# 2018 RNA Preliminary Reliability Needs

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# Goals

- **This presentation summarizes the 2018 RNA preliminary Base Case results**
  - No scenario results complete at this time
  - The scenarios will be finalized based on the original ("preliminary") RNA Base Case
  - The 2018 RNA major assumptions were presented at ESPWG/TPAS meetings from February through June 1, 2018
- **The objective of providing the stakeholders preliminary ("1st pass") Reliability Needs (RN) is to offer another opportunity prior to the final RNA for stakeholders' input regarding updates in projects and plans which may mitigate any identified RN**
  - To minimize unnecessary solutions solicitation

# Preliminary vs Final RN: Process Description

- **In finalizing the RN, system changes that occurred since the initial lock down date of the RNA assumptions will be considered, such as:**
  - Updated LTPs that may impact the Reliability Needs
    - If any pertinent LTP updates, then the Transmission Owner will present updates at either June 28 or July 2 ESPWG/TPAS meetings
  - Changes in BPTFs
  - Change in resources such as generating unit status, load forecast, or demand response that may impact the Reliability Needs

# 2018 RPP Background

- The 2018 Reliability Planning Process (RPP) starts with the 2018 Reliability Needs Assessment (2018 RNA) followed by the Comprehensive Reliability Plan (CRP)
  - 2018 RNA Study Period: year 1 = 2019 through year 10 = 2028
- The RPP is part of the Comprehensive System Planning Process and is performed pursuant to the Attachment Y of the NYISO OATT; see Section 31.2.
  - Additional implementation details, including recently updated RNA Base Case inclusion rules, are captured in the RPP Manual #26
- 2018 RNA is based on the information from the Gold Book 2018, the 2018 FERC 715 filing (power flow cases and auxiliary files), historical data, and market participant data

# 2018 RNA Base Case Development Background

- Based on the RNA Base Case, the NYISO identifies Reliability Needs of the New York State Bulk Power Transmission Facilities (BPTFs) in accordance with applicable Reliability Criteria (*i.e.*, NERC, NPCC, and NYSRC)
- Reliability evaluations consist of resource adequacy and transmission security evaluations of the New York Bulk Power Transmission Facilities over a ten-year Study Period
- 2018 RNA Base Case:
  - For the transmission security evaluations, the NYISO uses the 2018 FERC Form 715 filing and the information from the 2018 Gold Book as a starting point for developing the base case system models with the application of the inclusion rules.
  - For the resource adequacy evaluation, the models are developed starting with prior resource adequacy models, and are updated with information from the 2018 Gold Book and historical data, with the application of the inclusion rules. Information on modeling of neighboring systems is based on the input received from the NPCC CP-8 working group.
- In January 2018, an updated Manual 26 was approved and posted with the only change being in Section 3; mainly related to the RNA Base Case development and its inclusion rules
- The inclusion rules are used as guidelines to determine what proposed projects will be included in the RNA Base Case, and also how to treat generator deactivations

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# RNA Major Assumptions

# 2018 RNA Summer Peak Load Forecast Assumptions

**Topline** (former Econometric), **Baseline and Adjusted Summer Peak Forecast**

| Annual MW | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2018 Topline* Forecast | 33,763 | 34,099 | 34,367 | 34,554 | 34,727 | 34,946 | 35,132 | 35,442 | 35,750 | 35,982 | 36,154 |
| 2018 Gold Book Baseline** | 32,904 | 32,857 | 32,629 | 32,451 | 32,339 | 32,284 | 32,276 | 32,299 | 32,343 | 32,403 | 32,469 |
| + 2018 Solar PV | 440 | 566 | 689 | 774 | 843 | 889 | 928 | 963 | 989 | 1,017 | 1,038 |
| 2018 RNA RA Base Case*** | 33,344 | 33,423 | 33,318 | 33,225 | 33,182 | 33,173 | 33,204 | 33,262 | 33,332 | 33,420 | 33,507 |

**Comparison of Base Case Peak Forecasts - 2016 & 2018 RNA (MW)**

| Annual MW | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2016 RNA RA Base Case*** | 33,618 | 33,726 | 33,825 | 33,948 | 34,019 | 34,120 | 34,256 | 34,393 | 34,515 | 34,646 | 34,803 | | |
| 2018 RNA RA Base Case*** | | | 33,344 | 33,423 | 33,318 | 33,225 | 33,182 | 33,173 | 33,204 | 33,262 | 33,332 | 33,420 | 33,507 |
| Change from 2016 RNA | | | -481 | -525 | -701 | -895 | -1,074 | -1,220 | -1,311 | -1,384 | -1,471 | NA | NA |

* The topline forecast will be used for the resource adequacy scenario
** The transmission security power flow RNA base cases use this Gold Book baseline forecast
***For the resource adequacy (RA) study RNA Base Case, the 2018 Gold Book baseline load forecast was modified by removing the behind-the-meter solar PV impacts in order to model the solar PV explicitly as a generation resource to account for the intermittent nature of its availability

The Gold Book 2018 contains additional details on the load forecast:
http://www.nyiso.com/public/webdocs/markets_operations/services/planning/Documents_and_Resources/Planning_Data_and_Reference_Docs/Data_and_Reference_Docs/2018-Load-Capacity-Data-Report-Gold-Book.pdf

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# Proposed Generation Projects Included in the 2018 RNA preliminary Base Case

| Queue # | Project Name | Zone | CRIS Request | SP MW | Interconnection Status |
|---|---|---|---|---|---|
| **Proposed Generation Additions** | | | | | |
| 251 | CPV Valley Energy Center | G | 680.0 | 677.6 | CY11 |
| 349 | Taylor Biomass | G | 19.0 | 19.0 | CY11 |
| 395 | Copenhagen Wind | E | 79.9 | 79.9 | CY15 |
| 403 | Bethlehem Energy Center Uprate | F | 78.1 | 72.0 | CY15 |
| 387 | Cassadaga Wind | A | 126.0 | 126.0 | CY17 |
| 421 | Arkwright Summit | A | 78.4 | 78.0 | CY17 |
| 444 | Cricket Valley Energy Center II | G | 1020.0 | 1020.0 | CY17 |
| 461 | East River 1 Uprate | J | n/a | 2.0 | CY17 |
| 462 | East River 2 Uprate | J | n/a | 2.0 | CY17 |
| 467 | Shoreham Solar | K | 24.9 | 25.0 | CY17 |
| 510 | Bayonne Energy Center II | J | 120.4 | 120.4 | CY17 |
| 511 | Ogdensburg | E | 79.0 | 79.0 | CY17 |
| N/A | Nine Mile Point 2 | C | 63.4 | 63.4 | CY17 (CRIS only) |
| N/A | East River 6 | J | 8.0 | N/A | CY17 (CRIS only) |
| | **MW additions from 2016 RNA** | | **1,598** | **1,588** | |
| | **Total MW gen. additions** | | **2,377** | **2,364** | |

Also included in the 2016 RNA

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# Proposed Transmission Projects Included in the 2018 RNA Base Case

- All firm LTPs from the Gold Book 2018 were included in the 2018 RNA preliminary Base Case
- The Q545A Western NY - Empire State Line is also included

# Assumed Generation Deactivations

| Owner/Operator | Plant Name | Zone | CRIS | 2018 RNA Base Case Status* | 2016 RNA Base Case Status |
|---|---|---|---|---|---|
| Helix Ravenswood LLC | Ravenswood 04 | J | 15.2 | out | out |
| | Ravenswood 05 | J | 15.7 | out | out |
| | Ravenswood 06 | J | 16.7 | out | out |
| International Paper Company | Ticonderoga | F | 7.6 | out | in |
| Niagara Generation LLC | Niagara Bio-Gen | A | 50.5 | out | out |
| NRG Power Marketing LLC | Dunkirk 2 | A | 97.2 | out | out |
| | Huntley 67 | A | 196.5 | out | out |
| | Huntley 68 | A | 198.0 | out | out |
| | Astoria GT 05 | J | 16.0 | out | out |
| | Astoria GT 07 | J | 15.5 | out | out |
| | Astoria GT 08 | J | 15.3 | out | out |
| | Astoria GT 10 | J | 24.9 | out | out |
| | Astoria GT 11 | J | 23.6 | out | out |
| | Astoria GT 12 | J | 22.7 | out | out |
| | Astoria GT 13 | J | 24.0 | out | out |
| ReEnergy Black River LLC | Fort Drum | E | 55.6 | out | in |
| | Chateaugay Power | D | 18.6 | out | out |
| Binghamton BOP, LLC | Binghamton | C | 43.8 | out | in |
| Helix Ravenswood, LLC | Ravenswood 09 | J | 21.7 | out | in |
| Entergy Nuclear Power Marketing, LLC | Indian Point 2 | H | 1027.0 | out | in |
| | Indian Point 3 | H | 1040.0 | out | in |
| Selkirk Cogen Partners, LP | Selkirk 1 | F | 82.1 | out | in |
| | Selkirk 2 | F | 291.3 | out | in |
| J- Power USA Generation, LP Edgewood Energy, LLC | PPL Pilgrim ST GT1 | K | 45.6 | out | in |
| | PPL Pilgrim ST GT2 | K | 46.2 | | |
| Helix Ravenswood, LLC | Ravenswood 2-1 | J | 40.4 | | |
| | Ravenswood 2-2 | J | 37.6 | | |
| | Ravenswood 2-3 | J | 39.2 | | |
| | Ravenswood 2-4 | J | 39.8 | out | in |
| | Ravenswood 3-1 | J | 40.5 | | |
| | Ravenswood 3-2 | J | 38.1 | | |
| | Ravenswood 3-4 | J | 35.8 | | |
| Lyonsdale Biomass, LLC | Lyonsdale (Burrows) | E | 20.2 | out | in |
| R.E. Ginna Nuclear Power Plant, LLC | Ginna | B | 582.0 | in | out |
| Cayuga Operating Company, LLC | Cayuga 1 | C | 154.1 | in | out |
| | Cayuga 2 | C | 154.7 | in | out |
| Entergy Nuclear Power Marketing LLC | Fitzpatrick 1 | C | 858.9 | in | out |
| change in status | **Changes in deactivations since 2016 RPP** | | **1,203** | | |
| | **Total 2018 RNA MW assumed as deactivated** | | **3,703** | | |

* Consistent with the deactivation dates

# 2018 RNA Load and Capacity Summary

| Year | | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Peak Load (MW) -Gold Book 2018 NYCA Baseline | | | | | | | | | |
| | NYCA* | 32,857 | 32,629 | 32,451 | 32,339 | 32,284 | 32,276 | 32,299 | 32,343 | 32,403 | 32,469 |
| | Zone J* | 11,474 | 11,410 | 11,363 | 11,336 | 11,328 | 11,335 | 11,350 | 11,372 | 11,399 | 11,429 |
| | Zone K* | 5,323 | 5,278 | 5,246 | 5,231 | 5,229 | 5,237 | 5,251 | 5,268 | 5,287 | 5,306 |
| | Zone G-J* | 15,815 | 15,715 | 15,639 | 15,594 | 15,574 | 15,576 | 15,591 | 15,616 | 15,648 | 15,685 |
| | | | | | | | | | | | |
| | | Resources (MW) | | | | | | | | | |
| NYCA | Capacity** | 39,230 | 39,358 | 38,339 | 38,339 | 38,339 | 38,339 | 38,339 | 38,339 | 38,339 | 38,339 |
| | Net Purchases & Sales | 1,279 | 1,785 | 1,800 | 1,942 | 1,942 | 1,942 | 1,942 | 1,942 | 1,942 | 1,942 |
| | SCR | 1,219 | 1,219 | 1,219 | 1,219 | 1,219 | 1,219 | 1,219 | 1,219 | 1,219 | 1,219 |
| | Total Resources | 41,728 | 42,362 | 41,358 | 41,500 | 41,500 | 41,500 | 41,500 | 41,500 | 41,500 | 41,500 |
| | Cap+NetPurch+SCR/Load Ratio | 127.0% | 129.8% | 127.4% | 128.3% | 128.5% | 128.6% | 128.5% | 128.3% | 128.1% | 127.8% |
| | | | | | | | | | | | |
| Zone J | Capacity** | 9,562 | 9,562 | 9,562 | 9,562 | 9,562 | 9,562 | 9,562 | 9,562 | 9,562 | 9,562 |
| | UDR Awarded | 975 | 975 | 975 | 975 | 975 | 975 | 975 | 975 | 975 | 975 |
| | SCR | 392 | 392 | 392 | 392 | 392 | 392 | 392 | 392 | 392 | 392 |
| | Total Resources | 10,929 | 10,929 | 10,929 | 10,929 | 10,929 | 10,929 | 10,929 | 10,929 | 10,929 | 10,929 |
| | Cap+UDR+SCR/Load Ratio | 95.2% | 95.8% | 96.2% | 96.4% | 96.5% | 96.4% | 96.3% | 96.1% | 95.9% | 95.6% |
| | | | | | | | | | | | |
| Zone K | Capacity** | 5,220 | 5,220 | 5,220 | 5,220 | 5,220 | 5,220 | 5,220 | 5,220 | 5,220 | 5,220 |
| | UDR Awarded | 990 | 990 | 990 | 990 | 990 | 990 | 990 | 990 | 990 | 990 |
| | SCR | 48.13 | 48.13 | 48.13 | 48.13 | 48.13 | 48.13 | 48.13 | 48.13 | 48.13 | 48.13 |
| | Total Resources | 6,258 | 6,258 | 6,258 | 6,258 | 6,258 | 6,258 | 6,258 | 6,258 | 6,258 | 6,258 |
| | Cap+UDR+SCR/Load Ratio | 117.6% | 118.6% | 119.3% | 119.6% | 119.7% | 119.5% | 119.2% | 118.8% | 118.4% | 117.9% |
| | | | | | | | | | | | |
| Zone G-J | Capacity** | 15,371 | 15,373 | 14,354 | 14,354 | 14,354 | 14,354 | 14,354 | 14,354 | 14,354 | 14,354 |
| | UDR Awarded | 975 | 975 | 975 | 975 | 975 | 975 | 975 | 975 | 975 | 975 |
| | SCR | 475 | 475 | 475 | 475 | 475 | 475 | 475 | 475 | 475 | 475 |
| | Total Resources | 16,821 | 16,823 | 15,804 | 15,804 | 15,804 | 15,804 | 15,804 | 15,804 | 15,804 | 15,804 |
| | Cap+UDR+SCR/Load Ratio | 106.4% | 107.0% | 101.1% | 101.3% | 101.5% | 101.5% | 101.4% | 101.2% | 101.0% | 100.8% |

Notes:
*NYCA load values represent baseline coincident summer peak demand (which includes reductions due to energy efficiency programs, building codes, BtM solar, and non-solar distributed energy generation). Zones J and K load values represent non-coincident summer peak demand. Aggregate Zones G-J values represent G-J coincident peak, which is non-coincident with NYCA.

**NYCA Capacity values include resources electrically internal to NYCA, additions, re-ratings, and retirements (including proposed retirements and mothballs). Capacity values reflect the lesser of CRIS and DMNC values. NYCA resources include the net purchases and sales as per the Gold Book. Zonal totals reflect the awarded UDRs for those capacity zones

# 2018 RNA: Load and Resources Comparison for Study Year 5 (2023)

| Year 2023 | 2018 RNA | 2016 RNA | Delta |
|---|---|---|---|
| Baseline* Load | 32,284 | 33,748 | -1,464 |
| Total Resources** | 41,500 | 41,147 | 353 |
| Net Margin: Change in (net capacity - net load) | | | 1,817 |

Notes:
*includes the reductions due to projected energy efficiency programs, building codes and standards, distribution energy resources and behind-the-meter solar photovoltaic power; it also reflects expected impacts (increases) from projected electric vehicle usage.
**includes the total Special Case Resources (SCR), and net capacity purchases and sales from the Gold Book 2018

# Resource Adequacy Preliminary Results

# 2018 Preliminary RNA LOLE Results

- RNA Base Case LOLE preliminary results:

| Year | NYCA LOLE *days/year* |
|---|---|
| 2019 | 0.01 |
| 2020 | 0.00 |
| 2021 | 0.01 |
| 2022 | 0.01 |
| 2023 | 0.01 |
| 2024 | 0.01 |
| 2025 | 0.01 |
| 2026 | 0.01 |
| 2027 | 0.01 |
| 2028 | 0.01 |

- RA conclusion: LOLE < 0.1 criterion; therefore, no resource adequacy Reliability Needs are identified as result of this assessment

# Transmission Security Preliminary Results

# Transmission Security Preliminary Conclusions

- Evaluated Year 1 (2019), Year 5 (2023), Year 10 (2028) summer peak baseline power flow cases
- No Reliability Needs identified for Year 1 and Year 5
- Year 10 showed a 3 MW deficiency in Eastern Long Island
  - A 1% overload on Brookhaven to Riverhead 138 kV (Line 864)
  - Contingency is the loss of Wildwood to Riverhead 138 kV (Line 890) and returning the system to Normal Criteria (N-1-0 criteria violation)

# Next Steps

# Next Steps

- June 22 ESPWG/TPAS: Present preliminary ("1st pass") RNA results
- June 28 ESPWG and/or July 2 TPAS: Stakeholders' presentations of projects updates, as related to the preliminary Reliability Needs identified in this presentation
- *July 6, 2018: lock down assumptions for final ("2nd pass") RNA*
- July 19, Aug 8, Aug 22 ESPWG: review draft RNA reports
- Aug 22 ESPWG/TPAS: recommendation for approval of the 2018 RNA
- September 12 OC: Market Monitoring Unit review and OC vote
- September 28 MC: vote
- October: NYISO Board approval

# Questions?

We are here to help. Let us know if we can add anything.

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- Planning the power system for the future
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