Concern with ISO-NE's Proposed Gas Modeling

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ISO-NE's January 4 Memo provides helpful clarification

"To calculate each resource's MRI, the ISO will estimate how small changes (i.e., perturbations) in their capability affect system reliability using the ISO's resource adequacy modeling tools." Yet, the Memo further explains that for gas resources, they are proposing to perturb the gas supply, not the supply of generating capability. (Memo at 3)

"As such, 2,000 MW represents the gas constraint: an additional MW of Gas A or Gas B's QC provides no reliability value when there are already at least 2,000 MW of their capacity in the system because that additional MW would not be able to procure fuel to produce energy." (Memo at 5)

- ISO-NE admits that its proposed approach for gas accreditation is not a calculation of the marginal impact of adding additional generating capability (the evaluation basis for wind, solar, etc.) and is instead a calculation of the *marginal value of increasing the available gas supply*.
- A helpful correction of the December statement that "calculation of gas fleet value follows the same marginal accreditation of profile resources…" (ISO-NE December presentation to the NEPOOL Markets Committee (MC) at slide 96)

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But, it adds a troubling assertion

"Because Gas A and Gas B have MRI = 0, they receive no accredited capacity…Without QMRIC, Gas A and Gas B cannot receive capacity awards…. This results in $0 of payments to Gas A and Gas B…. In these examples, we assume that resources that do not sell CSO are either mothballed or retire. …because both Gas A and Gas B would exit the market, the total quantity of gas QC after the auction would be less than the gas constraint," (Memo at 10)

"Because Gas A and Gas B receive no capacity award and thus do not contribute to reliability, the system must procure additional capacity from the more expensive Non-Gas A and Non-Gas B to acquire 2,250 MW of capacity. This additional expensive capacity drives up the total social costs. …Gas A does not receive a CSO award and so is mothballed or exits the market, even though they are part of the optimal resource mix. " (Memo at 11)

- The Memo fails to recognize the ability (and hoped for incentive) of gas resources to contract for firm access to gas supply in order to obtain non-zero winter QMRIC and CSO. Indeed, the opportunity to get material capacity payments in return for contracting firm gas access would seem to incent efficient firm gas contracting activity.
- By paying the non-firm gas fleet for the greatest quantity of capacity that the uncontracted gas supply could support, the ISO-NE proposed approach would weaken incentives to procure firm gas supply access, depriving firm gas sellers of a reasonable opportunity to be compensated for the reliability value their gas supply provides.

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Example of weakened gas contracting incentives

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- The Memo explains that under ISO-NE's proposed derating form of accreditation, with each of the two 2000MW resources' gas burn capability chasing only 2000MWs of available gas supply, each resource would still receive a1000MW accreditation without any advance firm gas supply access contracting.
- This limits the financial incentive to contract firm gas supply access to the net capacity revenues (i.e., net of the cost of firm gas contracts) incremental to the capacity payment for doing no advance contracting.
- The weakened incentives are illustrated in the following slide.
- A subsequent slide illustrates the much stronger incentive to contract for firm gas supply access under an accreditation of non-firm gas resources that is based on the marginal reliability value of increasing gas generating capability *without increasing available gas supply*.

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Proposed approach weakens incentive for advance firm gas contracting

	ISO example	Case 1	Case 2	Case 3	Case 4
Resource A – non-firm	1000MW	600MW	400MW	200MW	0MW
Resource B – non-firm	1000MW	600MW	400MW	200MW	0MW
Resource B contracted firm gas (MW)	**0MW**	**800MW**	**1200MW**	**1400MW**	**2000MW**
Cost of $1/Dth gas call option premium, 20 days/month, 10 hours/day for a 9Dth/MWh resource	$0	($1,440,000) [1]	($2,160,000)	($2,880,000)	($3,600,000)
Capacity Payment at **$3.00**/kw-mo price	$3,000,000	$4,200,000	$4,800,000	$5,400,000	$6,000,000
Net Revenue	$3,000,000	$2,760,000	$2,640,000	$2,520,000	$2,400,000
Net revenue relative to no gas contracting	N/A	**($240,000)**	**($360,000)**	**($480,000)**	**($600,000)**

1 - $1/Dth*(20 days)*(10hrs/day)*9Dth/MWh*800MW

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A true MRI approach would provide better incentives

	ISO example	Case 1	Case 2	Case 3	Case 4
Resource A – non-firm	0MW[1]	0MW	0MW	0MW	0MW
Resource B – non-firm	0MW[1]	0MW	0MW	0MW	0MW
Resource B contracted firm gas (MW)	**0MW**	**800MW**	**1200MW**	**1400MW**	**2000MW**
Cost of $1/Dth gas call option premium, 20 days/month, 10 hours/day for a 9Dth/MWh resource	$0	($1,440,000)	($2,160,000)	($2,880,000)	($3,600,000)
Capacity Payment at $**3.00**/kw-mo price	$0	$4,200,000	$4,800,000	$5,400,000	$6,000,000
Net Revenue	$0	$2,760,000	$2,640,000	$2,520,000	$2,400,000
Net revenue relative to no gas contracting	N/A	$2,760,000	$2,640,000	$2,520,000	$2,400,000

1 – The ISO-NE analysis ignores the portfolio value of normally surplus gas generating capability to provide incremental output when the aggregate fleet EFORd rises to levels that would otherwise leave some available gas un-utilized.

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Proposed corrections to ISO-NE's gas resource modeling

- Respect available gas supply constraint in perturbation modeling (i.e., increase gas resource capability *without* increasing available gas supply).

- Recognize firm gas resource capability achieved through advance gas contracting. Much like the value of passing the Planning Procedure 10 overlapping impact test, there would now be value to achieving firm gas supply access consistent with the capacity rating.

- Find an appropriate method to reflect the incremental portfolio value of gas *generating resource* perturbation megawatt(s) (i.e., the ability of perturbation MW(s) to produce incremental output when so much of the existing gas fleet is on forced outage that not all available gas supply can otherwise be consumed).

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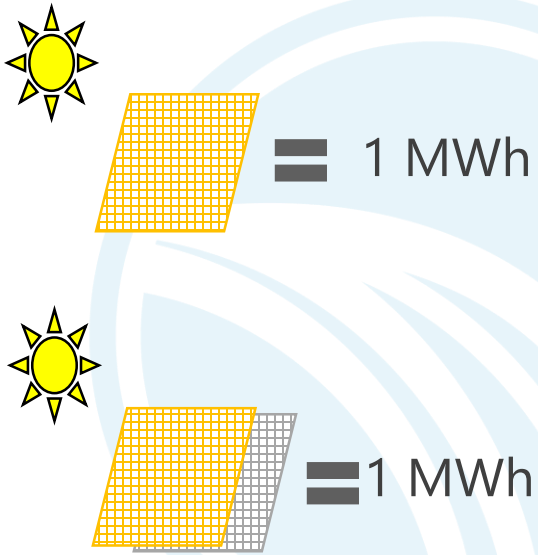
Strained Comparison to Solar or Wind Perturbation Modeling

At the December 2023 NEPOOL Markets Committee meeting, ISO-NE indicated that the gas perturbation modeling was consistent with perturbation modeling for wind and solar resources.

However, that analogy fails to recognize that the energy from the wind and the sun is not constrained and each new wind turbine or solar installation captures wind or solar energy not captured by the existing wind or solar fleet.

A more appropriate “apples to apples” comparison to gas perturbation modeling may exist if the new solar panel (perturbation MWs) were installed directly over the existing panel – then the new solar panel output would come at the expense of the existing solar panel (whose cells could not access the sunlight blocked by the new panel).



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