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Independent System Operator

Fuel Availability Constraints Modeling:
2025-2026 IRM Preliminary Base Case Sensitivity

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ICS Meeting # 293

September 4, 2024 **UPDATED**

See corrections on Slides 4 and 5

Agenda

- Background
- Sensitivity Analysis Results
- Comparison to Gas Constraints Modeling Whitepaper Impact Assessment
- Loss of Load Expectation (LOLE) Risk Distribution
- Hourly LOLE Distribution
- Next Steps

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Background

- **Due to the potential for constraints on fuel availability to arise during the winter months, accounting for the potential impacts of such constraints in the installed reserve margin (IRM) model is increasingly important as the system and resource mix continues to evolve**
- **A sensitivity analysis was performed for the Preliminary Base Case (PBC) of the 2025-2026 IRM study to assess the potential impacts of the fuel availability modeling construct developed as part of the Gas Constraints Modeling Whitepaper** (Gas Constraints Modeling Whitepaper - 2024-2025 IRM Study (nysrc.org))
  - The sensitivity analysis modeled varying levels of assumed fuel availability by winter load level using two values for assumed oil availability (11,000 MW and 8,000 MW), as detailed below

Tier	NYCA Load Conditions (MW)	Available Gas (MW)	11,000 MW Available Oil		8,000 MW Available Oil	
			Total Available Fuel (MW) (Gas + Oil)	*Illustrative Modeled Derate (Rounded MW)*	Total Available Fuel (MW) (Gas + Oil)	*Illustrative Modeled Derate (Rounded MW)*
1	>26,000	375	11,375	*8,650*	8,375	*11,650*
2	25,000 - 26,000	750	11,750	*8,250*	8,750	*11,250*
3*	24,000 - 25,000	2,750	13,750	*6,250*	10,750	*9,250*
4*	23,000 - 24,000	4,500	15,500	*4,500*	12,500	*7,500*
5	22,000 - 23,000	5,500	16,500	*3,500*	13,500	*6,500*
6	<22,000	No Constraint	No Constraint	*0*	No Constraint	*0*

* Tier 3 and 4 load levels comprise the actual peak loads observed in recent winter operating conditions. The illustrative MW derates are generally consistent with the typical reduction in generator capability experienced during those operating conditions

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2025-2026 IRM PBC Sensitivity Analysis Results

- Using an assumed oil availability quantity of 11,000 MW, the fuel availability constraints modeling increased the IRM by approximately 0.9%
- When the assumed level of available oil is reduced to 8,000 MW, the fuel availability constraints modeling significantly impacts the IRM, causing it to rise by around 7.2%
- The fuel availability constraints modeling also placed upward pressure on the locational capacity requirements (LCRs), as determined using the Tan45 methodology, with significantly greater impacts observed with an 8,000 MW assumed level of available oil
  - Due to the higher concentration of fossil fuel fired generators in Load Zone J affected by the fuel availability constraints modeling construct, the impact on the Load Zone J LCR is significantly greater than the impact on the Load Zone K LCR

Case	IRM (Delta)	J LCR (Delta)	K LCR (Delta)	G – J (Delta)
2025-2026 IRM PBC (Base Case)	23.6%	75.98%	102.52%	87.54%
11,000 MW available oil (Tan45)	24.5% (+0.9%)	76.60% (+0.62%)	102.75% (+0.17%)	88.00% (+0.46%)
8,000 MW available oil (Tan45)	30.8% (+7.2%)	78.51% (+2.53%)	103.49% (+0.97%)	89.40% (+1.86%)

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Comparison to Gas Constraints Modeling Whitepaper Results

Case	Sensitivity Analysis (Delta) Base Case: 2025-2026 RM PBC				Gas Constraints Modeling White Paper (Delta) Base Case: 2024-2025 IRM FBC			
	IRM	J LCR	K LCR	G – J	IRM	J LCR	K LCR	G – J
Available Oil: 11,000 MW (Tan45)	+0.90%	+0.62%	+0.17%	+0.46%	+0.3%	-0.05%	-0.05%	-0.04%
Available Oil: 8,000 MW (Tan45)	+7.20%	+2.53%	+0.97%	+1.86%	+5.0%	+2.45%	+0.17%	+1.79%

- **Compared to the impact assessment conducted for the Gas Constraints Modeling Whitepaper using the 2024-2025 IRM Final Base Case (FBC), the fuel availability constraints modeling had a larger impact on the 2025-2026 IRM PBC results using the same assumed levels of available oil**
  - The larger increase can be attributed to the system becoming more constrained in the 2025-2026 IRM PBC, due to factors such as the refinements to the assumptions for Emergency Operating Procedures (EOPs) and Emergency Assistance (EA), as well as the updated modeling for Special Case Resources (SCRs)
    - As discussed at the July 30, 2024 ICS meeting, the EOP and EA assumption updates materially impact the IRM and Tan45-determined LCRs, especially for Load Zone J

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LOLE Risk Distribution

11,000 MW Assumed Oil Available (Tan45) - % of Daily LOLE								
Load Level Bin	1	2	3	4	5	6	7	Total
Summer	26%	44%	18%	3%	1%	0%	0%	92%
Winter	8%	0%	0%	0%	0%	0%	0%	8%
Total	34%	44%	18%	3%	1%	0%	0%	100%

8,000 MW Assumed Oil Available (Tan45) - % of Daily LOLE								
Load Level Bin	1	2	3	4	5	6	7	Total
Summer	13%	18%	14%	3%	0%	0%	0%	49%
Winter	36%	7%	7%	1%	0%	0%	0%	51%
Total	50%	25%	21%	4%	0%	0%	0%	100%

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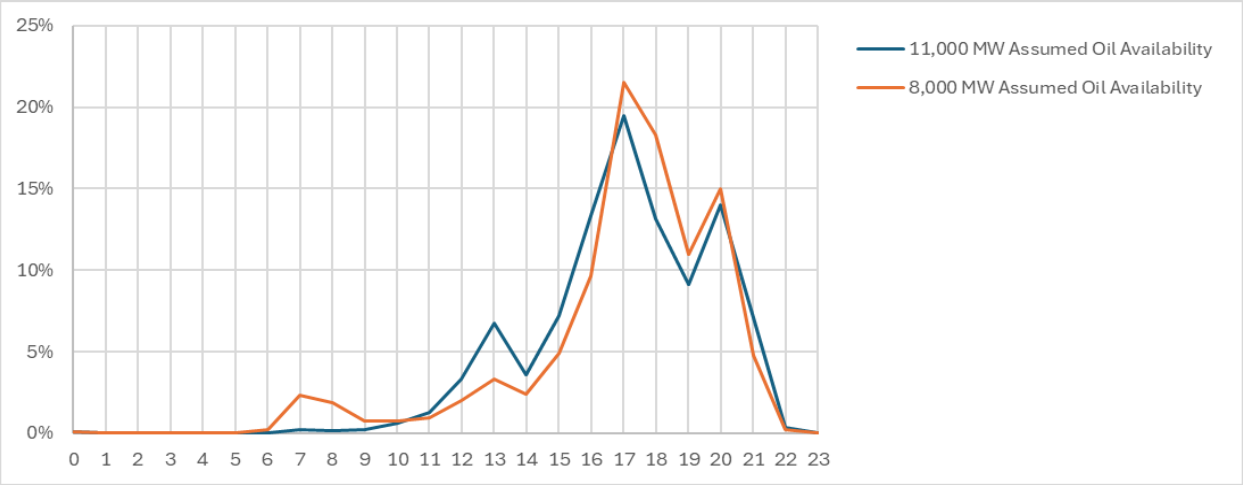
Hourly LOLE Distribution



- **In the case with 8,000 MW of assumed oil available, the hourly LOLE profile exhibits a stretched pattern, with an additional peak around hour beginning 7, compared to the case with 11,000 MW of assumed oil available**
  - Although the seasonal hourly LOLE distribution of both cases shows a similar overall profile (see Appendix 1), the shift in LOLE distribution towards the winter season in the case with 8,000 MW of assumed oil available alters the shape of the hourly LOLE curve, particularly in the morning hours

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Next Steps

- Continue evaluating winter modeling improvements and implementation of the fuel availability constraints model
- Consider an additional impact assessment of the fuel availability constraints modeling on the 2025-2026 IRM FBC

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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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Questions?

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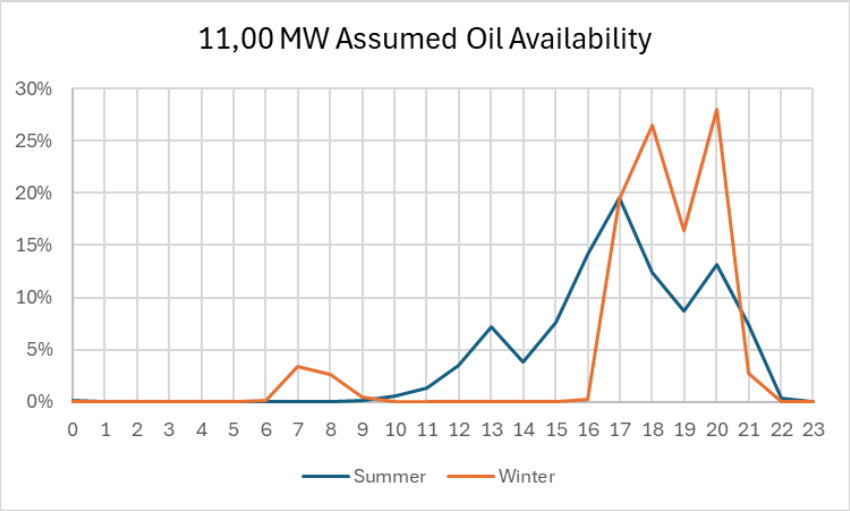
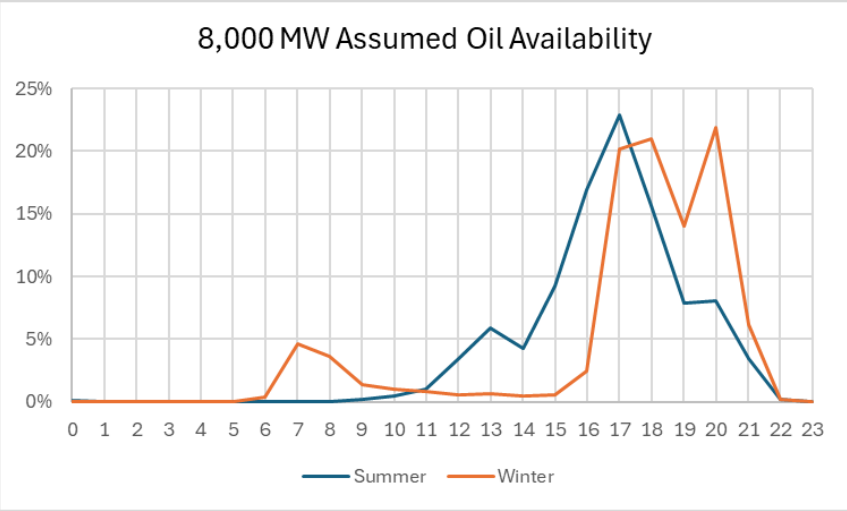
Appendix 1:

Seasonal Hourly LOLE Distribution





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