

# NYISO 2022 Draft Budget Overview

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Alan Ackerman

Customized Energy Solutions

Chair, Budget & Priorities Working Group

**Management Committee**

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# NYISO 2022 Draft Budget: Highlights

# Budget Highlights

## In Summary:

- NYISO's draft 2022 budget totals **\$169.2M**, allocated across a forecast of **150.0** million MWh, for a Rate Schedule 1 charge/MWh of **\$1.128**. Comparatively, the 2021 budget was **\$167.4M**, allocated across **147.3** million MWh for a Rate Schedule 1 charge/MWh of **\$1.137**
- NYISO's proposed 2022 Rate Schedule 1 Revenue Requirement is an increase of **\$1.8M**, which is **~1%** as compared to the 2021 budget
- NYISO's projected 2022 MWh throughput is an increase of **2.7** million MWh, which is **~1.8%** as compared to the 2021 budget
- The resulting Rate Schedule 1 charge/MWh is a **decrease** of **\$0.009**, which is **~1%** as compared to the 2021 budget

# Budget Highlights: Historical Budget Comparisons

(in millions, excluding RS1/MWh charges)	2019 Budget	2020 Budget	2021 Budget	2022 Draft	2021 vs. 2022
RS1 Rev. Requirement (in \$\$)	\$168.2	\$168.0	\$167.4	\$169.2	\$1.8
Budgeted MWh	<u>157.1</u>	<u>154.3</u>	<u>147.3</u>	<u>150.0</u>	<u>2.7</u>
RS1 Rev. Requirement (\$/MWh)	\$1.071	\$1.089	\$1.137	\$1.128	(\$0.009)
<b>RS1 Charge/MWh – Gross (before rebates from non-physical transactions):</b>					
RS1 Charge/MWh: Purchasers @ 72%	\$0.771	\$0.784	\$0.819	\$0.812	
RS1 Charge/MWh: Sellers @ 28%	\$0.300	\$0.305	\$0.318	\$0.316	
<b>RS1 Charge/MWh – Net (after estimated rebates from non-physical transactions):</b>					
RS1 Charge/MWh: Purchasers @~ 68%	\$0.728	\$0.741	\$0.773	\$0.767	
RS1 Charge/MWh: Sellers @~26%	\$0.278	\$0.283	\$0.296	\$0.293	
RS1 Charge/MWh: Non-physical transactions @~6%	\$0.064	\$0.065	\$0.068	\$0.068	

# Budget Highlights: 2022 vs. 2021 Revenue Requirement Changes

2022 Rate Schedule 1 Revenue Requirement	\$	169.2
2021 Rate Schedule 1 Revenue Requirement	\$	167.4
Increase in Rate Schedule 1 Revenue Requirement		\$ 1.8
<b>Spending Decreases/Containment &amp; Revenue Increases:</b>		
Debt Service Cost		(12.9)
Debt Service Proceeds		(3.6)
Miscellaneous Revenue ( <i>Planning Studies &amp; Interest Income</i> )		(1.3)
Building Services		(0.4)
Interest Expense on Current Year Debt Proceeds		-
Telecommunications		-
	\$	<u>(18.2)</u>
<b>Budget Increases</b>		
Capital ( <i>\$6.8M of increase is for Projects</i> )		6.9
Salaries & Benefits		6.6
Professional Fees ( <i>\$2.3M of increase is for Projects</i> )		4.1
Computer Services		1.3
Other Expenses ( <i>BOD, Travel &amp; Training</i> )		0.9
Insurance		0.1
External Legal Fees		0.1
	\$	<u>20.0</u>

# Budget Highlights: 2021 Budget Recap

In the 2021 budget, there were various spending requests deferred to future years or eliminated entirely to minimize the impact on the 2021 Rate Schedule 1. This was in recognition of the economic conditions brought about by the COVID-19 pandemic. Examples of those deferred items include:

- *ACC Control Renovation Project (\$5.6M)*
- *Various Infrastructure and Operations initiatives (\$1.6M)*
- *Various Enterprise projects (\$1.0M)*
- *Security related enhancements (\$0.5M)*
- *Cooling Tower Replacement (\$0.4M)*

In addition, NYISO held employee headcount flat for the third consecutive year, provided no employee merit increases in 2021, and made reductions in virtually every budget line item.

# Budget Highlights: Key Drivers

## 2022 Draft Budget Key Drivers:

- Proposed Project Portfolio - \$9.2M increase (Capital & Consulting), primarily driven by the Alternate Control Room Renovation Project (deferred from 2021) and the Distributed Energy Resource Integration Project
- Salaries & Benefits - \$6.6M increase, primarily driven by 3% merit compensation, seven new headcount proposed for 2022, impact of seven Planning headcount added in 2021 (not budgeted), resulting increases in employer 401k contributions and employment taxes, funding required to address employee recruitment challenges and health insurance cost increases (no plan changes)



# Budget Highlights: Key Drivers

## 2022 Draft Budget Key Drivers (continued):

- Debt Service Cost – \$12.9M decrease: NYISO utilized funds remaining from the 2019 and 2020 budget cycles, totaling \$10.1M, to make early repayments on outstanding debt and also achieved additional interest cost savings
- Debt Proceeds - \$3.6M additional loan proceeds as compared to 2021, which mitigates the increased cost impact of the proposed 2022 project portfolio

# Budget Highlights: Key Drivers

## Project Portfolio & Level of Debt Proceeds

NYISO's budgeted capital requirements and project spending continues to increase each year, primarily driven by various multi-year market design initiatives focused on new resource integration and various technology upgrades and infrastructure projects.

The 2019 – 2023 Budget Facility allows for a total amount of funding of \$140.0M over the five year term. Due to prior year decisions to defer projects, capital budget reductions and project cost savings, loan proceeds have been below planned for the past two years. This has resulted in additional loan proceed bandwidth of \$5.0M available for inclusion in the 2022 draft budget.

Due to the anticipated cost of the 2022 project portfolio, largely driven by DER and deferred infrastructure projects, the proposed level of 2022 Debt Proceeds is \$32.0M.

The following table identifies the planned annual loan draws as of the start of the 2019 – 2023 Budget Facility that were included in the Strategic Budget projections. In addition, the table includes the budgeted/proposed loan draws vs. estimated/actual for the term of the Budget Facility.

	2019	2020	2021	2022	2023
<b>Strategic Budget Proposed Loan Draws</b>	\$30.0M	\$28.0M	\$28.0M	\$27.0M	\$27.0M
<b>Budgeted/Proposed Loan Draws</b>	\$30.0M	\$27.6M	\$28.4M	\$32.0M	\$27.0M
<b>Estimated/Actual Loan Draws</b>	\$26.0M	\$26.6M	\$28.4M	\$32.0M	\$27.0M
<b>Budgeted/Proposed vs. Estimated Actual</b>	\$4.0M	\$1.0M	-	-	-

# Budget Highlights: Key Drivers

## Salaries & Benefits - Headcount & Resource Planning

Over the past several years, the NYISO has implemented budget strategies that achieved a flat headcount as detailed below.

	2019	2020	2021	2021 Revised	2022 Draft
Budgeted Headcount	594	594	594	601	608

In order to address the accelerated level of interconnection workload, seven new Planning positions were added to the 2021 authorized headcount in April of this year. The 2021 budgetary impact of adding additional headcount mid-year is mitigated by the fact that much of the work associated with the Interconnection and Class Year processes is billable to the developers, resulting in revenue to offset the incremental salary and benefit cost.

NYISO has evaluated new headcount requirements for 2022 and proposes to add seven new headcount next year. (Refer to slides 18 and 19 for details)

In addition to these seven positions, the NYISO has identified the need for five new headcount to support increased workload in various parts of the organization related to new resources entering the NYISO's markets driven by new participation models (DER, Energy Storage, Hybrid and Co-Located resources). However, NYISO is proposing to defer adding these positions to the budget, pending more certainty regarding the level of market entry and participation, thereby, eliminating approximately \$0.6M from the 2022 draft budget. (Refer to slide 26 for details)

# Budget Highlights: Key Drivers - Headcount

Department	New for 2022	Key Contributions from Positions
Market Operations	1	<p><b>Resource Adequacy Engineer</b> - Necessary to meet the expanded responsibilities the team will acquire when the NYISO moves to an Effective Load Carrying Capability (ELCC) model to define resources' reliability contributions. The new program is expected to be an annual obligation to recalculate contributions based upon the IRM developed model, measuring resource valuation for each resource type and location. Review of the model inputs, calculation methodology, and results will be required with stakeholders. Additional, continuous improvement of the data model and evaluation technics will be expected given the critical nature of the process and impacts on resource revenues.</p>
Operations	1	<p><b>Sr. Operations Engineer</b> – Required to augment workload and expertise gap related to operating a system with increasingly higher penetration of renewable and intermittent resources. Significant engineering analysis is required to accurately model new renewable resources and define appropriate operating characteristics in the design of operating criteria, limits, and procedures/ protocols.</p>
Market Structures	2	<p><b>Sr. Market Integration Specialists</b> – Required to fill a current gap between market design and system design and integration for the continuous evolution of the NYISO wholesale market design including creating new resource participation models (e.g. Energy Storage Resources, Distributed Energy Resources, Hybrid Resources, and Internal Controllable Lines) and realizing changes to the existing market structures (e.g. expanding RTC capabilities, adding new ancillary service products or addressing other reliability gaps identified in the Grid in Transition).</p>
External Affairs	1	<p><b>Member Relations Registration Coordinator</b> -The Registration Coordinator interacts with the NYISO's Market Participant's, operating in a customer service environment. The position will support the increase in registration caseload, field technical inquiries from electric generators, utilities, demand response providers, traders, and consumers that participate in New York's wholesale power markets. Work directly with internal NYISO departments to ensure the timely and efficient processing of customer registration applications in accordance with the NYISO's tariff.</p>

# Budget Highlights: Key Drivers - Headcount

Department	New for 2022	Key Contributions from Positions
System & Resource Planning	1	<p><b>System Modeling Planning Engineer</b> – Support the significant increase in responsibilities for the System Modeling group due to new NERC standards and database requirements. These include:</p> <ol style="list-style-type: none"> <li>1. NERC MOD-033 Standards-Requirements 1 and 2</li> <li>2. NERC TPL-007-3 Requirements 1, 2, 11 and 12</li> <li>3. Distributed Energy Resource (DERs) Modeling in Steady State and Dynamics Base Cases</li> <li>4. Composite Load Modeling in 2021 Series of MMWG Base Case Development</li> <li>5. Spring Minimum Load Case- New Case build in the 2021 Series of MMWG Power Flow Cases</li> </ol> <p>In addition to the above there is a need for additional support for Dynamics work and an urgent need to develop bench strength for Dynamics Databases, especially given the new complex DER models dynamic load models that need to be developed and maintained.</p>
Human Resources	1	<p><b>Program Lead</b> – Lead the development, implementation, and management of Professional Development Programs designed to strengthen recruiting and retention success, build talent resilience, support succession planning efforts, and provide opportunities to fulfill professional aspirations. These programs would include:</p> <ol style="list-style-type: none"> <li>1. Job Rotations</li> <li>2. Job Exchanges</li> <li>3. Formal Mentoring</li> </ol>
Total Included 2022 Budget	7 FTEs	

# Budget Highlights: Key Drivers

## Salaries & Benefits – Retention & Employee Recruitment Strategies

NYISO employee salary adjustments are proposed based upon a number of factors that include:

- National surveys showing the median number for merit increases across the country
- The planned budget for compensation adjustments among our RTO/ISO peers
- The imperative that the NYISO continue to offer competitive salaries in order to attract and retain talent and address inequities between actual compensation and market compensation levels for certain positions
- The commitment to recognition of certain individuals that achieve significant milestones in their professional development and their subsequent contributions to the success of the NYISO

In developing the 2022 budget, NYISO is proposing salary actions considering the factors referenced above and proposes to reinstate a merit pool of 3% and continue to budget promotion and equity adjustment pools of 0.5% each.

NYISO's headcount vacancy rate is currently at an historic high of 9%, primarily driven by increased employee attrition and recent challenges to recruiting efforts. Candidate responses to NYISO's recent employment offers have indicated that competing offers include sign-on bonuses and higher starting salaries, which has made recruiting highly qualified/skilled candidates more challenging in the current environment. Recovery from the COVID-19 pandemic has given rise to a job market that is more competitive than has been experienced in decades and the demand for most jobs, especially highly technical ones in the energy sector, is much higher than supply. In order to address these recruiting challenges, NYISO is proposing to include funds in the 2022 budget that would provide for more competitive employment offers (if needed).

It is critical that NYISO maintain competitive compensation levels that will assist in preventing additional employee turnover and ensure that we do not have a level of vacancies that prevents NYISO from achieving its strategic initiatives or negatively impacts the operation of our markets.

# Budget Highlights: Key Drivers

## Salaries & Benefits – 2022 Benchmark Data

National surveys showing the median number for merit increases across the country:

Currently the following sources have released 2022 projections:

World At Work	3.3%
The Conference Board	3.0%
Willis Towers Watson	3.0%
Korn Ferry	3.0%
SHRM	3.0%

The planned budget for compensation adjustments among our RTO/ISO peers is averaging 3.5% for 2022.

As another point of reference, the projected Cost of Living Adjustment (COLA) for 2022 is 6.2%.

*NYISO was the only RTO/ISO that had no merit increase in 2021.*



# Budget Highlights: Key Drivers

## Debt Service Cost

As part of NYISO's 2020 budget deficit mitigation strategy, Market Participants supported NYISO's proposal to retain \$6.4M of funds remaining from the 2019 budget cycle to offset the budget impacts of the COVID-19 pandemic. Due to budget reductions implemented by the NYISO throughout 2020, these funds were not required to offset COVID-19 related unplanned expenditures.

In 2022, Debt Service Cost will be reduced by \$12.9M as NYISO is utilizing funds remaining from the 2019 and 2020 budget cycles to make additional principal payments on the 2019 Budget Facility and EMS/BMS loan, both of which mature in 2022. This early debt repayment strategy serves to reduce the 2022 budgeted RS1 surcharge and is equivalent to approximately 0.07 cents.

The following is a recap of funds remaining from the 2019 and 2020 budget cycles that is being used to pay down outstanding debt:

	Year	
	2019	2020
Budget Underspend	\$5.7	\$5.8
Rate Schedule 1 over(under) Collection	<u>\$0.7</u>	<u>(\$2.1)</u>
Total Funds Remaining from Budget Cycle	\$6.4	\$3.7



# 2021 Budget Overview

(\$ in millions, except RS#1/MWh)	2021 Budget		
	Enterprise	Projects	Total
Capital	\$1.4	\$3.5	\$4.9
Salaries & Benefits	84.6	11.5	96.1
Professional Fees (including Legal)	17.1	9.0	26.1
Building Services	6.4	-	6.4
Computer Services	18.7	2.4	21.1
Insurance	3.2	-	3.2
Telecommunications	2.8	-	2.8
Other Expenses (BOD, Travel/Training, NPCC Fees)	<u>3.0</u>	<u>-</u>	<u>3.0</u>
<b>Subtotal: Current Year Needs</b>	<b>\$137.2</b>	<b>\$26.4</b>	<b>\$163.6</b>
Debt Service	38.3	-	38.3
<b>Subtotal: Cash Budget</b>	<b>\$175.5</b>	<b>\$26.4</b>	<b>\$201.9</b>
Less: Miscellaneous Revenues	(6.4)	-	(6.4)
Less: Proceeds from Current Year Budget Debt	(1.4)	(27.0)	(28.4)
Add: Interest on Current Year Budget Debt	<u>0.0</u>	<u>0.3</u>	<u>0.3</u>
<b>Total: Rate Schedule #1 Revenue Requirement in \$\$</b>	<b>\$167.7</b>	<b>\$(0.3)</b>	<b>\$167.4</b>
Budgeted MWh (in millions)			<b>147.3</b>
Rate Schedule #1 Revenue Requirement in \$/MWh (budget)			<b>\$1.137</b>

# 2022 Draft Budget Overview

(\$ in millions, except RS#1/MWh)	2022 Draft Budget		
	Enterprise	Projects	Total
Capital	\$1.4	\$10.4	\$11.8
Salaries & Benefits	89.4	13.3	102.7
Professional Fees (including Legal)	18.9	11.4	30.3
Building Services	6.0	0.0	6.0
Computer Services	20.3	2.1	22.4
Insurance	3.3	0.0	3.3
Telecommunications	2.8	0.0	2.8
Other Expenses (BOD, Travel/Training, NPCC Fees)	<u>3.9</u>	<u>0.0</u>	<u>3.9</u>
<b>Subtotal: Current Year Needs</b>	<b>\$146.0</b>	<b>\$37.2</b>	<b>\$183.2</b>
Debt Service	25.4	0.0	25.4
<b>Subtotal: Cash Budget</b>	<b>\$171.4</b>	<b>\$37.2</b>	<b>\$208.6</b>
Less: Miscellaneous Revenues	(7.7)	0.0	(7.7)
Less: Proceeds from Current Year Budget Debt	(1.4)	(30.6)	(32.0)
Add: Interest on Current Year Budget Debt	<u>0.0</u>	<u>0.3</u>	<u>0.3</u>
<b>Total: Rate Schedule #1 Revenue Requirement in \$\$</b>	<b>\$162.3</b>	<b>\$6.9</b>	<b>\$169.2</b>
Budgeted MWh (in millions)			<b>150.0</b>
Rate Schedule #1 Revenue Requirement in \$/MWh (budget)			<b>\$1.128</b>

# Timeline for 2022 Budget Cycle

- **September 9:** NYISO presents 2022 draft budget to BPWG
- **September 29 :** BPWG Chair to present 2022 draft budget to Management Committee
- **September 29:** BPWG meeting
- **October 8:** BPWG meeting
- **October 19:** BOD meeting to review draft of 2022 budget
- **October 20:** BPWG meeting
- **October 27:** Management Committee to vote on 2022 budget
- **November 16:** BOD approval of final 2022 budget

# NYISO 2022 Draft Budget: Cost Management Measures

# Cost Management Measures

## Capital – Increase of \$6.9M from 2021:

Capital requirements for 2022 are primarily driven by the proposed project portfolio. The following initiatives have eliminated \$3.9M from the 2022 draft budget:

- Maintenance programs allowing for deferral of costs to future years:
  - *UPS replacement - \$1.9M*
  - *Cooling Towers/Mechanical equipment - \$0.9M*
  - *Building Management systems - \$0.6M*
  
- Implementation of Microsoft 365 will avoid hardware upgrades:
  - *Microsoft Exchange & Phone System Replacement - \$0.5M*

# Cost Management Measures

## *Salaries & Benefits – Increase of \$6.6M from 2021:*

The following action has mitigated additional increases in the 2022 draft budget:

- Deferred the addition of five headcount that will be required to support new resource integration, eliminating approximately \$0.6M from the 2022 draft budget. (Refer to slide 23 for details)

# Cost Management Measures - Headcount

Department	Deferred for 2022	Key Contributions from Positions
Operations	2	<p><b>Commitment Analysis Engineer</b> – The anticipated level of DER penetration into the energy markets will require more engineering support on a daily basis to validate modeling, scheduling, and pricing results along with following up on Market Participant inquiries.</p> <p><b>Generation Operator</b> - Grid in Transition identifies several potential reliability gaps due to the addition of a significant number of new DER, intermittent, storage, and hybrid resources in the NYISO markets. This creates a substantially increased workload in Grid Operations including, but not limited to, monitoring the status of existing and new resources, authorizing entry into the markets, tracking commissioning schedules, ensuring required metering is installed and accurate, and performing NYISO qualification and verification for services.</p>
Market Monitoring	2	<p><b>Engineer</b> - It is expected that the penetration of new technologies will significantly increase the workload needed for both registration and verification of these resources. Current forecasts indicate that the NYISO will have dozens of resources seeking to begin registration next year with NYISO.</p> <p><b>Analyst</b> - This position is needed to support the expected additional workload for capacity market mitigation associated with new technologies. The interconnection queue has grown significantly in the last two years and thus the amount of storage technologies already evaluated for BSM has likewise increased significantly. In addition, with the DER project set to go live by the end of 2022, it is expected that a number of new technologies (solar, storage, small generators) will look to enter into the marketplace.</p>
Market Operations	1	<p><b>Analyst/Engineer</b> – Required to accommodate timely qualification and onboarding of resources in new participation models, analyze and validate market outcomes, develop market parameters and derating factors, and maintain expected levels of customer service. The volume and complexity of duration adjustment factors and derating factors with higher participation volume requires expanded staff involvement to provide the same level of review and verification.</p>
Total Deferred	5 FTEs	

# Cost Management Measures

## Professional Fees – Increase of \$4.1M from 2021

Implementation of the following strategies has eliminated \$3.6M from the 2022 draft budget:

- Implementation of reduced cost solutions
  - *Eliminated \$1.1M from DER project through use of internal labor*
  - *Eliminated \$0.3M from Hybrid Aggregation Model project through use of internal labor*
- Refined cost estimates
  - *\$1.1 reduction for 7 different projects*
- Projects deferred to a future budget year
  - *IT Infrastructure Automation (partial) \$0.1M*
  - *BMS Performance Certification \$1.0M*



# Cost Management Measures

## *Computer Services – Increase of \$1.3M from 2021:*

The following actions have avoided additional budget increases in 2022 totaling \$0.5M:

- Software Maintenance
  - *Negotiated maintenance renewal reductions - \$0.2M*
- Hardware/Computer Supplies
  - *Elimination of life cycle replacements - \$0.1M*
  - *Anticipated utilization reductions - \$0.2M*

# Cost Management Measures

## *Debt Service Proceeds – Increase of \$3.6M from 2021*

This five-year (2019-2023) Budget Facility is dedicated to funding capital investments, software development projects, and other strategic initiatives. This Capital funding mechanism avoids potential budget increases driven by expanding project and infrastructure requirements.

2022 Debt Service Proceeds have been increased to \$32.0M in support of the proposed project portfolio and infrastructure capital investments.

# Appendix A - Key Priorities & Projects for 2022

# Key Priorities and Projects for 2022

## Grid Reliability and Resilience

- *Deploy EMS/BMS Operational Enhancements*
- *Deploy the Outage Management System*
- *Define Capacity Value Study*

## Efficient Markets for a Grid in Transition

- *Propose Market Design Concept for Dynamic Reserves*
- *Complete Market Design Concept for Improving Capacity Accreditation*
- *Complete Study of Grid in Transition*

# Key Priorities and Projects for 2022

## Integration of Public Policy

- *Propose Market Design Concept for Internal Controllable Lines*
- *Deploy Distributed Energy Resources Participation Model*
- *Complete Functional Requirements for Hybrid Aggregation Model*
- *Deploy Comprehensive Mitigation Review*

# Key Priorities and Projects for 2022

## Internal Controllable Lines

- Many stakeholders have discussed the importance of this project with the NYISO over the last few months
- The NYISO understands the importance of this effort to New York State and the NYISO stakeholders
  - The NYISO is committed to working on Internal Controllable Lines throughout 2022 even if it achieves the MDCP milestone early
  - The NYISO will designate this project as continuing for stakeholder consideration in 2023 project prioritization
  - Based on its commitment to this effort, the NYISO expects to complete this project in 2025 as originally planned

# Key Priorities and Projects for 2022

## Technology Transformation and Infrastructure Investment

- *Complete ACC Control Room Renovation*
- *Deploy Microsoft 365 Organization Wide*
- *Deploy Database, Network Infrastructure & Application Platform Upgrades*
- *Deploy NetBackup Appliance Refresh*
- *Deploy Windows System Upgrade*
- *Complete Study for UPS Replacement*

# Key Priorities and Projects for 2022

## Physical and Cyber Security

- *Implement Supply Chain Security Enhancements*
- *Implement Security Automation & Operational Advancements*
- *Migrate to Next Generation Security Architecture*
- *Information Protection, Risk Management & Compliance*
- *Deploy IT Service Management Security Enhancements*



# Appendix B - NYISO 2022 Draft Budget: Line Item Details

# Line Item Details - Capital

(\$ in millions)	2022 Draft	2021 Budget	\$ Change
Facility Improvements	\$5.9	\$0.2	\$5.7
Replacement of Existing Hardware	4.9	4.2	0.7
Software & Software Licenses (capitalized)	<u>1.0</u>	<u>0.5</u>	<u>0.5</u>
<b>Total Capital Costs</b>	<b>\$11.8</b>	<b>\$4.9</b>	<b>\$6.9</b>

## Facility Improvements:

Facility improvements included within the 2022 budget include \$5.6M to upgrade the ACC Control Room, \$0.2M to replace electrical distribution panels, and \$0.1M to update office mechanical systems.

## Replacement of Existing Hardware:

Replacement of computer hardware fluctuates from year-to-year and is driven by technology refresh schedules, planned obsolescence by technology vendors, and the specific mix of new computer requirements identified in the current year project schedule. The 2022 budget includes \$4.0M of new hardware required for proposed projects, including \$1.6M for the Network Infrastructure Upgrade, \$1.0M for the NetBackup refresh, \$0.9M for the UPS replacement, \$0.3M for Windows upgrade, and \$0.3M for Unified Communications Platform. The 2022 budget also includes \$0.2M for chart recorders, \$0.3M for storage expansion, \$0.1M for wireless infrastructure replacement, and \$0.2M in other operational replacements.

## Software and Software Licenses (capitalized):

Replacement of computer software and software licenses fluctuates from year-to-year and is driven by a change in the number of users as well as by software required as identified in the current year project schedule. The 2022 budget includes \$0.8M of new software required for proposed projects, \$0.1M for licensing and \$0.1M of new software required for storage expansion.

# Line Item Details - Salaries & Benefits

(\$ in millions)	2022 Draft	2021 Budget	\$ Change
Base Salaries	\$70.8	\$66.2	\$4.8
Benefit Programs / At-Risk Compensation	26.2	24.8	1.4
Payroll Taxes	<u>5.7</u>	<u>5.1</u>	<u>0.6</u>
<b>Total Salaries &amp; Benefits</b>	<b>\$102.7</b>	<b>\$96.1</b>	<b>\$6.6</b>

## The ~6.9% increase in Salaries & Benefits is primarily driven by:

- \$1.8M – 3.0% Merit, 0.5% for Promotion Adjustments and 0.5% for Compensation Equity Adjustments
- \$0.9M – Employee Recruitment
- \$0.8M – Impact of seven FTEs added in Planning in 2021 that were not budgeted
- \$0.8M – Impact of seven additional FTEs in 2022
- \$0.8M – Impact of additional FTEs on benefits, including 401k plan contributions
- \$0.6M – Increase for FICA and Medicare related to additional FTEs and merit
- \$0.5M – 5% increase in health insurance

See additional details on Salaries & Benefits on the following slides

# Line Item Details - Salaries & Benefits (cont.)

Headcount Summary		
Total Authorized FTE Positions for 2021	601	
Add: New Positions for 2022	7	Refer to details on slides 18 & 19
Total Authorized FTE Positions for 2022	608	
Less: Assumed Vacancies	(36)	Based on assumed vacancy rate of 6%
<b>Equals: Total Budgeted FTE Positions</b>	<b>572</b>	

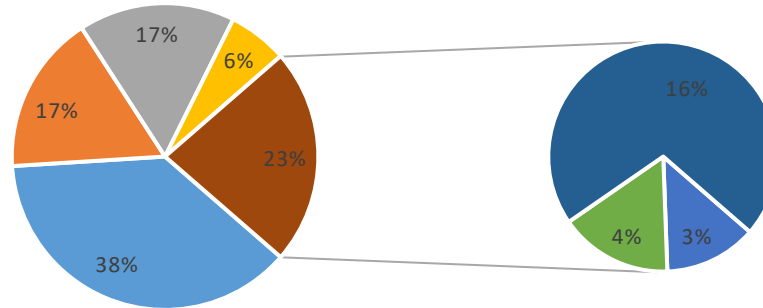
Headcount Summary By Year			
	2022	2021	Change
Total Authorized FTE Positions	608	594	14
Less: Assumed Vacancies	(36)	(35)	(1)
<b>Total Budgeted FTE Positions</b>	<b>572</b>	<b>559</b>	<b>13</b>

# Line Item Details - Professional Fees

(\$ in millions)	2022 Draft	2021 Draft	\$ Change
Product Enhancement consultants ( <i>several vendors</i> )	\$11.4	\$9.0	\$2.4
External legal fees	\$5.1	\$5.0	\$0.1
Market Monitoring	\$5.0	\$4.7	\$0.3
Misc. Professional Fees (all individually < \$250K)	\$1.5	\$1.5	\$0.0
Security guards	\$1.8	\$1.7	\$0.1
Reliability & Economic Planning	\$0.7	\$0.5	\$0.2
Information Technology & Facilities	\$0.3	\$0.3	\$0.0
Market design & related consulting	\$0.9	\$0.5	\$0.4
Ranger support & enhancements	\$1.1	\$1.1	\$0.0
Employee Benefits & Recruiting	\$1.9	\$1.1	\$0.8
External audits and Internal Audit co-sourcing	<u>\$0.6</u>	<u>\$0.7</u>	<u>(\$0.1)</u>
<b>Total Professional Fees</b>	<b>\$30.3</b>	<b>\$26.1</b>	<b>\$4.2</b>
<b>Product Enhancement Consultants:</b> The expected increase is primarily driven by the current mix of consulting support required by the 2022 proposed projects (See additional details on 2022 proposed product enhancements in a separate presentation posted for the 9/9/2021 BPWG meeting).			
<b>Market Monitoring:</b> The increase of \$0.3M is due to the annual rate increase anticipated in the upcoming contract renewal.			
<b>Market Design:</b> The increase of \$0.4M is resulting from additional efforts related to planning for future research and market prototype efforts.			
<b>Employee Benefits &amp; Recruiting:</b> The increase of \$0.8M is primarily due to additional costs related to employee recruitment and a benchmark study.			

# Line Item Details – Professional Fees

2022 Draft Budget



- Product Enhancement consultants (several vendors)
- External legal fees
- Market Monitoring
- Market design & related consulting
- All Other
- Employee Benefit Management & Recruiting
- Ranger support & enhancements

# Line Item Details - Building Services

(\$ in millions)	2022 Draft	2021 Budget	\$ Change
Building Services	\$6.0	\$6.4	\$(0.4)

NYISO includes building service contracts, repairs & maintenance, and membership dues & subscriptions within this budget category.

The cost of Building Services is projected to decrease by \$0.2M primarily due to a reduction in the use of office supplies and reduced building maintenance as well as reclassification of \$0.2M for certain subscriptions as computer services.

# Line Item Details - Computer Services

(\$ in millions)	2022 Draft	2021 Budget	\$ Change
Computer Services Costs	\$22.4	\$21.1	\$1.3

NYISO includes hardware and software maintenance, software licenses (non-capitalized), computer supplies, and minor equipment purchases within this budget category.

The continued addition of new hardware, software, software licenses, and technology upgrades continues to drive increases in this budget category as follows:

- **\$0.4M** – Due to increased maintenance costs resulting from additional system usage and related licensing requirements
- **\$0.2M** – Due to increased costs related to support of EMS/BMS system resulting from warranty expirations and negotiated price increases
- **\$0.6M** – Due to estimated 3% price increase on various maintenance contracts based upon recent negotiations

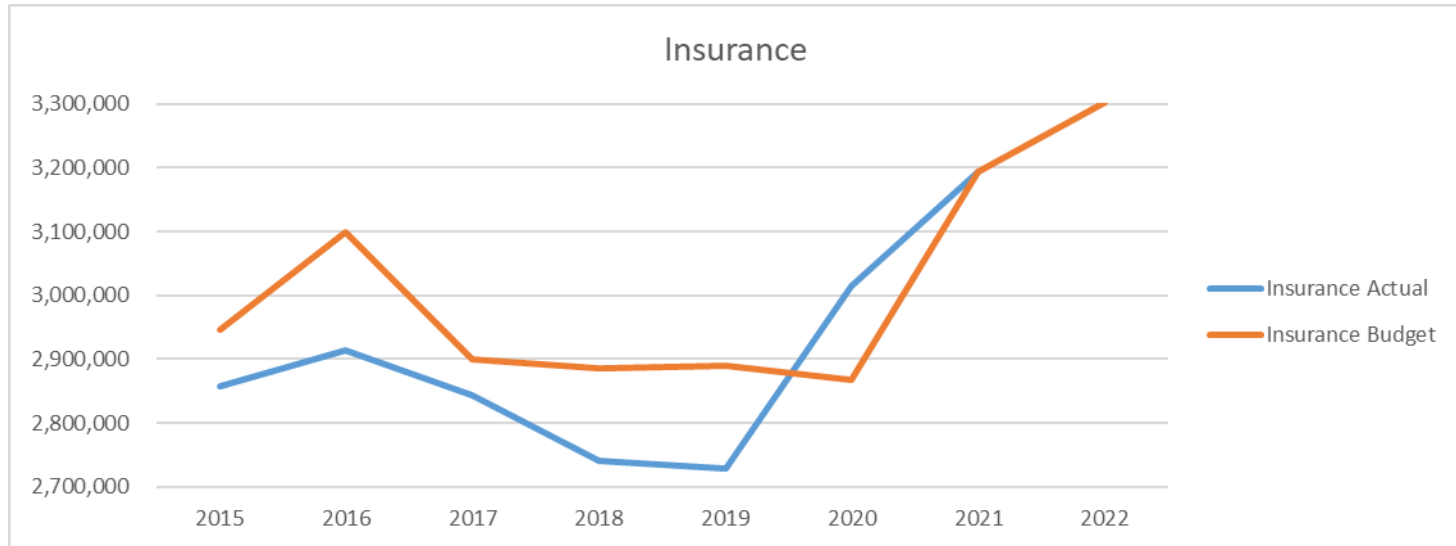


# Line Item Details - Insurance

(\$ in millions)	2022 Draft	2021 Budget	\$ Change
Insurance	\$3.3	\$3.2	\$0.1

The 2022 budget contains a 3% increase over 2021. In 2021, the NYISO experienced a 10% increase in policy renewal premiums due to economic conditions. This was after 4 consecutive years of a flat budget for insurance premiums (2017 – 2020).

# Line Item Details - Insurance



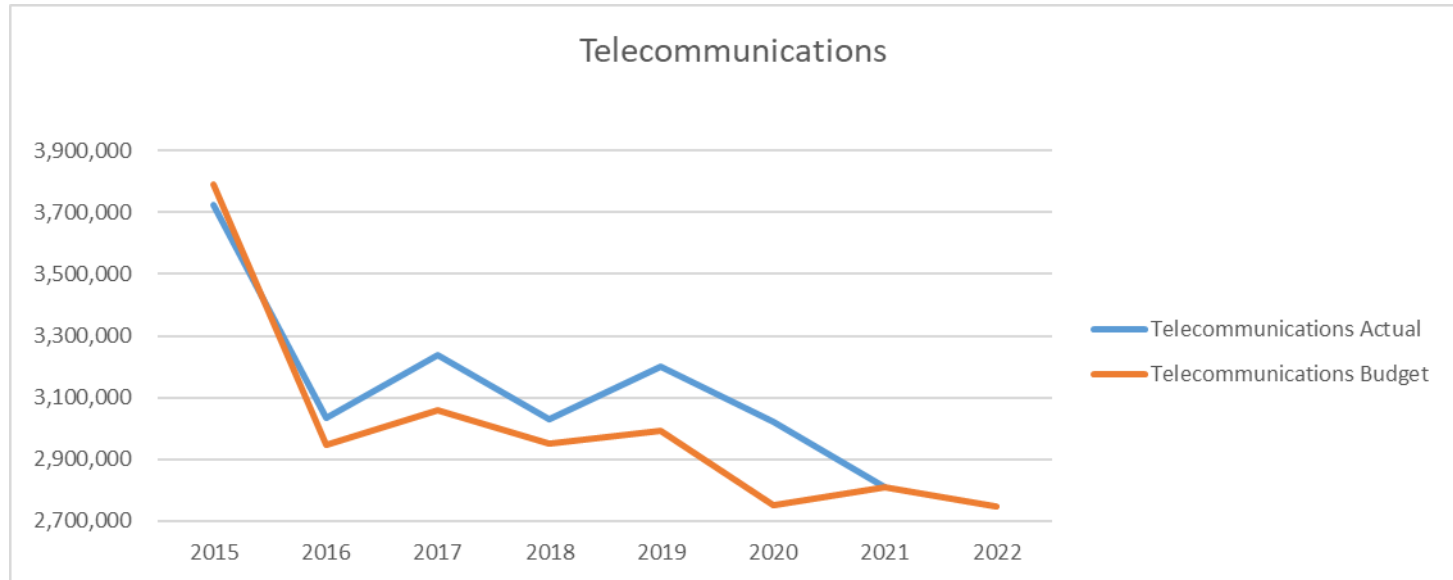
# Line Item Details - Telecommunications

(\$ in millions)	2022 Draft	2021 Budget	\$ Change
Telecommunications	\$2.8	\$2.8	\$-

The 2022 Telecommunications budget is held flat as a result of contract renewal negotiations.

Since 2015, the Telecommunications budget has decreased by 26% (\$3.8M in 2015 vs. \$2.8M in 2022).

# Line Item Details - Telecommunications



# Line Item Details - Other Expenses

(\$ in millions)	2022 Draft	2021 Budget	\$ Change
Travel, Meetings, Training Costs	\$1.4	\$0.7	\$0.7
BOD Fees and Expenses	\$2.2	\$2.0	\$0.2
NPCC Fees	<u>\$0.3</u>	<u>\$0.3</u>	<u>\$0.0</u>
<b>Total Other Expenses</b>	<b>\$3.9</b>	<b>\$3.0</b>	<b>\$0.9</b>

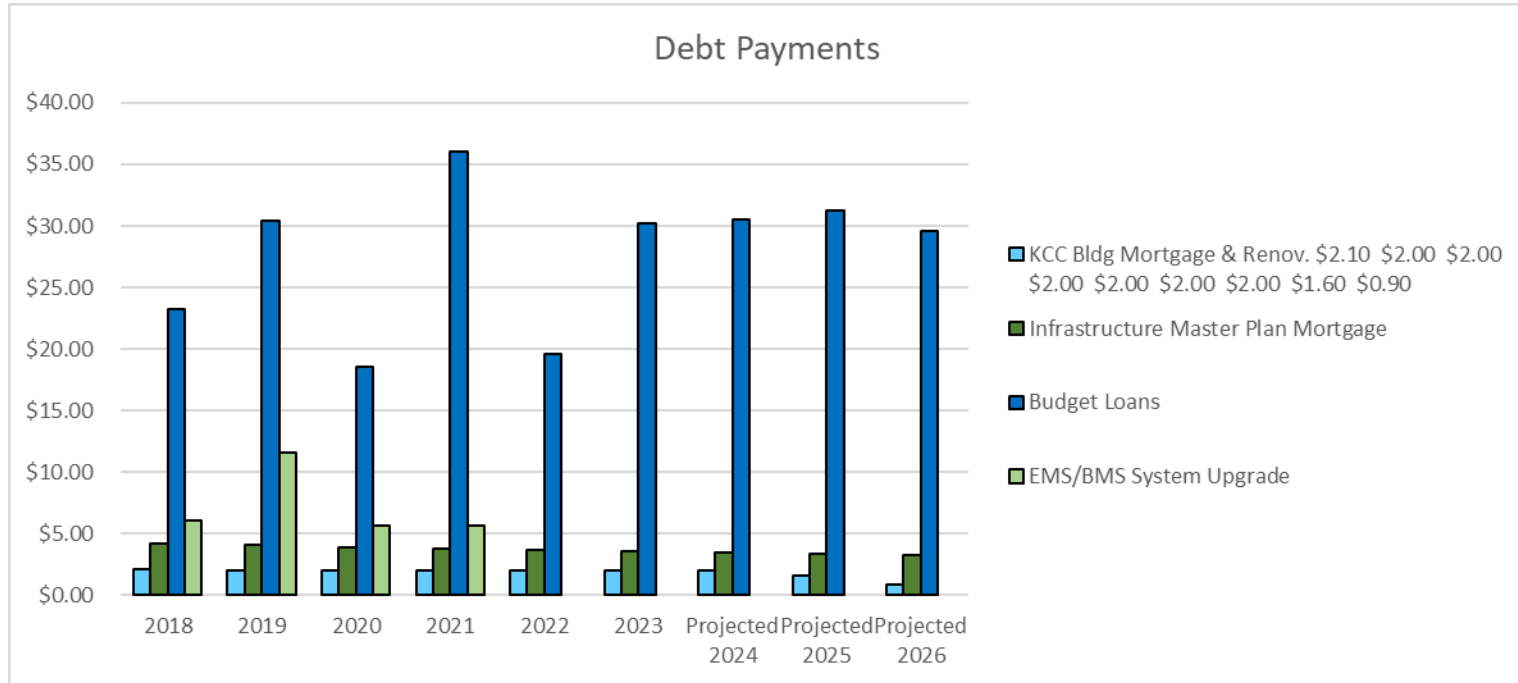
Other Expenses are projected to increase due to the assumption that business travel and offsite meetings will resume on a limited scale in 2022.

# Line Item Details - Debt Service

Annual Principal and Interest Repayments ** (\$ in millions)									
Debt Facility & Repayment Period	Borrowings	2019	2020	2021	2022	2023	2024	2025	2026
2005 KCC Bldg Mortgage & Renov. (20 yrs)	\$24.8M	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$1.60	\$0.90
Infrastructure Master Plan Mortgage (19 yrs)	\$45.0M	\$4.10	\$3.90	\$3.80	\$3.70	\$3.60	\$3.50	\$3.40	\$3.30
2015 Budget Loan (3 yrs)	\$25.0M	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2016 Budget Loan (3 yrs)	\$25.0M	\$4.20	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2017 Budget Loan (3 yrs)	\$24.7M	\$16.90	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2018 Budget Loan (3 yrs)	\$25.3M	\$9.00	\$8.80	\$8.50	\$ -	\$ -	\$ -	\$ -	\$ -
2016-2019 EMS/BMS System Upgrade	\$30.0M	\$11.60	\$5.60	\$5.60	\$ -	\$ -	\$ -	\$ -	\$ -
2019 Budget Loan (3 yrs)	\$26.0M	\$0.30	\$9.40	\$17.60	\$ -	\$ -	\$ -	\$ -	\$ -
2020 Budget Loan (3 yrs)	\$26.6M	\$ -	\$0.40	\$9.60	\$9.20	\$8.80	\$ -	\$ -	\$ -
2021 Budget Loan (3 yrs)	\$28.4M Est.	\$ -	\$ -	\$0.30	\$10.00	\$9.80	\$9.60	\$ -	\$ -
2022 Budget Loan (3 yrs)	\$32.0M Est.	\$ -	\$ -	\$ -	\$0.30	\$11.40	\$11.10	\$10.80	\$ -
2023 Budget Loan (3 yrs)	\$27.0M Est.	\$ -	\$ -	\$ -	\$ -	\$0.20	\$9.50	\$9.50	\$9.00
2024 Budget Loan (3 yrs)	\$30.0M Est.	\$ -	\$ -	\$ -	\$ -	\$ -	\$0.30	\$10.60	\$10.30
2025 Budget Loan (3 yrs)	\$28.0M Est.	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$0.30	\$10.30
2026 Budget Loan (3 yrs)	\$28.0M Est.	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$0.30
Bank Fees	n/a	\$0.70	\$0.70	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50	\$0.50
<b>Total Debt Service Payments</b>		\$48.80	\$30.80	\$47.90	\$25.70	\$36.30	**	**	**

Approximately \$27M - \$30M is expected to be borrowed on average each year during 2020 – 2023, representing the annual cost of implementing Projects, technology enhancements, and facility improvements  
 \*\*Totals are not shown in 2024, 2025, and 2026 as the annual principal and interest repayments on the Budget Loan are not known at this time.\*\*

# Line Item Details - Debt Payments

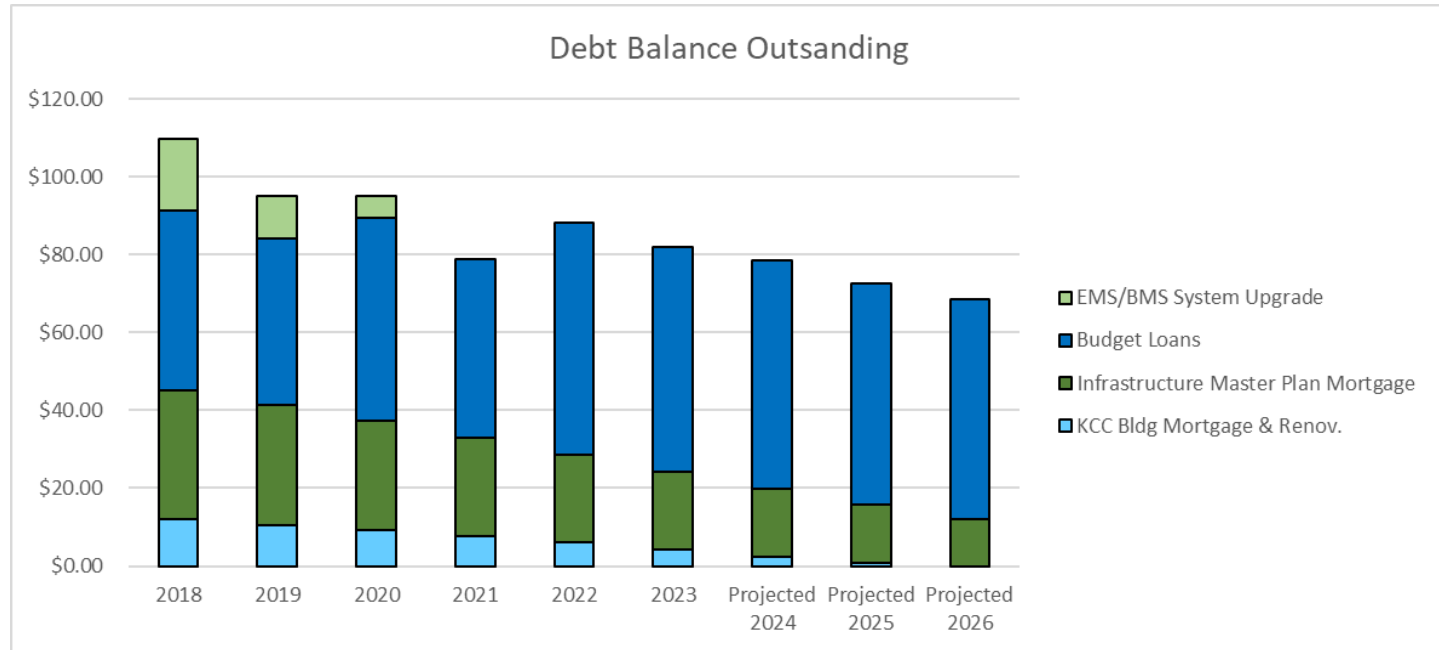


# Line Item Details - Debt Service (Cont.)

Principal Balance Outstanding at December 31 (\$ in millions)								
Debt Facility	2019	2020	2021	2022	2023	2024	2025	2026
2005 KCC Bldg Mortgage & Renov.	\$10.6	\$9.20	\$7.6	\$6.00	\$4.3	\$2.50	\$0.90	\$-
Infrastructure Master Plan Mortgage	\$30.7	\$28.0	\$25.4	\$22.70	\$20.0	\$17.40	\$14.80	\$12.00
2016 Budget Loan	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
2017 Budget Loan	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-
2018 Budget Loan	\$16.9	\$8.4	\$-	\$-	\$-	\$-	\$-	\$-
2016-2019 EMS/BMS System Upgrade	\$10.9	\$5.6	\$-	\$-	\$-	\$-	\$-	\$-
2019 Budget Loan	\$26.00	\$17.30	\$-	\$-	\$-	\$-	\$-	\$-
2020 Budget Loan	\$-	\$26.60	\$17.6	\$8.70	\$-	\$-	\$-	\$-
2021 Budget Loan	\$-	\$-	\$28.4	\$18.90	\$9.50	\$-	\$-	\$-
2022 Budget Loan	\$-	\$-	\$-	\$32.00	\$21.30	\$10.70	\$-	\$-
2023 Budget Loan	\$-	\$-	\$-	\$-	\$27.00	\$18.00	\$9.00	\$-
2024 Budget Loan	\$-	\$-	\$-	\$-	\$-	\$30.00	\$20.00	\$10.00
2025 Budget Loan	\$-	\$-	\$-	\$-	\$-	\$-	\$28.00	\$18.70
2026 Budget Loan	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$28.00
<b>Total Principal Outstanding</b>	<b>\$95.10</b>	<b>\$95.10</b>	<b>\$79.00</b>	<b>88.30</b>	<b>\$82.10</b>	<b>**</b>	<b>**</b>	<b>**</b>
<b>** Totals are not shown in 2024, 2025, and 2026 as the principal balance outstanding on the 2024, 2025, and 2026 Budget Loans are not known at this time.</b>								



# Line Item Details - Debt Outstanding



# Line Item Details - Misc. Revenue

(\$ in millions)	2022 Draft	2021 Budget	\$ Change
Total Miscellaneous Revenues	(\$7.7)	(\$6.4)	(\$1.3)

Miscellaneous revenue resulting from Interconnection and Transmission project study work is projected to increase in 2022 by \$1.7M, primarily due to an anticipated increase in billable internal labor hours.

Miscellaneous revenue from interest income is projected to decrease in 2022 by \$0.4M, primarily due to the expectation of continued low interest earnings on cash deposits.

# Appendix C - 2023 - 2026 Draft Budget: Projections

# Presentation Contents

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# Rate Schedule 1 Summary

(\$ in millions, except RS#1/MWh)	Budget Drafts				
	2022 Draft	2023 Projection	2024 Projection	2025 Projection	2026 Projection
Total: Rate Schedule #1 Revenue Requirement (in \$\$)	\$169.2	\$189.1	\$190.9	\$195.2	\$200.5
Budgeted MWh (in millions)	150.0	148.3	146.7	145.6	144.8
Rate Schedule #1 Revenue Requirement in (\$/MWh)	\$1.128	\$1.275	\$1.301	\$1.341	\$1.385

The 2022-2026 budget drafts presented above are advisory only.  
Actual budgets for these years will be developed and discussed with Market Participants annually.

# Budget Projections By Category

	Budget Drafts				
(\$ in millions, except RS#1/MWh)	2022 Draft	2023 Projection	2024 Projection	2025 Projection	2026 Projection
Capital	\$11.8	\$10.6	\$9.6	\$6.3	\$6.1
Salaries & Benefits	102.7	106.5	111.5	116.8	122.5
Professional Fees (including Legal)	30.3	28.8	29.1	29.1	29.8
Building Services	6.0	6.2	6.3	6.3	6.4
Computer Services	22.4	24.2	24.1	24.3	25.2
Insurance	3.3	3.4	3.5	3.6	3.7
Telecommunications	2.8	2.8	2.9	3.0	3.1
Other Expenses (BOD, Travel/Training, NPCC Fees)	<u>3.9</u>	<u>4.2</u>	<u>4.4</u>	<u>4.3</u>	<u>4.4</u>
<b>Subtotal: Current Year Needs</b>	<b>\$183.2</b>	<b>\$186.7</b>	<b>\$191.4</b>	<b>\$193.7</b>	<b>\$201.2</b>
Debt Service	<u>25.4</u>	<u>36.1</u>	<u>36.1</u>	<u>36.1</u>	<u>33.9</u>
<b>Subtotal: Cash Budget</b>	<b>\$208.6</b>	<b>\$222.8</b>	<b>\$227.5</b>	<b>\$229.8</b>	<b>\$235.1</b>
Less: Miscellaneous Revenues	(7.7)	(6.9)	(6.9)	(6.9)	(6.9)
Less: Proceeds from Current Year Budget Debt	(32.0)	(27.0)	(30.0)	(28.0)	(28.0)
Add: Interest on Current Year Budget Debt	<u>0.3</u>	<u>0.2</u>	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>
<b>Total: Rate Schedule #1 Revenue Requirement in \$\$</b>	<b>\$169.2</b>	<b>\$189.1</b>	<b>\$190.9</b>	<b>\$195.2</b>	<b>\$200.5</b>
<b>Budgeted MWh (in millions)</b>	<b>150.0</b>	<b>148.3</b>	<b>146.7</b>	<b>145.6</b>	<b>144.8</b>
<b>Rate Schedule #1 Revenue Requirement in \$/MWh (budget)</b>	<b>\$1.128</b>	<b>\$1.275</b>	<b>\$1.301</b>	<b>\$1.341</b>	<b>\$1.385</b>

# Major Assumptions

Cost Category	Major Assumptions for 2022 and 2023- 2026
<b>Capital</b>	<ul style="list-style-type: none"> <li>Purchases of Hardware and Software are estimated as follows: 2022 = \$5.9M    2023 = \$6.7M    2024 = \$6.8M    2025 = \$3.2M    2026 = \$3.8M</li> <li>Facility Improvements are estimated as follows: 2022 = \$5.9M    2023 = \$3.9M    2024 = \$2.8M    2025 = \$3.1M    2026 = \$2.3M</li> </ul>
<b>Salaries &amp; Benefits</b>	<ul style="list-style-type: none"> <li>Total budgeted headcount is as follows: 608 FTEs for 2022, 614 FTEs for 2023, 620 FTEs for 2024, 627 FTEs for 2025, and 634 for 2026</li> <li>Estimated vacancy factor is 6% in 2022 - 2026</li> <li>Promotion adjustment increase of 0.5% and equity adjustment increase of 0.5% in 2022-2026</li> <li>Average annual salary increase of 3% in 2022 - 2026</li> <li>Assumes \$0.8M pension plan funding in 2022 - 2026 and a 5% annual increase in health insurance cost in 2022 - 2026</li> </ul>
<b>Professional Fees (including Legal)</b>	<ul style="list-style-type: none"> <li>Assumes minor annual fluctuations in consulting support ranging from \$30.3M in 2022 to \$29.8M in 2026</li> </ul>
<b>Building Services</b>	<ul style="list-style-type: none"> <li>Assumes a decrease of \$0.4M in 2022 and assumes minor annual cost increases with budgets ranging from \$6.0M in 2022 to \$6.4M in 2026</li> </ul>
<b>Computer Services</b>	<ul style="list-style-type: none"> <li>Assumes an increase of \$1.3M in 2022 primarily due to additional licensing and maintenance costs</li> <li>Assumes minor price increase in 2023-2025</li> <li>Assumes price increases in 2026 due to multiple contract renewals</li> </ul>
<b>Insurance</b>	<ul style="list-style-type: none"> <li>Assumes 3% increase in 2022 and assumes 3% annual cost increases with budgets ranging from \$3.3M in 2022 to \$3.7M in 2026</li> </ul>
<b>Telecommunications</b>	<ul style="list-style-type: none"> <li>Assumes no increase in 2022 and assumes minor annual cost increases with budgets ranging from \$2.8M in 2022 to \$3.1M in 2026</li> </ul>
<b>Other Expenses</b>	<ul style="list-style-type: none"> <li>Assumes an increase of \$0.9M in 2022 due to the assumption that business travel and offsite meetings will resume on a limited scale</li> <li>Assumes annual increases with budgets ranging from \$3.9M in 2022 to \$4.4M in 2026</li> </ul>
<b>Debt Service</b>	<ul style="list-style-type: none"> <li>Annual borrowings (with 3-year repayment terms) to fund capital and product enhancements are anticipated to be \$32.0M for 2022, \$27.0M for 2023, \$30.0M for 2024, \$28.0M for 2025 and \$28.0M for 2026 (Assumes replacement Budget Facility effective January 1, 2024)</li> <li>Interest rates for most borrowings expected to be between 2.0% - 6.0%</li> <li>No reductions for "early payments" on debt from potential savings on annual budget or RS1 overcollections have been included</li> </ul>

# 2023 Budget Summary

## ■ In Summary

- NYISO's draft 2023 advisory budget totals \$189.1M, allocated across a forecast of 148.3 million MWh, for a Rate Schedule 1 charge/MWh of \$1.275. Comparatively, the draft 2022 budget totals \$169.2M, allocated across a forecast of 150.0 million MWh, for a Rate Schedule 1 charge/MWh of \$1.128
- NYISO's draft 2023 advisory budget represents a 11.9% increase in Revenue Requirement from the 2021 draft budget and a 1.1% decrease in projected MWh for an overall Rate Schedule 1 increase of 13.0%

## ■ Primary Drivers

- The primary drivers of a \$19.9M increase in the RS1 Revenue Requirement from 2022 to 2023 are as follows:
  - \$10.7M increase in Debt Service primarily due to no planned early repayments of outstanding debt
  - \$5.0M reduction in Debt Proceeds
  - \$3.8M increase in Salaries & Benefits driven primarily by 3.0% annual merit compensation, 0.5% equity and 0.5% promotion adjustments, the addition of 6 incremental FTEs and a 5% increase in health insurance costs



# 2024 Budget Summary

## ■ In Summary

- NYISO's draft 2024 advisory budget totals \$190.9M, allocated across a forecast of 146.7 million MWh, for a Rate Schedule 1 charge/MWh of \$1.301. Comparatively, the draft 2023 advisory budget totals \$189.1M, allocated across a forecast of 148.3 million MWh, for a Rate Schedule 1 charge/MWh of \$1.275
- NYISO's draft 2024 advisory budget represents a 1.0% increase in Revenue Requirement from the 2022 draft advisory budget and a 1.0% decrease in projected MWh for an overall Rate Schedule 1 increase of 2.0%

## ■ Primary Drivers

- The primary drivers of a \$1.8M increase in the RS1 Revenue Requirement from 2023 to 2024 are as follows:
  - \$5.0M increase in Salaries & Benefits driven primarily by 3.0% annual merit compensation, 0.5% equity and 0.5% promotion adjustments, the addition of 6 incremental FTEs and a 5% increase in health insurance costs
  - Partially offset by a \$3.0 increase in Debt Proceeds

# 2025 Budget Summary

## ■ In Summary

- NYISO's draft 2025 advisory budget totals \$195.2M, allocated across a forecast of 145.6 million MWh, for a Rate Schedule 1 charge/MWh of \$1.341. Comparatively, the draft 2024 advisory budget totals \$190.9M, allocated across a forecast of 146.7 million MWh, for a Rate Schedule 1 charge/MWh of \$1.301
- NYISO's draft 2025 advisory budget represents a 2.3% increase in Revenue Requirement from the 2023 draft advisory budget and a 0.8% decrease in projected MWh for an overall Rate Schedule 1 increase of 3.1%

## ■ Primary Drivers

- The primary driver of a \$4.3M increase in the RS1 revenue requirement from 2024 to 2025 is as follows:
  - \$5.3M increase in Salaries & Benefits driven primarily by 3.0% annual merit compensation, 0.5% equity and 0.5% promotion adjustments, the addition of 6 incremental FTEs and a 5% increase in health insurance costs

# 2026 Budget Summary

- **In Summary**
  - NYISO's draft 2026 advisory budget totals \$200.5M, allocated across a forecast of 144.8 million MWh, for a Rate Schedule 1 charge/MWh of \$1.385. Comparatively, the 2025 advisory budget totals \$195.2M, allocated across a forecast of 145.6 million MWh, for a Rate Schedule 1 charge/MWh of \$1.341
  - NYISO's draft 2026 advisory budget represents a 2.7% increase in Revenue Requirement from the 2024 draft budget and a 0.6% decrease in projected MWh for an overall Rate Schedule 1 increase of 3.3%
- **Primary Drivers**
  - The primary drivers of a \$5.3M increase in the RS1 Revenue Requirement from 2025 to 2026 are as follows:
    - \$5.7M increase in Salaries & Benefits driven primarily by a 3.0% annual merit compensation, 0.5% equity and 0.5% promotion adjustments, the addition of 6 incremental FTEs and a 5% increase in health insurance costs

# Appendix D – Peer Comparison

# PEER COMPARISON

(\$ in Millions)					
	Revenue Requirement*			Other Information*	
ISO/RTO	2022 Revenue Req. (In \$\$)	Estimated 2022 MWh throughput (In millions of MWh)	2022 revenue req. (In \$/MWh)	Debt outstanding at 12/31/22	Authorized FTEs at 12/31/22
MISO	330.0M	730.0	\$0.450	\$275.0M	1046
PJM	322.0M	817.0	\$0.394	\$7.9M	765
ERCOT	232.9M	420.0	\$0.555	\$39.0M	838
CAISO	Not Yet Available				
ISO-NE	\$216.3M	144.4	\$1.498	\$89.9M	593
SPP	Not Yet Available				
NYISO	\$169.2M	150.0	\$1.128	\$88.2M	608
* All amounts are DRAFT and may be subject to change as each ISO/RTO completes its 2022 budget approval process					

# Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system



# Questions?