New York ISO
Independent System Operator

2023 - 2024 IRM
New Load Shape Sensitivity Case

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NYISO

ICS Meeting # 266

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Background

- **In early 2022, the NYISO Load Forecast team made updated load shape recommendations as the outcome from the LFU Phase 2 Study**
  - The recommendation was made during ICS Meeting # 259 on March 29th (*March 29 ICS Presentation*)
  - Load shapes from 2013, 2017 and 2018 were recommended with the following LFU Bin Structure

Bin	Current Load Shapes	New Load Shape Recommendation
1	2006	2013
2	2002	2013
3	2007	2018
4	2007	2018
5	2007	2017
6	2007	2017
7	2007	2017

- **The new load shape review was added to the sensitivity case list for the 2023-2024 IRM study and the ICS requested a full Tan45 to be conducted**

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Adjusted New Load Shapes

- **The starting point for the new load shapes was at the gross level**
  - Impact from BTM Solar (*i.e.*, load reduction) was not included in the starting point for the new load shapes
- **NYISO's Load Forecast team adjusted these gross level load shapes to account for the impact of BTM Solar**
  - Gross level load shapes were adjusted to account for the 2023 expected BTM Solar penetration level
  - For example, for Bin 2, 2013 gross level load shapes were adjusted to account for the 2023 expected BTM Solar penetration level while using the 2013 BTM Solar curves
- **These adjusted new load shapes, based on the methodology above, were the input for the New Load Shape Sensitivity Case**
  - Consistent load shapes were also adopted for the external areas
  - Policy 5 adjustments were performed to align the top three summer peak load days of the external area load shapes with the NYCA top three peak load days

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Results

Results	2023 PBC *(Tan45)*	New Load Shape Sensitivity *(Tan45)*	Delta % (ICAP)
IRM	20.1%	19.8%	-0.3% (-96.1 MW)
J LCR	80.1%	77.8%	-2.3% (-253.0 MW)
K LCR	104.4%	102.0%	-2.4% (-120.7 MW)
G–J	89.531%	87.869%	-1.662% (-253.0 MW)

NYBA EOP (Days/Yr.)	8.04	8.33	+0.29

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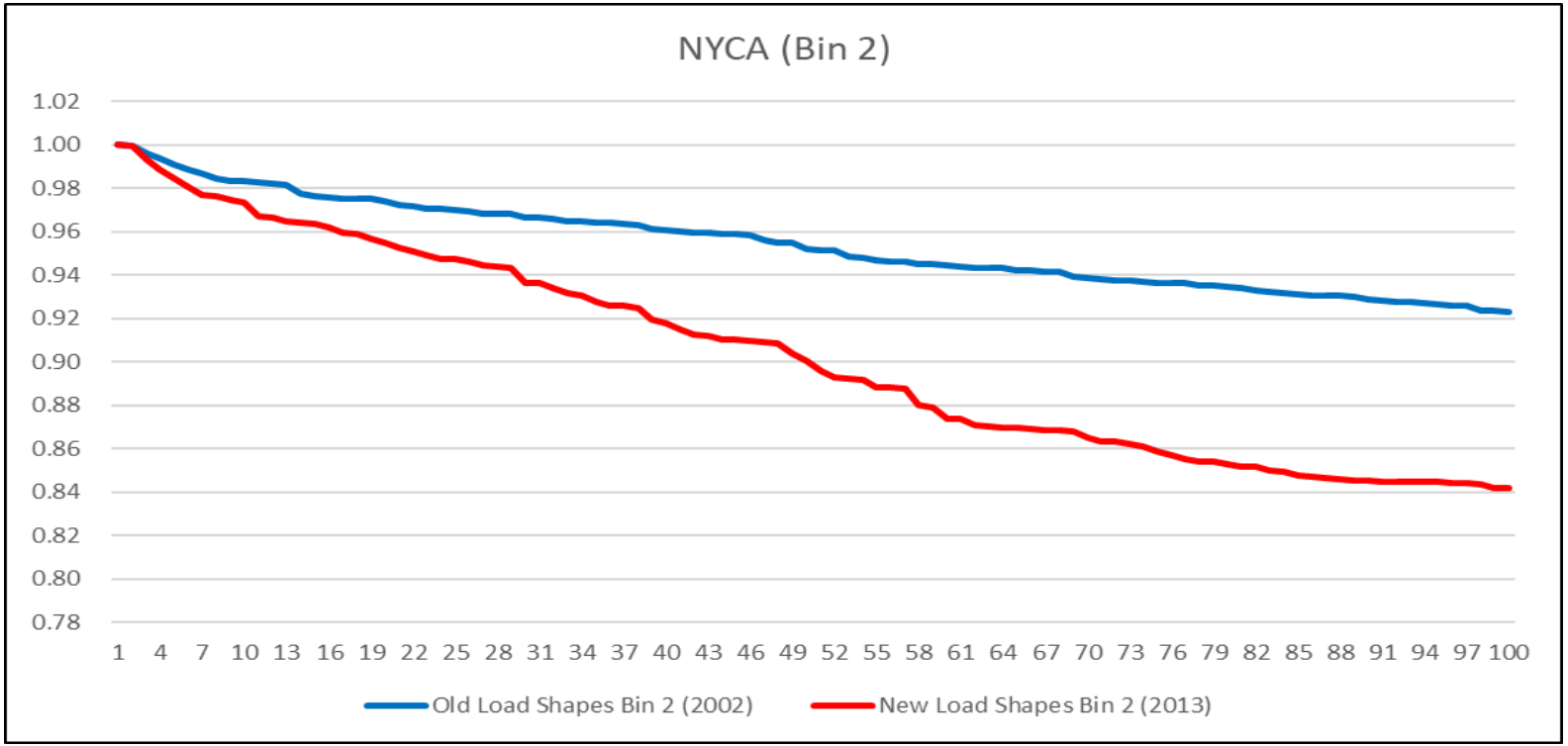
NYCA Normalized Load Shapes Duration Curve (Bin 2)



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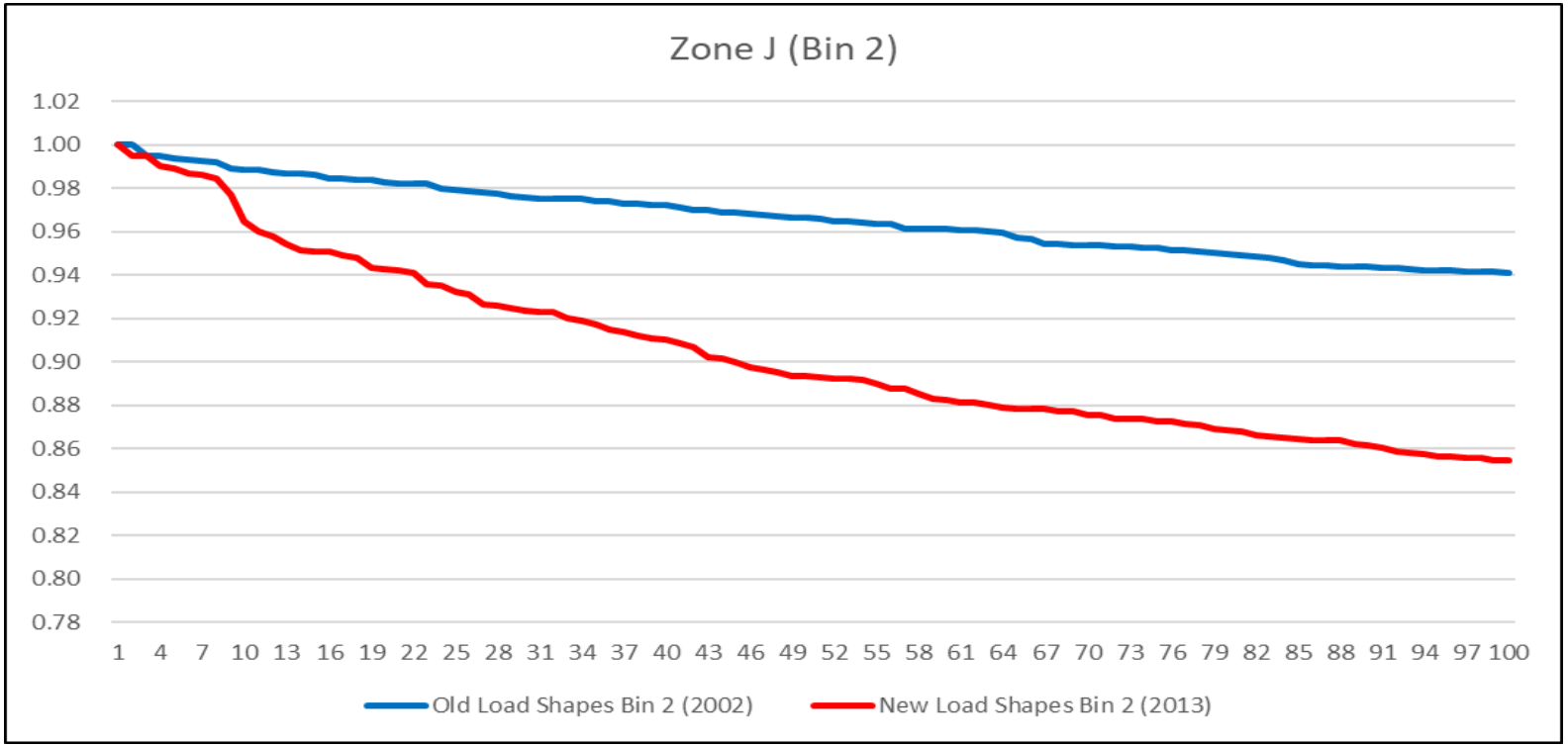
Zone J Normalized Load Shapes Duration Curve (Bin 2)



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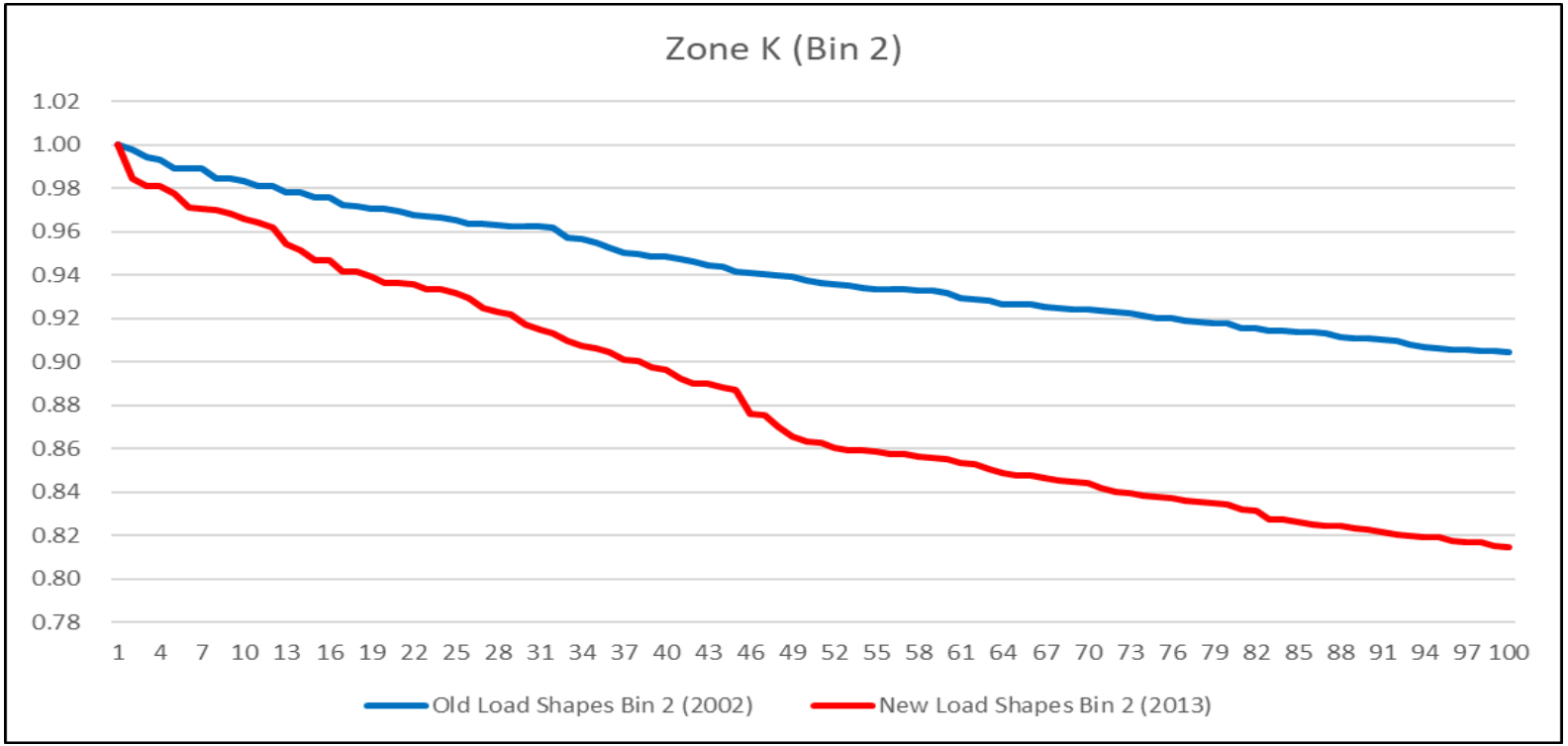
Zone K Normalized Load Shapes Duration Curve (Bin 2)



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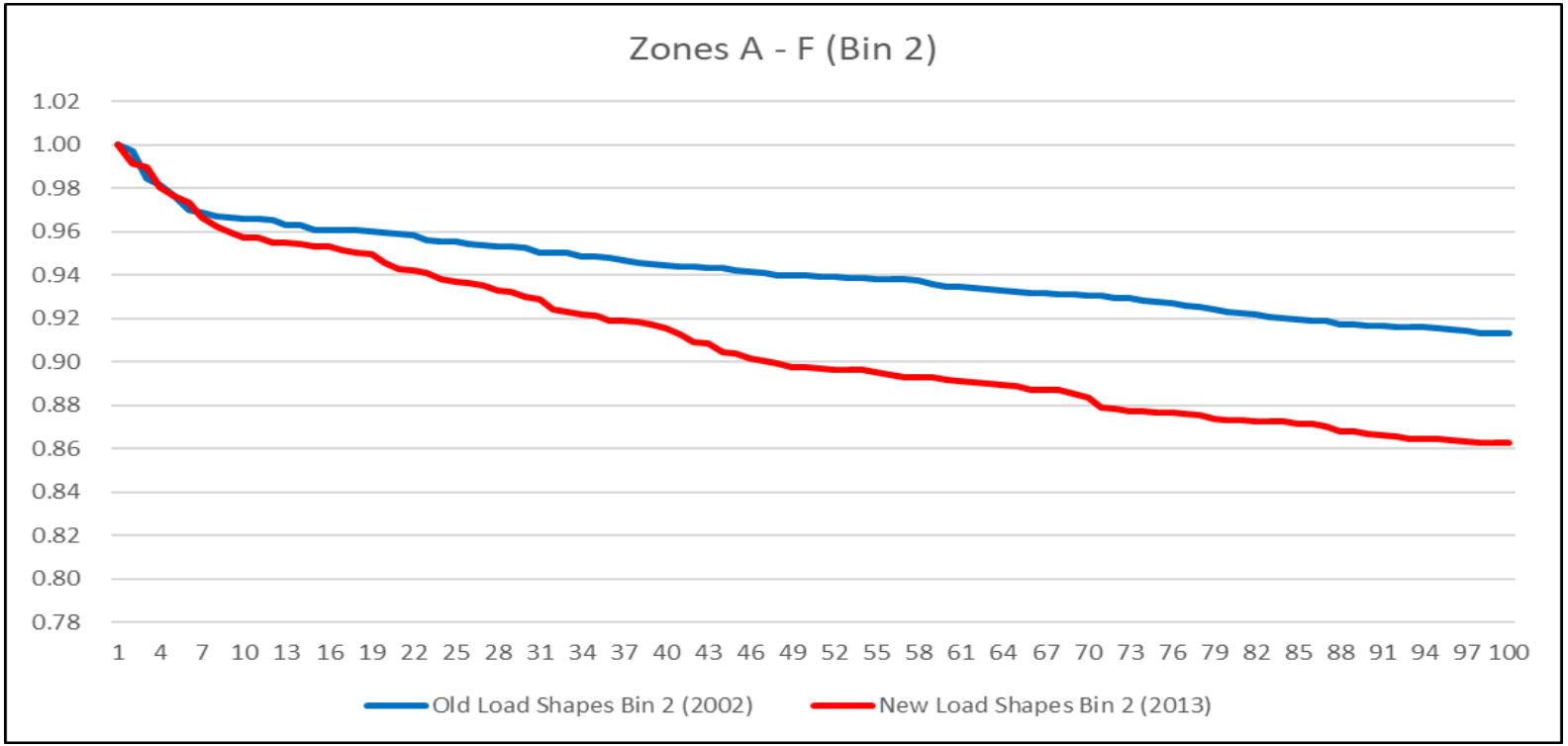
Zones A-F Normalized Load Shapes Duration Curve (Bin 2)



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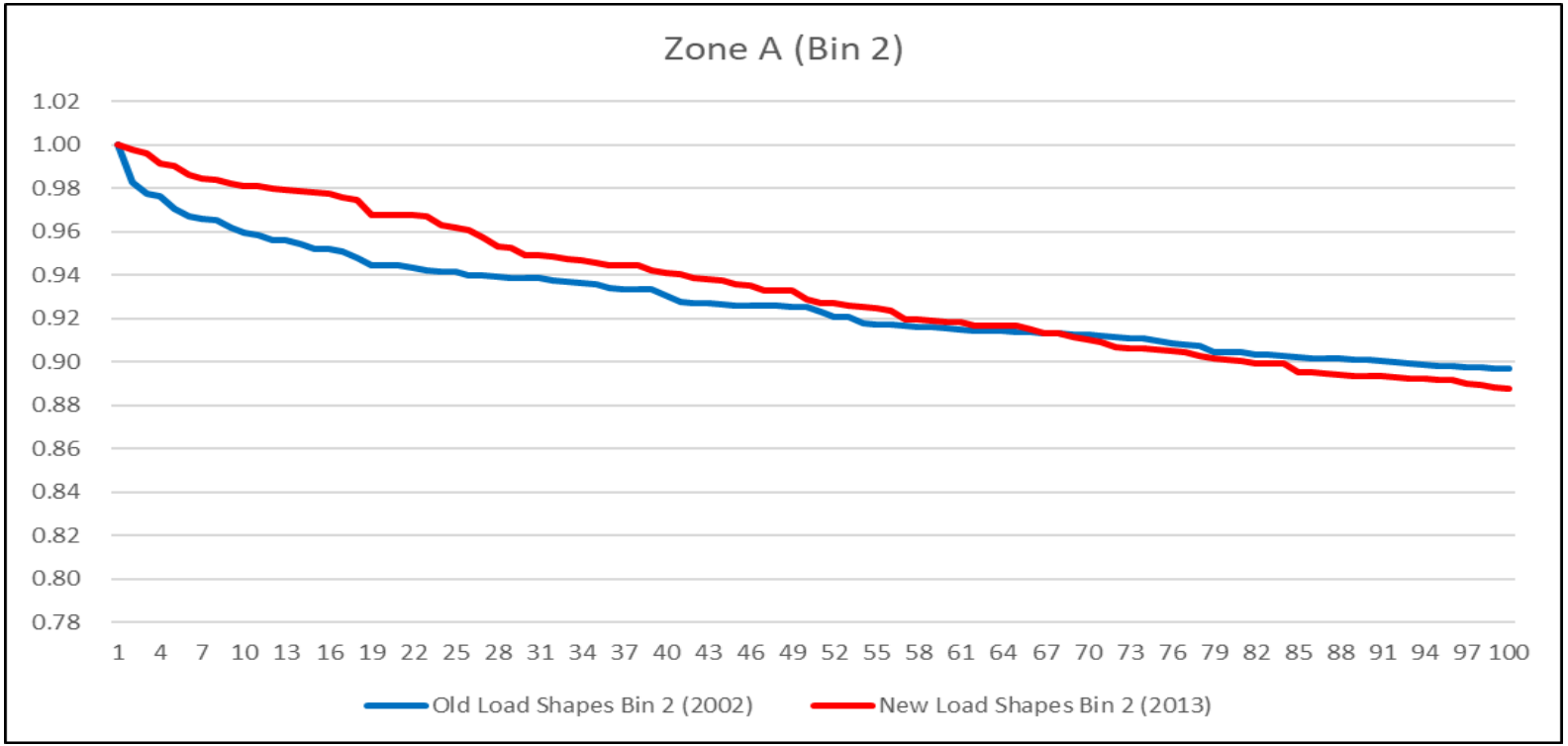
Zone A Normalized Load Shapes Duration Curve (Bin 2)



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Bin 2 Load Shape Hourly Buckets

NYCA, # of hours at load level (Bin 2)		
Load Level	Old Load Shapes (2002)	New Load Shapes (2013)
Top 1%	5	3
Top 2%	13	6
Top 3%	24	10
Top 5%	52	22
Top 10%	137	50
Top 20%	410	188

Zone J, # of hours at load level (Bin 2)		
Load Level	Old Load Shapes (2002)	New Load Shapes (2013)
Top 1%	8	4
Top 2%	24	8
Top 3%	42	9
Top 5%	79	16
Top 10%	181	45
Top 20%	486	211

- Represents the number of hours that fall within each load level in comparison to the peak hour
- For example, for NYCA, there were 137 total hours with the Old Load Shapes and 50 total hours with the New Load Shapes that fell within 10% of the peak load
  - Peak = 32,179.6 MW
  - 32,179.6 MW x (1 – 0.10) = 28,961.6 MW
  - # of Hours with Load Level > 28,961.6 MW = Top 10%

Zone K, # of hours at load level (Bin 2)		
Load Level	Old Load Shapes (2002)	New Load Shapes (2013)
Top 1%	4	1
Top 2%	12	4
Top 3%	20	7
Top 5%	37	14
Top 10%	106	38
Top 20%	298	119

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Hourly LOLE Distribution

HB	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Preliminary Base Case	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	6%	10%	18%	22%	22%	11%	4%	3%	1%	0%	0%	0%
New Load Shapes	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	4%	5%	7%	14%	22%	24%	12%	7%	3%	1%	0%	0%

- Hourly LOLE Distribution is concentrated to approximately 6-hour windows for both the Preliminary Base Case (Old Load Shapes) and New Load Shapes
- The high-risk hours for LOLE shifted to later in the day from approximately HB14 – HB16 to HB15 – HB17

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Summary

- **The New Load Shapes reduce the IRM and LCRs due to a steeper decline from the peak hour, particularly in Bin 2**
  - This observation is more prominent in Zones J and K than at the NYCA Level
    - On the contrary, Zone A has a flatter decline from the peak hour with the New Load Shapes compared to the Old Load Shapes
- **The New Load Shapes also shift the high-risk hours for LOLE to later in the day**
  - This is more consistent with the expectation of future load patterns, especially with an increase in BTM Solar penetration

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Questions?

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Our Mission & Vision

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Ensure power system reliability and competitive markets for New York in a clean energy future

Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

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