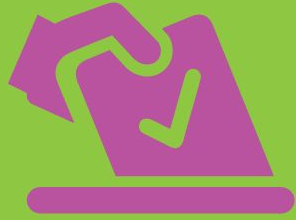


**NOTE:** These slides are not intended to stand alone without the narrative. If you are reviewing these slides on your own, please consider entering “Presenter View” by clicking the down arrow in the “Slideshow” button and adjusting the display balance between slides and narrative by dragging the bar between them.

If you happen to notice that there are over 100 slides, please don't panic! Several blocks of slides (eg. 14-21 or 22-27) are essentially a single image built up slide-by-slide – each with just a line or two of narrative – in order to draw your attention to different aspects of the image.

Questions, comments and corrections can be directed to [deb@themcdonoughs.org](mailto:deb@themcdonoughs.org)

A video of this presentation is (will be. . . ) available at (link).



*Proportional*  
RANKED  
CHOICE  
VOTING  
STUDY

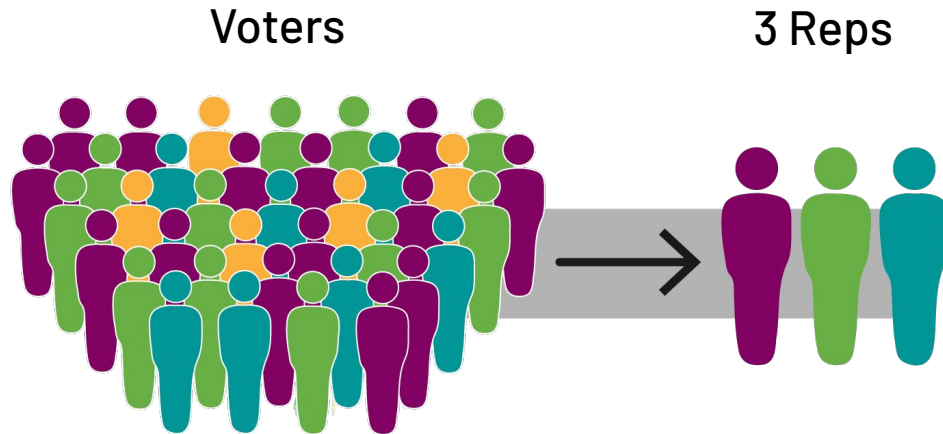


# An Annotated pRCV Tabulation

(These slides, along with the speaker notes and a few additional comments, are available at <http://bit.ly/3S7xigt>)

pRCV (proportional Ranked Choice Voting) is

- a multi-winner election method
- designed for proportional representation



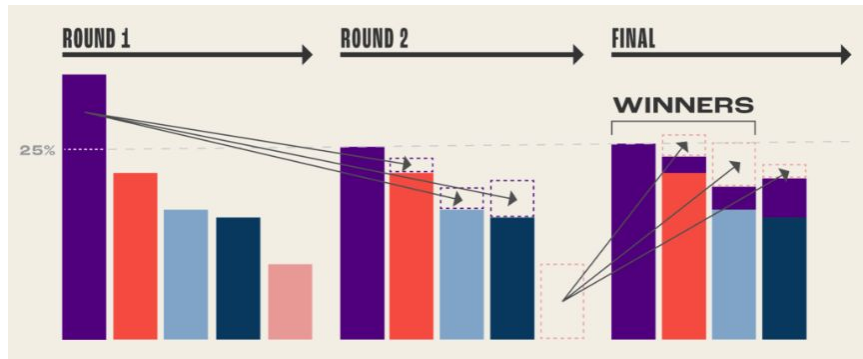
## pRCV (proportional Ranked Choice Voting) is

- a multi-winner election method
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- using standard ranked choice ballots and



## pRCV (proportional Ranked Choice Voting) is

- a multi-winner election method
- designed for proportional representation
- using standard ranked choice ballots and
- the Single Transferable Vote (STV) counting rules.



	First Choice	
Sheikh-Yousef	1959	(22.4%)
DiMillo	1850	(21.1%)
Chann	1486	(17.0%)
Grant	1088	(12.4%)
Buxton	978	(11.2%)
Bailey	418	(4.8%)
Washburn	378	(4.3%)
Emerson	218	(2.5%)
Houseal	205	(2.3%)
Condrey	175	(2.0%)
<b>Total</b>	<b>8755</b>	<b>(100%)</b>

Portland, ME

Charter Commission Election

June 2021

Four at-large seats

# Counting the Votes

## Single-Winner RCV (Majority)

- 1) Determine “election threshold”  
Always 50% (+ 1 vote)
- 2) Run-off rounds
  - a) Cross threshold? → Elected  
Tabulation complete
  - b) No winner? → Eliminate lowest  
Transfer to next choice

(Repeat as needed.)

## Multi-Winner pRCV (Proportional)

- 1) Determine “election threshold”  
**Depends on # of seats**
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Transfer to next choice

(Repeat as needed.)



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# Counting the Votes

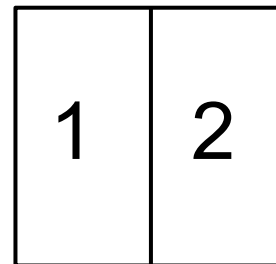
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## Multi-Winner pRCV (Proportional)

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# Counting the Votes

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Tabulation complete
  - b) No winner? → Eliminate lowest  
Transfer to next choice

(Repeat as needed.)

## Multi-Winner pRCV (Proportional)

- 1) Determine “election threshold”  
**Depends on # of seats**

1	2
3	4

	First Choice	
Sheikh-Yousef	1959	(22.4%)
DiMillo	1850	(21.1%)
Chann	1486	(17.0%)
Grant	1088	(12.4%)
Buxton	978	(11.2%)
Bailey	418	(4.8%)
Washburn	378	(4.3%)
Emerson	218	(2.5%)
Houseal	205	(2.3%)
Condrey	175	(2.0%)
<b>Total</b>	<b>8755</b>	<b>(100%)</b>

Step 1: Determine election threshold.

**Depends on # of seats**

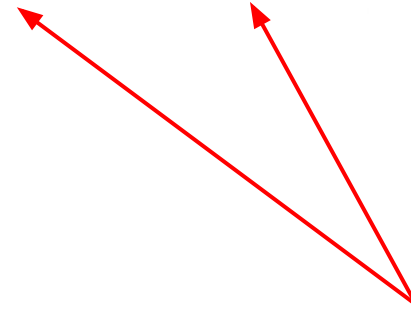
$$Threshold = \left\lfloor \frac{votes}{seats + 1} \right\rfloor + 1$$

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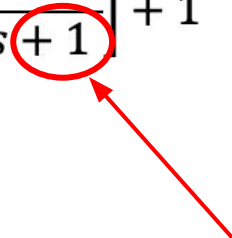
(floor brackets. . .)



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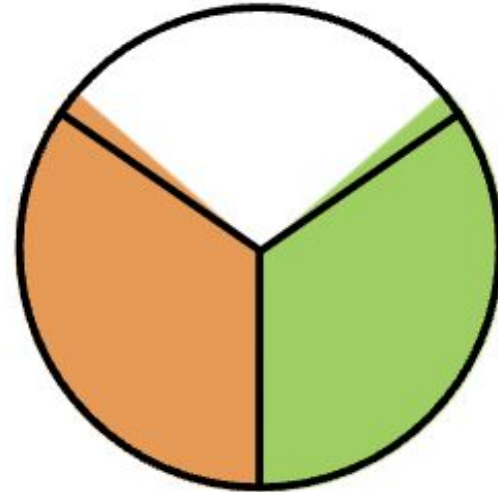
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Step 1: Determine election threshold.

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2 seats?



	First Choice	
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Step 1: Determine election threshold.

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$$= \left\lfloor \frac{8755}{4 + 1} \right\rfloor + 1$$

(This was a 4-seat election.)

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**Round 1: Sheik-Yousef and DiMillo elected**

**→ Surplus Distribution**

**Round 1a: Sheik-Yousef elected → Surplus Distribution**

	Round 1a
<b>Sheikh-Yousef</b>	1959
<b>DiMillo</b>	1850
Chann	1486
Grant	1088
Buxton	978
Bailey	418
Washburn	378
Emerson	218
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<b>Total</b>	<b>8755</b>

	Round 1a
<b>Sheikh-Yousef</b>	1959
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Chann	1486
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Bailey	418
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<b>Total</b>	<b>8755</b>

## Round 1a: Sheik-Yousef elected → Surplus Distribution

She has 1959 votes. The threshold is 1752.

$$1959 - 1752 = 207 \text{ surplus votes.}$$

	Round 1a
<b>Sheikh-Yousef</b>	1959
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Chann	1486
Grant	1088
Buxton	978
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## Round 1a: Sheik-Yousef elected → Surplus Distribution

She has 1959 votes. The threshold is 1752.

$$1959 - 1752 = 207 \text{ surplus votes.}$$

Historically? **Randomly** choose 207 ballots to transfer.



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**Math to the rescue!**

It “costs” 1752 votes to elect a candidate.

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It “costs” 1752 votes to elect a candidate.

$$1752/1959 = 89.43\%$$

“Spend” 89.43% electing Sheikh-Yousef.

	Round 1a
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DiMillo	1850
Chann	1486
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<b>Total</b>	<b>8755</b>

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It “costs” 1752 votes to elect a candidate.

$$1752/1959 = 89.43\%$$

“Spend” 89.43% electing Sheikh-Yousef.

Transfer the “change”.

	A	B	C	
1	PCC - Choice 1	PCC - Choice 2	PCC - Choice 3	PCC - Choice 4
2	Buxton, Catherine A.	Chann, Marpheen S.	Sheikh-Yousef, Nasreen A.	Emerson, Anthony M.
3	Chann, Marpheen S.	Sheikh-Yousef, Nasreen A.	undervote	undervote
4	Buxton, Catherine A.	Sheikh-Yousef, Nasreen A.	Emerson, Anthony M.	Washburn, Robert J.
5	Sheikh-Yousef, Nasreen A.	Chann, Marpheen S.	undervote	undervote
6	Condrey, Lawson T.	Chann, Marpheen S.	Grant, Benjamin K.	DiMillo, Steven A.
7	Sheikh-Yousef, Nasreen A.	Buxton, Catherine A.	Grant, Benjamin K.	Chann, Marpheen S.
8	DiMillo, Steven A.	Bailey, William M.	Houseal, Ian P.	Grant, Benjamin K.
9	Chann, Marpheen S.	Houseal, Ian P.	undervote	undervote
10	Grant, Benjamin K.	Condrey, Lawson T.	Chann, Marpheen S.	Washburn, Robert J.
11	Sheikh-Yousef, Nasreen A.	DiMillo, Steven A.	Emerson, Anthony M.	Chann, Marpheen S.
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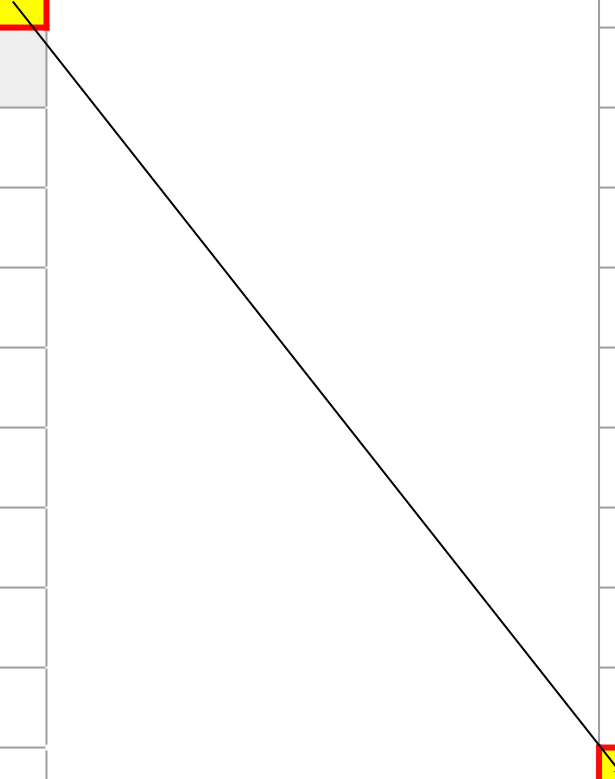
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	Round 1a	2nd Choice
<b>Sheikh-Yousef</b>	1959	
<b>DiMillo</b>	1850	20
Chann	1486	208
Grant	1088	92
Buxton	978	857
Bailey	418	9
Washburn	378	531
Emerson	218	144
Houseal	205	15
Condrey	175	23
<b>Total</b>	<b>8755</b>	

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2nd Choice
20
208
92
857
9
531
144
15
23
<b>1899?</b>

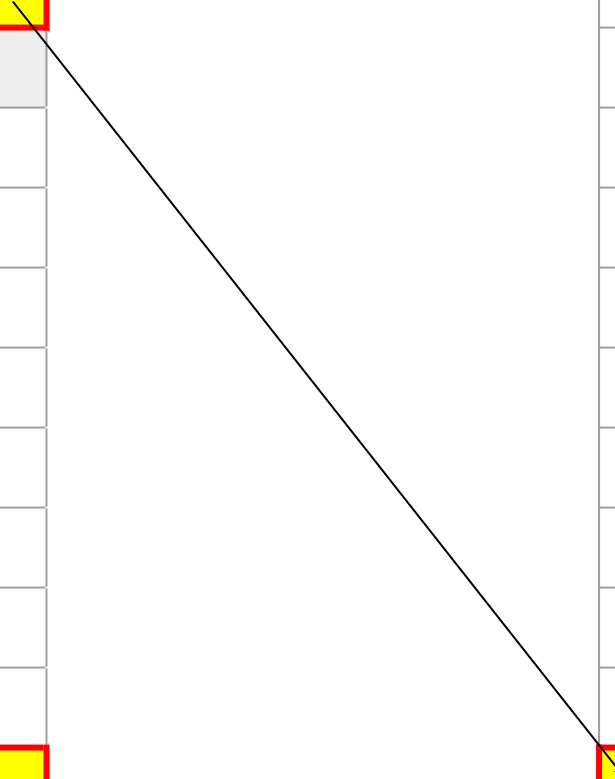




	A	B	C	
1	PCC - Choice 1	PCC - Choice 2	PCC - Choice 3	PCC - Cho
2	Buxton, Catherine A.	Chann, Marpheen S.	Sheikh-Yousef, Nasreen A.	Emerson,
3	Chann, Marpheen S.	Sheikh-Yousef, Nasreen A.	undervote	undervote
4	Buxton, Catherine A.	Sheikh-Yousef, Nasreen A.	Emerson, Anthony M.	Washburn
5	Sheikh-Yousef, Nasreen A.	Chann, Marpheen S.	undervote	undervote
6	Condrey, Lawson T.	Chann, Marpheen S.	Grant, Benjamin K.	DiMillo, St
7	Sheikh-Yousef, Nasreen A.	Buxton, Catherine A.	Grant, Benjamin K.	Chann, M
8	DiMillo, Steven A.	Bailey, William M.	Houseal, Ian P.	Grant, Ben
9	Chann, Marpheen S.	Houseal, Ian P.	undervote	undervote
10	Grant, Benjamin K.	Condrey, Lawson T.	Chann, Marpheen S.	Washburn
11	Sheikh-Yousef, Nasreen A.	DiMillo, Steven A.	Emerson, Anthony M.	Chann, M
12	Chann, Marpheen S.	Buxton, Catherine A.	Houseal, Ian P.	Condrey,
13	Sheikh-Yousef, Nasreen A.	undervote	undervote	undervote
14	Chann, Marpheen S.	Grant, Benjamin K.	Houseal, Ian P.	Buxton, C
15	Houseal, Ian P.	Grant, Benjamin K.	Chann, Marpheen S.	DiMillo, St

	Round 1a
<b>Sheikh-Yousef</b>	1959
<b>DiMillo</b>	1850
Chann	1486
Grant	1088
Buxton	978
Bailey	418
Washburn	378
Emerson	218
Houseal	205
Condrey	175
<b>Inactive</b>	<b>288</b>

2nd Choice
20
208
92
857
9
531
144
15
23
<b>60</b>

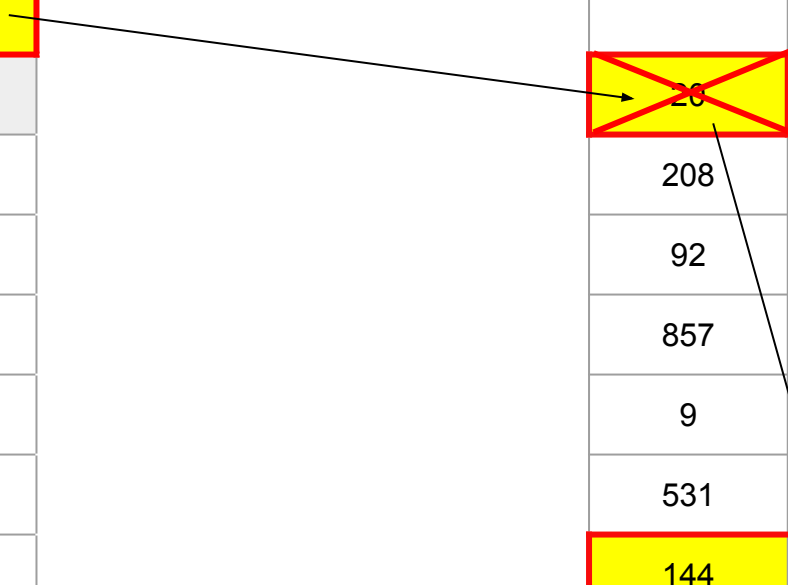


	Round 1a	2nd Choice
<b>Sheikh-Yousef</b>	1959	<del>26</del>
<b>DiMillo</b>	1850	
Chann	1486	208
Grant	1088	92
Buxton	978	857
Bailey	418	9
Washburn	378	531
Emerson	218	144
Houseal	205	15
Condrey	175	23
Inactive	288	60

	A	B	C	
1	PCC - Choice 1	PCC - Choice 2	PCC - Choice 3	PCC - Choice 4
2	Buxton, Catherine A.	Chann, Marpheen S.	Sheikh-Yousef, Nasreen A.	Emerson, Anthony M.
3	Chann, Marpheen S.	Sheikh-Yousef, Nasreen A.	undervote	undervote
4	Buxton, Catherine A.	Sheikh-Yousef, Nasreen A.	Emerson, Anthony M.	Washburn, Robert J.
5	Sheikh-Yousef, Nasreen A.	Chann, Marpheen S.	undervote	undervote
6	Condrey, Lawson T.	Chann, Marpheen S.	Grant, Benjamin K.	DiMillo, Steven A.
7	Sheikh-Yousef, Nasreen A.	Buxton, Catherine A.	Grant, Benjamin K.	Chann, Marpheen S.
8	DiMillo, Steven A.	Bailey, William M.	Houseal, Ian P.	Grant, Benjamin K.
9	Chann, Marpheen S.	Houseal, Ian P.	undervote	undervote
10	Grant, Benjamin K.	Condrey, Lawson T.	Chann, Marpheen S.	Washburn, Robert J.
11	Sheikh-Yousef, Nasreen A.	DiMillo, Steven A.	Emerson, Anthony M.	Chann, Marpheen S.
12	Chann, Marpheen S.	Buxton, Catherine A.	Houseal, Ian P.	Condrey, Lawson T.
13	Sheikh-Yousef, Nasreen A.	undervote	undervote	undervote
14	Chann, Marpheen S.	Grant, Benjamin K.	Houseal, Ian P.	Buxton, Catherine A.
15	Houseal, Ian P.	Grant, Benjamin K.	Chann, Marpheen S.	DiMillo, Steven A.

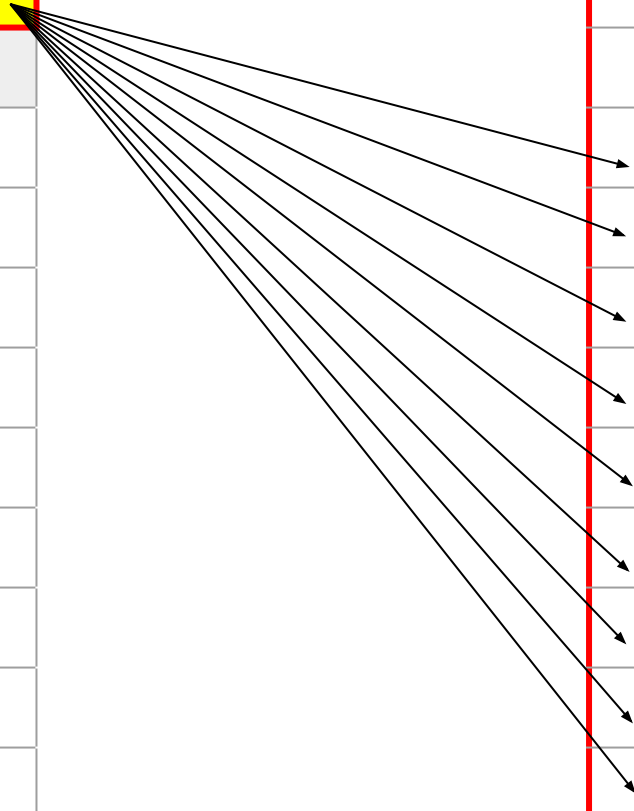
	Round 1a
<b>Sheikh-Yousef</b>	1959
<b>DiMillo</b>	1850
Chann	1486
Grant	1088
Buxton	978
Bailey	418
Washburn	378
Emerson	218
Houseal	205
Condrey	175
Inactive	288

2nd Choice	3rd Choice	'Next' Choice
<del>20</del>		
208	+ 3 =	211
92	+ 2 =	94
857	+ 4 =	861
9	+ 4 =	13
531	+ 3 =	534
144	+ 1 =	145
15	+ 0 =	15
23	+ 0 =	23
60	+ 3 =	63



	Round 1a
<b>Sheikh-Yousef</b>	1959
<b>DiMillo</b>	1850
Chann	1486
Grant	1088
Buxton	978
Bailey	418
Washburn	378
Emerson	218
Houseal	205
Condrey	175
Inactive	288

'Next' Choice	x Fraction	Votes to transfer
211		
94		
861		
13		
534		
145		
15		
23		
63		

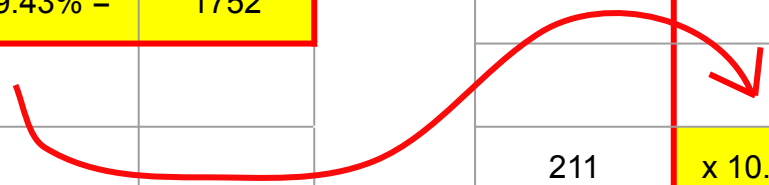


	Round 1a	Transfer from Sheikh-Yousef	Round 1b
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752
<b>DiMillo</b>	1850		
Chann	1486		
Grant	1088		
Buxton	978		
Bailey	418		
Washburn	378		
Emerson	218		
Houseal	205		
Condrey	175		
Inactive	288		

'Next' Choice	x Fraction	Votes to transfer
211		
94		
861		
13		
534		
145		
15		
23		
63		

	Round 1a	Transfer from Sheikh-Yousef	Round 1b
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752
<b>DiMillo</b>	1850		
Chann	1486		
Grant	1088		
Buxton	978		
Bailey	418		
Washburn	378		
Emerson	218		
Houseal	205		
Condrey	175		
Inactive	288		

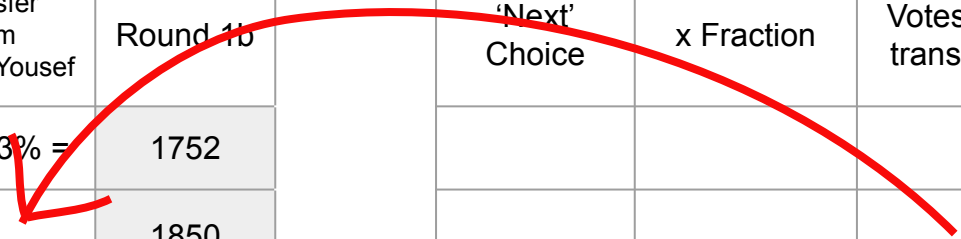
'Next' Choice	x Fraction	Votes to transfer
211	x 10.57% =	22.29
94	x 10.57% =	9.93
861	x 10.57% =	90.97
13	x 10.57% =	1.37
534	x 10.57% =	56.42
145	x 10.57% =	15.32
15	x 10.57% =	1.58
23	x 10.57% =	2.43
63	x 10.57% =	6.66





	Round 1a	Transfer from Sheikh-Yousef	Round 1b
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752
<b>DiMillo</b>	1850		1850
Chann	1486	+ 22.29 =	1508.29
Grant	1088	+ 9.93 =	1097.93
Buxton	978	+ 90.97 =	1068.97
Bailey	418	+ 1.37 =	419.37
Washburn	378	+ 56.42 =	434.42
Emerson	218	+ 15.32 =	233.32
Houseal	205	+ 1.58 =	206.58
Condrey	175	+ 2.43 =	177.43
Inactive	288	+ 6.66 =	294.66

'Next' Choice	x Fraction	Votes to transfer
211	x 10.57% =	22.29
94	x 10.57% =	9.93
861	x 10.57% =	90.97
13	x 10.57% =	1.37
534	x 10.57% =	56.42
145	x 10.57% =	15.32
15	x 10.57% =	1.58
23	x 10.57% =	2.43
63	x 10.57% =	6.66



	Round 1a	Transfer from Sheikh-Yousef	Round 1b
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752
<b>DiMillo</b>	1850		1850
Chann	1486	+ 22.29 =	1508.29
Grant	1088	+ 9.93 =	1097.93
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Inactive	288	+ 6.66 =	294.66

	Round 1a	Transfer from Sheikh-Yousef	Round 1b
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752
<b>DiMillo</b>	1850		1850
Chann	1486	+ 22.29 =	1508.29
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Houseal	205	+ 1.58 =	206.58
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Inactive	288	+ 6.66 =	294.66

<b>Progressive</b>

	Round 1a	Transfer from Sheikh-Yousef	Round 1b
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752
<b>DiMillo</b>	1850		1850
Chann	1486	+ 22.29 =	1508.29
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Houseal	205	+ 1.58 =	206.58
Condrey	175	+ 2.43 =	177.43
Inactive	288	+ 6.66 =	294.66

**Round 1b: DiMillo Elected → Surplus Transfer**

It “costs” 1752 votes to elect a candidate.

$$1752/1850 = 94.70\%$$

“Spend” 94.70% electing DiMillo.

Transfer the “change”.

	Round 1a	Transfer from Sheikh-Yousef	Round 1b	Transfer from DiMillo	Round 2
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752		1752
<b>DiMillo</b>	1850		1850	x 94.70% =	1752
Chann	1486	+ 22.29 =	1508.29		
Grant	1088	+ 9.93 =	1097.93		
Buxton	978	+ 90.97 =	1068.97		
Bailey	418	+ 1.37 =	419.37		
Washburn	378	+ 56.42 +	434.42		
Emerson	218	+ 15.32 =	233.32		
Houseal	205	+ 1.58 =	206.58		
Condrey	175	+ 2.43 =	177.43		
Inactive	288	+ 6.66 =	294.66		

Progressive

	Round 1a	Transfer from Sheikh-Yousef	Round 1b	Transfer from DiMillo	Round 2
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752		1752
<b>DiMillo</b>	1850		1850	x 94.70% =	1752
Chann	1486	+ 22.29 =	1508.29	+ 16.63 =	1524.93
Grant	1088	+ 9.93 =	1097.93	+ 8.69 =	1106.62
<b>Buxton</b>	978	+ 90.97 =	1068.97	+ 3.44 =	1072.42
Bailey	418	+ 1.37 =	419.37	+ 32.26 =	451.63
<b>Washburn</b>	378	+ 56.42 +	434.42	+ 1.70 =	436.12
Emerson	218	+ 15.32 =	233.32	+ 2.01 =	235.33
Houseal	205	+ 1.58 =	206.58	+ 5.88 =	212.46
Condrey	175	+ 2.43 =	177.43	+ 3.60 =	181.03
Inactive	288	+ 6.66 =	294.66	+ 23.78 =	318.44

Progressive

	Round 1a	Transfer from Sheikh-Yousef	Round 1b	Transfer from DiMillo	Round 2
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752		1752
<b>DiMillo</b>	1850		1850	x 94.70% =	1752
Chann	1486	+ 22.29 =	1508.29	+ 16.63 =	1524.93
Grant	1088	+ 9.93 =	1097.93	+ 8.69 =	1106.62
Buxton	978	+ 90.97 =	1068.97	+ 3.44 =	1072.42
Bailey	418	+ 1.37 =	419.37	+ 32.26 =	451.63
Washburn	378	+ 56.42 +	434.42	+ 1.70 =	436.12
Emerson	218	+ 15.32 =	233.32	+ 2.01 =	235.33
Houseal	205	+ 1.58 =	206.58	+ 5.88 =	212.46
Condrey	175	+ 2.43 =	177.43	+ 3.60 =	181.03
Inactive	288	+ 6.66 =	294.66	+ 23.78 =	318.44

Progressive

	Round 1a	Transfer from Sheikh-Yousef	Round 1b	Transfer from DiMillo	Round 2
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752		1752
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Houseal	205	+ 1.58 =	206.58	+ 5.88 =	212.46
Condrey	175	+ 2.43 =	177.43	+ 3.60 =	181.03
Inactive	288	+ 6.66 =	294.66	+ 23.78 =	318.44

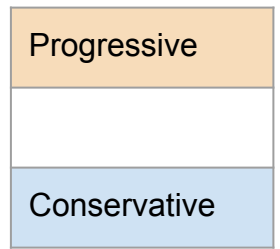
Progressive



	Round 1a	Transfer from Sheikh-Yousef	Round 1b	Transfer from DiMillo	Round 2
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752		1752
<b>DiMillo</b>	1850		1850	x 94.70% =	1752
Chann	1486	+ 22.29 =	1508.29	+ 16.63 =	1524.93
Grant	1088	+ 9.93 =	1097.93	+ 8.69 =	1106.62
Buxton	978	+ 90.97 =	1068.97	+ 3.44 =	1072.42
<b>Bailey</b>	418	+ 1.37 =	419.37	+ 32.26 =	451.63
Washburn	378	+ 56.42 +	434.42	+ 1.70 =	436.12
Emerson	218	+ 15.32 =	233.32	+ 2.01 =	235.33
Houseal	205	+ 1.58 =	206.58	+ 5.88 =	212.46
Condrey	175	+ 2.43 =	177.43	+ 3.60 =	181.03
Inactive	288	+ 6.66 =	294.66	+ 23.78 =	318.44

Progressive

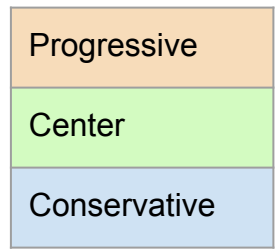
	Round 1a	Transfer from Sheikh-Yousef	Round 1b	Transfer from DiMillo	Round 2
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752		1752
<b>DiMillo</b>	1850		1850	x 94.70% =	1752
Chann	1486	+ 22.29 =	1508.29	+ 16.63 =	1524.93
Grant	1088	+ 9.93 =	1097.93	+ 8.69 =	1106.62
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<b>Bailey</b>	418	+ 1.37 =	419.37	+ 32.26 =	451.63
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Emerson	218	+ 15.32 =	233.32	+ 2.01 =	235.33
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Condrey	175	+ 2.43 =	177.43	+ 3.60 =	181.03
Inactive	288	+ 6.66 =	294.66	+ 23.78 =	318.44



	Round 1a	Transfer from Sheikh-Yousef	Round 1b	Transfer from DiMillo	Round 2
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752		1752
<b>DiMillo</b>	1850		1850	x 94.70% =	1752
Chann	1486	+ 22.29 =	1508.29	+ 16.63 =	1524.93
Grant	1088	+ 9.93 =	1097.93	+ 8.69 =	1106.62
Buxton	978	+ 90.97 =	1068.97	+ 3.44 =	1072.42
Bailey	418	+ 1.37 =	419.37	+ 32.26 =	451.63
Washburn	378	+ 56.42 +	434.42	+ 1.70 =	436.12
Emerson	218	+ 15.32 =	233.32	+ 2.01 =	235.33
Houseal	205	+ 1.58 =	206.58	+ 5.88 =	212.46
Condrey	175	+ 2.43 =	177.43	+ 3.60 =	181.03
Inactive	288	+ 6.66 =	294.66	+ 23.78 =	318.44

Progressive
Conservative

	Round 1a	Transfer from Sheikh-Yousef	Round 1b	Transfer from DiMillo	Round 2
<b>Sheikh-Yousef</b>	1959	x 89.43% =	1752		1752
<b>DiMillo</b>	1850		1850	x 94.70% =	1752
Chann	1486	+ 22.29 =	1508.29	+ 16.63 =	1524.93
Grant	1088	+ 9.93 =	1097.93	+ 8.69 =	1106.62
Buxton	978	+ 90.97 =	1068.97	+ 3.44 =	1072.42
Bailey	418	+ 1.37 =	419.37	+ 32.26 =	451.63
Washburn	378	+ 56.42 +	434.42	+ 1.70 =	436.12
Emerson	218	+ 15.32 =	233.32	+ 2.01 =	235.33
Houseal	205	+ 1.58 =	206.58	+ 5.88 =	212.46
Condrey	175	+ 2.43 =	177.43	+ 3.60 =	181.03
Inactive	288	+ 6.66 =	294.66	+ 23.78 =	318.44



	Round 1a	Round 1b	Round 2
<b>Sheikh-Yousef</b>	1959	1752	1752
<b>DiMillo</b>	1850	1850	1752
Chann	1486	1508.29	1524.93
Grant	1088	1097.93	1106.62
Buxton	978	1068.97	1072.42
Bailey	418	419.37	451.63
Washburn	378	434.42	436.12
Emerson	218	233.32	235.33
Houseal	205	206.58	212.46
Condrey	175	177.43	181.03
Inactive	288	294.66	318.44

**Round 2:**

	Round 1a	Round 1b	Round 2
<b>Sheikh-Yousef</b>	1959	1752	1752
<b>DiMillo</b>	1850	1850	1752
Chann	1486	1508.29	1524.93
Grant	1088	1097.93	1106.62
Buxton	978	1068.97	1072.42
Bailey	418	419.37	451.63
Washburn	378	434.42	436.12
Emerson	218	233.32	235.33
Houseal	205	206.58	212.46
<b>Condrey</b>	<b>175</b>	<b>177.43</b>	<b>181.03</b>
Inactive	288	294.66	318.44

**Round 2: Condrey Eliminated**

	Round 1a	Round 1b	Round 2
<b>Sheikh-Yousef</b>	1959	1752	1752
<b>DiMillo</b>	1850	1850	1752
Chann	1486	1508.29	1524.93
Grant	1088	1097.93	1106.62
Buxton	978	1068.97	1072.42
Bailey	418	419.37	451.63
Washburn	378	434.42	436.12
Emerson	218	233.32	235.33
Houseal	205	206.58	212.46
<b>Condrey</b>	<b>175</b>	<b>177.43</b>	<b>181.03</b>
Inactive	288	294.66	318.44

**Round 2: Condrey Eliminated**

He has 175 whole votes. . .

	Round 1a	Round 1b	Round 2
<b>Sheikh-Yousef</b>	1959	1752	1752
<b>DiMillo</b>	1850	1850	1752
Chann	1486	1508.29	1524.93
Grant	1088	1097.93	1106.62
Buxton	978	1068.97	1072.42
Bailey	418	419.37	451.63
Washburn	378	434.42	436.12
Emerson	218	233.32	235.33
Houseal	205	205.58	212.46
<b>Condrey</b>	<b>175</b>	<b>177.43</b>	<b>181.03</b>
Inactive	288	294.66	318.44

**Round 2: Condrey Eliminated**

He has 175 whole votes, **and 6.03 votes in “change.”**



	Round 1a	Round 1b	Round 2
Sheikh-Yousef	1959	1752	1752
DiMillo	1850	1850	1752
Chann	1486	1508.29	1524.93
Grant	1088	1097.93	1106.62
Buxton	978	1068.97	1072.42
Bailey	418	419.37	451.63
Washburn	378	434.42	436.12
Emerson	218	233.32	235.33
Houseal	205	206.58	212.46
Condrey	175	177.43	181.03
Inactive	288	294.66	318.44

**Round 6: Bailey Eliminated**

**Round 5: Washburn Eliminated**

**Round 4: Emerson Eliminated**

**Round 3: Houseal Eliminated**

**Round 2: Condrey Eliminated**

	Round 1a	Round 1b	Round 2	Transfer from Condrey	Round 3
<b>Sheikh-Yousef</b>	1959	1752	1752		1752
<b>DiMillo</b>	1850	1850	1752		1752
Chann	1486	1508.29	1524.93	+ 33.85	1558.77
Grant	1088	1097.93	1106.62	+ 30.69	1137.31
Buxton	978	1068.97	1072.42	+ 40.90	1113.32
Bailey	418	419.37	451.63	+ 13.58	465.21
Washburn	378	434.42	436.12	+ 13.37	449.49
Emerson	218	233.32	235.33	+ 14.26	249.60
Houseal	205	206.58	212.46	+ 10.53	222.99
<del>Condrey</del>	175	177.43	181.03	- 181.03	0
Inactive	288	294.66	318.44	+ 23.85	342.29

Progressive
Center
Conservative

	Round 1a	Round 1b	Round 2	Transfer from Condrey	Transfer from Houseal	Round 4
<b>Sheikh-Yousef</b>	1959	1752	1752			1752
<b>DiMillo</b>	1850	1850	1752			1752
Chann	1486	1508.29	1524.93	+ 33.85	+ 62.38	1621.16
Grant	1088	1097.93	1106.62	+ 30.69	+ 52.01	1189.31
Buxton	978	1068.97	1072.42	+ 40.90	+ 13.58	1126.90
Bailey	418	419.37	451.63	+ 13.58	+ 54.60	519.81
Washburn	378	434.42	436.12	+ 13.37	+ 10.11	459.59
Emerson	218	233.32	235.33	+ 14.26	+ 3.16	252.76
<del>Houseal</del>	205	206.58	212.46	+ 10.53	- 222.99	0
<del>Condrey</del>	175	177.43	181.03	- 181.03		0
Inactive	288	294.66	318.44	+ 23.85	+ 27.16	369.45

Progressive
Center
Conservative

	Round 1a	Round 1b	Round 2	Transfer from Condrey	Transfer from Houseal	Transfer from Emerson	Round 5
<b>Sheikh-Yousef</b>	1959	1752	1752				1752
<b>DiMillo</b>	1850	1850	1752				1752
Chann	1486	1508.29	1524.93	+ 33.85	+ 62.38	+ 31.69	1652.85
Grant	1088	1097.93	1106.62	+ 30.69	+ 52.01	+ 25.32	1214.64
Buxton	978	1068.97	1072.42	+ 40.90	+ 13.58	+ 91.13	1218.03
Bailey	418	419.37	451.63	+ 13.58	+ 54.60	+ 10.69	530.50
Washburn	378	434.42	436.12	+ 13.37	+ 10.11	+ 67.92	527.51
<del>Emerson</del>	218	233.32	235.33	+ 14.26	+ 3.16	- 252.77	0
<del>Houseal</del>	205	206.58	212.46	+ 10.53	- 222.99		0
<del>Condrey</del>	175	177.43	181.03	- 181.03			0
Inactive	288	294.66	318.44	+ 23.85	+ 27.16	+ 26.01	395.46

Progressive
Center
Conservative

	Round 1a	Round 1b	Round 2	Transfer from Condrey	Transfer from Houseal	Transfer from Emerson	Round 5
<b>Sheikh-Yousef</b>	1959	1752	1752				1752
<b>DiMillo</b>	1850	1850	1752				1752
Chann	1486	1508.29	1524.93	+ 33.85	+ 62.38	+ 31.69	1652.85
Grant	1088	1097.93	1106.62	+ 30.69	+ 52.01	+ 25.32	1214.64
Buxton	978	1068.97	1072.42	+ 40.90	+ 13.58	+ 91.13	1218.03
Bailey	418	419.37	451.63	+ 13.58	+ 54.60	+ 10.69	530.50
Washburn	378	434.42	436.12	+ 13.37	+ 10.11	+ 67.92	527.51
<del>Emerson</del>	218	233.32	235.33	+ 14.26	+ 3.16	- 252.77	0
<del>Houseal</del>	205	206.58	212.46	+ 10.53	- 222.99		0
<del>Condrey</del>	175	177.43	181.03	- 181.03			0
Inactive	288	294.66	318.44	+ 23.85	+ 27.16	+ 26.01	395.46

Progressive
Center
Conservative

	Round 1a	Round 1b	Round 2	Transfer from Condrey	Transfer from Houseal	Transfer from Emerson	Round 5
<b>Sheikh-Yousef</b>	1959	1752	1752				1752
<b>DiMillo</b>	1850	1850	1752				1752
Chann	1486	1508.29	1524.93	+ 33.85	+ 62.38	+ 31.69	1652.85
Grant	1088	1097.93	1106.62	+ 30.69	+ 52.01	+ 25.32	1214.64
Buxton	978	1068.97	1072.42	+ 40.90	+ 13.58	+ 91.13	1218.03
Bailey	418	419.37	451.63	+ 13.58	+ 54.60	+ 10.69	530.50
Washburn	378	434.42	436.12	+ 13.37	+ 10.11	+ 67.92	527.51
<del>Emerson</del>	218	233.32	235.33	+ 14.26	+ 3.16	- 252.77	0
<del>Houseal</del>	205	206.58	212.46	+ 10.53	- 222.99		0
<del>Condrey</del>	175	177.43	181.03	- 181.03			0
Inactive	288	294.66	318.44	+ 23.85	+ 27.16	+ 26.01	395.46



Progressive
Center
Conservative

	Round 1a	Round 1b	Round 2	Transfer from Condrey	Transfer from Houseal	Transfer from Emerson	Transfer from Washburn	Round 6
<b>Sheikh-Yousef</b>	1959	1752	1752					1752
<b>DiMillo</b>	1850	1850	1752					1752
Chann	1486	1508.29	1524.93	+ 33.85	+ 62.38	+ 31.69	+ 48.07	1700.92
Grant	1088	1097.93	1106.62	+ 30.69	+ 52.01	+ 25.32	+ 62.85	1277.49
Buxton	978	1068.97	1072.42	+ 40.90	+ 13.58	+ 91.13	+ 373.57	1591.60
Bailey	418	419.37	451.63	+ 13.58	+ 54.60	+ 10.69	+ 10.85	541.35
<del>Washburn</del>	378	434.42	436.12	+ 13.37	+ 10.11	+ 67.92	- 527.51	0
<del>Emerson</del>	218	233.32	235.33	+ 14.26	+ 3.16	- 252.77		0
<del>Houseal</del>	205	206.58	212.46	+ 10.53	- 222.99			0
<del>Condrey</del>	175	177.43	181.03	- 181.03				0
Inactive	288	294.66	318.44	+ 23.85	+ 27.16	+ 26.01	+ 32.17	427.63

	Round 1a	Round 1b	Round 2	Transfer from Condrey	Transfer from Houseal	Transfer from Emerson	Transfer from Washburn	Round 6
<b>Sheikh-Yousef</b>	1959	1752	1752					1752
<b>DiMillo</b>	1850	1850	1752					1752
Chann	1486	1508.29	1524.93	+ 33.85	+ 62.38	+ 31.69	+ 48.07	1700.92
Grant	1088	1097.93	1106.62	+ 30.69	+ 52.01	+ 25.32	+ 62.85	1277.49
Buxton	978	1068.97	1072.42	+ 40.90	+ 13.58	+ 91.13	+ 373.57	1591.60
Bailey	418	419.37	451.63	+ 13.58	+ 54.60	+ 10.69	+ 10.85	541.35
<del>Washburn</del>	378	434.42	436.12	+ 13.37	+ 10.11	+ 67.92	- 527.51	0
<del>Emerson</del>	218	233.32	235.33	+ 14.26	+ 3.16	- 252.77		0
<del>Houseal</del>	205	206.58	212.46	+ 10.53	- 222.99			0
<del>Condrey</del>	175	177.43	181.03	- 181.03				0
Inactive	288	294.66	318.44	+ 23.85	+ 27.16	+ 26.01	+ 32.17	427.63





	Round 1a	Round 1b	Round 2	Transfer from Condrey	Transfer from Houseal	Transfer from Emerson	Transfer from Washburn	Round 6
<b>Sheikh-Yousef</b>	1959	1752	1752					1752
<b>DiMillo</b>	1850	1850	1752					1752
<b>Chann</b>	1486	1508.29	1524.93	+ 33.85	+ 62.38	+ 31.69	+ 48.07	<b>1700.92</b>
<b>Grant</b>	1088	1097.93	1106.62	+ 30.69	+ 52.01	+ 25.32	+ 62.85	1277.49
<b>Buxton</b>	978	1068.97	1072.42	+ 40.90	+ 13.58	+ 91.13	+ 373.57	1591.60
<b>Bailey</b>	418	419.37	451.63	+ 13.58	+ 54.60	+ 10.69	+ 10.85	541.35
<del>Washburn</del>	378	434.42	436.12	+ 13.37	+ 10.11	+ 67.92	- 527.51	0
<del>Emerson</del>	218	233.32	235.33	+ 14.26	+ 3.16	- 252.77		0
<del>Houseal</del>	205	206.58	212.46	+ 10.53	- 222.99			0
<del>Condrey</del>	175	177.43	181.03	- 181.03				0
<b>Inactive</b>	288	294.66	318.44	+ 23.85	+ 27.16	+ 26.01	+ 32.17	427.63



	Round 1a	Round 1b	Round 2	Transfer from Condrey	Transfer from Houseal	Transfer from Emerson	Transfer from Washburn	Transfer from Bailey	Round 7
<b>Sheikh-Yousef</b>	1959	1752	1752						1752
<b>DiMillo</b>	1850	1850	1752						1752
Chann	1486	1508.29	1524.93	+ 33.85	+ 62.38	+ 31.69	+ 48.07	+ 211.84	1922.76
Grant	1088	1097.93	1106.62	+ 30.69	+ 52.01	+ 25.32	+ 62.85	+ 81.67	1359.16
Buxton	978	1068.97	1072.42	+ 40.90	+ 13.58	+ 91.13	+ 373.57	+ 56.44	1648.04
<del>Bailey</del>	418	419.37	451.63	+ 13.58	+ 54.60	+ 10.69	+ 10.85	- 541.35	0
<del>Washburn</del>	378	434.42	436.12	+ 13.37	+ 10.11	+ 67.92	- 527.51		0
<del>Emerson</del>	218	233.32	235.33	+ 14.26	+ 3.16	- 252.77			0
<del>Houseal</del>	205	206.58	212.46	+ 10.53	- 222.99				0
<del>Condrey</del>	175	177.43	181.03	- 181.03					0
Inactive	288	294.66	318.44	+ 23.85	+ 27.16	+ 26.01	+ 32.17	+ 181.39	609.02



	Round 1a	Round 1b	Round 2	Transfer from Condrey	Transfer from Houseal	Transfer from Emerson	Transfer from Washburn	Transfer from Bailey	Round 7
<b>Sheikh-Yousef</b>	1959	1752	1752						1752
<b>DiMillo</b>	1850	1850	1752						1752
Chann	1486	1508.29	1524.93	+ 33.85	+ 62.38	+ 31.69	+ 48.07	+ 211.84	1922.76
Grant	1088	1097.93	1106.62	+ 30.69	+ 52.01	+ 25.32	+ 62.85	+ 81.67	1359.16
Buxton	978	1068.97	1072.42	+ 40.90	+ 13.58	+ 91.13	+ 373.57	+ 56.44	1648.04
<del>Bailey</del>	418	419.37	451.63	+ 13.58	+ 54.60	+ 10.69	+ 10.85	- 541.35	0
<del>Washburn</del>	378	434.42	436.12	+ 13.37	+ 10.11	+ 67.92	- 527.51		0
<del>Emerson</del>	218	233.32	235.33	+ 14.26	+ 3.16	- 252.77			0
<del>Houseal</del>	205	206.58	212.46	+ 10.53	- 222.99				0
<del>Condrey</del>	175	177.43	181.03	- 181.03					0
Inactive	288	294.66	318.44	+ 23.85	+ 27.16	+ 26.01	+ 32.17	+ 181.39	609.02

	Round 1a	Round 1b	Round 7
<b>Sheikh-Yousef</b>	1959	1752	1752
<b>DiMillo</b>	1850	1850	1752
<b>Chann</b>	1486	1508.29	1922.76
Grant	1088	1097.93	1359.16
Buxton	978	1068.97	1648.04
<del>Bailey</del>	418	419.37	0
<del>Washburn</del>	378	434.42	0
<del>Emerson</del>	218	233.32	0
<del>Houseal</del>	205	206.58	0
<del>Condrey</del>	175	177.43	0
Inactive	288	294.66	609.02

## Round 7: Chann elected → Surplus Distribution

It “costs” 1752 votes to elect a candidate.

$$1752/1922.76 = 91.12\%$$

“Spend” 91.12% electing Chann.

Transfer the “Change”.

	Round 1a	Round 1b	Round 7
<b>Sheikh-Yousef</b>	1959	1752	1752
<b>DiMillo</b>	1850	1850	1752
<b>Chann</b>	1486	1508.29	<b>1922.76</b>
Grant	1088	1097.93	1359.16
Buxton	978	1068.97	1648.04
<del>Bailey</del>	418	419.37	0
<del>Washburn</del>	378	434.42	0
<del>Emerson</del>	218	233.32	0
<del>Houseal</del>	205	206.58	0
<del>Condrey</del>	175	177.43	0
Inactive	288	294.66	609.02

## Round 7: Chann elected → Surplus Distribution

It “costs” 1752 votes to elect a candidate.

$$1752/1922.76 = 91.12\%$$

“Spend” 91.12% electing Chann.

Transfer the “Change”.

Chann’s 1922.76 vote total includes:

**1486 whole votes with Chann marked first  
+ 372 whole votes from eliminated candidates**

	Round 1a	Round 1b	Round 7
<b>Sheikh-Yousef</b>	1959	1752	1752
<b>DiMillo</b>	1850	1850	1752
<b>Chann</b>	1486	1508.29	<b>1922.76</b>
Grant	1088	1097.93	1359.16
Buxton	978	1068.97	1648.04
<del>Bailey</del>	418	419.37	0
<del>Washburn</del>	378	434.42	0
<del>Emerson</del>	218	233.32	0
<del>Houseal</del>	205	206.58	0
<del>Condrey</del>	175	177.43	0
Inactive	288	294.66	609.02

## Round 7: Chann elected → Surplus Distribution

It “costs” 1752 votes to elect a candidate.

$$1752/1922.76 = 91.12\%$$

“Spend” 91.12% electing Chann.

Transfer the “Change”.

**(and the change of change. . . )**

Chann’s 1922.76 vote total includes:

1486 full ballots with Chann marked first  
+ 372 full ballots from eliminated candidates  
**+ 64.76 in partials from S-Y or DiMillo**  
**(some by way of an elimination)**

**Round 7: Chann elected**  
**→ Surplus Distribution**

	Round 1a	Round 1b	Round 7	Transfer from Chann	Round 8
<b>Sheikh-Yousef</b>	1959	1752	1752		1752
<b>DiMillo</b>	1850	1850	1752		1752
<b>Chann</b>	1486	1508.29	1922.76	x 91.12% =	1752
Grant	1088	1097.93	1359.16	+ 78.39 =	1437.56
Buxton	978	1068.97	1648.04	+ 46.68 =	1694.72
<del>Bailey</del>	418	419.37	0		0
<del>Washburn</del>	378	434.42	0		0
<del>Emerson</del>	218	233.32	0		0
<del>Houseal</del>	205	206.58	0		0
<del>Condrey</del>	175	177.43	0		0
Inactive	288	294.66	609.02	+ 45.67 =	654.69



Progressive
Center
Conservative

	Round 1a	Round 1b	Round 7	Round 8
<b>Sheikh-Yousef</b>	1959	1752	1752	1752
<b>DiMillo</b>	1850	1850	1752	1752
<b>Chann</b>	1486	1508.29	1922.76	1752
Grant	1088	1097.93	1359.16	1437.56
<b>Buxton</b>	978	1068.97	1648.04	<b>1694.72</b>
<del>Bailey</del>	418	419.37	0	0
<del>Washburn</del>	378	434.42	0	0
<del>Emerson</del>	218	233.32	0	0
<del>Houseal</del>	205	206.58	0	0
<del>Condrey</del>	175	177.43	0	0
Inactive	288	294.66	609.02	654.69

**Round 8: Buxton elected**

... because she has more votes than Grant.



Progressive
Center
Conservative



## . . . but is it proportional?

	Round 1a	Round 1b	Round 7	Round 8
<b>Sheikh-Yousef</b>	1959	1752	1752	1752
<b>DiMillo</b>	1850	1850	1752	1752
<b>Chann</b>	1486	1508.29	1922.76	1752
Grant	1088	1097.93	1359.16	1437.56
<b>Buxton</b>	978	1068.97	1648.04	1694.72
Bailey	418	419.37	0	0
Washburn	378	434.42	0	0
Emerson	218	233.32	0	0
Houseal	205	206.58	0	0
Condrey	175	177.43	0	0

Progressive
Center
Conservative

## . . . but is it proportional?

	1st Choice
<b>Sheikh-Yousef</b>	1959
<b>DiMillo</b>	1850
<b>Chann</b>	1486
Grant	1088
<b>Buxton</b>	978
Bailey	418
Washburn	378
Emerson	218
Houseal	205
Condrey	175

	Voters	
Progressive	3533	40.4%
Center	2574	29.4%
Conservative	2268	25.9%
Others	380	4.3%

## . . . but is it proportional?

	1st Choice	pRCV
<b>Sheikh-Yousef</b>	1959	1752
<b>DiMillo</b>	1850	1752
<b>Chann</b>	1486	1752
Grant	1088	1437.56
<b>Buxton</b>	978	1694.72
Bailey	418	0
Washburn	378	0
Emerson	218	0
Houseal	205	0
Condrey	175	0

	Voters		Seats	
Progressive	3533	40.4%	2	50%
Center	2574	29.4%	1	25%
Conservative	2268	25.9%	1	25%
Others	380	4.3%		

## Is pRCV more proportional than other options? “Last-N-Standing”

	1st Choice	pRCV
<b>Sheikh-Yousef</b>	1959	1752
<b>DiMillo</b>	1850	1752
<b>Chann</b>	1486	1752
Grant	1088	1437.56
<b>Buxton</b>	978	1694.72
Bailey	418	0
Washburn	378	0
Emerson	218	0
Houseal	205	0
Condrey	175	0



“Last-4-Standing” would have elected these four, giving the fourth seat to Grant.

	Voters	
Progressive	3533	40.4%
Center	2574	29.4%
Conservative	2268	25.9%
Others	380	4.3%

## Is pRCV more proportional than other options? “Last-N-Standing”

	1st Choice	pRCV
<b>Sheikh-Yousef</b>	1959	1752
<b>DiMillo</b>	1850	1752
<b>Chann</b>	1486	1752
Grant	1088	1437.56
<b>Buxton</b>	978	1694.72
Bailey	418	0
Washburn	378	0
Emerson	218	0
Houseal	205	0
Condrey	175	0



“Last-N-Standing” would have elected these four, giving the fourth seat to Grant.

~30% of the vote → 50% of the seats

~40% of the vote → 25% of the seats

	Voters	
Progressive	3533	40.4%
Center	2574	29.4%
Conservative	2268	25.9%
Others	380	4.3%

# Is pRCV more proportional than other options? Sequential RCV

	1st Choice	pRCV	Sequential
Sheikh-Yousef	1959	Round 1	Cycle 2
DiMillo	1850	Round 2	
Chann	1486	Round 7	Cycle 1
Grant	1088		
Buxton	978	Round 8	Cycle 3
Bailey	418		
Washburn	378		Cycle 4
Emerson	218		
Houseal	205		
Condrey	175		

	Voters	
Progressive	3533	40.4%
Center	2574	29.4%
Conservative	2268	25.9%
Others	380	4.3%

# Is pRCV more proportional than other options? Sequential RCV

	1st Choice	pRCV	Sequential
Sheikh-Yousef	1959	Round 1	Cycle 2
DiMillo	1850	Round 2	??????
Chann	1486	Round 7	Cycle 1
Grant	1088		
Buxton	978	Round 8	Cycle 3
Bailey	418		
Washburn	378		Cycle 4
Emerson	218		
Houseal	205		
Condrey	175		

	Voters	
Progressive	3533	40.4%
Center	2574	29.4%
Conservative	2268	25.9%
Others	380	4.3%

# Is pRCV more proportional than other options? “SNTV”

	SNTV	pRCV	Sequential
Sheikh-Yousef	1959	Round 1	Cycle 2
DiMillo	1850	Round 2	
Chann	1486	Round 7	Cycle 1
Grant	1088		
Buxton	978	Round 8	Cycle 3
Bailey	418		
Washburn	378		Cycle 4
Emerson	218		
Houseal	205		
Condrey	175		

Charter Commission

Vote for one.

- Bailey
- Buxton
- Chann
- Condrey
- Emerson
- Grant
- Houseal
- Sheikh-Yousef
- Washburn



# Is pRCV more proportional than other options? “SNTV”

	SNTV	pRCV	Sequential
Sheikh-Yousef	1959	Round 1	Cycle 2
DiMillo	1850	Round 2	
Chann	1486	Round 7	Cycle 1
Grant	1088		
Buxton	978	Round 8	Cycle 3
Bailey	418		
Washburn	378		Cycle 4
Emerson	218		
Houseal	205		
Condrey	175		

	Voters	
Progressive	3533	40.4%
Center	2574	29.4%
Conservative	2268	25.9%
Others	380	4.3%

# Is it more proportional than other options? “Vote-for-N”

	SNTV	pRCV	Sequential
Sheikh-Yousef	1959	Round 1	Cycle 2
DiMillo	1850	Round 2	
Chann	1486	Round 8	Cycle 1
Grant	1088		
Buxton	978	Round 10	Cycle 3
Bailey	418		
Washburn	378		Cycle 4
Emerson	218		
Houseal	205		
Condrey	175		

Charter Commission

Vote for 4.

- Bailey
- Buxton
- Chann
- Condrey
- Emerson
- Grant
- Houseal
- Sheikh-Yousef
- Washburn

# Is it more proportional than other options? “Vote-for-N”

	SNTV	pRCV	Sequential	Vote-for-4
Sheikh-Yousef	1959	Round 1	Cycle 2	4424 (1st)
DiMillo	1850	Round 2		3069
Chann	1486	Round 8	Cycle 1	4390 (3rd)
Grant	1088			3332 (4th)
Buxton	978	Round 10	Cycle 3	4424 (1st)
Bailey	418			1859
Washburn	378		Cycle 4	3104
Emerson	218			2219
Houseal	205			1617
Condrey	175			1592

Charter Commission

Vote for 4.

- Bailey
- Buxton
- Chann
- Condrey
- Emerson
- Grant
- Houseal
- Sheikh-Yousef
- Washburn

## How about voter success?

	pRCV	Sequential	Vote-for-4
First choice elected?			
First or second?			
At least 1 top 4?			
(None of top-4?)			
All 4?			

## How about voter success?

	pRCV	Sequential	Vote-for-4
First choice elected?			
First or second?			
At least 1 top 4?			
(None of top-4?)			
All 4?			

(3 = Buxton, Chann, Sheikh-Yousef)

## How about voter success?

	pRCV	Sequential (3 + Washburn)	Vote-for-4
First choice elected?		54.6%	
First or second?			
At least 1 top 4?			
(None of top-4?)			
All 4?			

(3 = Buxton, Chann, Sheikh-Yousef)

## How about voter success?

	pRCV	Sequential (3 + Washburn)	Vote-for-4 (3 + Grant)
First choice elected?		54.6%	62.9%
First or second?			
At least 1 top 4?			
(None of top-4?)			
All 4?			

(3 = Buxton, Chann, Sheikh-Yousef)

## How about voter success?

	pRCV (3 + DiMillo)	Sequential (3 + Washburn)	Vote-for-4 (3 + Grant)
First choice elected?	71.7%	54.6%	62.9%
First or second?			
At least 1 top 4?			
(None of top-4?)			
All 4?			

(3 = Buxton, Chann, Sheikh-Yousef)



## How about voter success?

	pRCV (3 + DiMillo)	Sequential (3 + Washburn)	Vote-for-4 (3 + Grant)
First choice elected?	71.7%	54.6%	62.9%
First or second?	86.4%		
At least 1 top 4?	97.0%		
(None of top-4?)			
All 4?			

(3 = Buxton, Chann, Sheikh-Yousef)

## How about voter success?

	pRCV (3 + DiMillo)	Sequential (3 + Washburn)	Vote-for-4 (3 + Grant)
First choice elected?	71.7%		
First or second?	86.4%		
At least 1 top 4?	97.0%		
(None of top-4?)	(3.0%)		
All 4?			

(3 = Buxton, Chann, Sheikh-Yousef)

## How about voter success?

	pRCV (3 + DiMillo)	Sequential (3 + Washburn)	Vote-for-4 (3 + Grant)
First choice elected?	71.7%	54.6%	62.9%
First or second?	86.4%		
At least 1 top 4?	97.0%		
(None of top-4?)	(3.0%)		
All 4?	0.2% (18 voters)		

(3 = Buxton, Chann, Sheikh-Yousef)

## How about voter success?

	pRCV (3 + DiMillo)	Sequential (3 + Washburn)	Vote-for-4 (3 + Grant)
First choice elected?	71.7%	54.6%	62.9%
First or second?	86.4%	71.3%	77.4%
At least 1 top 4?	97.0%	84.5%	88.5%
(None of top-4?)	(3.0%)	(15.5%)	(11.5%)
All 4?	0.2% (18 voters)	5.2% (451 voters)	4.7% (415 voters)

(3 = Buxton, Chann, Sheikh-Yousef)

Summary:

The outcome of a pRCV tabulation was more proportional than

- Sequential single-winner RCV
- Vote-for-4
- Last-N-Standing
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. . . and more voters successfully elected a candidate of choice.

These slides, along with the speaker notes and a few additional comments, are available at:

<http://bit.ly/3S7xigt>

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