New York ISO
Independent System Operator

Enhancing Fuel & Energy Security

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Agenda

- Background
- 2020 Project Scope
- Fuel Security Monitoring Elements
- Enhanced Monitoring Tools
- Next Steps

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Background

- **In 2019, the NYISO engaged Analysis Group to perform an assessment of fuel and energy security (FES study) in New York**
  - The final study report as well as the NYISO Management Response are posted with the material for the November 21, 2019 ICAPWG meeting
- **On April 14, 2020, the NYISO discussed with stakeholders a plan to enhance fuel security monitoring**
  - Today's presentation will outline the specific measures the NYISO has implemented for enhanced monitoring

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2020 Project Scope

- Enhance monitoring by adding additional fuel security elements to the Winter Capacity Assessment (Fall) and Cold Weather Operations (Spring) presentations
- Develop the ability to apply various assumptions similar to the FES study to be used as an input for internal fuel and energy security assessments (e.g., internal short-term [~ 14 day look ahead] assessment)
- Continue to further define and incorporate ongoing consideration of fuel security
  - Further assessment of potential fuel security-related "thresholds" or "triggers" to assist in identifying the potential for future concerns
  - Determine if/when it may be prudent to re-run a comprehensive FES study

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Fuel Security Study Refresh Triggers

- Fuel Security monitoring will be updated at least twice each year and compared to the assumptions in the 2019 FES study
- Identification of large deviations between (1) actual conditions and the conditions assessed in the 2019 FES study and/or (2) the assumptions used by the 2019 FES study that could adversely impact reliability would trigger a need to collaborate with stakeholders on refreshing the study

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Fuel Security Monitoring

Status Key:

Well aligned with FES study

Trending towards bounds FES study

Deviating from FES study with potential impact to reliability

Item	Actual 2018/19	Actual 2019/20	Actual 2020/21	Forecast/Target 2023/24	Study Assumptions	Status
Deployment of new renewable and clean energy resources						
1) Onshore Wind	1,900 MW	1,985 MW		2,806 MW	2,531 - 5,274MW	
2) Solar (Utility scale)	32 MW	32 MW		32 MW	2,728 - 7,086MW (Combined BTM & Utility scale)	
2a) Solar (BTM)	1,479 MW	1,896 MW		4,192 MW	2,728 - 7,086MW (Combined BTM & Utility scale)	
3)Energy Storage	30 MW	50 MW		899 MW	350 MW (4 hr)	
4) Offshore Wind	0 MW	0 MW		0 MW	0 MW 1,696 MW (2024)	
NYSDEC "Peaker Rule" impact	0 MW	0 MW		754 MW	1,350 MW	
Winter Peak Load and 90/10 Forecast	24,728 MW	23,253 MW		26,004 MW	26,458 MW	
Non-Solar DG, BTM	213 MW	224 MW		169 MW	Included in load forecast	
EE (energy efficiency)	-	-		1270 MW	Included in load forecast	
EV (Electric Vechicle penetration)	-	-		246 MW	Included in load forecast	
Electrification (Primarily heating)	-	-		701 MW	Included in load forecast	
Nuclear Nameplate Capacity	5,430 MW	5,424 MW		3,356 MW	1,435 - 3,356 MW	
SCR/EDRP Winter Capability (NYCA)	884 MW	853 MW		839 MW	893 MW	

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Fuel Security Monitoring

Status Key:
Well aligned with FES study
Trending towards bounds FES study
Deviating from FES study with potential impact to reliability

Item	Actual 2018/19	Actual 2019/20	Actual 2020/21	Forecast/Target 2023/24	Study Assumptions	Status
System Metrics						
Hydro and Thermal Forced Outages	3,287 MW	2,299 MW		-	2,576 - 5,152MW	
Gas only generator outages due to lack of fuel	632 MW	160 MW		-	1,880MW	
Change in initial oil nameplate capacity	Included in study	-81 MW compared to 2018/19		-	-1,000MW	
Winter season starting oil inventory (MWh)	2,008,788 MWh	2,038,589 MWh			Approx. 1,000,000 - 2,000,000 MWh	
Interchange over Winter Peak	2,890 MW	3,806 MW			-1,600MW to 900MW	
Real Time Fuel Mix	NG 3,935 MW - 3,584 MW DF 5,651 MW - 5,221 MW	NG 4,454 MW - 4,211 MW DF 4,426 MW - 4,104 MW		-	NG 3,500MW - 2,000 (A-F), NG 2,500 - 1,000 (G-K), 0MW in J&K during 3-day cold snap	
Firm Gas Generators	1,915 MW	1,911 MW		-	1,911 MW	
Pipeline Capacity	Import: 13,963 MMcf/d Export: 6,827 MMcf/d	Import:13,978 MMcf/d Export: 6,827 MMcf/d		-	Import: 13,923 MMcf/d Export: 7,136 MMcf/d	
Status of transmission upgrades (AC Transmission, WNY PPTN)	AC transmission projects selected	2020 RNA COD 12/2023		-	In-Service	
SCR/EDRP Activations	0	0		-	Max 5 activations per zone/area 4 hours per activation	

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Enhanced Monitoring Tools

- **Generator fuel and emissions reporting (GFER) surveys provide information to inform internal fuel and energy security assessments.**
  - Extensive NYISO efforts to improve the accuracy of these survey results, Generator Owners timely and precise reporting is valuable and appreciated.
- **Internal monitoring tools incorporate data received in the GFER surveys to help predict the possibility of unserved load due to a variety of assumptions similar to those used in the 2019 FES study such as:**
  - Stored fuel inventories and expected replenishments
  - Long duration and/or severe cold snap load forecast modeling
  - Simulated outage rates based on fuel type or specific generating unit availability
  - Simulated fuel availability and delivery disruptions

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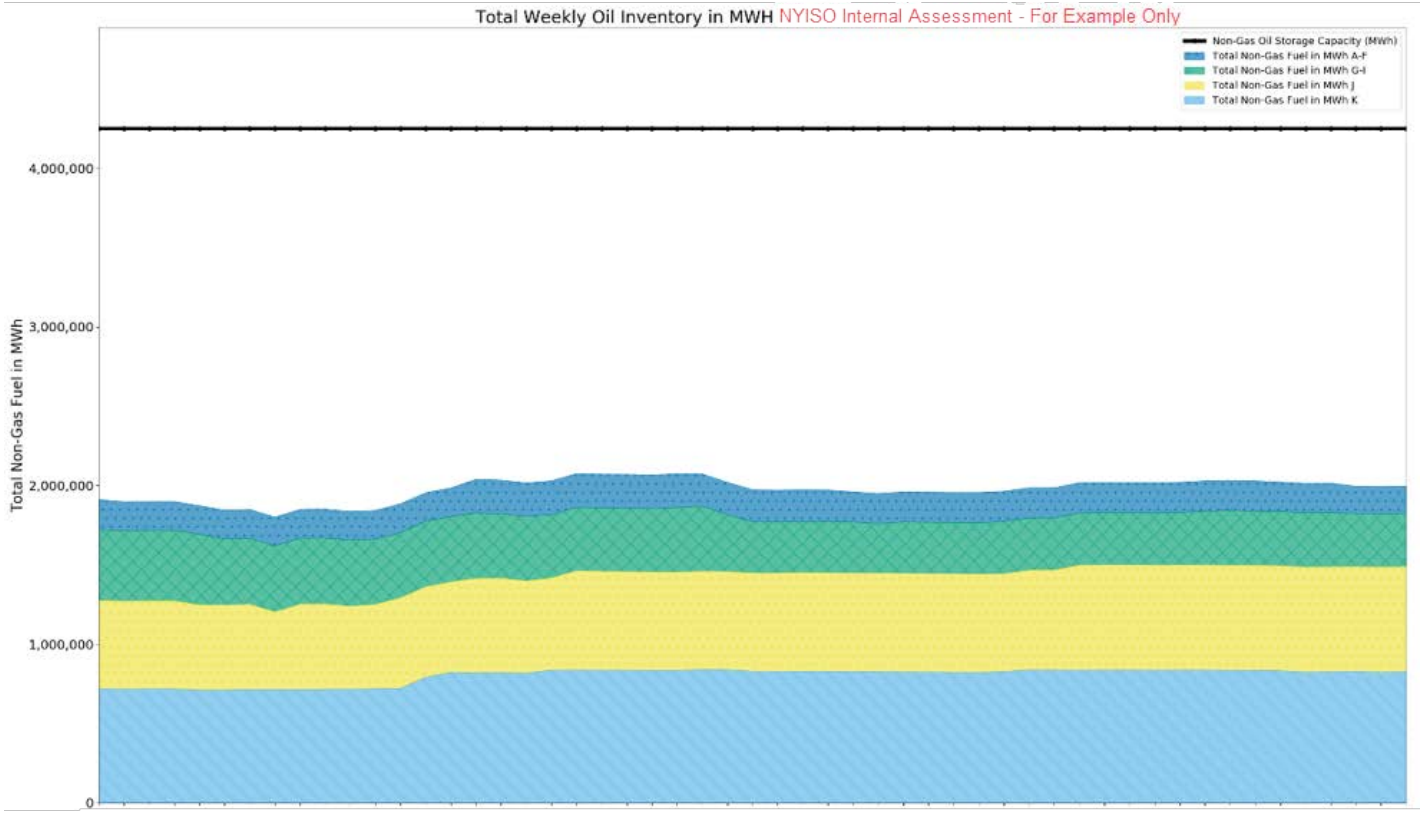
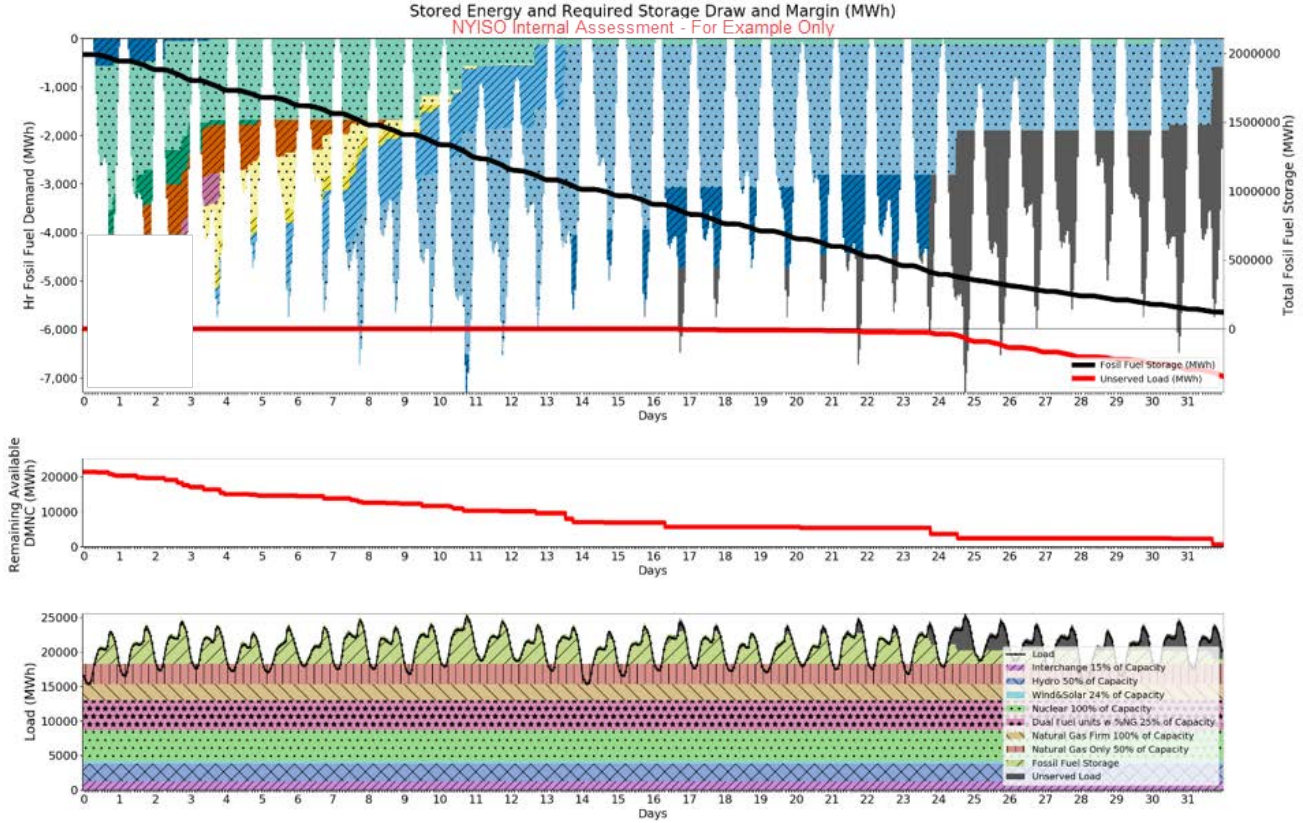
Enhanced Monitoring Tools - Example



Enhanced Monitoring Tools - Example



Next Steps

- The NYISO will continue to monitor fuel and energy security metrics using the enhanced tools developed this year and will discuss findings with stakeholders as part of the Winter Capacity Assessment (Fall) and Cold Weather Operations (Spring) presentations going forward

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Feedback/Questions?

- Email additional feedback to:
  - Debbie Eckels, deckels@nyiso.com

Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policymakers, stakeholders and investors in the power system

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