New York ISO
Independent System Operator

Tan45 Methodology Review Whitepaper Update

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NYISO

EC Meeting #301

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Purpose and Background

- This presentation reflects a summary of the information discussed at the 5/1/2024 ICS meeting and is provided to EC for information
- Under the Tan45 Methodology Review Whitepaper, scenarios with future system changes are to be developed and the Tan45 process will be conducted to evaluate its operation under such future conditions (see appendix for details)
- ICS prioritized 4 scenarios with addition of supply and transmission
  - Addition of 9,000 MW each of front-of-the-meter (FTM) solar, land-based wind (LBW) and off-shore wind (OSW); each resource type addition analyzed independently
  - Addition of Champlain Hudson Power Express (CHPE)
- Today's presentation will go through the results and insights of the 4 scenarios and solicit inputs from EC

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Key Takeaways

- **With increased penetration of land-based wind and solar, the IRM will increase substantially due to high derating factors of renewable resources**
  - This is consistent with the findings of previous High Renewable Whitepapers
- **When adding renewable resources upstate, the underlying locational differences (i.e. downstate load center and upstate surplus generation) remain unchanged and hence the Tan45 methodology continues to function consistent with current operations**
  - However, the Tan45 curves for the LBW scenario are significantly flatter due to the higher derating factor for LBW than FTM solar, and the modeled system risk remains concentrated in summer during the day
- **When adding significant incremental supply downstate, regardless of resource type, the underlying locational differences are changed and the tradeoff between IRM and LCRs in the Tan45 methodology is adversely impacted**
  - The Tan45 methodology was unable to produce an IRM and LCRs with the addition of 9,000 MW of OSW
- **CHPE project adds both transmission towards downstate and incremental supply in Load Zone J, and Tan45 methodology shows little impact on the IRM with an increase in Load Zone J locational capacity requirement (LCR)**
  - Additional review of the CHPE model and the scenario setup is required
  - ICS recommended prioritizing the scenario with Long Island Public Policy Transmission Needs (LI PPTN) Project to better assess the Tan45 methodology with the transmission addition

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Tan45 Results Summary

Case	IRM	J LCR	K LCR	G-J LCR
BC (2024-2025 FBC)	23.1%	72.73%	103.21%	84.58%
TC-G1 (FTM Solar)	48.0%	72.70%	103.97%	92.46%
TC-G2 (LBW)	44.2%	75.60%	105.37%	86.67%
TC-G3 (OSW)	No Results	No Results	No Results	No Results
TC-T1 (CHPE)	23.2%	76.09%	102.18%	87.04%

- **FTM Solar and LBW resources were primarily added upstate and therefore did not impact historic locational differences in the NYCA system**
  - The high IRM result is consistent with the findings from prior High Renewable Whitepapers, and is due to higher derating factors for these resources compared to thermal resources
- **The addition of 9,000 MW of OSW resources shifts the historic locational differences on the system resulting in the Tan45 process failing to establish an IRM that satisfies all of the requirements of Policy No. 5-17**
- **CHPE shifts the Load Zone J curve up due to added capacity from the Unforced Capacity Deliverability Rights (UDR) resource associated with the project**
  - Further analysis will be conducted to better understand the results of this test case

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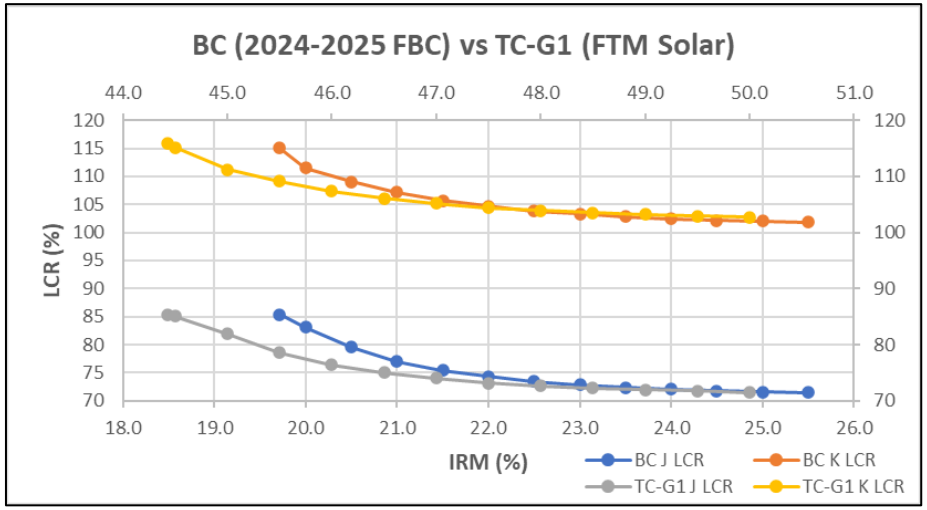

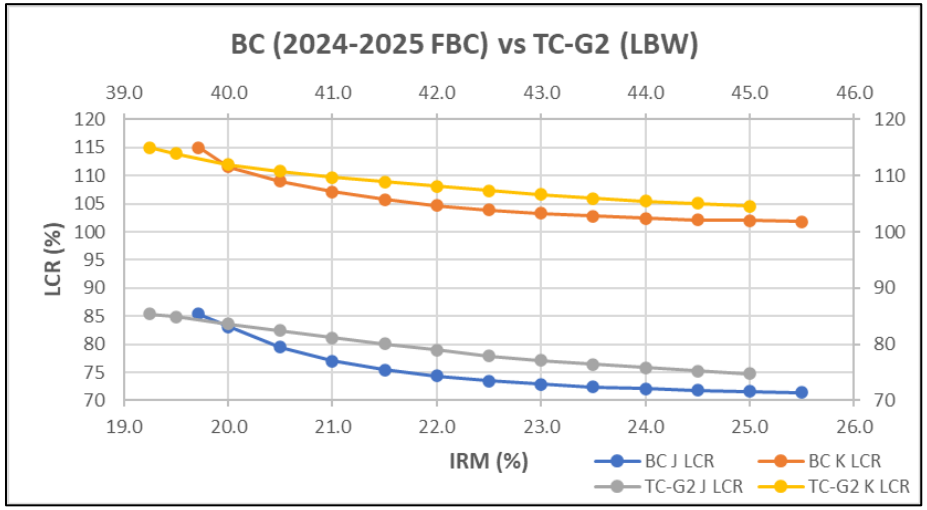

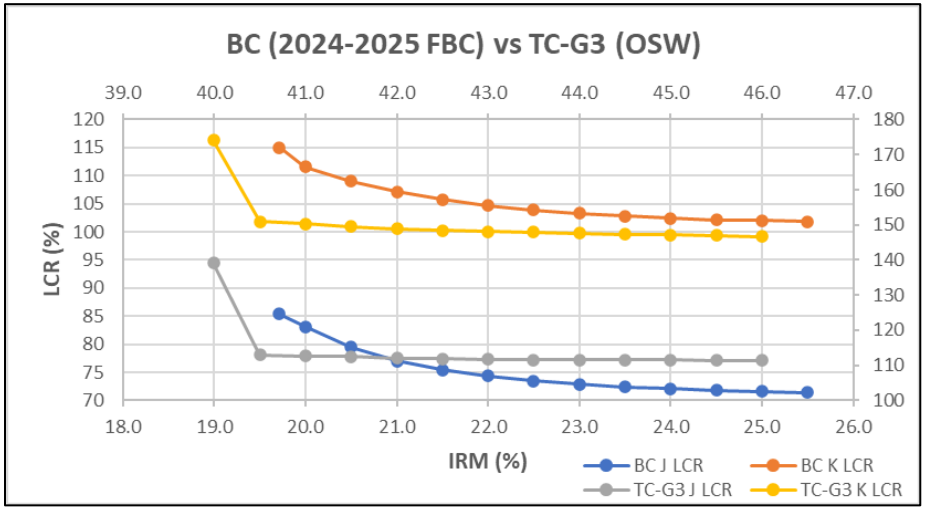

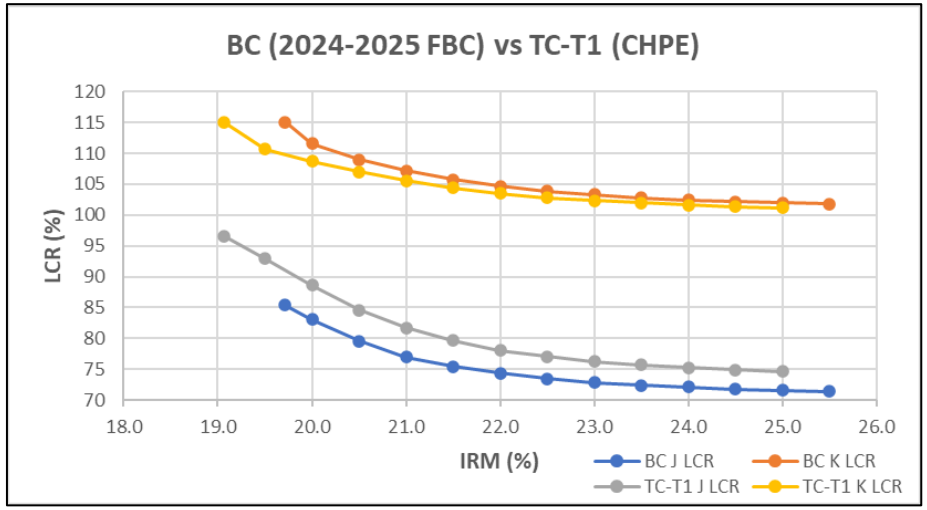

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Our Mission & Vision

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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Appendix

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Tan45 Review – Summary of Test Cases

Test Case Name	System Scenario	Description
BC	Base Case	2024 – 2025 IRM Final Base Case (23.1% IRM)
TC-T1	Future Transmission Projects	Base Case + CHPE
TC-T2		Base Case + LI PPTN
TC-T3		Base Case + CPNY
TC-T4		Base Case + CHPE, LI PPTN, and CPNY
TC-G1	Increased Renewable Generation Resources	Base Case + 9,000 MW FTM Solar
TC-G2		Base Case + 9,000 MW LBW
TC-G3		Base Case + 9,000 MW OSW
TC-G4		Base Case + 27,000 MW FTM Solar, LBW, and OSW (9,000 MW of each type)
TC-TG5	Future Transmission Projects + Increased Renewable Generation Resources	Base Case + CHPE, LI PPTN, and CPNY + 27,000 MW FTM Solar, LBW, and OSW (9,000 MW of each type)

Initial Prioritized Cases

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Modeling Assumptions

- **FTM Solar Zonal Allocation:**

Zone	A	B	C	D	E	F	G	H	I	J	K	Total
FTM Solar Additions (MW)	2,632.9	300.0	1,642.6		1,037.8	2,133.9	1,207.1				45.7	9,000.0

- **LBW Zonal Allocation:**

Zone	A	B	C	D	E	F	G	H	I	J	K	Total
LBW Additions (MW)	2,345.1	322.1	2,473.4	1807.6	2,051.8							9,000.0

- **OSW Zonal Allocation:**

Zone	A	B	C	D	E	F	G	H	I	J	K	Total
OSW Additions (MW)										6,000.0	3,000.0	9,000.0

- **CHPE Assumptions:**
  - 1,250 MW connection from HQ to Load Zone J backed by a 1,250 MW Unforced Capacity Deliverability Rights (UDR) resource located in a dummy zone modeled within the NYCA system
    - The UDR resource was assumed to have an EFORd of 4.54% (NERC class average for hydro resources) and the transmission line was assumed to have an outage rate of 5% (5 Year Average Cable Outage Rate for 2018-22 from 2024-2025 IRM Final Base Case Model Assumptions Matrix = 4.83%)

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Questions?

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