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## Subject: Dual Upper Operating Limits in SMD2

Under SMD 2.0, units must provide two Upper Operating Limits (UOLs) with their bid: normal ( $UOL_N$ ) and emergency ( $UOL_E$ ). For many units  $UOL_N$  and  $UOL_E$  will have the same value. For other units, the range between  $UOL_N$  and  $UOL_E$  will be an emergency operating range. Units claiming to have an emergency operating range must document their claims to the NYISO.

### Details:

The advent of SMD 2.0 introduces a new bid parameter for generator bids: the emergency upper operating limit, or  $UOL_E$ . Before SMD 2.0, the last point of the incremental energy bid curve was interpreted as the  $UOL_E$ . With SMD 2.0, the last point of the bid curve will no longer be interpreted as the  $UOL_E$ .  $UOL_E$  must be separately and explicitly specified.

Prior to SMD 2.0, each generator bid contained a parameter called the upper operating limit, or UOL that was interpreted as the generator normal upper operating limit. Under SMD 2.0, that parameter will be explicitly called the normal upper operating limit, or  $UOL_N$  and interpretation of this bid parameter is unchanged. The ability to bid two upper operating limits is primarily for those units who may only utilize their full range of capacity under extraordinary circumstances.,

In both the Day-Ahead Market (DAM) and in the Real-Time Market, NYISO Operations may allow generating units to be scheduled up to the  $UOL_E$ . For the DAM, SCUC will normally be evaluated using normal generator operating limits ( $UOL_N$ ). If SCUC indicates there are violations of transmission limits or violations of load, or reliability based reserve or regulation requirements, then the ISO may re-evaluate the DAM using emergency operating limits and units may be scheduled up to the  $UOL_E$ . In Real-Time Market operation, the ISO may schedule units up to the  $UOL_E$  in accordance with actions identified in the Emergency Operations Manual.

If a unit's DAM schedule is less than or equal to the  $UOL_N$ , then the unit's Real-Time Market  $UOL_N$  is set to the bid  $UOL_N$ . However, if a unit's DAM schedule is greater than its bid  $UOL_N$ , then the unit's Real-Time Market bid  $UOL_N$  is set equal to the bid  $UOL_E$ .

The MIS has been modified to require both  $UOL_N$  and  $UOL_E$  in generator bids. Units without an emergency operating range must provide the same value for both  $UOL_N$  and  $UOL_E$ . Otherwise, the unit's emergency operating range must be explicitly declared. That is, the value of  $UOL_N$  must be less than the value of  $UOL_E$ . The emergency operating range, if any, must be at the upper end of a unit's capability, and must represent an operating level that requires extraordinary efforts to attain. Candidates for emergency operating ranges include, but are not necessarily limited to:

- Peak-firing of combustion turbine generators;
- Inlet air cooling of combustion turbine generators;
- Over-pressure operation of conventional steam generating units;
- Operation of conventional steam generating units without the top feedwater heater; and
- Operation with reduced auxiliary power usage.

The purpose of this "Technical Bulletin" is to facilitate participation in the NYISO by communicating various NYISO concepts, techniques, and processes to Market Participants before they can be formally documented in a NYISO manual. The information contained in this bulletin is subject to change as a result of a revision to the ISO Tariffs or a subsequent filed tariff with the FERC.

Units that claim to have an emergency operating range must provide substantiating information to the NYISO. The Market Monitoring and Performance Unit (MMP) of the NYISO will assess the claim, based on good engineering practice and operating procedures, and will allow the emergency operating range if warranted. In order to establish a  $UOL_E$ , the unit must conduct a DMNC test that reflects the plant's efforts to achieve the higher-than-normal maximum output. The measures taken to achieve the higher-than-normal output must be reported to the NYISO. MMP will also monitor the unit's offering behavior, manifested in the unit's offer curve and presentation of its  $UOL_N$  and  $UOL_E$ .

Units that have sold ICAP have the obligation to offer that capacity daily unless they have been forced off or are on scheduled maintenance. That obligation is specified in section 5.12.1 of the Services Tariff.

- Units with an ICAP obligation, that do not have an emergency operating range ( $UOL_E=UOL_N$ ), must present an offer curve with a  $UOL_N$  (and  $UOL_E$  by default) consistent with their ICAP obligation.
- Units with an ICAP obligation, that do have an emergency operating range ( $UOL_E>UOL_N$ ), must present both a  $UOL_N$  and a  $UOL_E$ . The  $UOL_E$  must be consistent with their ICAP obligation.

For example, a unit with a nameplate capacity rating of 125 MW conducts a DMNC test and achieves 125 MW through certain extra measures. MMP and the unit agree that without the extra measures the unit is capable of producing at the rate of 90 MW on a sustained basis. Upon application and appropriate documentation, the unit would be recognized as having a  $UOL_N$  of 90 MW and a  $UOL_E$  of 125 MW.

If the unit were to sell 125 MW of ICAP for part or all of a capability period, then its obligation is to offer 125 MW daily during the period so long as it is not forced out or on maintenance. The unit's bid  $UOL_E$  would be 125 MW, consistent with the ICAP obligation and also consistent with the determination of that number as a  $UOL_E$ . The unit's bid  $UOL_N$  would be 90 MW.

If the unit were to sell only 100 MW of ICAP, its bid  $UOL_E$  could be as low as 100 MW, although the unit could choose to offer up to the 125 MW that it was capable of producing. The bid  $UOL_N$  would still be 90 MW.

If the unit were to sell only 85 MW of ICAP, then its daily offer obligation falls to 85 MW, a number which is in the normal operating range. Its bid  $UOL_N$  could be anywhere between 85 and 90 MW; its bid  $UOL_E$  could be as high as 125; and its emergency range would be anywhere from 0 MW to 35 MW.

The existence of an approved and monitored emergency operating range must not be used to withhold normally available capacity. The range is to be considered fixed, as it is a function of the actions taken to achieve the DMNC. Derates of DAM-available capacity will apply to the  $UOL_E$  and the  $UOL_N$  so that there is a proper reporting of available capacity through GADS, and a proper accounting of equivalent capacity in the calculation of  $EFOR_d$ .

A unit that fundamentally does not have an emergency operating range ( $UOL_N = UOL_E$ ) faces analogous circumstances depending on the amount of ICAP (qualified and) sold. Suppose that our 125 MW nameplate unit has a DMNC of 125 MW without requiring extraordinary actions. If it sells 125 MW of ICAP, then its obligation is to offer 125 MW daily. Its bid  $UOL_N$  will be 125 MW, and bid  $UOL_E$  will be also 125 MW.

If the unit sells only 100 MW of ICAP, then its obligation is to offer 100 MW. Its actual offer might be anywhere between 100 and 125 MW, and whatever the top point is, it will be a bid  $UOL_N$ .

Market Participants should refer to the NYISO ICAP Manual for information on qualifying the MWs between a  $UOL_N$  and  $UOL_E$  as ICAP.