

Internal Controllable Lines Updates

Michael Swider

Senior Market Design Specialist
Technology Development

Amanda Myott

Market Design Specialist
Energy Market Design

ICAPWG/MIWG

September 30, 2022

Agenda

- Ramp limit discussion
- Interconnection updates
- Next steps

Ramp Limit

Review

- **Market Design Concept Proposed presentation that the NYISO delivered to stakeholders at the MIWG on August 04 included the following statement on ramp:**
 - The NYISO anticipates it will need to limit an ICL's permitted ramp rate to mitigate impacts on the parallel AC system, including voltage impacts
- **Stakeholders requested a more in-depth description on why a ramp limit is needed for an Internal Controllable Line**

HVDC Ramp Review

- **Ramp rate of a HVDC facility is dependent on the technology utilized, but generally able to ramp very quickly**
 - Some HVDC can ramp at a rate greater than 1,000 MW per second
 - A typical 1,000 MW generator has a ramp rate of 10-20 MW per minute
 - Typical generator ramp rates are 1-2% of capability per minute
- **External AC transaction scheduling interfaces and controllable lines are collectively subject to interchange ramp limits to mitigate impacts on system voltage performance**
 - External Interface Interchange Ramp Limits ([nyiso.com](https://www.nyiso.com))

System Operations Review

- Voltage/reactive power is not secured in system dispatch
- Voltage is controlled by local reactive sources such generators, reactors and capacitors
- Phase Angle Regulator (PAR) tap moves for the majority of PARs in NY and on external tie lines are manual actions which, while optimized in the system dispatch, require operator action to realize optimized flows

Example: Fast ICL (HVDC) Ramp

- Assume ICL runs parallel to AC lines and is heavily loaded
- ICL ramps down very quickly without a change in system generation or load
- ICL flows will shift to the parallel AC network and may cause voltage to drop below operating limits, or flows on AC lines to exceed limits
- Manual operator actions are needed to: (a) adjust generator reactive output, (b) switch shunt capacitors in service to return voltages to within operation limits, and (c) implement PAR tap changes to realize the optimized schedules from the system dispatch and return line flows within limits.

Benefits of ICL Ramp Limits

- **Allows time for manual operator intervention to adjust PARs, switch in/out of service reactors/capacitors and adjust generator MVAR output to stabilize voltage and power flow impacts caused by HVDC schedule changes**
- **Better conforms to the normal rate of changing flow across the different elements of the system**
- **Similar to CTS (15-minute scheduling), proposing to start with conservative limits and increase ramp as operators gain experience**

Interconnection Updates

Interconnection Manual Updates

- **As presented in 08/04/22 Market Design Concept Proposal, the NYISO proposes to clarify in the Transmission Expansion and Interconnection Manual how ICL internal to the NYCA will be evaluated under the Minimum Interconnection Standard**
 - These updates will reflect the ability of the NYISO to model ICL internal to the NYCA as dispatchable in the Interconnection study process, consistent with the Minimum Interconnection Standard

Deliverability Tariff Updates

- **As presented in the Market Design Concept Proposal, the NYISO proposes to evaluate an ICL requesting CRIS for deliverability in both the Capacity Region where the ICL withdraws and the Capacity Region in which the ICL injects**
 - This approach will require an ICL internal to the NYCA to mitigate deliverability impacts identified under the applicable deliverability tests in both the ROS Capacity Region and the Capacity Region in which it proposes to inject
- **The NYISO intends to proceed with proposed tariff revisions for the deliverability aspects of the ICL design on a more accelerated timeline than the rest of the ICL market design tariff revisions**
 - The NYISO proposes to request in a corresponding Section 205 filing that the tariff revisions apply to the next Class Year (timing the effective date prior to the lockdown of the next Class Year base cases and/or commencement of the Class Year deliverability evaluations)
 - This will allow the necessary deliverability tariff revisions to be in place for the upcoming Class Year (estimated to begin in Q1 2023) and any ICL projects in the Class Year can be evaluated consistently with the methodology described in the ICL MDCP

Interconnection Manual and Deliverability Tariff Update Timeline

■ October/November 2022

- Discuss draft interconnection manual and deliverability tariff revisions with stakeholders (ICAPWG/MIWG)
- Propose draft interconnection manual and deliverability tariff revisions for vote at BIC/OC
- Propose draft deliverability tariff revisions for vote at BIC/OC/MC

■ December 2022/January 2023

- File stakeholder-approved deliverability tariff revisions with FERC

■ Note that the 2023 prioritized project milestone for ICL is Market Design Complete (MDC), which will entail completion of all draft tariff revisions for the ICL energy and capacity market designs

Next Steps

Next Steps

- **2022: Continue work on Interconnection and Deliverability Manual and Tariff Revisions**
- **2023 Milestone: Market Design Complete (MDC)**
 - Specific ramp limits for ICL will be evaluated as part of the MDC

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