

# 2026 RNA: Preliminary Base Case Draft Results

---

**Laura Popa**

Manager, Resource Planning

**ESPWG/TPAS**

July 23, 2026, KCC

**Keith Burrell**

Principal Transmission  
Planning Advisor

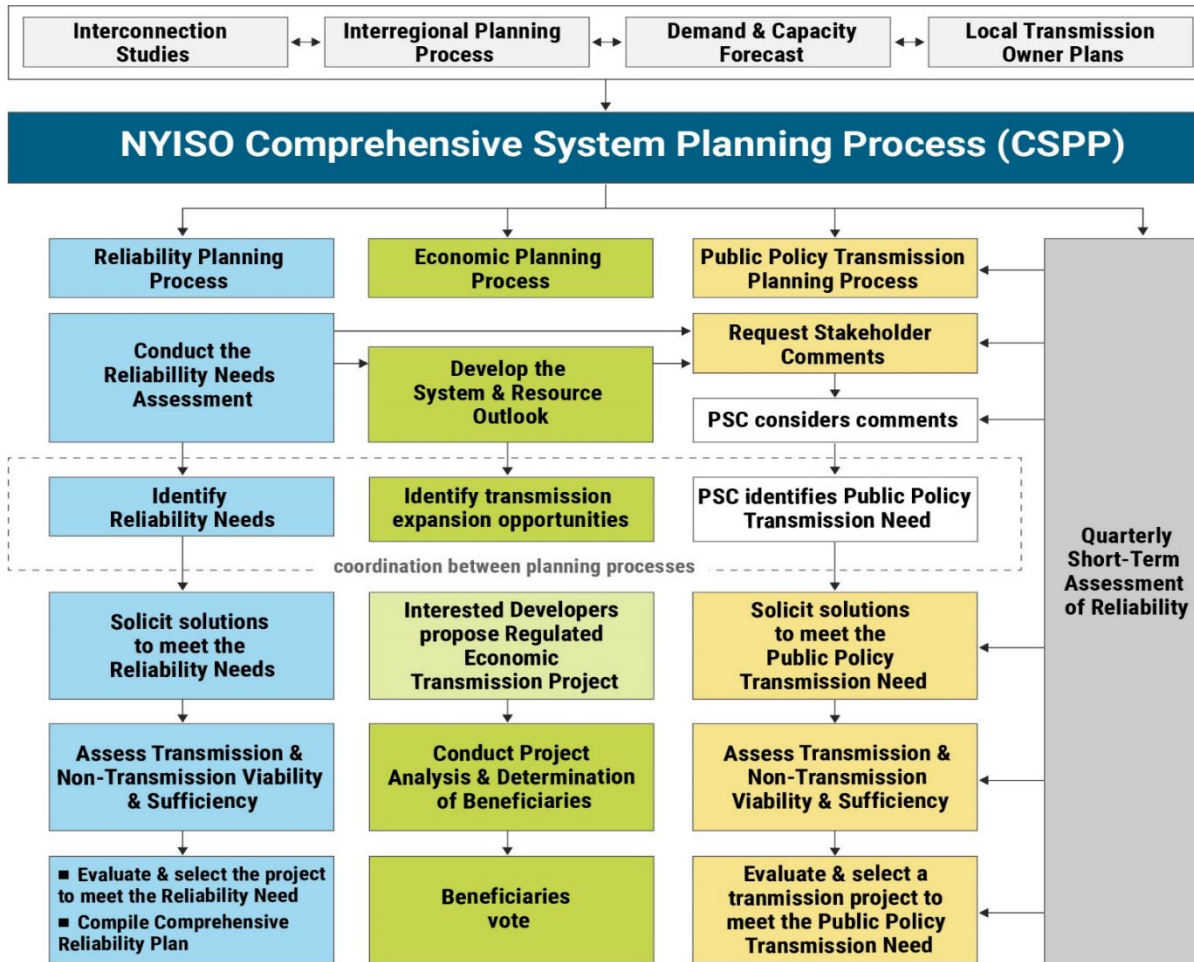
# Agenda

- **2026 RNA Background**
- **Draft 2026 RNA preliminary Base Case results**
- **Data catalog**
- **Schedule**
- **Appendix: additional reference**

# Objective

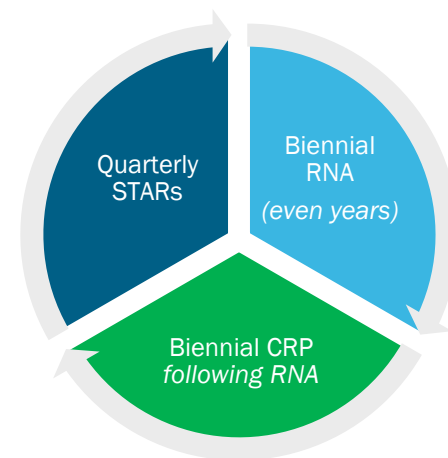
- Present Draft 2026 RNA preliminary Base Case results
- Discuss remaining tasks in the 2026 RNA

# 2026 RNA Background



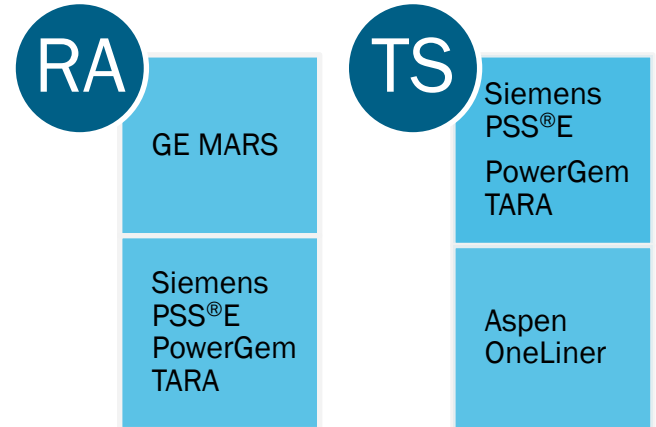
# Reliability Planning Studies

- **Short-Term Assessments of Reliability (STARs)**
  - Conducted quarterly in direct collaboration with Transmission Owners
  - Five-year study with a focus on addressing needs arising in the first three years
- **Reliability Needs Assessment (RNA)**
  - Conducted biennially to identify long-term New York State Bulk Power Transmission System (BPTF) reliability needs in years 4-10 on Base Case
  - Considers Transmission Owner LTPs, proposed generation and proposed transmission that meet inclusion rules, demand forecasts, and updates to the system
  - If Reliability Needs are identified, the NYISO issues a competitive solicitation for market-based and alternative regulated solutions, and the Responsible Transmission Owner(s) is required to propose a regulated backstop solution
- **Comprehensive Reliability Plan (CRP)**
  - Biennial report that documents the plans for a reliable grid over the 10-year planning horizon
  - If applicable, includes an assessment of viability and sufficiency and an evaluation and selection of the more efficient or cost-effective transmission solution to a Reliability Need(s) in years 4-10



# Assessing Reliability Criteria

- Reliability Criteria includes applicable NERC, NPCC, NYSRC Reliability Rules
- NYISO assesses Reliability Criteria on the BPTF as follows:
  - Resource Adequacy (RA)
    - The ability of the electric systems to supply the aggregate electrical demand and energy requirements of their customers at all times, taking into account scheduled and reasonably expected unscheduled outages of system elements.
  - Transmission Security (TS)
    - The ability of the electric system to withstand disturbances, such as electric short circuits or unanticipated loss of system elements.
    - The ability of the power system to withstand the loss of one or more elements without involuntarily disconnecting firm load.



# 2024-2025 RPP Cycle Background

- The 2026-2027 Reliability Planning Process (RPP) started with the 2026 Reliability Needs Assessment (2026 RNA) and is followed by the 2027-2036 Comprehensive System Plan (CRP).
  - 2026 RNA Study Period: year 4 = 2030 through year 10 = 2036
  - Note: year 1 through year 5 are assessed in the quarterly Short-Term Assessment of Reliability (STAR), with a focus on years 1 through 3
- 2026 RNA is based on the information from the 2026 Gold Book, the 2026 FERC Form 715 filing, historical data, and Market Participant data.
- NYISO will identify Reliability Needs when there is a violation, or potential violation of, Reliability Criteria in the 2026 RNA Base Case.
- The objective of presenting the preliminary results providing stakeholders is to offer an opportunity, prior to the final RNA, for stakeholders' input regarding updates in projects and plans, which may impact any identified criteria violations.

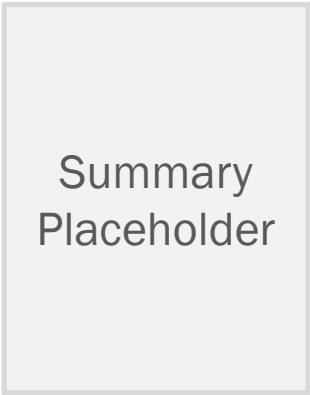
# Data Catalog

# 2026 Reliability Needs Assessment Data Catalog

Report



Study Summary



## Report Appendices

- Appendix A:
- Appendix B:
- Appendix C:
- Appendix D:
- Appendix E:
- Appendix F:
- Appendix G:
- Appendix H:
- Appendix I:
- Appendix J:

## Other Relevant Documents

- 2026 Gold Book
- 2025 Q3 STAR Solutions Selection
- 2025-2034 CRP
- 2024 RNA
  
- NYSRC RR rev 47
- NPCC Directory 1 July 2, 2024 rev
- NERC TS

## Stakeholder Presentations

- April 7, 2026 TPAS/LFTF/ESPGW  
Various demand forecasts
- April 29, 2026 MC  
2025 Q3 STAR solutions
- May 6, 2026 ESGWG/TPAS  
RNA draft key assumptions,  
RA Assumptions Matrix  
TS Assumptions Matrix  
RPP Manual updates
- May 14, 2026 OC  
RPP Manual updates
- May 20, 2026 ESGWG/TPAS  
RNA scenario assumptions
- June 1, 2026 LFTF/TPAS/ESPGW  
Additional demand forecasts
- June 25, 2026 TPAS/ESPGW  
RNA potential scenarios
- July 7, 2026 LFTF/TPAS/ESPGW  
RNA potential scenarios  
Load Forecast Uncertainty updates

- July 23, 2026 TPAS/ESPGW  
RNA preliminary Base Case draft results  
Assumptions Matrix

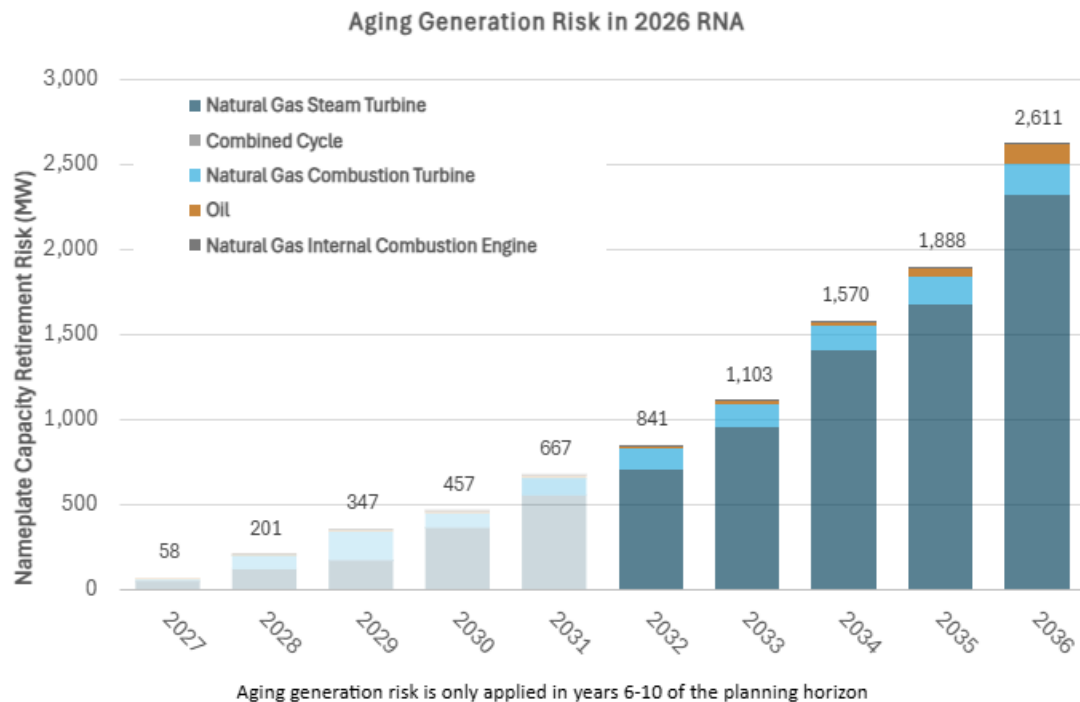
# Preliminary Base Case Results

# Key Assumptions

- Key assumptions were reviewed and discussed with stakeholders in the May 6, 2026 TPAS/ESPWG presentation linked in the data catalog. Highlights are summarized below.
  - **Generation**
    - ~6,200 MW of solar, wind, and storage proposed projects
    - 517 MW of NYPA small plants assumed retired in 2031
    - ~5,400 MW of non-firm gas out of service during winter peak
  - **Large Loads**
    - ~2,700 MW of proposed large loads projects
  - **Emergency assistance decreases from 3,500 MW to 2,500 MW by 2036 for resource adequacy assessment**
    - 100 MW reduction applied annually beginning in the first study year
  - **Certain summer resource adequacy topology limits updated, including some limits that are different in the winter season**
  - **Transmission security margin incorporates NYCA 5-year zonal-average EFORd values**
  - **Generation aging risks considerations – details on next slide**

# Aging Generation

- The aging generation model applies to years 6-10
- Units contribute to aging generation risk after crossing a threshold age
  - For the Base Case, this is the age by which 95% of peer capacity had retired



# Overview of Preliminary Results

- **Preliminary RNA results indicate several deficiencies that are expected to result in declared Reliability Needs.**
  - Several factors are particularly influential in the preliminary findings, including approximately 2,700 MW of new large load additions by 2036, the planned retirement of the NYPA small gas plants (517 MW), and approximately 2,600 MW of aging generation risk.
- **The base case exceeds the state's resource adequacy criterion starting in 2033 with a deficiency of approximately 200 MW and gets worse through 2036 with a deficiency greater than 1,800 MW.**
  - Driven by demand growth, including large loads, and increasing exposure to aging generation resulting in reduced available supply.
- **Unlike previously identified reliability needs, this resource deficiency is not driven by internal transmission constraints but rather is an issue of insufficient statewide supply to meet projected demand.**

# Overview of Preliminary Results, cont.

- **Consistent with the projected reliability margins discussed in recent STARs, the RNA is observing transmission security margin deficiencies in New York City and the Lower Hudson Valley following the unavailability of the Gowanus and Narrows barges, as well as the NYPA small gas plants**
  - NYC is deficient about 130 MW (2031) growing to over 1,800 MW (2036)
  - Lower Hudson Valley is deficient about 300 MW (2032) growing to over 2,000 MW (2036)
  - Long Island transmission security margins are sufficient throughout the planning horizon, but this assumes that the Propel NY transmission project is in service and sufficient generation supply is available to transfer into that locality
- **Thermal issues under peak conditions have been identified on certain transformers. Some transmission security analysis (off-peak system voltage and stability) are currently being evaluated.**

# Resource Adequacy

# Resource Adequacy Draft Preliminary Base Case NYCA Results

- Resource Adequacy NYCA Base Case annual LOLE violations start in 2033 and increase through 2036, reflecting increased risks, such as demand growth, aging generation, and less reliance on imports.

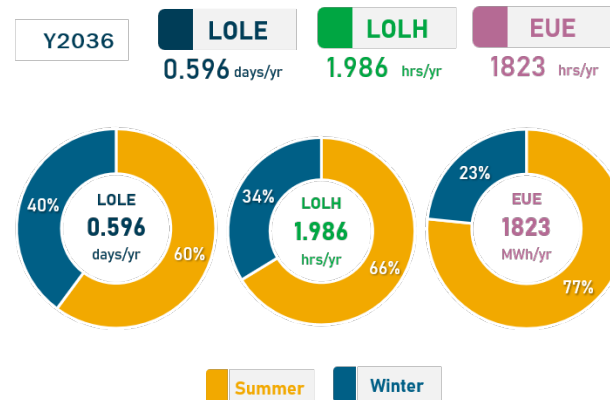
| Study Year | LOLE (event-days/yr) |        |        |
|------------|----------------------|--------|--------|
|            | Annual               | Summer | Winter |
| 2027       | 0.025                | 0.025  | 0.000  |
| 2028       | 0.032                | 0.032  | 0.000  |
| 2029       | 0.034                | 0.034  | 0.000  |
| 2030       | 0.019                | 0.019  | 0.000  |
| 2031       | 0.036                | 0.036  | 0.000  |
| 2032       | 0.074                | 0.074  | 0.000  |
| 2033       | 0.115                | 0.114  | 0.002  |
| 2034       | 0.182                | 0.170  | 0.012  |
| 2035       | 0.290                | 0.243  | 0.047  |
| 2036       | 0.596                | 0.358  | 0.238  |

Note: Maroon indicates LOLE above 0.1 event-days/year during a season; however, the current NYSRC and NPCC criteria are based on annual LOLE, shown in red font.

# Additional Reliability Indices

- Loss of load hours (LOLH) and expected unserved energy (EUE) reliability indices are provided for information as there is no criteria at this time
  - Normalized EUE (ppm) =  $(\text{EUE} / \text{GB forecast}) * 1,000,000$

| Study Year | LOLE          | LOLH   | EUE    | NEUE  |
|------------|---------------|--------|--------|-------|
|            | event-days/yr | hrs/yr | MWh/yr | ppm   |
| 2027       | 0.025         | 0.060  | 25     | 0.16  |
| 2028       | 0.032         | 0.083  | 34     | 0.22  |
| 2029       | 0.034         | 0.090  | 36     | 0.23  |
| 2030       | 0.019         | 0.044  | 26     | 0.16  |
| 2031       | 0.036         | 0.094  | 65     | 0.40  |
| 2032       | 0.074         | 0.222  | 170    | 1.04  |
| 2033       | 0.115         | 0.353  | 311    | 1.88  |
| 2034       | 0.182         | 0.600  | 524    | 3.12  |
| 2035       | 0.290         | 0.978  | 877    | 5.15  |
| 2036       | 0.596         | 1.986  | 1823   | 10.54 |



# NYCA LOLE After Each EOP Step

- For all years, NYCA is dependent on Emergency Operating Procedures (EOPs), especially emergency assistance from neighboring regions and operating reserves.
- Without emergency assistance, LOLE violations would occur throughout the planning horizon.
- Without the use of 10-min operating reserves, LOLE violations would occur as early as 2031.

| LOLE After EOP Step (event-days/year) | Max MW<br>(S) 2027 | Max MW<br>(S) 2036 | 2027  | 2028  | 2029  | 2030  | 2031  | 2032  | 2033  | 2034   | 2035   | 2036   |
|---------------------------------------|--------------------|--------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|
| Pre-EOP results                       | -                  | -                  | 3.524 | 2.972 | 4.258 | 1.861 | 2.676 | 4.849 | 6.762 | 10.999 | 14.307 | 21.527 |
| Special Case Resources (SCRs)         | 593                | 593                | 2.969 | 2.541 | 3.668 | 1.372 | 2.003 | 3.750 | 5.193 | 8.551  | 11.328 | 17.102 |
| 5% Manual Voltage Reduction           | 68                 | 78                 | 2.895 | 2.487 | 3.601 | 1.308 | 1.910 | 3.611 | 4.979 | 8.234  | 10.939 | 16.497 |
| 30-Minute Operating Reserve           | 655                | 655                | 1.288 | 0.994 | 1.717 | 0.712 | 1.060 | 2.095 | 2.989 | 5.177  | 7.037  | 10.696 |
| Voluntary Load Curtailment            | 267                | 267                | 1.048 | 0.815 | 1.463 | 0.574 | 0.857 | 1.740 | 2.524 | 4.459  | 6.191  | 9.525  |
| Public Appeals                        | 74                 | 74                 | 0.980 | 0.749 | 1.365 | 0.539 | 0.811 | 1.660 | 2.435 | 4.366  | 6.091  | 9.427  |
| 5% Remote Controlled Vol. Reduction   | 452                | 488                | 0.707 | 0.571 | 1.065 | 0.373 | 0.582 | 1.220 | 1.810 | 3.317  | 4.838  | 7.614  |
| Emergency Assistance (External)       | 3,400              | 2,500              | 0.068 | 0.079 | 0.086 | 0.065 | 0.100 | 0.160 | 0.200 | 0.340  | 0.568  | 1.216  |
| Part of the 10-Minute Op. Reserve     | 860                | 860                | 0.025 | 0.032 | 0.034 | 0.019 | 0.036 | 0.074 | 0.115 | 0.182  | 0.290  | 0.596  |
| Total MW                              | 6,370              | 5,515              |       |       |       |       |       |       |       |        |        |        |

- Notes:
1. NYCA annual LOLE is at last step. **Red font** indicates exceeding NYCA LOLE criterion.
  2. **Maroon** indicates LOLE above 0.1 event-days/year; however, the current NYSRC and NPCC criterion applies only to the last EOP step results for the NYCA annual LOLE, shown in **red font**.

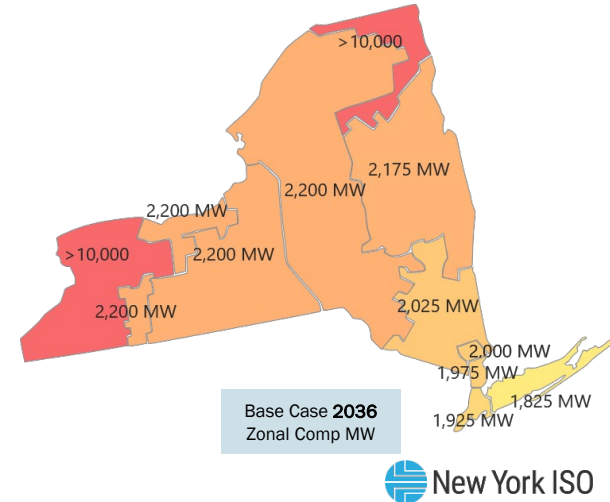
# Preliminary Zonal Resource Adequacy Margin/Compensatory MW - Background

- **Estimates either the Zonal Resource Adequacy Margin (ZRAM) (-), when LOLE is below 0.1 event-days/year criterion, or the compensatory MW (+), when LOLE is above its criterion**
  - It represents the amount of “perfect MW capacity” needed to bring the system to its LOLE criterion
  - “Perfect capacity” is capacity that is not derated or subject to energy durations limitations. Thus, removal/addition of lower/higher amounts of real capacity are likely to result in reliability issues at specific transmission locations
  - ZRAM and compensatory MW can be found using two methods:
    - Assessing one zone at a time to provide insights into what is needed in each zone to bring the system back to criterion
    - Distributing perfect capacity across zones using seasonal load-based ratios to provide a representative system-wide allocation
- **Serves as a screening tool that highlights either zonal or statewide resource adequacy needs**

# Preliminary ZRAM/Compensatory MW

- The map below shows the amount of compensatory MW that would be needed in each New York load zone independently to meet the resource adequacy criterion
  - Additional resources located in New York City and Long Island provide slightly greater reliability value than upstate zones; however, internal transmission constraints are not a major contributor to the statewide deficiency
- If distributed proportionally across the State, approximately 1,850 MW of additional perfect capacity would be required to eliminate the deficiency

| Study Year | Base Case LOLE (event-days/year) | Compensatory MW (+), ZRAM MW (-) |        |        |        |        |        |        |        |        |        |        | NYCA Load Ratio |
|------------|----------------------------------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------|
|            |                                  | Zone A                           | Zone B | Zone C | Zone D | Zone E | Zone F | Zone G | Zone H | Zone I | Zone J | Zone K |                 |
| 2027       | 0.025                            | -1875                            | -1875  | -2350  | -2300  | -2350  | -2350  | -2350  | -2350  | -2350  | -1925  | -450   | -1900           |
| 2028       | 0.032                            | -1775                            | -1800  | -2100  | -1975  | -2100  | -2100  | -2075  | -2075  | -2075  | -1900  | -425   | -1675           |
| 2029       | 0.034                            | -1625                            | -1600  | -1725  | -1700  | -1725  | -1725  | -1700  | -1700  | -1700  | -1575  | -375   | -1475           |
| 2030       | 0.019                            | -1700                            | -1700  | -2025  | -2000  | -2025  | -2025  | -1975  | -1975  | -1975  | -1925  | -950   | -1975           |
| 2031       | 0.036                            | -1250                            | -1225  | -1275  | -1250  | -1275  | -1250  | -1200  | -1200  | -1200  | -1200  | -725   | -1200           |
| 2032       | 0.074                            | -375                             | -375   | -375   | -375   | -375   | -375   | -350   | -350   | -350   | -350   | -225   | -350            |
| 2033       | 0.115                            | 225                              | 225    | 225    | 225    | 225    | 225    | 225    | 225    | 225    | 225    | 200    | 225             |
| 2034       | 0.182                            | 800                              | 775    | 775    | 775    | 775    | 775    | 775    | 775    | 775    | 775    | 700    | 725             |
| 2035       | 0.290                            | 1300                             | 1300   | 1275   | 1275   | 1275   | 1275   | 1250   | 1250   | 1250   | 1250   | 1125   | 1175            |
| 2036       | 0.596                            | Inf                              | 2200   | 2200   | Inf    | 2200   | 2175   | 2025   | 2000   | 1975   | 1925   | 1825   | 1850            |

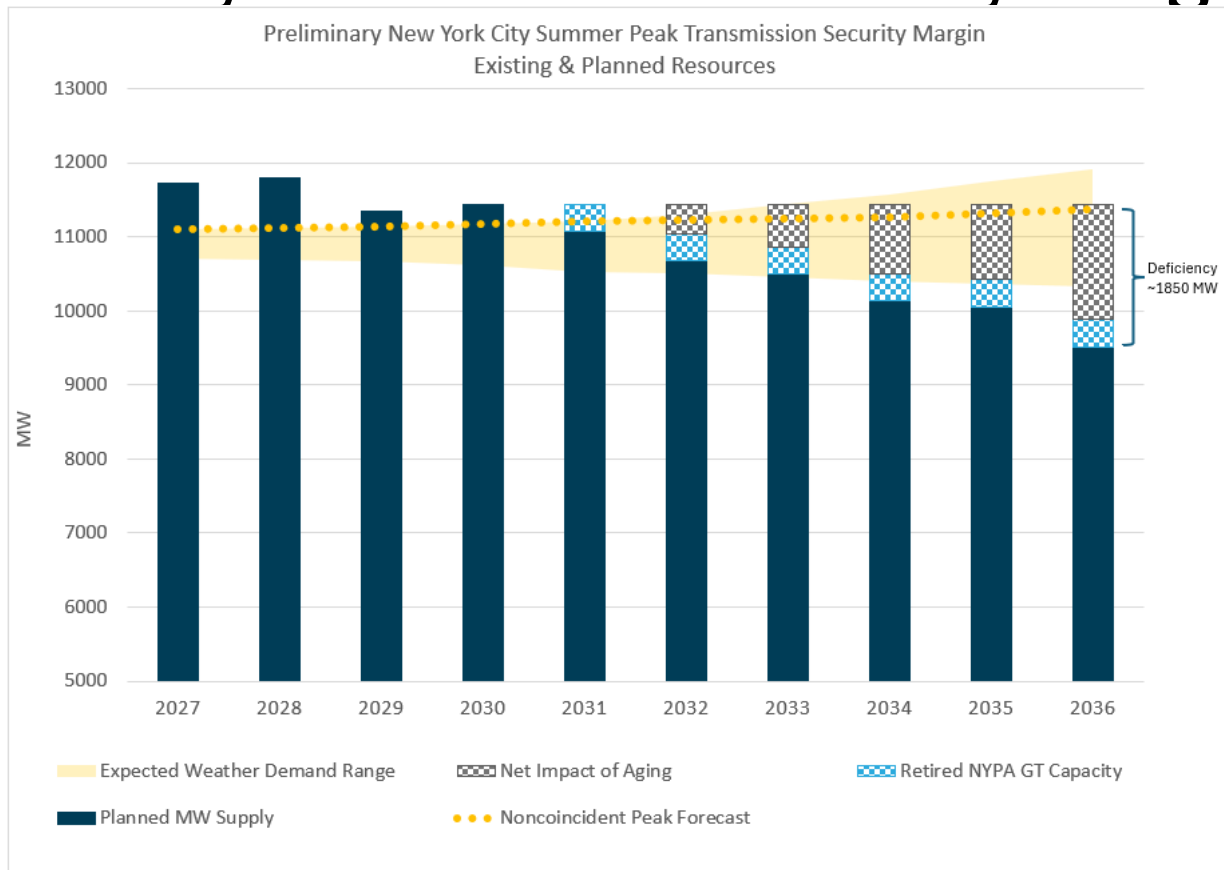


# Transmission Security

# New York City

- **NYISO continues to observe deficiencies in NYC in the short-term horizon**
- **In the longer-term horizon, the reliability margins worsen over time as electricity demand grows and the supply decreases due to the planned retirement of the NYPA small gas plants after 2030 and the risks of aging generation availability**
  - Following the retirement of the NYPA small gas plants, the New York City locality is deficient by about 130 MW in 2031 and worsens to over 1,800 MW in 2036

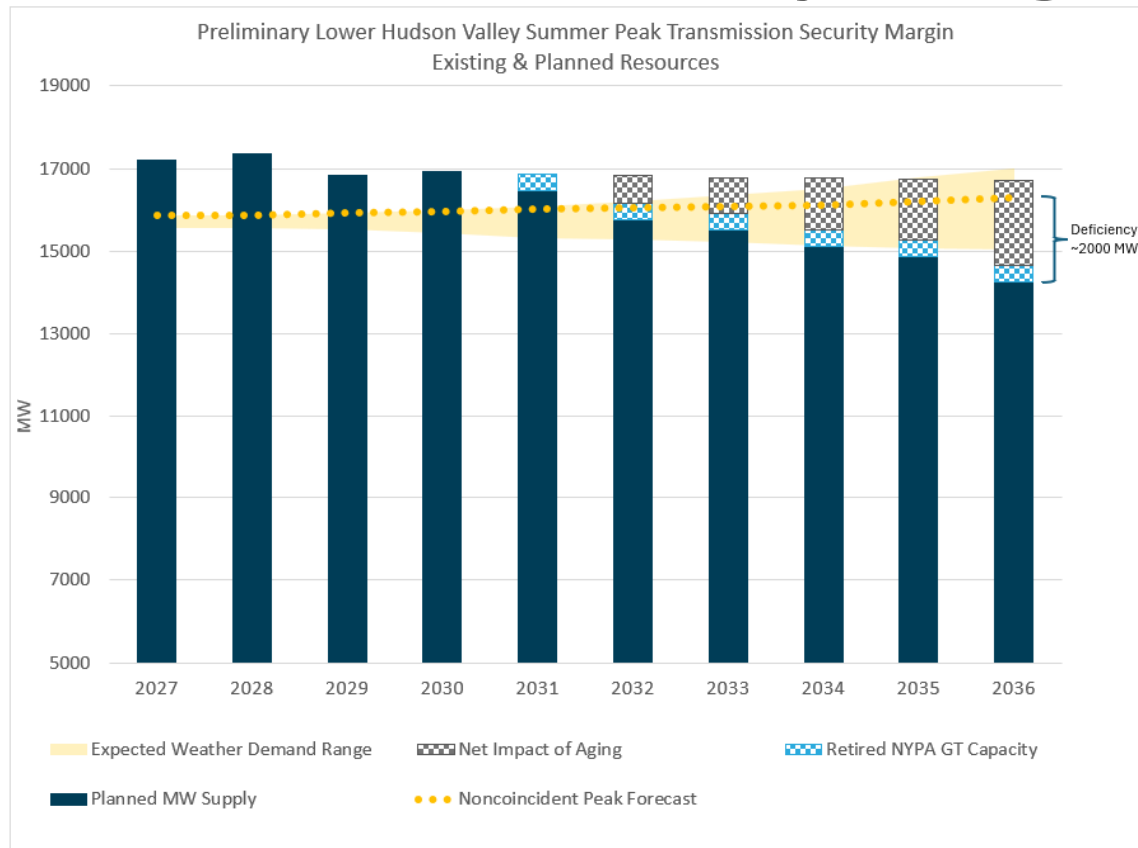
# New York City Transmission Security Margin



# Lower Hudson Valley

- **In the longer-term horizon, the reliability margins worsen over time as electricity demand grows and the supply decreases due to the planned retirement of the NYPA small gas plants after 2030 and the assumption for aging generation risk**
  - With CHPE in service and having demonstrated its planned power capabilities, this locality is deficient by about 300 MW in 2032 and growing to over 2,000 MW in 2036 following the retirement of the NYPA small gas plants and the unavailability of the Gowanus and Narrows barges
  - This deficiency is primarily an exacerbation of the New York City deficiency

# LHV Transmission Security Margin



# Potential Solutions to NYC and LHV Transmission Security Deficiencies

- **Generation additions, demand reduction, and/or new transmission into New York City or the Lower Hudson Valley**
  - However, resource adequacy results show that there may not be sufficient upstream resources to solve these deficiencies with transmission alone
- **2,000 MW of compensatory MW in New York City would likely also solve the LHV and statewide resource deficiencies**

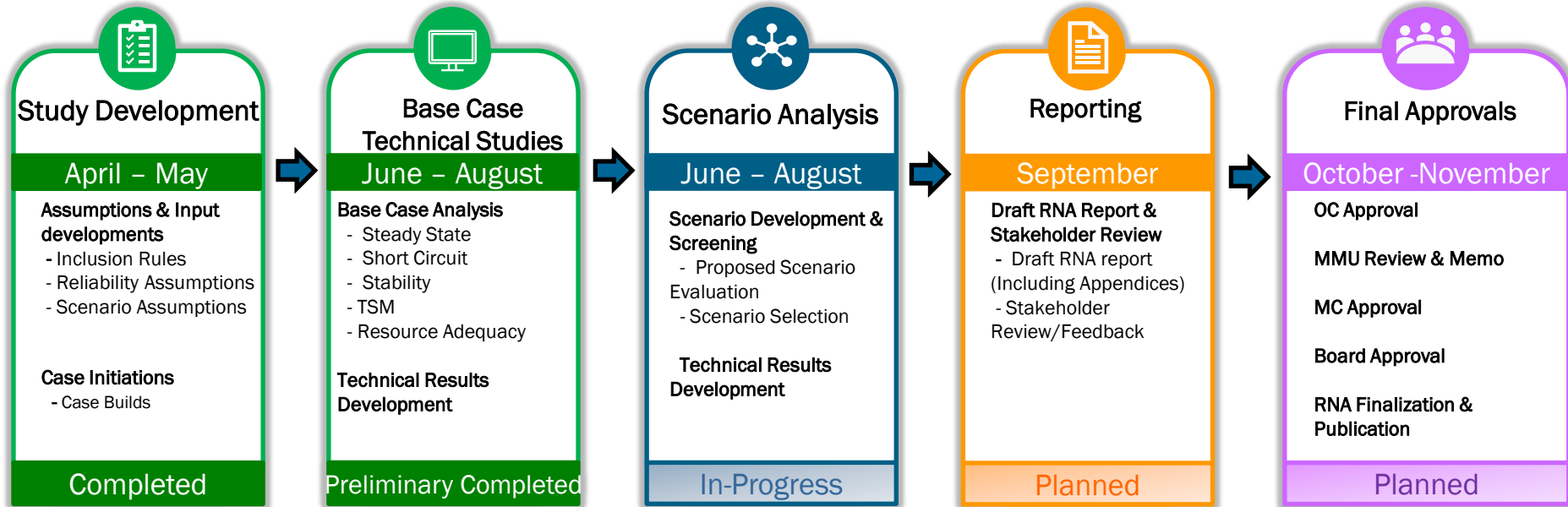
# Additional Transmission Security Findings

- **Additional thermal issues are also observed under peak conditions, primarily driven by large loads and other planned system changes observed at least by summer 2031:**
  - West Haverstraw transformer
  - Oakdale transformer
- **Voltage under peak conditions, off-peak thermal and voltage, stability, short circuit analyses are currently under evaluation**

# 2026 RNA Preliminary Schedule

# RNA Study Schedule

## 2026 RNA Study Timeline



*\*Timeline reflects the current status of the RNA study and is subject to change.*

# Our Mission and Vision



## Mission

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



## Vision

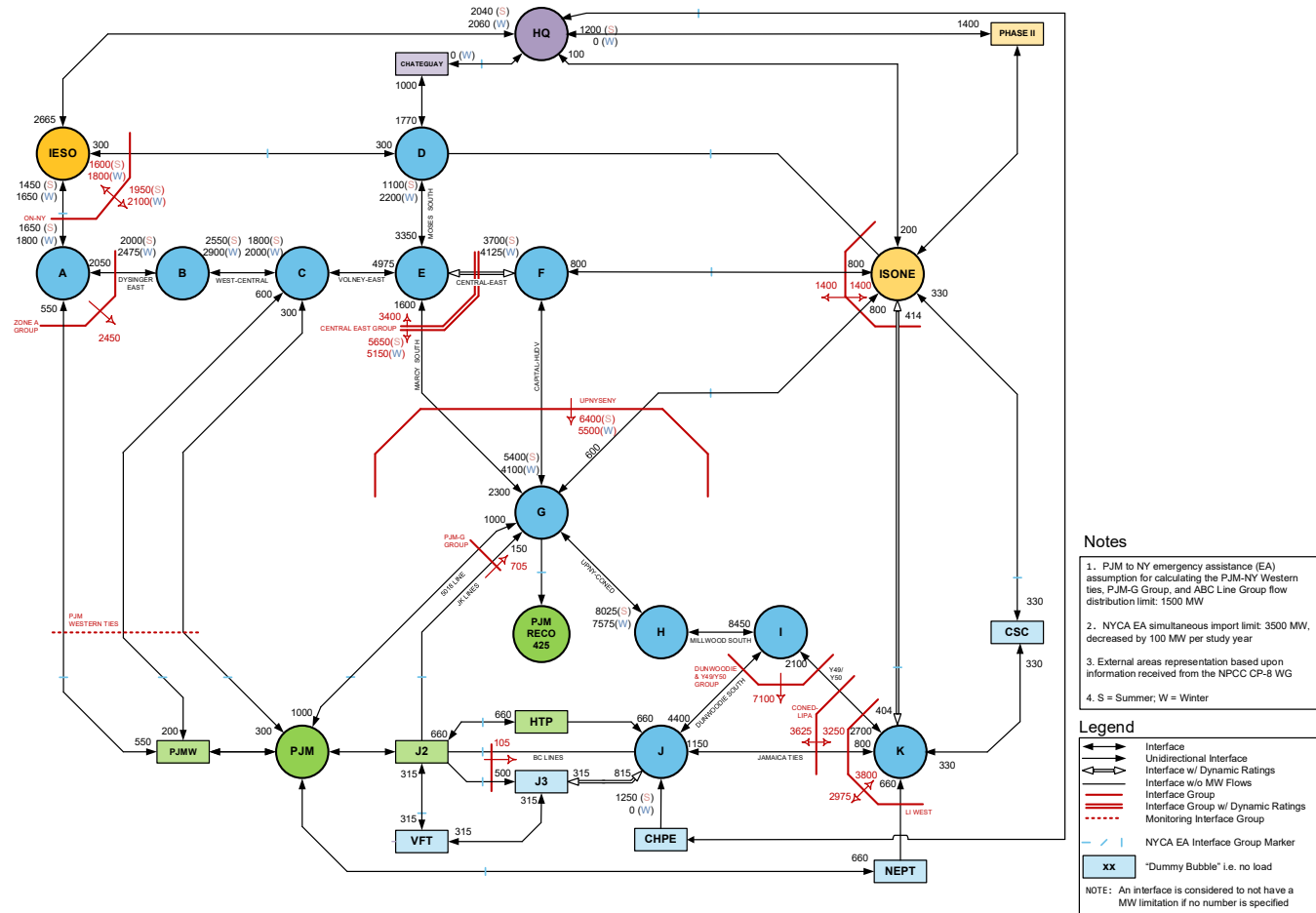
Working together with stakeholders to build the cleanest, most reliable electric system in the nation



# Questions?

# Appendix: MARS Topology

## 2026 RNA draft preliminary MARS Topology SY 2030- 2036



MARS Draft Topology for 2026 RNA Base Cases: Study Years 4 through 10 (2030-2036) – with LIPPTN

# Summary of Changes to Interfaces from 2024 RNA

| Changes from 2024 RNA             |                              |           |         | 2024 RNA  |           |           |           | 2026 RNA-Prelim |            |            |            |
|-----------------------------------|------------------------------|-----------|---------|-----------|-----------|-----------|-----------|-----------------|------------|------------|------------|
| Tag                               | Interface Name               | Direction | Type    | 2025-2029 | 2030-2034 | 2025-2029 | 2030-2034 | 2027-2029       | 2030-2036  | 2027-2029  | 2030-2036  |
|                                   |                              |           |         | Summer    |           | Winter    |           | Summer          |            | Winter     |            |
| Internal Interfaces               |                              |           |         |           |           |           |           |                 |            |            |            |
| A_TO_B                            | DYSINGER EAST                | Forward   | Static  | 2000      | 2000      | 2000      | 2000      | 2000            | 2000       | 2475       | 2475       |
|                                   |                              | Reverse   | Static  | Unlimited |           | Unlimited |           | 2050            | 2050       | 2050       | 2050       |
| B_TO_C                            | WEST CENTRAL                 | Forward   | Static  | 1500      | 1500      | 1500      | 1500      | 1800            | 1800       | 2000       | 2000       |
|                                   |                              | Reverse   | Static  | 2275      | 2275      | 2275      | 2275      | 2550            | 2550       | 2900       | 2900       |
| C_TO_E                            | VOLNEY EAST                  | Forward   | Static  | 5650      | 5650      | 5650      | 5650      | 4975            | 4975       | 4975       | 4975       |
|                                   |                              | Reverse   | Static  | Unlimited |           | Unlimited |           | Unlimited       |            | Unlimited  |            |
| D_TO_E                            | MOSES SOUTH                  | Forward   | Static  | 3500      | 3500      | 3500      | 3500      | 3350            | 3350       | 3350       | 3350       |
|                                   |                              | Reverse   | Static  | 1600      | 1600      | 1600      | 1600      | 1100            | 1100       | 2200       | 2200       |
| E_TO_F                            | CENTRAL EAST (MARS)          | Forward   | Dynamic | 3925      | 3925      | 3925      | 3925      | 3700            | 3700       | 4125       | 4125       |
|                                   |                              | Reverse   | Static  | Unlimited |           | Unlimited |           | Unlimited       |            | Unlimited  |            |
| F_TO_G                            | CAPITAL HUDSON VALLEY        | Forward   | Static  | 5400      | 5400      | 5400      | 5400      | 5400            | 5400       | 4100       | 4100       |
|                                   |                              | Reverse   | Static  | Unlimited |           | Unlimited |           | Unlimited       |            | Unlimited  |            |
| G_TO_H                            | UPNY - ConEd                 | Forward   | Static  | 7050      | 7050      | 7050      | 7050      | 8025            | 8025       | 7575       | 7575       |
|                                   |                              | Reverse   | Static  | Unlimited |           | Unlimited |           | Unlimited       |            | Unlimited  |            |
| Internal Interface Groups         |                              |           |         |           |           |           |           |                 |            |            |            |
| E_TO_FG                           | Central East and Marcy Group | Forward   | Dynamic | 5650      | 5650      | 5650      | 5650      | 5650            | 5650       | 5150       | 5150       |
|                                   |                              | Reverse   | Static  | 3400      | 3400      | 3400      | 3400      | 3400            | 3400       | 3400       | 3400       |
| IJ_TO_K                           | ConEd To LIPA (I,J TO K)     | Forward   | Static  | 1598      | 3250      | 1598      | 3250      | 1598            | 3250       | 1598       | 3250       |
|                                   |                              | Reverse   | Dynamic | 170       | 1900      | 170       | 1900      | 170             | 3625       | 170        | 3625       |
| LI_WEST                           | LI WEST                      | Forward   | Static  | Unlimited |           | Unlimited |           | Unlimited       | 3800       | Unlimited  | 3800       |
|                                   |                              | Reverse   | Static  | 84        | 1240      | 84        | 1240      | 84              | 2975       | 84         | 2975       |
| UPNYSYNY                          | UPNY-SENY (MARS)             | Forward   | Static  | 7150      | 7150      | 7150      | 7150      | 6400            | 6400       | 5500       | 5500       |
|                                   |                              | Reverse   | Static  | Unlimited |           |           |           | Unlimited       |            | Unlimited  |            |
| Sourced External Interface Groups |                              |           |         |           |           |           |           |                 |            |            |            |
| NYCA_EA                           | NY IMPORT EM. ASSISTANCE     | Forward   | Static  | 3500      | 3500      | 3500      | 3500      | 3400-3200*      | 3100-2500* | 3400-3200* | 3100-2500* |
|                                   |                              | Reverse   | Static  | Unlimited |           | Unlimited |           | Unlimited       |            | Unlimited  |            |
| External Interfaces               |                              |           |         |           |           |           |           |                 |            |            |            |
| CHAT_HQ                           | CHATEGUAY TO HQ              | Forward   | Static  | Unlimited |           | Unlimited |           | Unlimited       |            | Unlimited  |            |
|                                   |                              | Reverse   | Static  | Unlimited |           | Unlimited |           | Unlimited       |            | 0          | 0          |

\*NYCA simultaneous import limit: 3500 MW, decreased by 100 MW per study year

New York ISO