively infrequent
- Markups in RT and DA markets were close to zero or negative
- In 2022, withheld economic capacity relatively low

Wholesale capacity market structurally competitive

- RSI and Pivotal Supplier Test scores: no pivotal suppliers
- Overall competitiveness increased with decrease in SENE zonal load forecast & increase in import capability limit

Wholesale Ancillary Services generally performing well. Regulation market structurally competitive. Forward Reserve Market (FRM) structurally uncompetitive.

- Recent FRM auctions show low Residual Supply Index scores at system-level for TMNSR; and for total thirty reserves

2024 focus in on enhancing market design for capacity, energy and ancillary services markets to send more accurate price signals – addressing changing resource mix, associated operating complexity, and the region's winter security risks

Note: See Annual Work Plan & Wholesale Markets Plan for detail

Note: See IMM 2022 Annual Markets Report for detail

Progress & 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.

Improve day-ahead load forecasting accuracy

- Average accuracy for peak hours of the month meets ISO's standards, *but* average accuracy across all hours of month does not. *See Monthly COO report to NEPOOL for detail*

Enhance programs to incorporate state policy objectives

- Reflect state energy efficiency goals; PV and electrification growth in long-term forecasting methodology. *See NEPOOL Load Forecast Committee & Planning Committee working groups*
- In consultation with states, conduct longer-term transmission planning program

Interconnect and register new resources to meet FERC established timeframes

- *See Order 845 Quarterly Performance metric filings*
- Streamline DER process through transferring all distribution system interconnection to state processes

2024 focus is on enhancing existing tools and programs to improve modeling of emerging technology resources and develop forecasting solutions and load management solutions for weather dependent resources:

- collect more detailed information about resources' operating characteristics, reflecting increased complexity and limited energy of resources
- methods for tracking and forecasting amount and impact of electrification of heating (space & water) and transportation (vehicle classes)
- Process interconnection requests more quickly and advocate/plan for federal interconnection queue policy changes

Operational Excellence:

Continuously improve operations and processes, with a focus on prioritizing project scope and implementation, business results, and continuity of reliable operations

Maintain NERC Standards compliance

- Operate bulk electric system reliability, e.g., within frequency limits; to avoid instability, cascading outages or uncontrolled separation;
- Maintain accurate planning models and update planning studies
- Oversee facility interconnection studies

Accurately settle markets with no errors

- Satisfactorily complete annual SSAE 18 audit
- Administer hourly market operations with minimal LMP corrections and zero provisional DAM results adjustments

Maintain IT uptime and ensure business continuity

- Continuous assessments of cyber security threats and risks against CIP Standards; NIST Framework; DHS Known Exploited Vulnerabilities; phishing attempts

Maintain accurate quarterly budget forecasts, comparing projected costs/revenues against actual financial results

2024 focus is on improving business operations across organization

- Implement internal process and technology improvements to address increasing grid complexity
- Maintain resources for providing participants with settlements finality and allocate resources to administer unique provisions of the Mystic Cost of Service Agreement
- Continue to modernize IT assets, technologies, and tools to mitigate cybersecurity threats

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 in supporting the four pillars of the clean energy transition

- Address public policy concerns
 - Assess regional policy requests
 - Administer stakeholder prioritization process
- Annually survey stakeholder satisfaction with ISO services
 - Overall service quality
 - Market Participant training course satisfaction
- Over past several years, ISO has delivered products responsive to:
 - NE States 2020 Vision
 - Request to evaluate clean energy pricing (Pathways report)
 - Request to conduct longer-term transmission planning (Future Grid Reliability Study; 2050 transmission study)
 - Requests for mid-year winter energy adequacy assessments
 - Technical support on states' RFP efforts
- Focus in 2024 is addressing:
 - Building on novel analyses performed in 2022-23 to update assessments of regional energy adequacy vulnerabilities
 - Mature longer-term transmission planning program
 - Provide technical support to States, as requested, on RFP programs

APPENDIX 4: CYBER SECURITY AND CIP COMPLIANCE HISTORY AND COSTS



Cyber Security and CIP Compliance

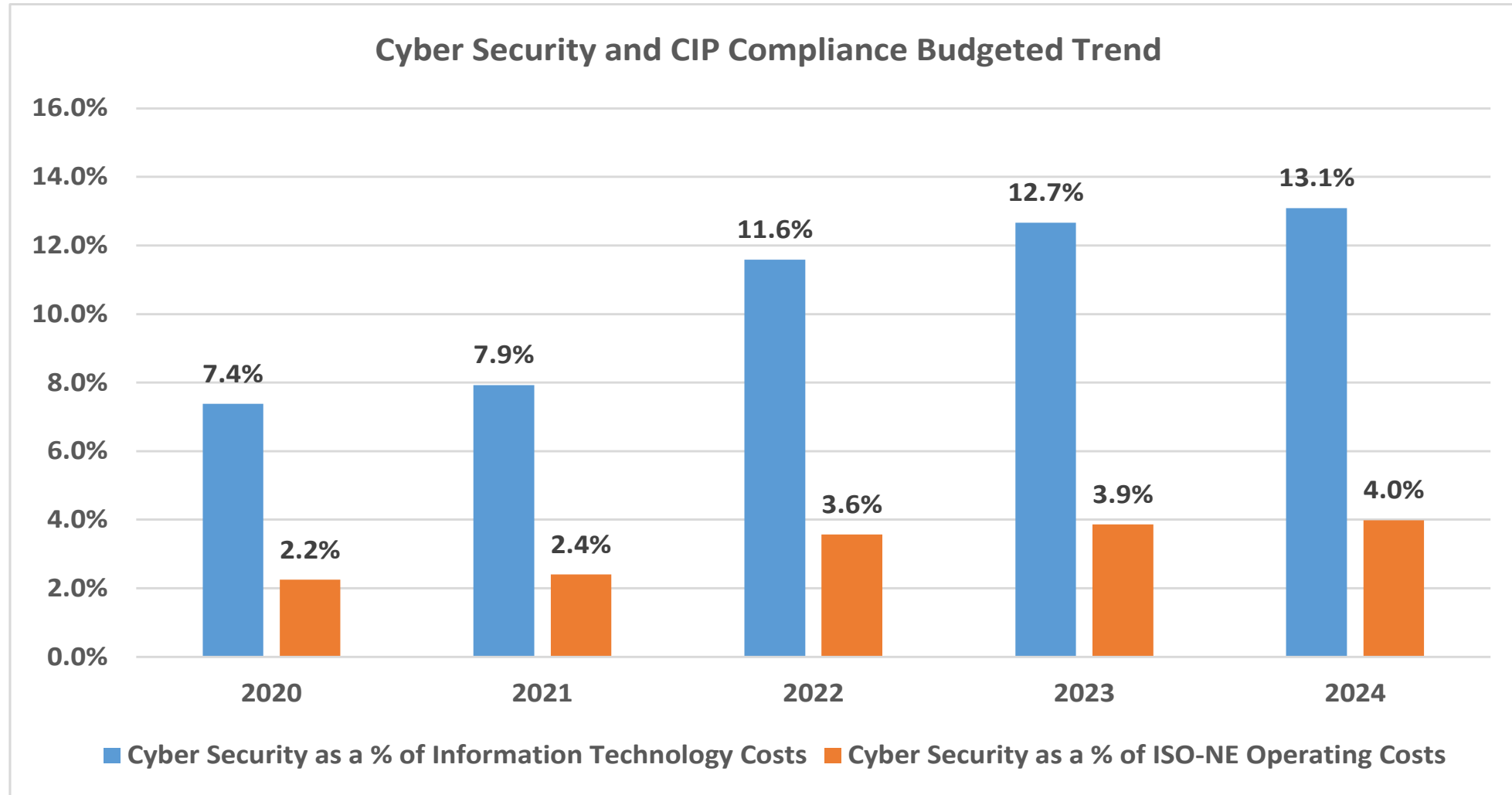
- Background
 - Information technology has become an indispensable tool for efficiently and reliably operating the increasingly complex regional power system, administering the billion-dollar markets where wholesale electricity is bought and sold in New England, and engaging and collaborating with our 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
 - 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

Cyber Security and CIP Compliance *(cont.)*

- 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
- In 2022 ISO-NE replaced an outdated existing tool that served as a foundation for all network security with a new modern platform for ISO-NE's network traffic capture and visibility infrastructure, which is a critical component to cyber security and IT infrastructure operations. This infrastructure tool serves as a foundation for all network security throughout ISO-NE; the new tool (Packet Broker) was needed to maintain compliance with North American Electric Reliability Corporation Critical Infrastructure Protection standards; in addition, the new tool added an optimized design to accommodate the expansion of network traffic monitoring capabilities, enhanced filtering capabilities and integrates into other cyber security monitoring tools
- During 2022 ISO-NE also procured additional software to enhance our capability to visualize, detect and respond to threats and vulnerabilities from industrial control systems and technology that interfaces with the physical world (e.g., distributed control systems, SCADA); and software to improve ISO-NE's ability to recognize and block phishing attempts, as these attempts have increased exponentially and become more sophisticated in the past several years

Cyber Security and CIP Compliance *(cont.)*

To ensure robust cyber security defenses against ongoing sophisticated threats and to ensure compliance with CIP standards, ISO-NE has increasingly invested in these areas which have trended higher of our Information Technology and Overall Operating Expense Budgets



APPENDIX 5: 2024 BUDGET RESOURCES BY FUNCTIONAL AREA



2024 Budget Resources By Functional Area

ISO-NE provides a vast array of services to market participants and the New England region. Slides 136 through 161 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 2024 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	33.2	Rents & Leases	0.8
System Planning	20.7	Network Operations	3.7
Market Development & Settlements	20.9	Computer Services	25.4
Information Services	52.6	Data Services & Office Expenses (1)	2.3
Program Management, Adv Tech Solutions, and NEPOOL Relations	14.3	Insurance Expense	3.4
Market Monitoring & Mitigation	7.0	Board of Directors Expense	1.6
Legal Services	7.7	Meetings & Related Expense	1.5
External Affairs and Corporate Communications	5.4	Education & Training	1.3
Compliance, Risk Management, Finance, and Internal Audit	13.8	Taxes, Permits, Licenses & Fees (1)	0.2
Human Resources	7.9	NPCC Dues	8.1
CEO and COO and Support Staff	3.1	Interest Expense	3.5
Building Services	4.3	CEO Emerging Work Allowance and Board Contingency	2.7
		Misc. Revenues, Interest Income, and Purchase Discounts	(0.9)
		Total Operating Budget	\$ 244.3

(1) Comprises the \$2.5 million total of *Other Expense* on Slide 92

2024 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.

Area	2021	2021	Positions	2022	2022	Positions	2023	2023	Positions	2024	2024
	Total	Budgeted	Filled	Total	Budgeted	Filled	Total	Budgeted	Filled	Total	Budgeted
	FTEs	FTEs	12/31/2021	FTEs	FTEs	12/31/2022	FTEs	FTEs	6/30/2023	FTEs	FTEs
System Operations & Market Administration	135.0	129.5	122.0	135.0	127.5	127.0	137.0	128.5	131.0	138.0	127.5
System Planning	65.0	62.0	60.0	66.0	62.5	57.0	70.0	65.5	68.0	85.0	78.5
Market Development & Settlements	52.0	50.0	48.0	55.0	51.5	55.0	64.0	60.0	57.0	68.0	63.0
Information Services	178.5	171.0	172.0	184.0	175.5	179.0	193.0	181.0	181.0	200.0	185.0
Prog Mgt, Adv Tech Solutions, & NEPOOL Relations	52.5	50.5	50.5	54.5	52.0	51.5	58.5	55.0	51.5	64.5	59.5
Market Monitoring & Mitigation	21.0	20.0	21.0	21.0	20.0	18.0	21.0	19.5	19.0	21.0	19.5
Legal Services	16.0	15.5	16.0	18.0	17.5	18.0	18.0	17.0	18.0	18.0	16.5
Ext Affairs and Corp Comm	19.0	18.0	18.0	19.0	18.0	17.0	21.0	19.5	20.0	23.0	20.5
Compliance, Risk Mgt, Finance & Internal Audit	43.0	41.5	41.0	44.0	43.0	41.0	44.0	41.5	44.0	47.0	43.5
Human Resources	16.0	15.5	15.0	16.0	15.5	16.0	18.0	17.0	17.0	24.0	22.0
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	4.5
Building Services	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.5
Totals	608.0	583.5	573.5	622.5	593.0	589.5	654.5	614.5	616.5	698.5	644.5

Budgeted Vacancy %'s are as follows: 2021 and 2022 – 4.0%; 2023 and 2024 is 5.0%.

2024 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 2021 and 2022, current forecasted amounts for 2023, and proposed budget amounts for 2024.

Area	2021		2022		2023		2024	
	Expense	FTE Equiv	Expense	FTE Equiv	Expense	FTE Equiv	Expense	FTE Equiv
\$ amounts in thousands								
System Operations & Market Adm.	\$ 109.6	0.8	\$ 321.0	2.3	\$ 873.0	6.0	\$ 512.5	3.4
System Planning	2,382.7	12.0	2,064.6	10.1	2,120.6	9.9	4,162.7	18.8
Market Development & Settlements	2,961.2	12.6	1,919.5	7.9	2,247.5	8.9	4,692.5	17.8
Information Services	4,773.3	23.9	5,209.0	25.2	5,743.8	26.7	5,682.1	25.4
Info. Services - Cyber Security	2,321.1	11.6	2,669.7	12.9	3,350.3	15.6	3,977.4	17.8
Prog Mgt, Adv Tech Solutions, & NEPOOL Relations	686.3	2.9	1,643.3	6.7	1,972.0	7.7	1,019.0	3.8
Market Monitoring	1,608.2	8.6	1,786.4	9.3	1,830.0	9.1	2,094.5	10.0
Legal Services	1,115.2	4.3	1,780.5	6.6	2,234.5	8.0	1,877.0	6.4
Ext Affairs & Corp Comm	574.7	3.1	692.9	3.6	717.2	3.6	671.9	3.3
Compl., Risk Mgt, Finance & Int Audit	1,204.1	6.1	1,387.8	6.8	1,734.9	8.2	2,074.2	9.4
Human Resources	1,958.1	7.8	2,184.7	8.4	2,111.7	7.8	2,493.3	8.9
CEO & COO & Support	-	-	-	-	-	-	-	-
Building Services	-	-	-	-	-	-	-	-
Total	\$ 19,694.5	93.8	\$ 21,659.5	99.7	\$ 24,935.4	111.5	\$ 29,257.1	125.0

Note: Outside consulting in the capital budget is done per project and not by functional area. Consultant spending on all capital projects totaled \$11,616.2 or approximately 55 FTEs for 2021 and \$14,147.8 or 65 FTEs for 2022. Budgeted/forecasted amounts for 2023 or 2024 cannot be provided since several projects are in the Planning/Conceptual Design phase and their specific requirements have not been fully established.

2024 Budget Components By Functional Area

System Operations & Market Administration – 138.0 FTEs

Salaries (fully burdened) \$ 32.7M

Professional Fees \$ 0.5M

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.



2024 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.

2024 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.

2024 Budget Resources By Functional Area

System Planning – 85.0 FTEs (7.0 FTEs are allocated to reimbursable studies)

Salaries (fully burdened) \$ 16.5M

Professional Fees \$ 4.2M

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.

2024 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.

2024 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.

2024 Budget Resources by Functional Area

Market Development & Settlements - 68.0 FTEs (2.0 FTEs are allocated to the capital budget)

Salaries (fully burdened)* \$ 16.2M

Professional Fees \$ 4.7M

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.

2024 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.



2024 Budget Resources By Functional Area

Information Services – 200.0 FTEs (22.0 FTEs are allocated to the capital budget)

Salaries (fully burdened)*	\$ 42.9M
Professional Fees	\$ 9.7M

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 1,830 product versions, 1,729 servers, 931 desktop systems, 968 network devices, and 543 appliances.

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

Information Technology (IT) Software Development and Power System Support (67.0 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 147 through 150 only include operating costs.



2024 Budget Resources By Functional Area

Information Services *(cont.)*

Description	Amount (\$ in Millions)
Information Technology (IT) Software Development and Power System Support, <i>(cont.)</i>	
<ul style="list-style-type: none">• Energy Market Applications Maintenance and Support.<ul style="list-style-type: none">– 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).	
Total IT Software Development and Power System Support:	\$ 14.2M



2024 Budget Resources By Functional Area

Information Services *(cont.)*

Description	Amount (\$ in Millions)
<p>Information Technology (IT) Infrastructure and Enterprise Support Services (101.0 FTEs)</p> <p>Staff and Consultants perform the following functions:</p> <ul style="list-style-type: none">• 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.	
Total IT Infrastructure and Enterprise Support Services:	\$ 26.6M



2024 Budget Resources By Functional Area

Information Services (cont.)

Description	Amount (\$ in Millions)
Information Technology (IT) Management, Cyber Security, and Software Testing (32.0 FTEs)	
Staffing and Consultants perform the following functions:	
<ul style="list-style-type: none">• Direct Management of Software Development & Power System Support, Infrastructure & Enterprise Support, Cyber Security, and Software Testing (including change management).• Cyber Security, including:<ul style="list-style-type: none">– Policy and Procedure Development.– Controls Assessment.– Security Compliance & Reporting.– Virus/Malware Response & Reporting.– Intrusion Monitoring & Response.– Security Software Tools Maintenance & Support.– Critical Infrastructure Protection Compliance & Monitoring.– Security Metrics Collection & Reporting.– Change Control Testing & Reporting.– Security Awareness & Training, Software Change Management, and Quality Assurance Control.• Software Testing Control.	
Total IT Management, Cyber Security, and Software Testing:	\$11.8M
Total Information Services Staffing, Consulting, and Computer Services:	\$52.6M

2024 Budget Resources By Functional Area

Program Management, Advanced Technology Solutions, and Participant Relations & Services – 64.5 FTEs (10.0 FTEs are allocated to the capital budget)

Salaries (fully burdened)* \$ 13.3M

Professional Fees \$ 1.0M

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 leading the company's engagement, training, and support of industry stakeholders on proposed changes to and implementation of ISO's planning, operational, and market initiatives.

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.

2024 Budget Resources By Functional Area

Program Management, Advanced Technology Solutions, and Participant Relations & Services (*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* - Leads the ISO's engagement with market participants and other stakeholders to collaborate on ISO's projects for market designs and reliability improvements. Administers the NEPOOL Technical Committees and related working groups, and serves as the ISO's primary liaison for NEPOOL members.
- *PRS: Participant Support & Solutions* – Manages and supports user experiences in the ISO markets, transmission planning processes, and other business functions to resolve industry stakeholder issues.
- *PRS: Participant Training Services* – Develops and delivers the ISO's external training programs for industry stakeholders to participate in all ISO systems and do business within ISO New England's footprint.
- *PRS: Project Services* – Develops and coordinates internal and external plans, work flows, and information on corporate projects across multiple departments to integrate the ISO's market, planning, and operations initiatives. Regularly publishes updated reports to industry stakeholders on corporate initiatives.

2024 Budget Resources By Functional Area

Market Monitoring & Mitigation – 21.0 FTEs

Salaries (fully burdened) \$ 4.9M

Professional Fees \$ 2.1M

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.

2024 Budget Resources By Functional Area

Legal Services - 18.0 FTEs

Salaries (fully burdened) \$ 5.8M

Legal Fees \$ 1.9M

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.

2024 Budget Components By Functional Area

External Affairs and Corporate Communications - 23.0 FTEs

Salaries (fully burdened) \$ 4.7M

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).
- Assesses environmental policies and advises company on implications and conducts outreach to environmental and community groups.

2024 Budget Resources By Functional Area

Compliance, Strategy, Risk Management, Finance/Market and Credit Risk, and Internal Audit - 47.0 FTEs

Salaries (fully burdened) \$ 11.7M

Professional Fees \$ 2.1M

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.

2024 Budget Resources By Functional Area

Human Resources - 24.0 FTEs

Salaries (fully burdened) \$ 5.4M

Professional Fees \$ 2.5M

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 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 and costs for external recruiter fees, background checks (initial and required updates), candidate travel, 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 employees, 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 including the selection, design, and administration of all health and welfare benefits (e.g., medical, life insurance, etc.), working with providers and brokers, and designing and administering 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.

2024 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, that key talent is developed to support critical positions within the organization, and that knowledge is retained despite talent attrition.
- Supporting organizational effectiveness through the alignment of strategy, goals, scorecards, performance and rewards as well as consultation on enhancing employee engagement, optimizing team performance and organizational design, and elevating leadership capabilities.
- 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.
- 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.
- Deepening employee engagement by developing and enhancing programs for employee onboarding, career progression, diversity and inclusion, employee well-being, and employee communications as related.

2024 Budget Resources By Functional Area

Human Resources *(cont.)*

Description

- Managing back-end employee information including personnel files and payroll administration, while owning and developing HRIS system(s).
- Managing the ISO Reception function, including registration of numerous stakeholders and visitors to our secure facility.
- Offering input as a key advisor towards workplace safety, employee relations, and positive employee experience.

Description

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

Salaries (Fully Burdened)

\$ 3.1M



2024 Budget Resources By Functional Area

Building Services

\$4.3M

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	\$ 0.9
• Utilities.	1.6
• Repairs and Maintenance, Cleaning Services, Snow Removal, Landscaping, and Trash Removal.	1.0
• Security.	0.8
Total Building Services	\$ 4.3



2024 Budget Resources By Functional Area

Meetings & Related Expenses and Education & Training

\$2.8M

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.	0.3
• <u>Regulatory</u> – Travel and related expense for regulatory meetings and support including FERC, NERC, NPCC, and state agencies.	0.4
• <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.	0.6
Total Meetings & Related Expenses and Education & Training	\$ 2.8M

APPENDIX 6: 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, 2023, the tax-exempt debt rate is 3.2% and settlement float rate is 2.4%
 - These costs could exceed what’s predicted on Slide 92
 - 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 119)

APPENDIX 7: CAPITAL EXPENDITURES BUDGET DETAIL



Capital Budget – 2024 Capital Projects Schedule

(\$000's)

Capital Projects - Approved Charters

- . Day-Ahead Ancillary Service Improvements
- . nGEM Software Development Part III
- . Operating System Server Upgrade Phase I
- . Solar Do-Not-Exceed Dispatch Phase II
- . Internal Market Monitoring Data Analysis Phase IV
- . Energy Management System Short-term Load Forecast Replacement
- . IT Asset Workflow Integration and Updates
- . Energy Management System Host Monitoring Software Replacement
- . Settlement Technology Improvements Project

Sub Total Projects with Approved Charters

Planning/Conceptual Design [2]

- . nGEM Real-Time Market Clearing Engine Implementation
- . FERC Order 881 Compliance
- . CIP Electronic Security Perimeter Redesign Phase II
- . Enterprise Resource Planning System Replacement
- . Resource Capacity Accreditation
- . Microsoft 365 Service Adoption
- . 2024 Issue Resolution Project
- . Long-term FTRs
- . FERC Order 2222
- . Privileged Account Management Security Enhancements Phase II
- . 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 (2023) Cost to Complete [1]	2024 Cost to Complete	Future Cost to Complete	Total Project Costs	Estimated Complete Date
1,898.0	2,463.6	3,811.6	951.9	9,125.1	03/25
9.8	1,372.4	2,500.0	585.6	4,467.8	03/25
-	1,167.5	1,215.5	-	2,383.0	07/24
252.8	657.2	920.5	-	1,830.5	10/24
103.9	564.1	519.0	-	1,187.0	05/24
48.9	733.1	371.1	-	1,153.1	07/24
446.8	372.2	238.0	-	1,057.0	05/24
50.2	198.5	31.9	-	280.6	01/24
132.0	383.2	27.3	-	542.5	03/24
2,942.4	7,911.8	9,634.8	1,537.5	22,026.6	
1,891.8	1,971.9	6,000.0	7,000.0	16,863.7	06/25
	1,270.0	3,300.0	3,200.0	7,770.0	06/25
25.6	500.0	2,000.0	-	2,525.6	12/24
-	194.6	1,600.0	700.0	2,494.6	03/25
0.9	199.1	1,000.0	2,000.0	3,200.0	12/25
-	100.0	1,000.0	1,000.0	2,100.0	09/25
-	-	1,000.0	-	1,000.0	12/24
907.5	-	-	-	907.5	[3] TBD
-	-	500.0	6,700.0	7,200.0	12/26
-	-	500.0	-	500.0	12/24
-	-	1,631.2	-	1,631.2	
2,825.8	4,235.6	18,531.2	20,600.0	46,192.6	
-	-	5,334.0	-	5,334.0	
-	-	1,500.0	-	1,500.0	
\$ 5,768.2	\$ 12,147.4	\$ 35,000.0	\$ 22,137.5	\$ 75,053.1	

[1] The amounts under the "Current Year (2023) Cost to Complete" list only includes those projects with budgeted costs in 2024 and beyond.

[2] The 2024 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

2024 Expenditures/Major Projects in Development

Day-Ahead Ancillary Services Improvements

\$3.8M

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 March 2025.



Capital Budget

2024 Expenditures/Major Projects in Development

nGEM Software Development Part III

\$2.5M

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, completed in June 2023, included 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 March 2025.



Capital Budget

2024 Expenditures/Major Projects in Development

Operating System Server Upgrade Phase I

\$1.2M

ISO-NE relies on a number of legacy servers for critical business functions that will be reaching end-of-life in the near future. The Operating System Server Upgrade project will be a multi-phase project to upgrade or retire these servers, and develop a server update lifecycle that will provide consistent, standard, and modern deployments of servers that support ISO-NE's business objectives. Phase I the project will establish a lifecycle process and include the upgrade or retirement of servers where support will end in 2024. This project will establish a timeline for a server refresh cycle consistent with published maintenance support dates, and replace or refresh servers prior to the end of a support period, thereby avoiding increased costs of extended server maintenance and support. This new life cycle will limit the number of supported operating systems, which will improve security analysis, patching efficiency, and threat vector risk.

Phase II of the project will upgrade or replace remaining servers, establish metrics and system improvements to allow the Information Technology management team to quickly assess the fleet of servers for decision-making purposes, and develop and implement process improvements to enable server life cycle management.

The targeted completion date for this project is July 2024.



Capital Budget

2024 Expenditures/Major Projects in Development

Solar Do Not Exceed Dispatch Phase II

\$0.9M

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. During Phase I GE developed enhancements to ISO-NE's Renewable Plan (RPlan) software to allow Market Participants to submit their medium and long-term data for the availability of future power generation. Enhancements included upgrades to support provisions of solar power forecasts, in addition to the ability to receive forecasts for both wind and solar from multiple vendors.

Phase II of the Solar DNE Dispatch project will perform the steps necessary to reliably and efficiently integrate solar resources into the DNE dispatch process. This will include introduction of in-front-of-the meter solar resource power forecasts and incorporation into the Real-Time DNE dispatch process, the Energy Management System, and into System Operator Situational Awareness displays. In addition, Phase II will evaluate and develop additional solar-specific reports and web-posting needs, including but not limited to: provisions of solar forecast data to Local Control Centers, development and distribution of solar forecast reports, and posting of solar undelivered energy reports (similar to what is currently being done for wind resources).

The targeted completion date for this project is October 2024.



Capital Budget

2024 Expenditures/Major Projects in Development

Internal Market Monitoring Data Analysis Phase IV

\$0.5M

ISO-NE's Internal Market Monitoring (IMM) department analyzes market data to identify issues that may compromise the efficiency and integrity of market outcomes. Successful analysis requires access to a large variety of market data. The multi-phase IMM Data Analysis project has enabled IMM market analysts to explore data across multiple markets (e.g., energy, capacity, and ancillary services) and multiple market products (e.g., physical and financial). Previous phases of the IMM Data Analysis project developed a market data analysis system with access to data from Financial Transmission Rights, the Forward Reserve Market, the Day-Ahead and Real-Time market systems, the Forward Capacity Market and Net Commitment Period Compensation. As a result, IMM analysts have access to energy and regulation market data and the ability to address outstanding requests for improvements/optimizations related to data tables. However, the process to collect and analyze data from the various sources is time consuming and requires validation and preparation before the data can be used.

The Internal Market Monitoring Data Analysis Phase IV project will develop a solution to enable Internal Market Monitoring analysts to query data from all possible sources, with the objective of providing available data in a "readiness" state, reducing the amount of data preparation time, while also ensuring the data is accurate, consistent, reliable, and complete.

The targeted completion date for this project is May 2024.



Capital Budget

2024 Expenditures/Major Projects in Development

Energy Management System Short-term Load Forecast Replacement

\$0.4M

The Energy Management System's short term load forecast (STLF) is a critical input to Real-Time unit commitment and unit dispatch software. The existing STLF software is unable to address the emergence of behind-the-meter solar to account for load patterns of weather and clouds, requiring significant manual intervention by control room operators in order to minimize market and reliability impacts. This issue has been growing in severity over the past several years and a variety of small-scale initiatives have been completed in order to allow system operators to manually adjust the STLF to account for behind-the-meter solar activity during the operating day. Because of the significant manual adjustments and rapid growth of behind-the-meter solar, replacement of the STLF engine is required for efficiency and accuracy.

The development of a new forecasting system to replace the current STLF will improve the price formation for Coordinated Transaction Scheduling, provide a more accurate input for Real-Time unit commitment and dispatch software; and reduce the time Control Room operators spend monitoring and manually intervening in the STLF results, allowing operators to focus more on system conditions and reliability. This project will also develop and deliver a new forecasting system with a dynamic modeling process that will create a real-time load data feed and incorporate real-time behind-the-meter photovoltaic data for use in forecasting; develop new forecasting models; establish the necessary development, integration, and production environments for the load forecasting platform; train ISO personnel regarding the new system; and update the relevant internal procedures and process documentation.

The targeted completion date for this project is July 2024.



Capital Budget

2024 Expenditures/Major Projects in Development

IT Asset Workflow Integration and Updates

\$0.2M

The IT Asset Workflow (ITAW) system is used for the business processes associated with procurement, installation, and deployment of IT assets. The ITAW application provides all the necessary tracking, controls, and audit trails for these assets. The ITAW's workflows need to be updated to provide the ISO with search and data maintenance capabilities, specifically in the ISO's configuration management database. Additionally, the current ITAW was developed prior to the creation of certain cyber security and compliance standards.

ITAW updates in this project will include ensuring that current and accurate data is available in the configuration management database system; the ability to perform an impact analysis when changes are made to configured assets; reductions to audit and compliance risks by providing audit trails for actions associated with North American Electric Reliability Corporation's (NERC) Critical Infrastructure Protection (CIP) and other cyber security standards; and a reduction to needed resources (e.g., licensing fees and third party application support) that are currently required to keep multiple data sources in sync.

The targeted completion date for this project is May 2024.



Capital Budget

2024 Expenditures/Major Projects in Development

Energy Management System Host Monitoring Software Replacement **\$0.1M**

ISO-NE's current host monitoring software vendor will discontinue support for their antivirus protection as an on-premise endpoint detection and response (EDR) solution in December 2023. ISO-NE uses this antivirus software to provide malware protection on certain Bulk Electric System (BES) Cyber Assets, and is a key part of ISO NE's compliance with NERC CIP standards. The most cost efficient solution to ensure we maintain operational cyber security in the Energy Management System environment, as well as comply with CIP standards, is to select and deploy a new on-premise host based agent solution.

The Energy Management System Host Monitoring Software Replacement project will identify and implement a host monitoring solution to replace the existing software and applications for the EMS environment to comply with CIP standards. The scope of the project will include the procurement of the necessary applications and licenses for the new EDR solution; deployment and configuration of a user interface for management endpoints; deployment of the solution; integration of cyber security monitoring tools to enhance identification and response abilities; and necessary updates to CIP compliance documentation, processes, and procedures.

The targeted completion date for this project is January 2024.



Capital Budget

2024 Expenditures/Major Projects in Development

Settlement Technology Improvements Project

\$0.1M

The Settlement Technology Improvements project will replace all settlement application servers and associated hardware that are outdated and do not contain the necessary components and features needed for ongoing support of the various settlement applications. The settlement applications include the Settlement Market System, Market Information System, and Financial Assurance Management system all serving critical functions related to settlement, billing, and reporting to Market Participants. The upgrade of settlement application servers and associated hardware will provide enhanced security features, flexible support controls for planned outages, enhanced features to monitor and control outage requests, and logging for detailed reporting on user access.

The targeted completion date for this project is March 2024.



Capital Budget

2024 Expenditures/Major Projects in Conceptual Design

nGEM Real-Time Market Clearing Engine Implementation

\$6.0M

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 has been developed and is in production. The nGEM Real-Time Market Clearing Engine (RT MCE) project will build on the Day-Ahead MCE to develop and deploy the Real-Time MCE, including ISO-NE customizations.

During the first phase of the nGEM RT MCE project, two of the legacy RT MCE study modes (the Real-Time Unit Commitment (RTUC) and Coordinated Transaction Scheduling Pricing Engine (CTSPE) functions) will be replaced and the transition from EMS to MMS interfaces will be started. The nGEM RT MCE project will provide performance improvements by enabling more intensive market clearing formulations; eliminate reliance on .CSV flat files for communication of data between the MCE and other parts of the MMS; and enhance installation, patching, and upgrades of MCE's in ISO infrastructure.

The target completion date for this project is June 2025.



Capital Budget

2024 Expenditures/Major Projects in Conceptual Design

FERC Order 881 Compliance \$3.3M

FERC Order 881 has several compliance requirements for the ISO regarding the accuracy and transparency of transmission line ratings. The compliance requirements will require the ISO to comply with specific data reporting and record-keeping protocols. To ensure compliance, organizations need a robust software solution that automates data management, streamlines reporting processes, and maintains accurate records. The goal of this project is to implement the order requirements effectively and efficiently.

This project will include enhancements to existing Energy Management System (EMS) products and the creation of a new product to handle compliance with transmission line limit exchanges among the ISO and transmission owners (TOs).

The target completion date for this project is June 2025.



Capital Budget

2024 Expenditures/Major Projects in Conceptual Design

CIP Electronic Security Perimeter Redesign Phase II

\$2.0M

The CIP Electronic Security Perimeter Redesign project is a multi-phase project that 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 ISO-NE's overall network security posture. Phase II efforts will consolidate ISO-NE's production and integration networks into one ESP, with fewer electronic access points; modernize ISO-NE's firewall platform; implement a modern access control mechanism for CIP networks, replacing a legacy terminal-server based system; and standardize ISO-NE's IP address scheme to enable easier network management. This project is also foundational for future CIP compliance projects.

The targeted completion date for this project is December 2024.



Capital Budget

2024 Expenditures/Major Projects in Conceptual Design

Enterprise Resource Planning System Replacement

\$1.6M

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 March 2025.



Capital Budget

2024 Expenditures/Major Projects in Conceptual Design

Resource Capacity Accreditation

\$1.0M

In response to the evolving resource mix in the New England region and potential increasing risk of natural gas limitations in the winter, the ISO is considering changes to how resources are accredited in the Forward Capacity Market (FCM). As part of this project, three major areas will be considered for tariff changes: (1) improvements to resource performance and load assumptions used in the resource adequacy assessment (RAA) process; (2) potential inclusion of energy limits on energy storage and natural gas-/oil-fired resources in the RAA; and (3) application of a marginal reliability impact (MRI) approach to calculate the accredited capacity of resources. These changes will have a significant impact on the implementation of the FCM, requiring modification to the existing implementation and development of new functionality. Areas impacted will include, but are not limited to, RAA modeling assumptions, resource qualification, demand curve formulation, commercial and seasonal demonstrations, reconfiguration auction qualification, pay-for-performance, and compensation and cost allocation.

The targeted completion date for this project is December 2025.

Capital Budget

2024 Expenditures/Major Projects in Conceptual Design

Microsoft 365 Service Adoption

\$1.0M

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 September 2024.



Capital Budget

2024 Expenditures/Major Projects in Conceptual Design

2024 Issue Resolution Project

\$1.0M

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 2024 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 2024.



Capital Budget

2024 Expenditures/Major Projects in Conceptual Design

FERC Order 2222

\$0.5M

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, Forward Capacity Market Order 2222, in development and scheduled to be completed in November 2023, will implement the necessary software changes to support the qualification and participation of Distributed Energy Capacity Resources in the Forward Capacity Market. The FERC Order 2222 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 order.

The targeted completion date for this project is December 2026.



Capital Budget

2024 Expenditures/Major Projects in Conceptual Design

Privileged Account Management Security Enhancements Phase II

\$0.5M

ISO-NE continually monitors the changing landscape with respect to phishing threats 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 Phase II project will continue 2022 efforts to develop technology and processes to protect and reduce the risk of these cyber attacks for high risk key accounts.

The targeted completion date for this project is December 2024.



Capital Budget

2024 Expenditures/Major Projects in Conceptual Design

Non-Project Capital Expenditures

\$5.3M

Non-Project capital expenditures fund external and internal capitalized labor necessary to program System Improvement Requests (\$2.5M); non-project related hardware purchases (\$2.5M); and Building Improvements, Machinery & Equipment, and Furniture & Fixtures (\$0.3M).

Other Emerging Work

\$1.6M

This category is primarily intended to address emerging work requests during 2024 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

2024 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 2024 amounts and description of funding included for each category is provided as follows:

- **\$2.5 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.
- **\$2.5 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 2024, 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.
- **\$0.3 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 2024 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 all common area Main Control Center kitchens including appliances, cabinets, counter, and flooring; and renovation of the Main Control Center lobby areas.

Capital Budget

Resource Allocation for 2024 Projects with Approved Charters

The following projects included in the 2024 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	2021 Actual Results				2022 Actual Results				2023 Actual & Remaining Forecast (1)				2024 Budget			
	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
. Day-ahead Ancillary Services Improvements (2)	\$ -	-	\$ -	-	\$ 53,628	0.3	\$ 416,579	1.7	\$ 480,634	2.4	\$ 3,357,114	13.4	\$ 1,700,736	8.3	\$ 2,110,874	8.5
. nGEM Software Development Part III (2)	-	-	-	-	-	-	-	-	69,832	0.3	1,312,351	5.3	180,000	0.9	2,320,000	9.3
. Operating System Server Upgrade Phase I	-	-	-	-	9,248	0.0	-	-	195,241	1.0	963,023	3.9	288,844	1.4	926,622	3.7
. Solar Do-Not-Exceed Dispatch Phase II	-	-	-	-	4,545	0.0	-	-	522,713	2.6	382,811	1.5	697,300	3.4	223,145	0.9
. Internal Market Monitoring Data Analysis Phase IV	-	-	-	-	-	-	-	-	570,560	2.8	97,440	0.4	451,000	2.2	68,000	0.3
. Energy Management System Short-term Load Forecast Replacement	-	-	-	-	16,765	0.1	-	-	200,660	1.0	564,560	2.3	171,145	0.8	200,000	0.8
. IT Asset Workflow Integration and Updates	30,892	0.2	-	-	136,869	0.7	-	-	440,082	2.2	211,156	0.8	208,000	1.0	30,000	0.1
. Energy Management System Host Monitoring Software Replacement	-	-	-	-	-	-	-	-	132,299	0.6	116,413	0.5	21,918	0.1	10,000	0.0
. Settlement Technology Improvements Project	-	-	-	-	105	0.0	-	-	392,774	1.9	122,344	0.5	27,306	0.1	-	-

Assumptions for FTE Equiv = Int Labor Fully Burdened = \$98/hr., Consultants = \$120/hr.

(1) 2023 includes actual results through June as well as the remaining forecast for the rest of the year. Actual amounts through June are: Day-ahead Ancillary Services Improvements (Int Labor \$79.1K, Consult \$1,348.7K); nGEM Software Development Part II (Int Labor \$9.8K); Operating System Server Upgrade (Int Labor \$36.6K, Consult \$89.6K, Hardware \$3.4K); Solar Do-Not-Exceed Dispatch phase II (Int Labor \$168.1K), Consult \$80,3K); Internal Market Monitoring Data Analysis Phase IV (Int Labor \$93.5K, Consult \$10.4K); Energy Management System Short-term Load Forecast Replacement (Int Labor \$32.1K); IT Asset Workflow Integration and Updates (Int Labor \$226.4K; Consult \$52.7K); Energy Management System Host Monitoring Software Replacement (Int Labor \$14.1K, Hardware \$36.1K); Settlement Technology Improvements Project (Int Labor \$111.1K, Consult \$20.8K)

(2) The Day-ahead Ancillary Services Improvements has \$951,900 and nGEM Software Development Part III project has \$585,600 of costs beyond 2024.

APPENDIX 8: 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 9: 2024-2027 PRO-FORMA STATEMENTS

2024 - 2027 Pro-Forma Budgets

(Dollars in Millions)	2024	2025	2026	2027
Operating Budget ⁽¹⁾	\$244.3	\$265.1	\$284.8	\$305.7
Capital Project Budget	\$35.0	\$40.0	\$40.0	\$40.0
Total	\$279.3	\$305.1	\$324.8	\$345.7
Operating ⁽¹⁾	\$244.3	\$265.1	\$284.8	\$305.7
Depreciation ⁽¹⁾	\$32.6	\$38.5	\$39.6	\$42.9
True-Up	\$(3.0)	(\$1.0)	(\$1.0)	(\$1.0)
Revenue Requirement	\$274.1	\$302.6	\$323.5	\$347.6
TWh Forecast ⁽²⁾	140.7	143.2	146.4	149.7
\$/KWh Rate	\$0.00195	\$0.00211	\$0.00221	\$0.00232

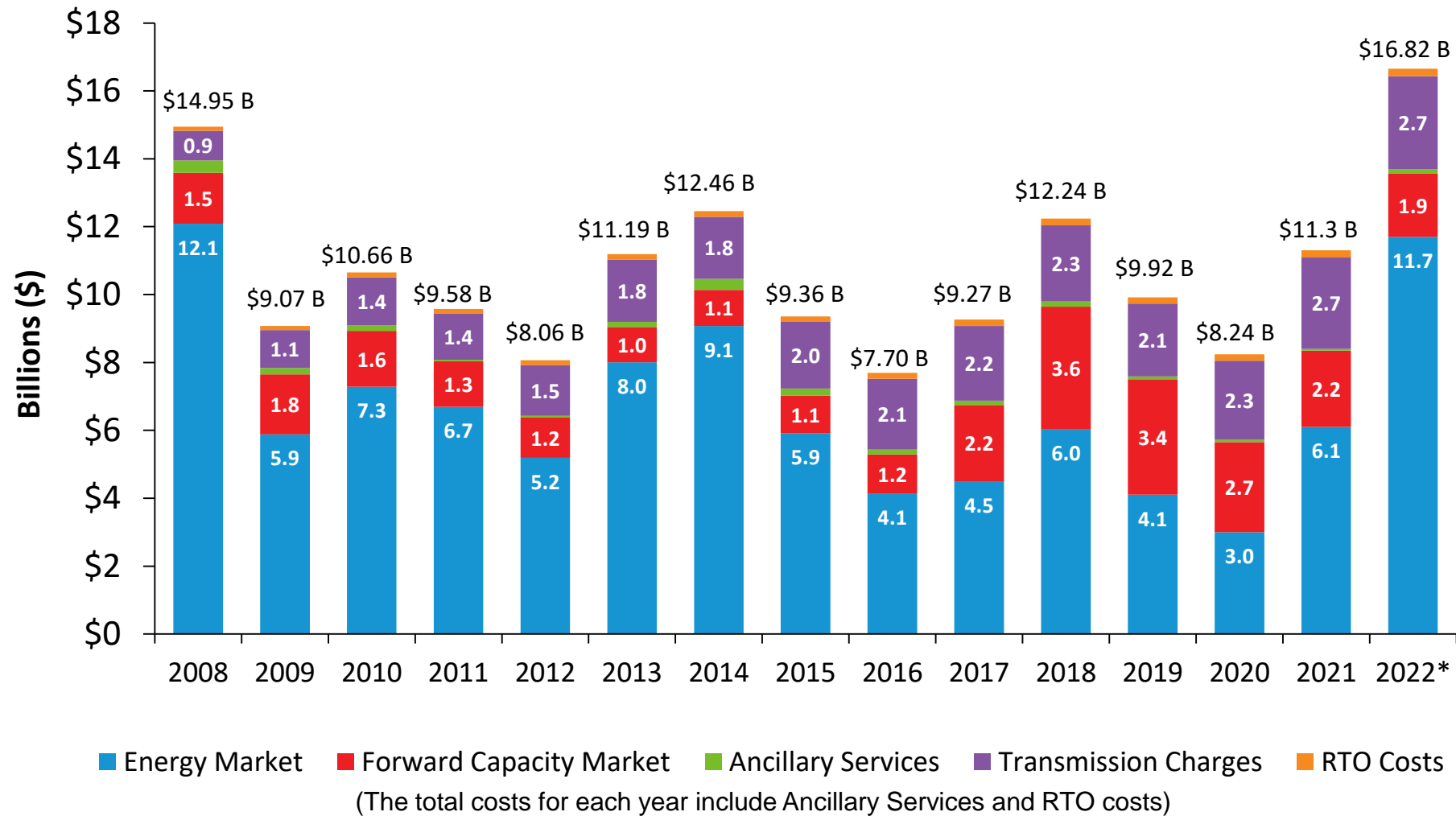
(1) 2025 – 2027 assumes an inflationary increase in Operating costs, however, there is no inflationary increase for interest expense and interest income, and the budgets do not contemplate new mandated activities.

(2) For 2024 – 2027, the May 2023 CELT Report was used.

APPENDIX 10: 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 almost \$17 billion



Source: 2022 Report of the Consumer Liaison Group; *2022 data is preliminary and subject to resettlement

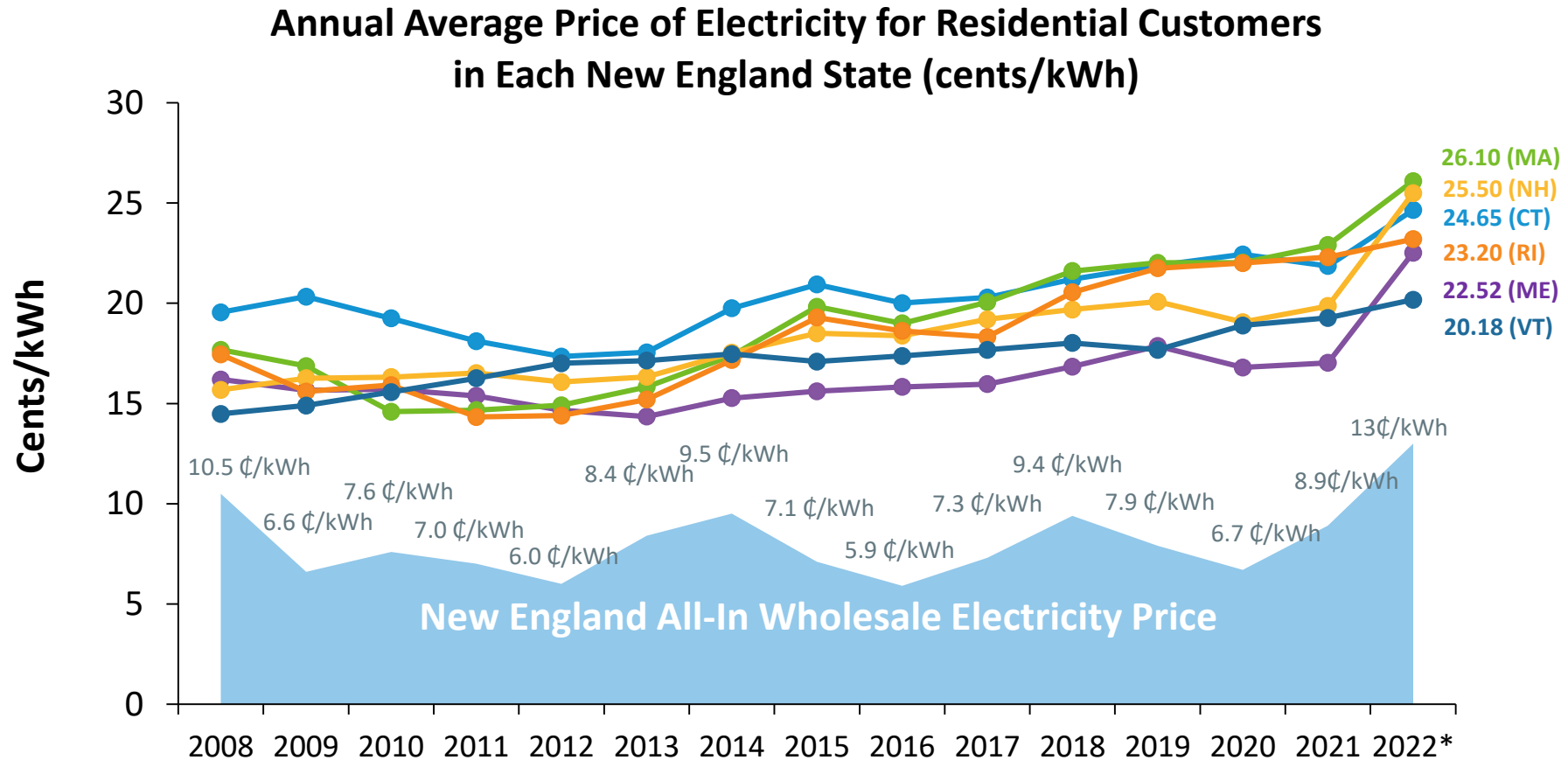
Note: Forward Capacity Market values shown are based on auctions held roughly three years prior to each calendar year.

New England Wholesale Electricity Costs^(a)

	2018		2019		2020		2021		2022*	
	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh
Wholesale Market Costs										
Energy (LMPs)^(b)	\$6,041	4.7	\$4,105	3.3	\$2,996	2.4	\$6,099	4.8	\$11,698	9.0
Ancillaries^(c)	\$147	0.1	\$83	0.1	\$62	0.1	\$59	0.0	\$134	0.1
Capacity^(d)	\$3,606	2.8	\$3,401	2.7	\$2,662	2.2	\$2,245	1.8	\$1,864	1.4
Subtotal	\$9,794	7.6	\$7,589	6.0	\$5,720	4.7	\$8,404	6.6	\$13,697	10.6
Transmission charges^(e)	\$2,250	1.7	\$2,146	1.7	\$2,331	1.9	\$2,688	2.1	\$2,741	2.1
RTO costs^(f)	\$196	0.2	\$184	0.1	\$191	0.2	\$216	0.2	\$214	0.2
					Mystic Cost of Service Agreement				\$166	0.1
Total	\$12,240	9.4	\$9,918	7.9	\$8,242	6.7	\$11,308	8.9	\$16,819	13.0

- (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 2022 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 Price of Electricity to Ultimate Customers by End-Use Sector, by State (Through Dec. 2022); *2022 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 11: ISO/RTO FINANCIAL COMPARISON



Financial Results Summary

ISO/RTO Financial Summary - 2022 Actual Results

Operating Expense and Capital Expenditures for Calendar Year 2022, and Outstanding Debt as of December 31, 2022 ⁽¹⁾

(Amounts in Millions)

	ISO-NE ⁽²⁾	NYISO	CAISO	IESO ⁽³⁾	PJM	MISO	SPP	ERCOT
Operating Expense - 2022	\$ 210.8	\$ 206.8	\$ 246.1	\$ 239.8	\$ 401.9	\$ 424.6	\$ 220.7	\$ 247.5
Less: Amortization & Depreciation	(25.0)	(25.6)	(36.7)	(21.4)	(36.4)	(31.8)	(17.5)	(26.3)
Regulatory Fees	(6.4)	(15.3)	-	-	(71.8)	(68.2)	(27.3)	-
Grant Expenses	-	-	-	-	-	-	-	-
Net Operating Expense - 2022	\$ 179.4	\$ 165.9	\$ 209.4	\$ 218.4	\$ 293.7	\$ 324.6	\$ 175.9	\$ 221.2
Other Financial Data								
Capital Expenditures for 2022	\$ 29.1	\$ 19.3	\$ 19.2	\$ 62.2	\$ 30.9	\$ 34.2	\$ 11.5	\$ 63.9
Outstanding Debt as of 12/31/22	\$ 89.7	\$ 82.4	\$ 165.4	\$ 120.0	\$ 7.9	\$ 274.4	\$ 161.7	\$ 2,950.5
Actual full-time equivalent headcount as of 12/31/22	589.5	568.8	665.0	806.0	760.0	1019.0	662.0	790.0

(1) Applicable amounts were taken from each entity's 2022 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 12: 2021 AND 2022 ACTUAL TO BUDGET VARIANCE ANALYSIS