Stakeholder Feedback and IESO Response

MR-00495-R00: Adding De-Rates to the Real-Time Lost Cost Economic Operating Point – Comments and Questions rom Vlad Urukov

Provision	Question	IESO Response
3.4.4 The RT LC EOP for a *non-quick start resource* shall be equal to its *real-time schedule* when it is scheduled below its *minimum loading point* for interval $i \in I$ and bus $b \in B^{NQS}$: If $\sum_{k \in K^{E}_{i,b}} ASDG_{i,b,k} < MinQDG_{b}$ for $b \in B^{NQS}$ then: $$\sum_{k \in K^{E}_{i,b}} ESDG_{i,b,k} = ASDG_{i,b}$$ 3.4.4A For a *dispatchable generation resource*, its RT LC EOP shall not exceed the maximum available capacity for the *resource* for the interval $i \in I$ and bus $b \in B^{DG}$:	A. 3.4.4. is for a non-quick start resource whereas 3.4.4A speaks to a dispatchable generation resource. Is 3.4.4A thus applicable only to a dispatchable non-quick start resource? B. Is the maximum available capacity $AdjMaxDGi,b$ clear C. Why is this specified at a bus level? D. Where is the parameter 'k' defined?	A. Section 3.4.4A applies to all dispatchable generation resources. It is not a subset of 3.4.4. The A is used only so it is sequenced to follow 3.4.4. B. Yes, AdjMaxDG represents the maximum available capacity. If there is a de-rate, this equation will reduce the maximum available capacity through the inclusion of the de-rate variable. C. Specification at a bus level is for consistency with the language in Appendix 7.8 section 4.4.6 RT LOC EOP and the calculation engine rules in Appendices 7.5, 7.5A and 7.6. D. Parameter 'k' is defined in sections 3.2.20 to 3.2.23. It refers to the offers in energy and OR.

Provision	Question	IESO Response
$$min\left(\sum_{k\in K_{i,b}^{E}} QDG_{i,b,k}, Derate_{i,b}\right)$$ $$min\left(\sum_{k\in K_{i,b}^{E}} QDG_{i,b,k}, Derate_{i,b}\right)$$	2.2.24 With respect to all *resources*: 2.2.24.1 $Derate_{h,b}$ designates the maximum amount of *energy and op reserve* that can be scheduled for a *resource* in a *dispatch ho* $h \in \{1, \ldots, 24\}$. The derate term is <u>only</u> defined in terms of h (hour),b whereas in the context of the proposed change (as well as other instances) the subscript is i (interval),b. While I don't think this is a big issue, it would be better to also define derate i,b to define that it is the derate that was applicable in a given interval i, noting that there may be intra-hour changes which would prevent it to be mapped back to derate h,b	The section 2.2.24 is part of the DAM Lost Cost EOP and is not where the de-rate term is being referenced for the RT lost cost EOP. For the RT LC EOP the following section applies and uses the subscript 'i'. **Market Participant Data Parameters** 3.2.28 With respect to all *resources*: 3.2.28.1 $Derate_{i,b}$ designates the maximum amount of *energy* and *operating reserve* that can be scheduled for a *resource* in a *dispatch interval*;
$$AdjMaxDG_{i,b} = \begin{cases} min\left(\sum_{k\in K_{i,b}^{E}} QDG_{i,b,k}, Derate_{i,b}\right) & if\ b \in B^{VG} \\ min\left(\sum_{k\in K_{i,b}^{E}} QDG_{i,b,k}, Derate_{i,b}\right) & otherwise \end{cases}$$ $$\sum_{k\in K_{i,b}^{E}} ESDG_{i,b,k} + \sum_{k\in K_{i,b}^{10S}} ES10SDG_{i,b,k} + \sum_{k\in K_{i,b}^{10N}} ES10NDG_{i,b,k} + \sum_{k\in K_{i,b}^{30R}} ES30RDG_{i,b,k} \leq AdjMax$$	The two min( ) terms are exactly the same, therefore there is no need to split the AdjMaxDG equation into two parts – one for VGs and one for non VG dispatchable resource, unless there is a VG specific term that is missing.	The IESO agrees that the two min( ) terms are the same, and has simplified the formula by removing the redundancy and having the min( ) term apply to all dispatchable generation resources.

Provision	Question	IESO Response
	The other two AdjMaxDG terms (for DA LC and RT LOC , respectively) are indeed different for VGs as they $$AdjMaxDG_{h,b} = \begin{Bmatrix} min\left(\sum_{k \in K^E_{h,b}} QDG_{h,b,k}, Derate_{h,b}, VGForecast_{h,b}\right) & if\ b \in B^{VG} \\ min\left(\sum_{k \in K^E_{h,b}} QDG_{h,b,k}, Derate_{h,b}\right) & otherwise \end{Bmatrix}$$ $$AdjMaxDG_{i,b} = \begin{Bmatrix} min\left(\sum_{k \in K^E_{i,b}} QDG_{i,b,k}, Derate_{i,b}, FG_{i,b}\right) & if\ b \in B^{VG} \\ min\left(\sum_{k \in K^E_{i,b}} QDG_{i,b,k}, Derate_{i,b}\right) & otherwise \end{Bmatrix}$$ Is the FG term present in the RT LOC also needed for RT LC?	