
INFORMATION NOTE

The Single Transferable Vote System As Applied in the 1995 Ordinary Election of the Legislative Council In Respect of the Election Committee Constituency

Objective

1. This information note aims to give a more detailed description on the operation of the Single Transferable Vote (STV) system as applied in the 1995 Legislative Council (LegCo) Election Committee (EC) election.

Background

2. The 1995 LegCo EC election adopted the STV system as the voting system, which was defined in the Legislative Council (Electoral Provisions) Ordinance (the Ordinance) (Cap 381, Clause 12A). This STV system aims to distribute LegCo seats via a mechanism which converts ballots to votes.

3. The 1995 LegCo EC consisted of 283 eligible electors who were members of the District Boards. The number of LegCo Members to be elected was 10 and there were 18 candidates competing for these ten seats.

4. After several rounds of transfer of votes, 10 LegCo members were elected and each was able to meet the quota of votes set by the Ordinance.

Operation of the STV System

Valid Votes

5. In accordance with the Ordinance, each elector had one single vote which was transferable among the candidates. The elector would mark his or her preferences on the ballot paper by ranking at least ten candidates in a descending order. Any ballot paper with any missing link in the order of preferences of the candidates would be ruled invalid. Only valid votes would be counted.

The Provisional Legislative Council Secretariat welcomes the re-publication, in part or in whole, of this document, and also its translation in other languages. Material may be reproduced freely for non-commercial purposes, provided acknowledgment is made to the Research and Library Services Division of the Provisional Legislative Council Secretariat as the source and one copy of the reproduction is sent to the Provisional Legislative Council Library.

Quota

6. In accordance with the Ordinance, the quota was determined as follows:-

$$\frac{283 \text{ valid votes}}{10 \text{ seats} + 1} + 1 = 26.73 = 26 \text{ (fraction disregarded)}$$

7. Only when the number of valid votes was known could the quota be determined (please refer to the appendix). If the candidate whose number of votes was greater than or equal to the quota, he or she would be assured of a seat.

Transfer of Surplus Votes

8. If the candidate whose number of votes was greater than the quota, then these surplus of votes (i.e., surplus = valid votes for this candidate minus 26) would be transferred to the next preference marked on the elected member's ballot papers. This transfer would be made on a proportional basis. For details, please refer to the appendix.

9. In the process of the transfer of surplus votes, the value of a surplus vote was determined with reference to the number of times the vote was transferred. For details, please refer to the appendix.

10. If the number of the candidate's votes was less than or equal to the quota, then there would be no surplus of votes to transfer.

Elimination

11. When there were no more surpluses of votes available and no more remaining candidate was able to meet the quota, then the process of elimination would take place. The candidate with the lowest number of votes would be eliminated from the race; his or her votes would be transferred to the next preference marked on his or her ballot papers. This transfer was also made on a proportional basis. For details, please refer to the appendix.

Distribution of LegCo Seats

12. This process of transferring votes would continue until all the ten LegCo members were elected.

Illustrative Example

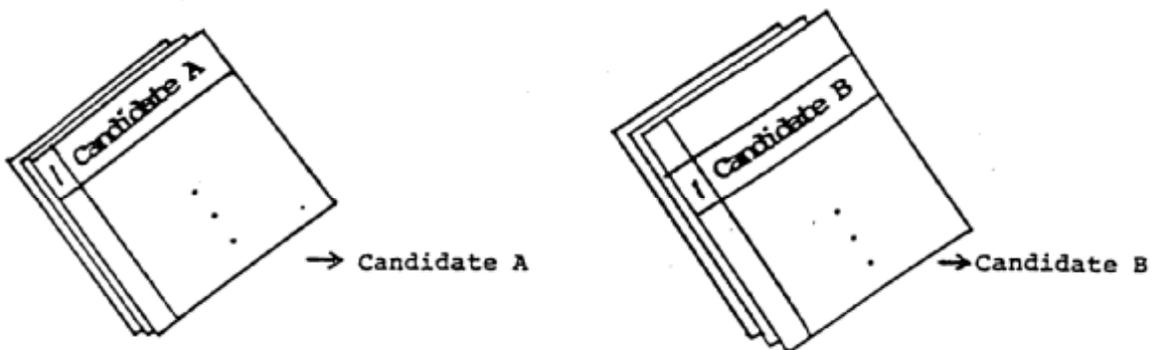
13. An example of the operation of the STV system is given in the appendix which had been tabled by the Constitutional Affairs Branch at one of the Committee meetings of the LegCo in 1994. Please note that the number of valid votes used in the appendix is for illustrative purpose only.

Prepared by Miss Eva Liu, Miss Elyssa Wong
4 September 1997
Tel: 2869-7735

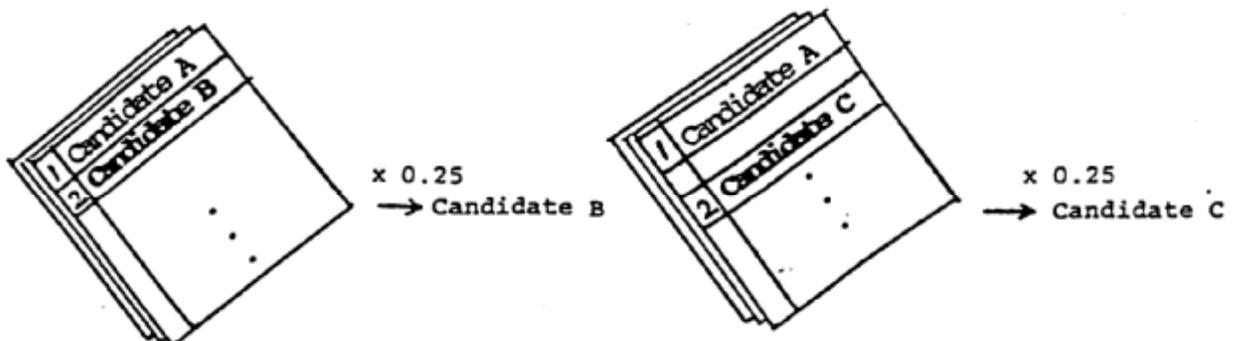
- Only if at a particular stage when no further candidate reaches the quota will the elimination process take place at that stage: the candidate or candidates having the least number of aggregate votes at that stage will be eliminated from the race, and their votes will be transferred by allocating all of their ballot papers to the remaining candidates according to the next preference marked on the ballot papers (Note 1).
- The votes transferred to a candidate will be added to the votes he obtained prior to the transfer to give his aggregate votes at the end of that particular stage.
- An illustrative example of the counting procedure of the STV system is at Annex. It explains the main steps in the counting of votes under the STV system.

Stage 1

- The votes are sorted according to their first preferences.



- Candidate A obtains 40 first-preference votes. He is elected with 10 surplus votes (i.e. 40 votes minus the quota of 30).
- The 10 surplus votes will be transferred by allocating the 40 ballot papers to the 2nd-choice candidates marked on these ballot papers, at a transfer value of $10/40$ or 0.25 each (Note 2).



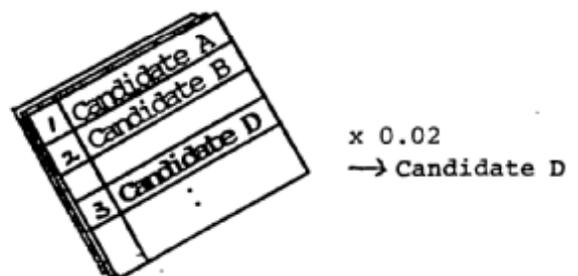
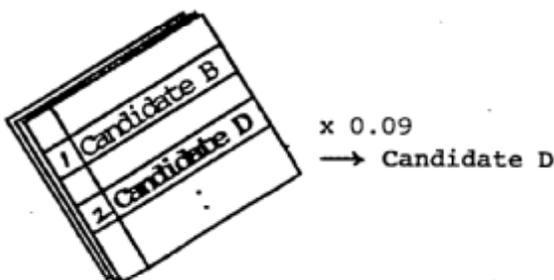
- If, say, Candidate B is the 2nd preference in 20 of these 40 ballot papers, Candidate B will receive 5 votes (20×0.25) from Candidate A.

Stage 2

- The votes allocated from Candidate A are added to the first-preference votes in respect of each of the remaining candidates, giving the aggregate number of votes in respect of each of these candidates at Stage 2.
- Since Candidate B himself already has 28 first-preference votes, he will have 33 aggregate votes after the Stage 1 re-allocation (5 votes from Candidate A) which exceeds the quota, and Candidate B is elected with 3 surplus votes (i.e. 33 votes minus the quota of 30).
- Candidate C having 27 first-preference votes also receives 3 surplus votes from Candidate A, giving a total of 30 aggregate votes which equals the quota. Therefore Candidate C is elected but with no surplus vote.
- The 3 surplus votes of Candidate B will be transferred by allocating the 48 ballot papers of Candidate B (28 ballot papers marked with Candidate B as first preference plus 20 ballot papers allocated from Candidate A) to the remaining candidates according to the next following preference marked on these ballot papers.
- The transfer value of Candidate B's ballot papers (Note 2) is:
 - (i) for ballot papers marked with Candidate B as first preference = $\frac{3}{33} \times 1$ or = 0.09 each.
 - (ii) for ballot papers allocated from Candidate A = $0.25 \times \frac{3}{33}$ or = 0.02 each.

Batch 1 (ballot papers marked with Candidate B as first preference)

Batch 2 (ballot papers allocated from Candidate A)



- If, say, Candidate D is the 2nd preference in 20 of the 28 ballot papers in Batch 1, Candidate D will receive 1.8 votes (20×0.09) from Candidate B.
- If Candidate D is also the 3rd preference in 10 of the 20 ballot papers in Batch 2, Candidate D will receive another 0.2 vote (10×0.02) from Candidate B.
- Therefore a total of 2 ($1.8 + 0.2$) out of 3 surplus votes of Candidate B will be transferred to Candidate D.
- If Candidate C is the 3rd preference in the remaining 10 ballot papers in Batch 2, these 10 ballot papers will be transferred to the 4th-preference candidate(s) marked on the ballot papers because Candidate C is already elected. Suppose they all go to Candidate Y, who will therefore receive 0.2 vote from Candidate B.

Stage 3

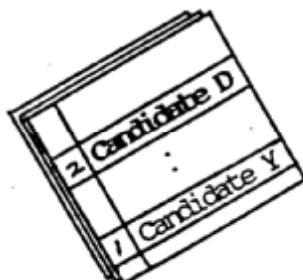
- No further candidate reaches the quota after the Stage 2 re-allocation. Candidate Z having the least number of aggregate votes at this stage is eliminated from the race. He has no vote to transfer.

Stage 4

- The elimination process continues. Candidate Y is eliminated with 2.2 votes to transfer.
- The transfer value of Candidate Y's ballot papers (Note 3) is:
 - (i) for ballot papers marked with Candidate Y as first preference = 1 each.
 - (ii) for ballot papers allocated from Candidate B = 0.02 each.

Batch 1 (Ballot papers marked with Candidate Y as first preference)

Batch 2 (ballot papers allocated from Candidate B)



$\times 1$
→ Candidate D



$\times 0.02$
→ Candidate X

Stage 5 and onwards

- The transfer of surplus votes and the elimination process, as the case may be, will go on until one of the following two situations is reached:

- (i) when 10 candidates have reached the quota (in which case these 10 candidates will be declared elected); or
- (ii) when at a particular stage the number of remaining candidates equals to the number of seats not yet filled (in which case the candidates who have reached the quota at an earlier stage, and those candidates remaining in the race at the last stage (irrespective of whether or not they have reached the quota) will be declared elected).

Note 1: In case at a particular stage a ballot paper is to be allocated to a candidate who has already reached the quota or has been eliminated from the race prior to the transfer, that ballot paper will be allocated instead to another candidate who is marked as the next following preference on that ballot paper.

Note 2: Transfer value of ballot papers of a successful candidate =
$$\frac{\text{No. of his surplus votes}}{\text{No. of his aggregate votes}} \times \text{Value of the ballot paper at that stage before transfer}$$

In the illustrative example at Annex:

- (i) for Candidate A, all of his ballot papers will have the same transfer value which is $\frac{10}{40} \times 1 = 0.25$ each
- (ii) for Candidate B, his ballot papers will have two different transfer values:

transfer value of his original 28 ballot papers = $\frac{3}{33} \times 1 = 0.09$ each

transfer value of the 20 ballot papers allocated from Candidate A = $\frac{3}{33} \times 0.25 = 0.02$ each

Note 3: Ballot papers of a losing candidate are allocated to the remaining candidates at their full value at the particular stage.

Single Transferable Vote system - An illustrative example of the counting procedure

Notes

Assumptions:

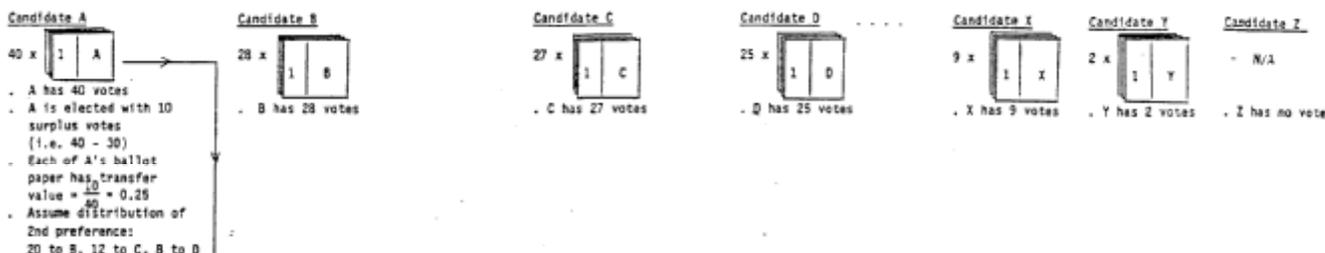
Number of Valid votes = 329

Number of seats = 10

Quota = $\frac{329}{10 + 1} + 1 = 30.82$ (disregard any remainder) = 31

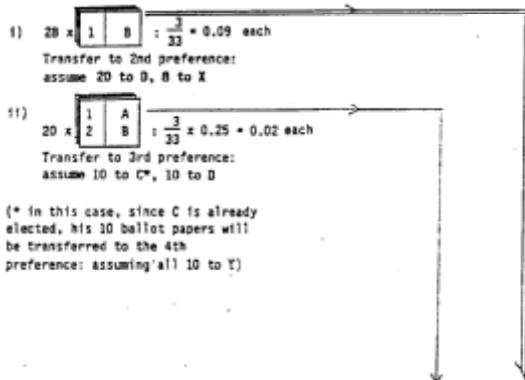
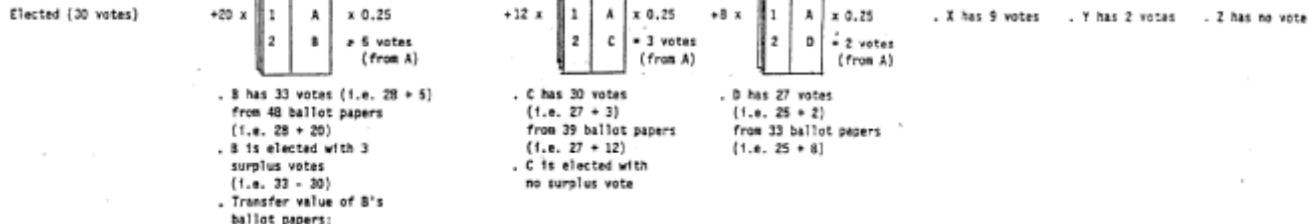
1st Count

Count the 1st preference votes.



Transfer of surplus votes & 2nd count

Transfer A's surplus votes to the remaining candidates and add to their respective 1st preference votes.



Transfer of surplus votes & 3rd count

- Transfer B's surplus votes to the remaining candidates and add to their respective aggregate votes.

Candidate A
Elected (30 seats)

Candidate B
Elected (30 votes)

Candidate C
Elected (30 votes)

Candidate D

+20 x

1	B
2	D

 x 0.09 = 1.8 votes (from B)

+10 x

1	A
2	B
3	D

 x 0.02 = 0.2 vote (from A/B)

D has 29 votes (i.e. 27 + 1.8 + 0.2) from 63 ballot papers (i.e. 33 + 20 + 10)

Candidate X

+8 x

1	B
2	X

 x 0.09 = 0.72 vote (from B)

X has 9.72 votes (i.e. 9 + 0.72) from 17 ballot papers (i.e. 9 + 8)

Candidate Y

+10 x

1	A
2	B
3	C
4	Y

 x 0.02 = 0.2 votes (from A/B)

Y has 2.2 votes (i.e. 2 + 0.2) from 12 ballot papers (i.e. 2 + 10)

Candidate Z
Z has no vote

Elimination of candidate

- Since no further candidate reaches the quota at this stage, Z having the least number of aggregate votes is eliminated from the race.
Z has no vote to transfer.

Elected (30 seats)

Elected (30 votes)

Elected (30 votes)

D has 29 votes

X has 9.72 votes

Y has 2.2 votes
Assume distribution of next following preference:

Eliminated (0 vote)

Elimination of candidate, transfer of votes & 4th count

- Since no further candidate reaches the quota at this stage, Y having the least number of aggregate votes is eliminated from the race.
- Transfer Y's votes to the remaining candidates and add to their respective aggregate votes.

Elected (30 seats)

Elected (30 votes)

Elected (30 votes)

+2 x

2	D
1	Y

 x 1 = 2 votes (from Y)

D has 31 votes (i.e. 29 + 2) from 65 ballot papers (i.e. 63 + 2)

D is elected with 1 surplus vote (i.e. 31 - 30)

Transfer value of D's ballot papers:

- i) 25 x

1	D
---	---

 = $\frac{1}{31} \times 1$ (from D)
- ii) 8 x

1	A
2	D

 = $\frac{1}{31} \times 0.25$ (from A)
- iii) 20 x

1	B
2	D

 = $\frac{1}{31} \times 0.09$ (from B)
- iv) 10 x

1	A
2	B
3	D

 = $\frac{1}{31} \times 0.02$ (from A/B)
- v) 2 x

2	D
1	Y

 = $\frac{1}{31} \times 1$ (from Y)

+10 x

1	A
2	B
3	C
4	Y
5	X
6	Y

 x 0.02 = 0.2 vote (from A/B/Y)

X has 9.92 votes (i.e. 9.72 + 0.2) from 27 ballot papers (i.e. 17 + 10)

Eliminated (0 vote)

Eliminated (0 vote)

Transfer of surplus votes & 5th count

- Transfer D's surplus votes to the remaining candidates and add to their respective aggregate votes.

Subsequent stages

- The transfer of votes goes on until all 10 seats are filled.
- If at subsequent stages, no candidate can reach the quota even after transfer of votes but there are still seats available, the elimination process will continue until the number of remaining candidates equals to the number of seats available.*
- At that final stage, the remaining candidates will be elected to the last available seats.
*If, say, there are two or more candidates competing for one last seat and they have an equal number votes, the successful candidate will be determined by drawing lot. (This arrangement to be prescribed in subsidiary legislation. The same as for elections in geographical constituencies)

