

Methodology for Consumer Impact Analysis: Distributed Energy Resources (DER) Participation Model

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Agenda

- **Project Description**
- **Background**
- **Consumer Impact Methodology**
- **Other Impacts**
- **Feedback**
- **Next Steps**

Project Description

- Although DER can currently participate in the NYISO-administered wholesale markets in limited ways, market enhancements to further integrate DER will benefit the system as a whole.
- The main objective of the DER Roadmap and resulting market design is to integrate existing and emerging DER technologies¹
- This presentation addresses the consumer impact of DERs. As we had mentioned in the ESR consumer impact analysis presentation, it will also serve as the basis of the DER impact analysis since both ESRs and DERs will have a similar effect on energy and capacity markets

1. Distributed Energy Resources Roadmap for New York's Wholesale Electricity Markets, A Report by the New York Independent System Operator, January 2017

Background

- **The NYISO's goal is to Develop a Dispatchable DER Participation Model for the NYISO-administered wholesale markets²**
 - Create a model that supports the NYISO Market Design Vision - Attract and retain the most efficient resources to meet NY's reliability needs²
- **As part of developing a DER participation model, the NYISO has commenced on a process of evaluating the capacity value of resources with varying duration limitations**
 - The NYISO retained GE to evaluate the capacity value of various resources in the NYISO market with the objective of aligning payments with the capacity value provided by each resource
- **This is a new approach shifting away from the one-size-fit-all approach used currently**
 - Payment to resources based on the value they provide to the capacity market

2. DER Market Design Updates and Energy Market Bid to Bill Examples, Presentation of Michael Lavillotti to the July 26 MIWG

Consumer Impact Analysis (IA) Evaluation Areas

- Present the potential impact on all four evaluation areas

RELIABILITY	COST IMPACT/ MARKET EFFICIENCIES
ENVIRONMENT/ NEW TECHNOLOGY	TRANSPARENCY



Energy Market Impact Assumptions

- The impact to representative upstate and downstate historical energy prices for all intervals in 2017 will be calculated using the assumptions outlined on this and the next slide.
 - The short run energy market impact of DERs will be approximated using:
 - Hourly Day-Ahead load
 - Real time 5-minute level prices (DERs dispatchable on a 5-minute basis)
- Pricing data from two Generator buses with high price volatility selected:
 - Upstate node: 9-Mile 2
 - Downstate node: Ravenswood 3
- The consumer impact of DER resources for both upstate (Zones A-F) and downstate (Zones G-K) will be estimated for multiple scenarios as shown in the table below.

MW	Impact	Incremental Percent per 100 MW
600	6%	1% (1%x600) = 6%
1200	9%	0.5% (0.5%x600)+6% = 9%
2000	11%	0.25% (0.25%x800)+9% = 11%



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Energy Market Impact Methodology

- The study will consider a 4, 6, or 8 hour duration for DERs.
 - DER injections will be assumed to take place during two sets of seasonal hours:
 - Summer (May through October) from HB12:00 to HB19:00
 - Winter (November through April) from HB14:00 to HB21:00
- **The hourly average price impact will be multiplied by its respective hourly average load for both upstate and downstate.**
 - A constant resource availability factor of 20%, 50%, or 80% will then be applied to provide the estimated consumer impact range.

Capacity Market Impact

- **Since we don't know how much DER will be available, we will provide estimates over a range of expected values**
 - Assume a range of DER 600MW, 1200 MW and 2000MW added to the fleet
- **Assume that 70 percent of DER will be located in Zone J and 30 percent in ROS**
 - 20% of the capacity will be assumed to be resources moving from the SCR program to the DER program
 - 15% of original SCRs will be assumed to have left the market
 - This will be represented in the analysis by removing 35% of SCR MW from the Capacity Market prior to adding in the DER MW
- **DERs will be modeled with a 10% derating factor**
- **Sensitivities will be run at DER having a 50% and 100% impact on capacity requirements**
- **The IRM/LCR values from as found system will be assumed**
- **DERs will be modeled consistent with the capacity supplier payment structure proposed in the DER project and ultimately adopted as part of the stakeholder process**
- **We assume that most of the DER will participate in the wholesale market as capacity providers**

Short term Cost Impact Methodology

- Use the 2018 as found system as a base case, for both short term and long term consumer impact analysis
 - 2018 as found system with additions of 600MW, 1200MW and 2000MW of DER penetration
- The short-run impact analysis will assume no additional changes to generation
- The impacts shown in the short run may not be sustainable, as retirements and other changes will result from the influx of large amounts of capacity additions. We address this in the long run analysis, that assumes a supply level based on the historic level of excess

Long Term Cost Impact Methodology

- **Use the 2018 as found system as a base case**
 - the same MW additions and requirement percentages developed in the short term impact analysis
 - the 2018 Demand Curve values
- **For the supply level, we will use the historic excess defined as a percentage of excess above the requirement observed within the last three Capability Years in each of the different Localities**

Additional Analysis

- **At the October 9, 2018 Joint ICAP/MIWG/PRLWG meeting, several stakeholders requested that the NYISO compute the consumer impact of SCRs leaving the wholesale market as a results of potential changes from the current compensation regime**
 - Specifically, compute the impact of all SCRs leaving the market
- **The NYISO intends to provide that analysis as requested by stakeholders**
 - We will provide the impact of SCRs leaving the market as a stand alone analysis, separate from the consumer impact of DERs discussed earlier in the presentation

Other Impacts

- Evaluate other impacts:
 - Reliability Impact
 - Environmental Impact
 - Impact on Transparency

Feedback?

- Email additional feedback to:
- deckels@nyiso.com

Next Steps

- Communicate any changes to the consumer impact analysis methodology in response to stakeholder feedback
- Present the results of the consumer impact analysis in February 2019

Questions?

We are here to help. Let us know if we can add anything.

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits 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 policy makers, stakeholders and investors in the power system



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