
Annex 3: Alternative configurations of the Bidding zone review region “South East Europe” which are to be considered in the bidding zone review process

Bidding Zone Review Region "SEE"

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This annex depicts in detail the Bidding Zone configurations for the Bidding Zone Review "SEE" that are to be considered in the bidding zone review process in accordance with Article 14(5) of Regulation (EU) 2019/943 of the European Parliament and the Council of 5th June 2019 on the internal market for electricity (recast).

2. Overview of the configurations of the Bidding Zone Review Region "SEE"

1. The BZRR considers SEE Bidding Zone configurations. This includes the Bidding Zone Configuration currently in place, and an additional Bidding Zone Configuration for Greece.
2. An overview of the configurations, including: name of the configuration, number of the configuration (for reference purposes), the number of bidding zones per Member State, and whether the bidding zone configuration in a Member States has an expert-based or model-based justification, is given in Table 1.
3. A geographical overview of the bidding zone delineations is given in [Figure 1](#).
4. Each configuration is described in more detail in Section 3 of this Annex.

Configuration nr	1	2	3	...	...	...
Configuration Name	Status Quo	Bidding zone GR, CR	[Name]	...	...	...
Member State 1	[# BZs] [EB/MB]	[# BZs] [EB/MB]	[# BZs] [EB/MB]	...	...	...
Greece	...1 [EB]	2... [EB]	...	...	...	...
Bulgaria	...1 [EB]	1... [EB]	...	...	...	...
...
...
...

Table 1: Overview of the Bidding Zone Configurations and the number of Bidding Zones per Member State per configuration

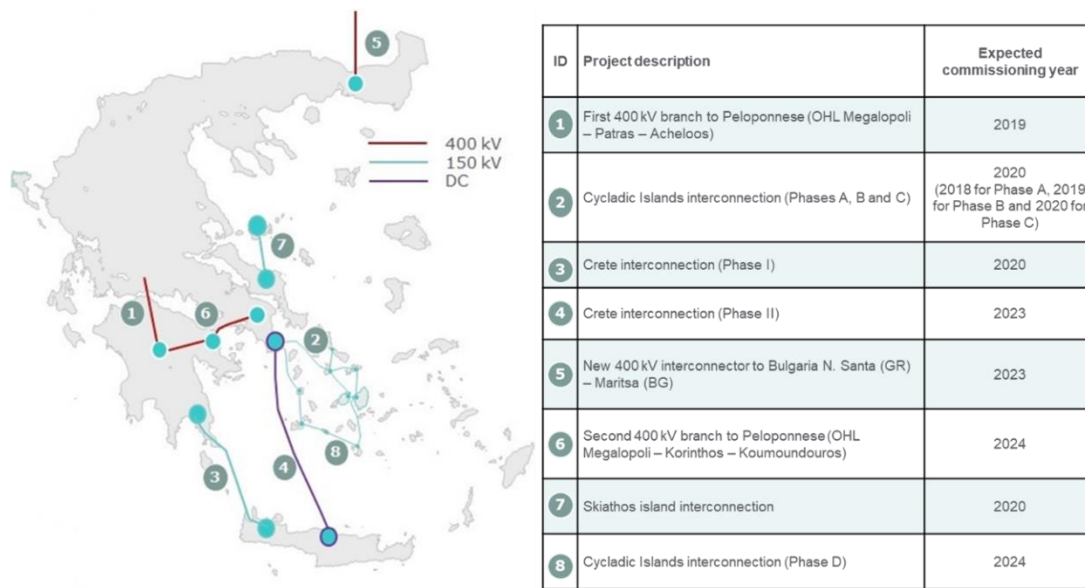


Figure 1. Geographical overview of the bidding zone delineations

3. Detailed information per configuration

This section provides detailed information per configuration.

1: Status Quo Configuration

1. The overview of the Status Quo Configuration is inserted for convenience.
2. The network elements which will form the Bidding Zone Borders of this configuration, is given in **Error! Reference source not found.**

In this configuration it is assumed that no new Bidding Zones are considered in Greece until 2023, therefore the status quo configuration of a single GR BZ is taken into account.

The current internal congestion in the 150 kV system in the area of the Peloponnese will be alleviated by the beginning of 2020, due to the construction of a 400 kV line between the Acheloos EHVSS and the Patras and Megalopoli EHVSSs. The Peloponnese system will be further strengthened with the construction of a second 400 kV line connecting Megalopoli and Koumoundourou EHVSSs.

A new line between Nea Santa (GR) and Maritsa East (BG) is expected to be constructed within 2023. This line will impact on the NTC between GR and BG, however it will not produce any internal congestion within the GR BZ.

All other new system transmission expansions focus in the interconnection of further isolated Greek islandic systems with the mainland and cause no internal congestion within the GR BZ.

The island of Crete will be interconnected with the Greek mainland in two phases. During Phase I, internal congestion will occur between the Peloponnese and Crete (150 kV line between Molai and Chania HVSS). During this period, redispatching will be required and it is estimated that daily redispatch volume will be approximately 3,3 GWh, resulting in redispatching cost of approximately 240 M€ per year. However, this situation will be remediated by 2023, once the Phase II of the project will be completed (with the construction of the DC cable between Koumoundourou HVSS and Damasta HVSS) and no further internal congestion will be evident between the Greek mainland and the Crete system.

Since this phenomenon will occur only for two years and past the completion of Phase II of the interconnection a second BZ will not be required, the first configuration considered is a single Bidding Zone, which consists of the entire interconnected Greek system with all foreseen expansions until 2023 (status quo configuration).

Configuration 1 Status Quo Configuration									
Cty-CBk	Bidding Zone Border	TSO1	Station 1	TSO2	Station 2	Voltage level [kV]	Type	Network element Name	New/different compared to status quo?
GR	GR - BG	IPTO	a. Thessaloniki b. Nea Santa	ESO-EAD	a. Blageovgrad b. Maritsa East	400 kV 400 kV	AC AC		No
GR	GR-IT	IPTO	Arachthos	TERNA	Galatina	400 kV	DC		No

Table 2: Bidding Zone Borders of Status Quo configuration

2: "Bidding Zones: GR, CR" (New Configuration)

1. A geographical overview of the bidding zone delineations is given in Figure 1.
2. The network elements which will form the Bidding Zone Borders of this configuration, is given in Table 2.

In this configuration, it is assumed that starting from the date when the island of Crete is interconnected in year 2020 (Phase I), the Greek system will consist of two bidding zones compared to one zone, as in the status quo configuration. The first bidding zone will be mainland Greece and small interconnected islands (GR BZ) and the second bidding zone will be the island of Crete (CR BZ). The new bidding zone configuration is proposed due to the extension of the Greek system to the island of Crete, which was previously an autonomous system.

The two 150kV AC lines of Phase I of the interconnection have an estimated transfer capacity of 150MW-180MW and do not suffice to supply the total net load of Crete. Since the conventional generation units in Crete are mostly oil units, with much higher generation cost than the generation units operating in the mainland, it is expected that there will always be congestion in the interconnection in the direction of mainland Greece to Crete (GR towards CR). The annual redispatching costs are estimated around 240 M€. IPTO balancing market system has already provisioned the possibility for protentional additional bidding zones and there is no significant additional cost for implementing the two proposed bidding zones in the market.

Therefore, in this configuration Bidding Zone is proposed for the Greek mainland and adjacent small interconnected islands (GR) and an additional Bidding Zone for Crete (CR). It should be noted that this proposed new BZ is internal (within the Greek territory) and it does not affect any cross-border flows between the GR BZ and adjacent Bidding Zones, thus any other TSOs than IPTO.

Configuration 2 "Bidding Zones: GR, CR" (New Configuration)									
Cty-CBk	Bidding Zone Border	TSO1	Station 1	TSO2	Station 2	Voltage level [kV]	Type	Network element Name	New/different compared to status quo?
GR	GR - BG	IPTO	a.Thessaloniki b. Nea Santa	ESO-EAD	a. Blageovgrad b. Maritsa East	400 kV 400 kV	AC AC		No
GR	GR-CR	IPTO	a. Molaoi b. Koumoundourou	IPTO	a. Chania b. Damasta	150 kV 500 kV	AC DC		Yes
GR	GR-IT	IPTO	Arachthos	TERNA	Galatina	400 kV	DC		No

Table 2: Bidding Zone Borders of Configuration "Bidding Zones: GR, CR" (New Configuration)