

VOTING Ausmittlung

Calculation Methods

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1. Majority election

1.1 Absolute majority

Canton	Calculation	Implementation
St. Gallen	Number of valid ballots divided by two. The next higher integer is the absolute majority.	https://github.com/abraxas-labs/voting-ausmittlung-service/blob/main/src/Voting.Ausmittlung.Core/Utils/MajorityElectionStrategy/MajorityElectionAbsoluteMajorityStrategy.cs#L39
Thurgau / Zürich	Candidate votes divided by double the number of seats. The next higher integer is the absolute majority.	https://github.com/abraxas-labs/voting-ausmittlung-service/blob/main/src/Voting.Ausmittlung.Core/Utils/MajorityElectionStrategy/MajorityElectionAbsoluteMajorityCandidateVotesDividedByTheDoubleOfNumberOfMandatesStrategy.cs#L13

1.2 Relative majority

To achieve the relative majority, the candidate needs one more vote than their opponents.

2. Proportional election

2.1 Seat allocation

2.1.1 Hagenbach-Bischoff-Procedure

Implementation considering the Federal Act on Political Rights (PRA), **Art. 40 ff.**

Where not all the mandates have been allocated, the mandates remaining shall be allocated individually and one after the other according to the following rules:

- a. the number of votes cast in favour of each electoral list is divided by a number equivalent to the number of mandates already allocated to that list plus one.
- b. the next mandate is allocated to the electoral list that has the largest quotient.
- c. if more than one list is entitled to the next mandate as they have the same quotient, then the next mandate is allocated to the list that achieved the highest remainder in the division according to Article 40 paragraph 2.
- d. if there are still two or more lists with the same right to the mandate, the mandate goes to the list that has obtained the highest number of party votes.
- e. if more than one list still has the same right to the mandate, the first mandate is allocated to the list whose candidate for the mandate has obtained the highest number of votes.
- f. if more than one candidate has obtained the same highest number of votes, the mandate is allocated by drawing lots.

² This procedure is repeated until all the mandates have been allocated.

Implementation see <https://github.com/abraxas-labs/voting-ausmittlung-service/blob/main/src/Voting.Ausmittlung.Core/Utils/ProportionalElectionStrategy/ProportionalElectionHagenbachBischoffStrategy.cs#L12>

Art. 41 e. and f. are not yet implemented. When these cases occur, the solution enables the manual capture of the seat distribution and seats.

2.1.2 Double proportional representation

Described in Pukelsheim, F. (2017): Proportional Representation: Apportionment Methods and Their Applications, Springer International Publishing AG. (Chapter 15.9, Page 292).

Implementation see <https://github.com/abraxas-labs/voting-ausmittlung-service/tree/main/src/Voting.Ausmittlung.BiproportionalApportionment>