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Interpretation of MZT and MNZT for bi-directional units

Introduction

MZT and MNZT definitions can be found in the grid code. This document's purpose is to provide clarity on the definition for units that are capable of both importing and exporting power.

The definitions for MZT and MNZT in the grid code are as below. The bold parts are for special mention in this document.

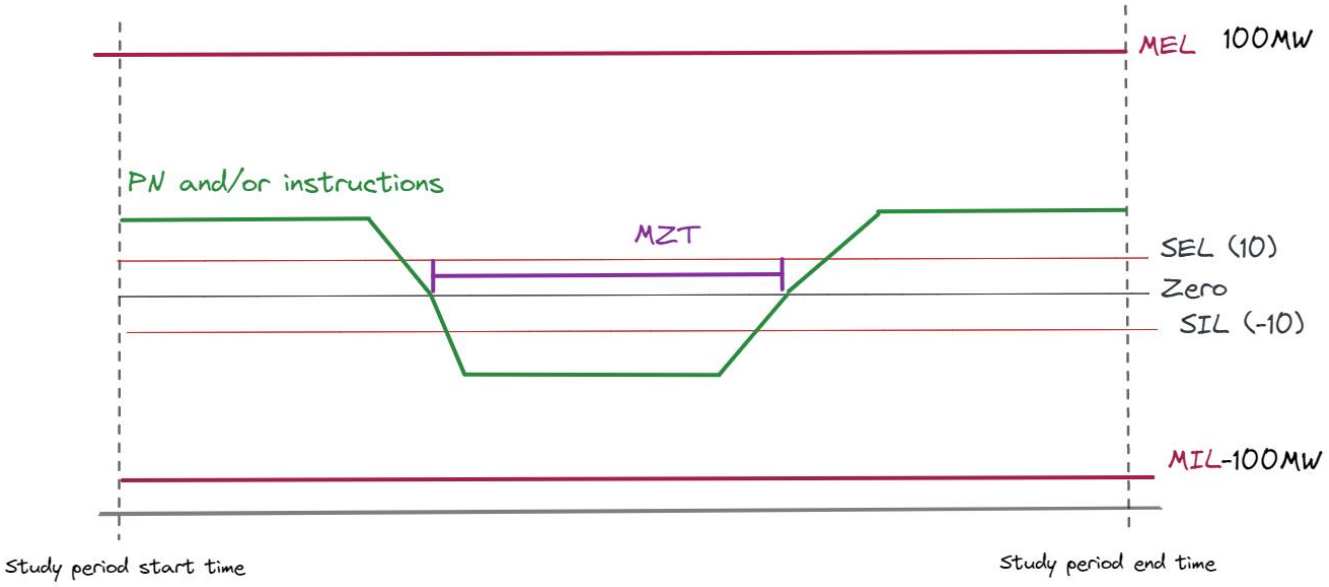
*"Minimum Zero Time (MZT), being either the minimum time that a BM Unit which has been **exporting must operate at zero or be importing, before returning to exporting** or the minimum time that a BM Unit which has been **importing must operate at zero or be exporting before returning to importing**, as a result of a Bid-Offer Acceptance expressed in minutes.*

*Minimum Non-Zero Time (MNZT), expressed in minutes, being the minimum time that a BM Unit **can operate a non-zero level** as a result of a Bid-Offer acceptance."*

MZT

The above MZT statement for bi-directional units means that the acronym is not entirely accurate. The following instruction scenarios are possible.

- A bi-directional unit does not need to stop at zero for MZT, it can operate in the opposite direction as long as it does so for a minimum length of time equal to its MZT value.



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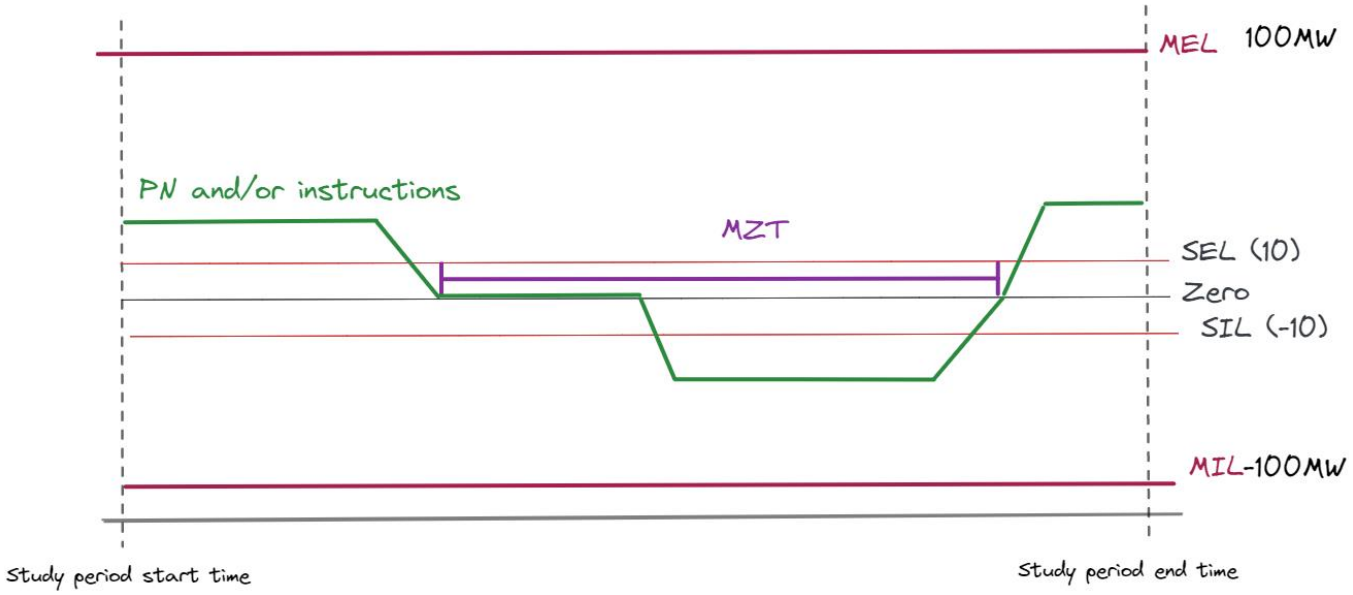
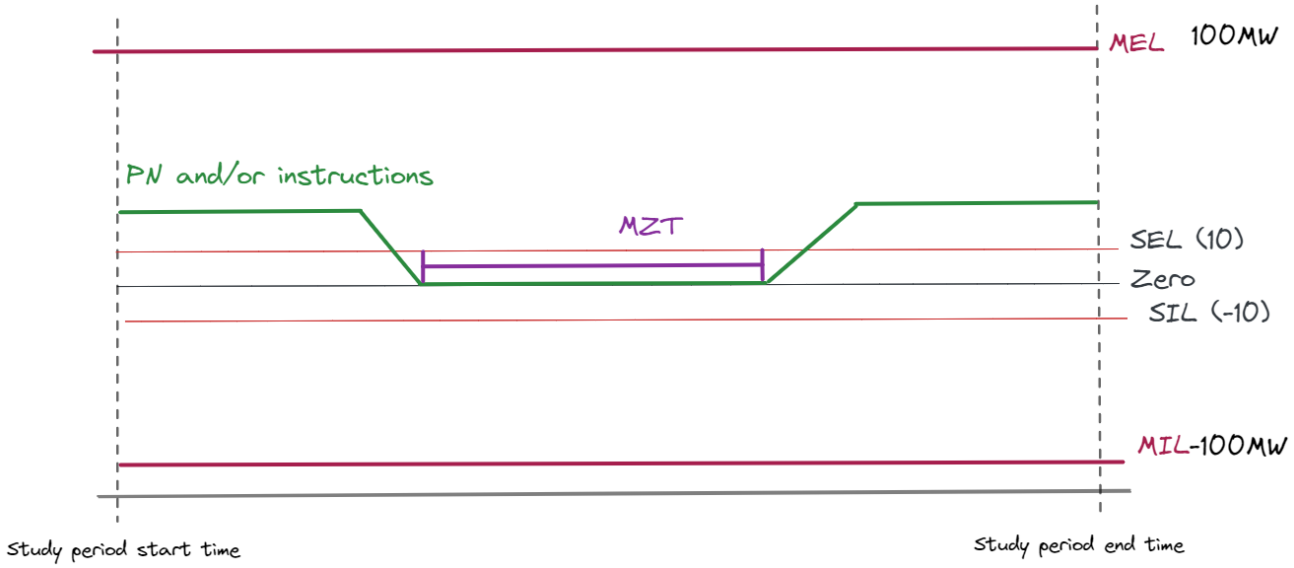
- A bi-directional unit that has moved to zero and the opposite direction, the elapsed time of both zero and opposite direction count towards MZT.



- A bi-directional unit has moved to zero for MZT and then after the elapsed time move back in the same direction.



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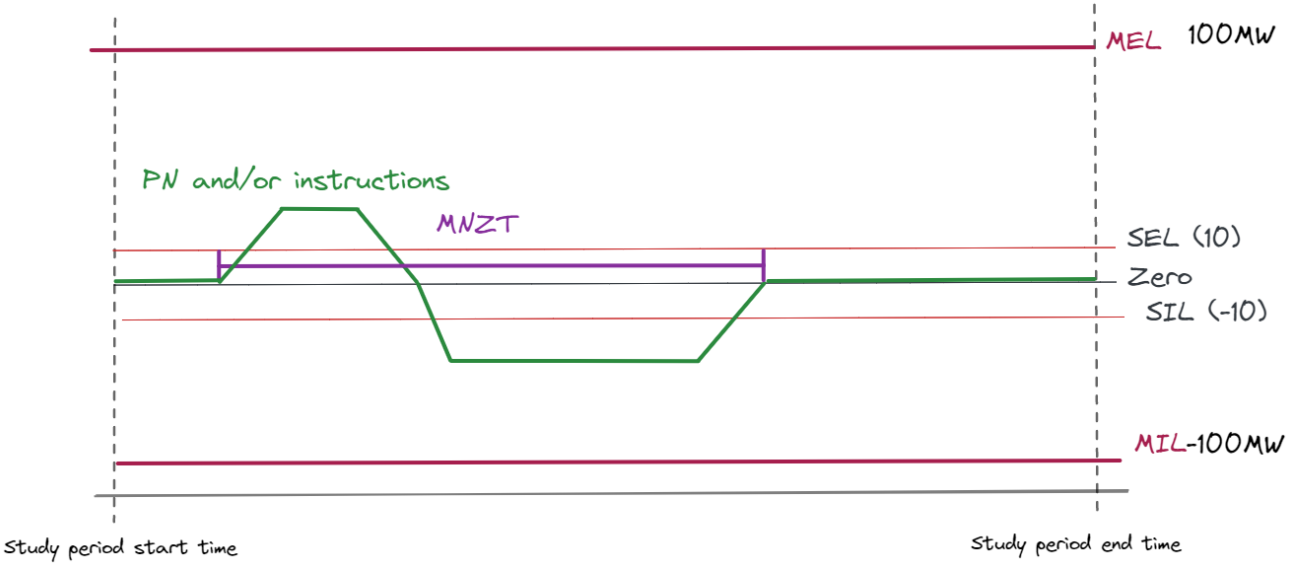
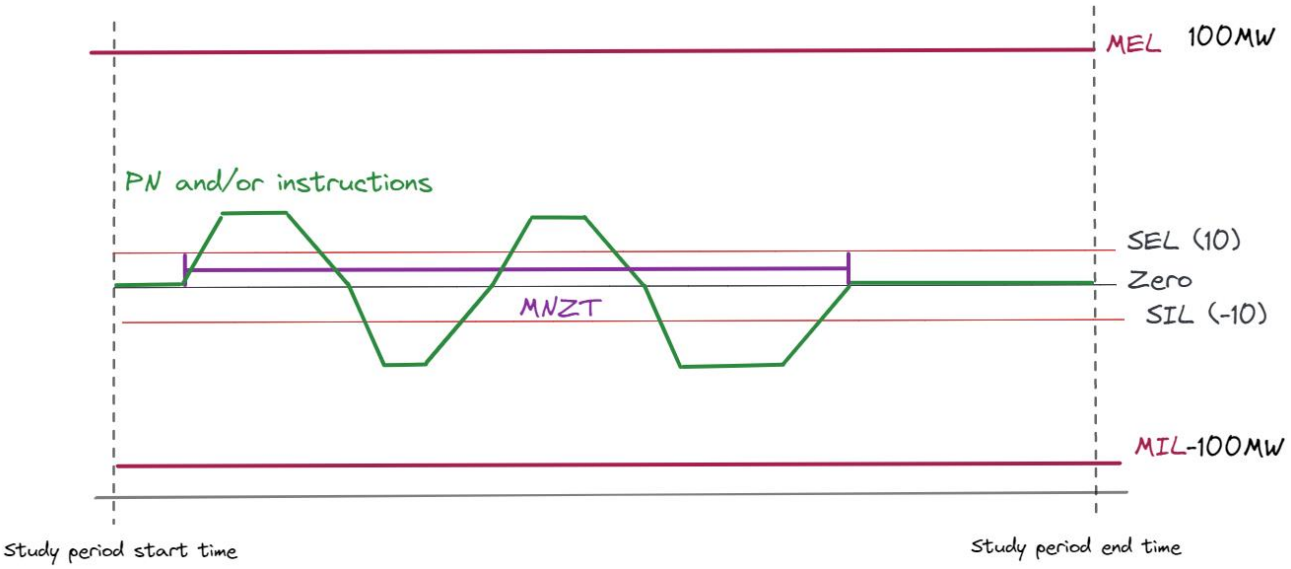
MNZT

For MNZT the measure for elapsed time starts when a unit leaves zero. A unit can shift between importing and exporting without breaching MNZT.

- A bi-directional unit that goes from exporting to importing without stopping at zero will have both the time exported and imported count towards its MNZT. There is no limit to the number of times the unit crosses zero.





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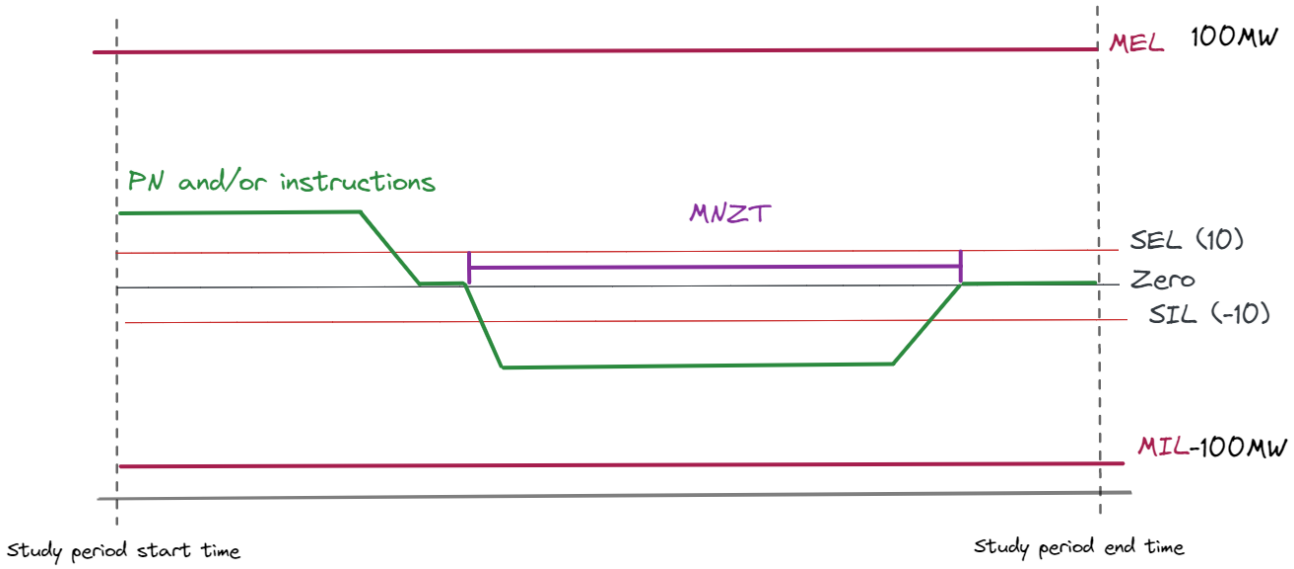
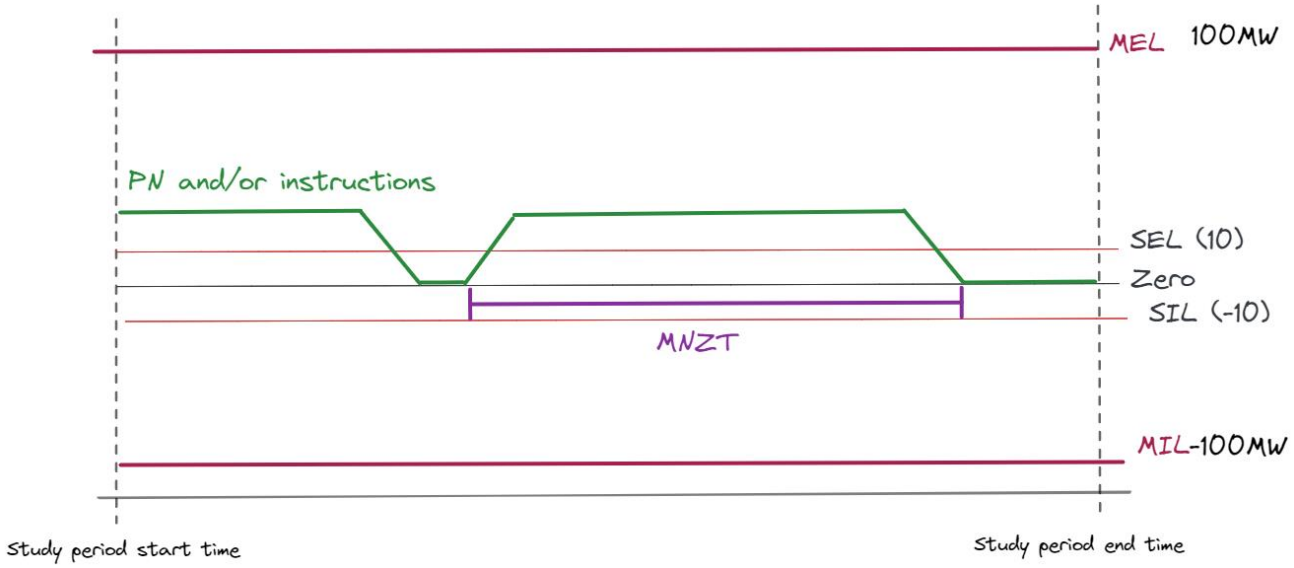
- A bi-directional unit that stops at zero will reset the counter for MNZT. The elapsed MNZT will only include the time when the unit has once again moved away from zero.





Conclusion

We have presented here how we will be interpreting MZT and MNZT for bi-directional units. If you have any feedback, or perhaps you have further examples please send queries to Box.BalancingProgramme@nationalgrideso.com