New York ISO
Independent System Operator

2022 RNA Policy Case
S2 for 2030 Scenario Results

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Agenda

- 2022-2023 Reliability Planning Process (RPP) background and scenarios
- 2022 RNA Policy Case scenario results

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2022 RNA Policy Case S2 for 2030 Background

2022 RNA: Scenarios Background

- **One of the objectives of the Reliability Planning Process is to identify, through the development of appropriate scenarios, factors and issues that might adversely impact the reliability of the Bulk Power Transmission Facilities (BPTF)**
  - The scenarios results are for information only
  - Generally, the scenarios will be built off the preliminary ("1st pass") RNA Base Case, unless specifically identified
- **Proposed scenarios were presented at the April 26 ESPWG/TPAS [link]**

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Policy Case S2 for 2030 Resource Adequacy Scenario

The 2021-2040 System & Resource Outlook ("the Outlook") Policy Case scenarios background:

- **After discussions with stakeholders, including state agencies (NYSDPS and NYSERDA), two distinct scenarios were selected for evaluation as "Policy Cases" under the Outlook:**
  - Scenario 1 ("S1") utilizes industry data and NYISO load forecasts, representing a future with high demand and assuming less restrictions in renewable generation buildout options.
  - Scenario 2 ("S2") utilizes various assumptions consistent with the Climate Action Council Integration Analysis and represents a future with a moderate peak but a higher overall energy demand

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Policy Case S2 for 2030 Resource Adequacy Scenario

- **The 2022 RNA Policy Case S2 scenario builds upon the assumptions and findings from the Outlook Policy Case S2 scenario for year 2030 and provide further insight focusing on system reliability aspects such as resource adequacy**
  - These studies do not define the formula to calculate the percentage of renewable energy relative to end-use energy, (*i.e.,* how to account for a certain renewable energy target by 2030).
  - The Outlook S2 utilizes various assumptions consistent with the Climate Action Council Integration Analysis and represents a future with a moderate peak but a higher overall energy demand (25,892 MW winter peak, 30,070 summer peak, and 164,256 GWh energy demand in 2030)
- **As policymakers advance the implementation plan of the CLCPA, the NYISO's assessments are intended to complement their efforts, and are not intended to define the specific steps that must be taken to achieve the policy goals**
  - Additional refinements in assumptions, models, and methods in the following years will continue to be necessary as more information becomes available from policy implementation and modeling perspectives.

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Policy Case S2 for 2030 Resource Adequacy Scenario

2030 Outlook S2 Energy Details	A	B	C	D	E	F	G	H	I	J	K	NYCA
Net Load Energy (GWh)	14,547	9,438	14,955	4,802	6,305	10,183	7,732	2,632	5,769	53,937	19,518	149,817
+ BtM-PV Energy (GWh)	1,277	899	1,866	332	2,067	2,433	1,870	192	225	1,217	2,060	14,439
Total Energy (GWh)	15,824	10,337	16,821	5,134	8,372	12,616	9,602	2,824	5,993	55,155	21,578	164,256

2030 Outlook S2 Peak Details	A	B	C	D	E	F	G	H	I	J	K	NYCA
Net Load Peak (MW)	2,319	1,499	2,348	769	907	1,795	1,537	535	1,178	9,867	3,989	26,743
+ BtM-PV at NYCA Peak (MW)	293	208	429	79	475	562	432	45	51	280	475	3,327
Total Load Peak (MW)	2,612	1,706	2,777	847	1,382	2,357	1,969	579	1,229	10,147	4,464	30,070

Note:

- The gross load (Load + BtM PV) was used in the MARS model as BtM-PV was explicitly modeled

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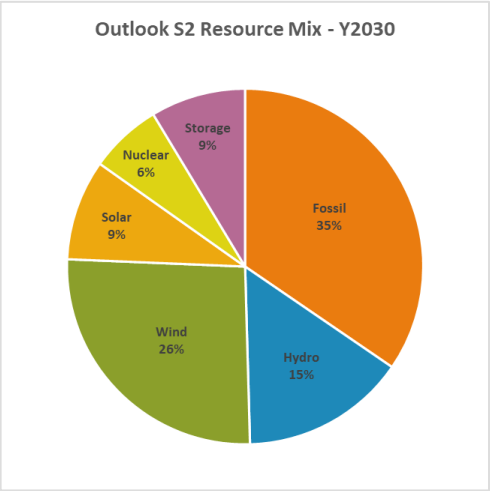
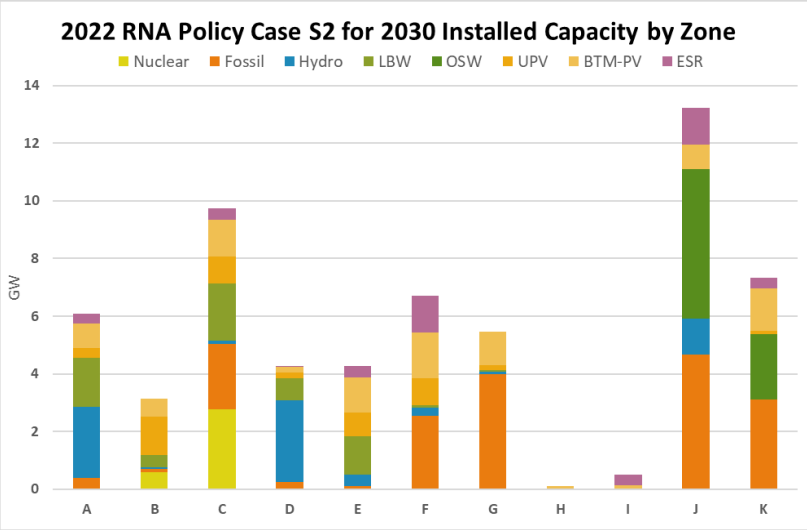
Policy Case S2 for 2030 Resource Adequacy Scenario





2022 RNA Policy Case S2 for 2030 Installed Capacity (MW)

Zone/Type	Nuclear	Fossil	Hydro	LBW	OSW	UPV	BTM-PV	ESR	Total
A	0	395	2,440	1,707	0	330	863	345	6,079
B	581	110	64	366	0	1,350	608	0	3,079
C	2,765	2,313	110	1,695	0	865	1,278	379	9,405
D	0	250	2,984	778	0	180	212	15	4,419
E	0	107	392	1,175	0	794	1,204	396	4,068
F	0	2,552	312	101	0	887	1,592	1,275	6,719
G	0	3,930	109	69	0	170	1,160	0	5,438
H	0	0	0	0	0	0	119	0	119
I	0	0	0	0	0	0	144	349	493
J	0	4,848	1,250	0	5,166	0	861	1,286	13,411
K	0	3,145	0	0	2,270	99	1,482	365	7,362
Total	3,346	17,650	7,660	5,890	7,436	4,676	9,523	4,410	60,591

Note:

- No Dispatchable Emissions-Free Resources (DEFRs) were modeled for the resource adequacy simulations

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2022 RNA Policy Case S2 for 2030 Results

Policy Case S2 Results and ZRAM

NYCA Metric	Value
LOLE (days/year)	0.008
LOLH (hours/year)	0.020
EUE (MWH/year)	3.264

- Similar LOLE to the corresponding Base Case RNA year result
- Vastly different ZRAM values due to the large change in resource mix and location

Study Year 2030	NYCA LOLE	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F	Zone G	Zone H	Zone I	Zone J	Zone K
Base Case	0.006	-850	-850	-2,325	-1,925	-2,525	-2,525	-2,525	-2,175	-2,175	-1,450	-750
Policy Case S2	0.008	-2,300	-2,300	-2,700	-1,150	-2,700	-2,725	-2,750	-2,700	-2,700	-1,900	-450

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Policy Case S2 Age-Based Removal Scenario

- Unlike MAPS, MARS does not utilize unit commitment and all generation is assumed to be available if the unit is not on an outage
- To compensate for this program limitation, this analysis evaluates the impact of the unavailability of select generation resources, using age as a proxy for the priority order of retiring units
  - Unit Age is calculated using the In-Service Date from Table III-2 in the 2022 Gold Book, as compared to May 1, 2030
  - This analysis makes successive retirements until the LOLE exceeds the criterion.
- This analysis does not consider the impact of transmission or transfer limit changes that may result from the unit retirements

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Policy Case S2 Age-Based Removal Results

	Total Thermal Capacity Left (MW)				Total Thermal Capacity Removed (MW)				
Cases (Age >=)	Zone J	Zone K	Other Zones	Total	Zone J	Zone K	Other Zones	Total	NYCA LOLE
Outlook S2 Base	4,848	3,145	9,657	17,650	0	0	0	0	0.01
62	4,848	2,737	9,635	17,220	0	408	22	430	0.04
61*	4,848	2,499	9,635	16,982	0	646	22	668	0.10
61	4,848	2,341	9,616	16,805	0	804	41	845	0.19

Observations

- NYCA meets the LOLE criterion when 430 MW are removed
- NYCA exceeds the LOLE criterion when 668 MW are removed (61*)
  - The increase in LOLE is driven by Zone K capacity removals

Notes:

- Case 61: All the units 61 years and older were retired in this case
- Case 61*: A special evaluation of Case 61 where the marginal unit was derated instead of fully retired to obtain an LOLE closer to 0.1 days/year

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Questions?

Roles of the NYISO

- **Reliable operation of the bulk electricity grid**
  - Managing the flow of power on 11,000 circuit-miles of transmission lines from hundreds of generating units
- **Administration of open and competitive wholesale electricity markets**
  - Bringing together buyers and sellers of energy and related products and services
- **Planning for New York's energy future**
  - Assessing needs over a 10-year horizon and evaluating projects proposed to meet those needs
- **Advancing the technological infrastructure of the electric system**
  - Developing and deploying information technology and tools to make the grid smarter

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Our Mission & 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

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