

Fair-Share Voting

Proposing a New Voting Method
For Participatory Budgeting

Robert Tupelo-Schneck

schneck@gmail.com

Robert Loring

votingsite@gmail.com

www.AccurateDemocracy.com

Contents

- Problems with the usual voting method used for Participatory Budgeting
- Fair-Share Voting: a new voting method

Problems with Usual Method

- Usual method:
 - Each voter has a set number of votes
 - Projects with most votes are funded until money runs out
- Problems
 - Tactical voting
 - Plurality rule
 - Not cost-aware

Tactical Voting

- When a voter votes “other than his or her sincere preference in order to prevent an undesirable outcome” (Wikipedia)
- Voters don't want to waste their votes
- The voting system forces them to think tactically about how to make their vote count, rather than just voting their sincere preferences

Tactical Voting

- Don't vote for a sure loser—that would be throwing your vote away
- Don't vote for a sure winner—that would be throwing your vote away
- Bullet voting
 - If you *strongly desire* one project, then vote for that project *only*
 - Because voting for lower choices could make one of them beat your favorite and make it lose

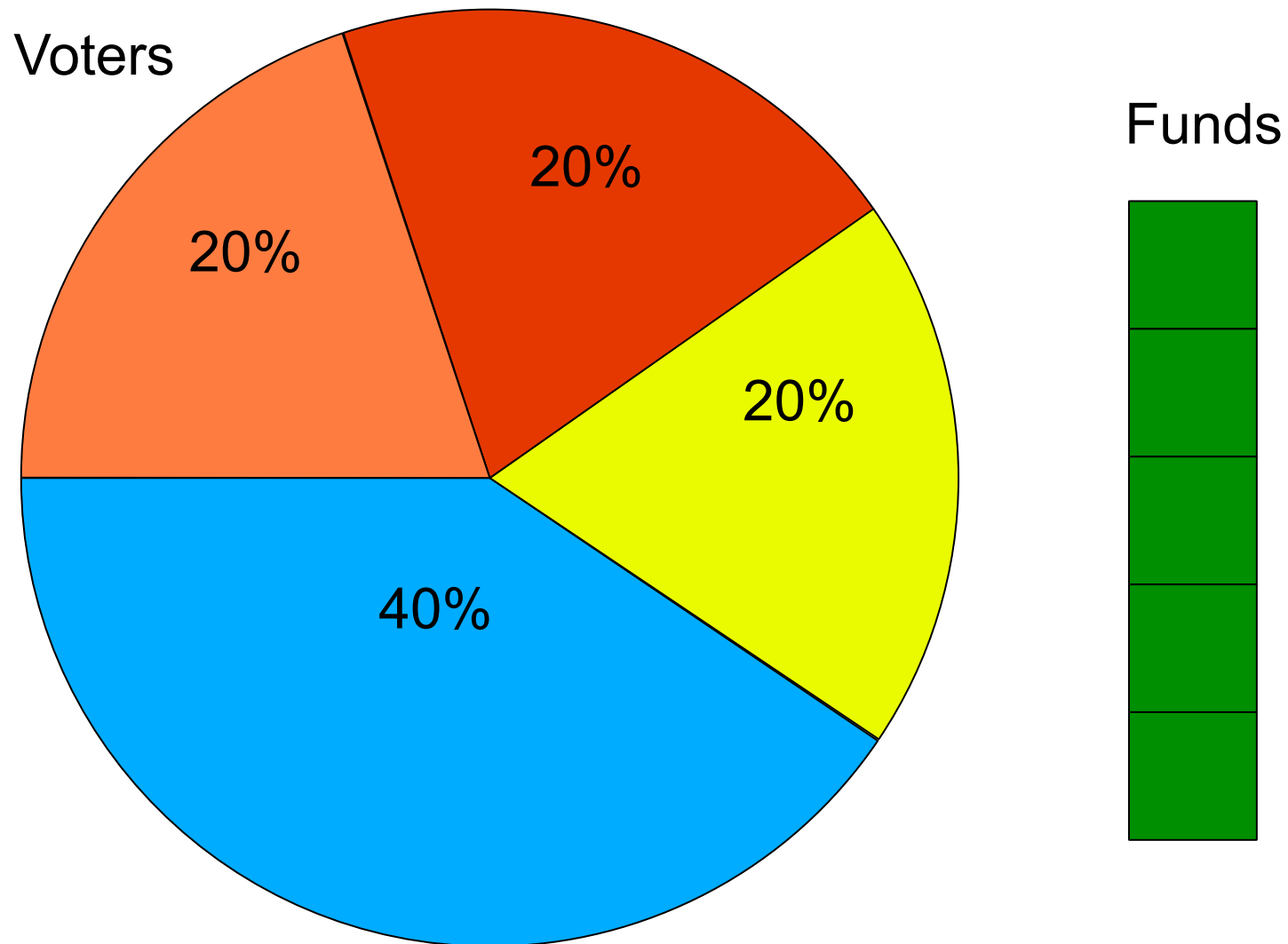
Tactical Voting

- **Better:** a voting system where voters can feel confident in expressing their *sincere preferences*
 - That it will not result in a wasted vote
 - That it will not hurt their most important preferences

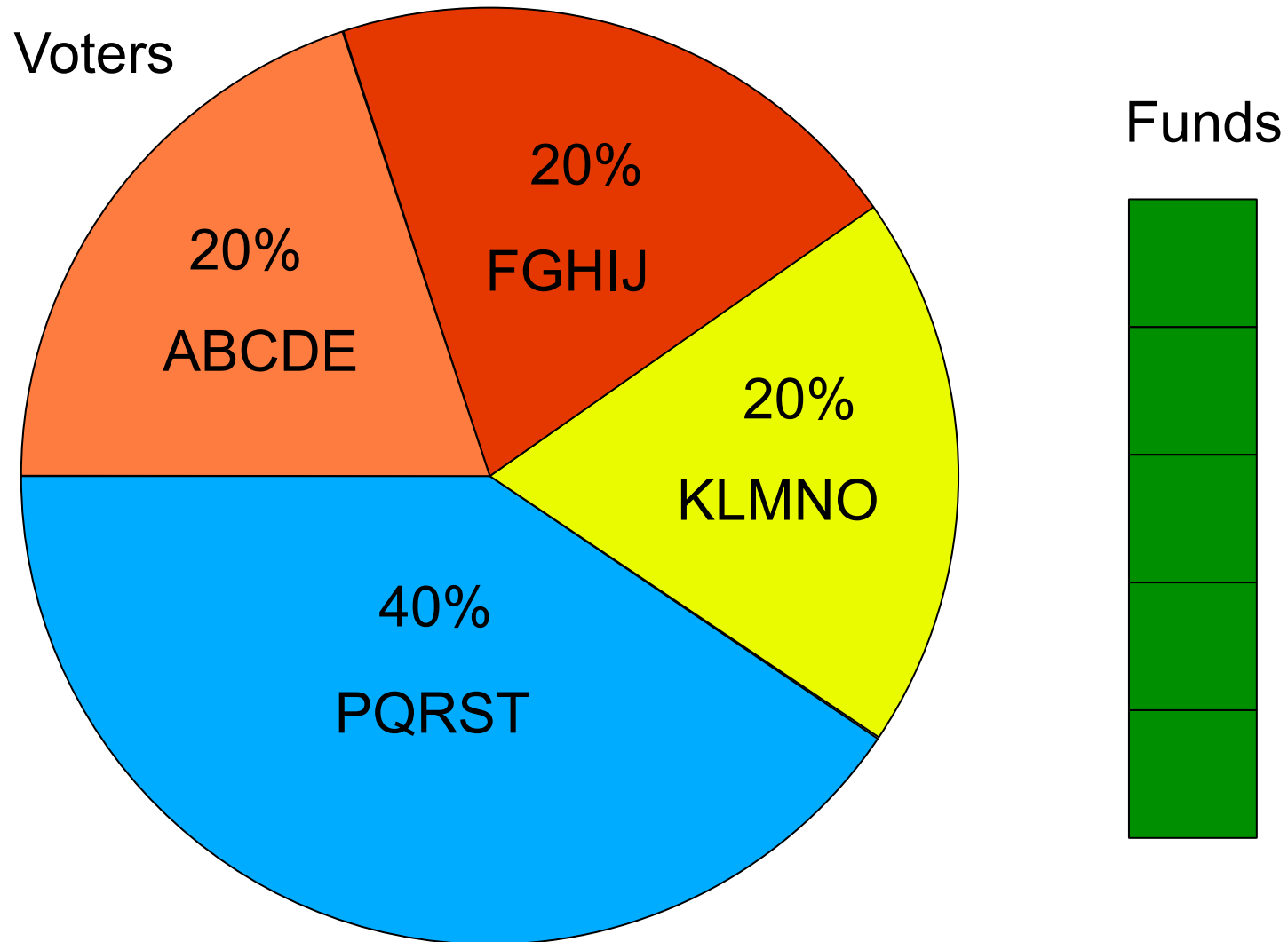
Problems of Plurality Rule

- The largest group of voters can control *all* the money
- If the largest group is divided, a minority can control *all* the money

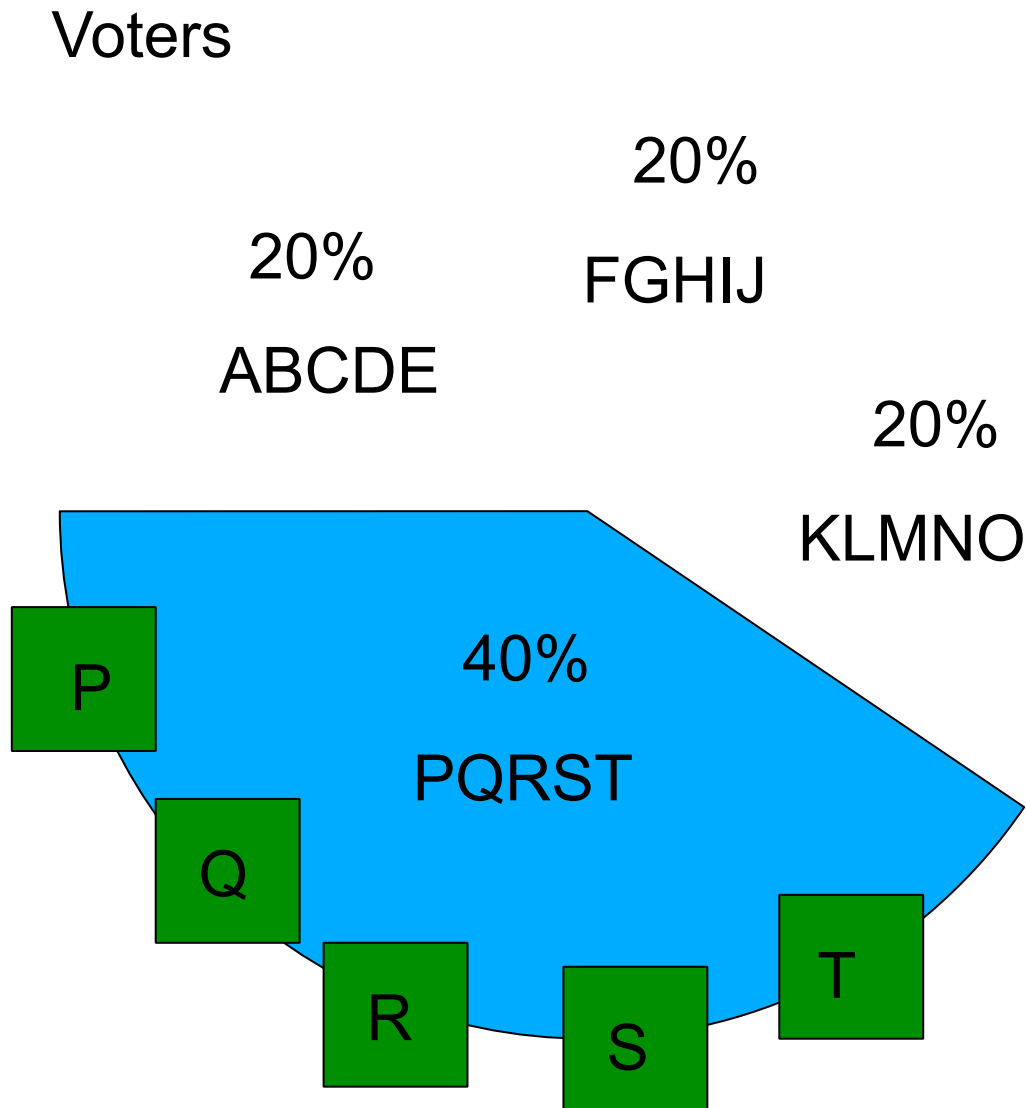
Problems of Plurality Rule



Problems of Plurality Rule



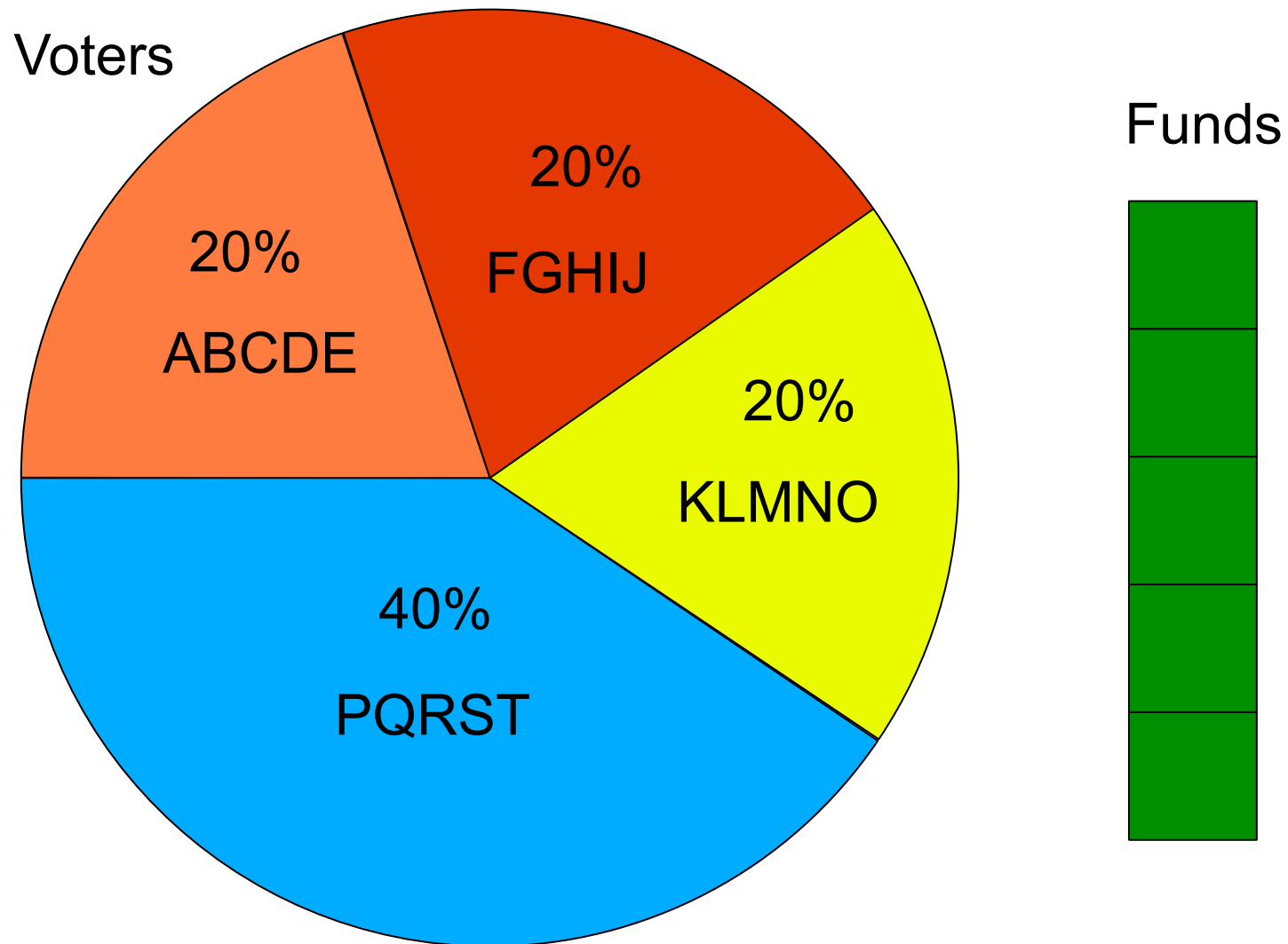
Problems of Plurality Rule



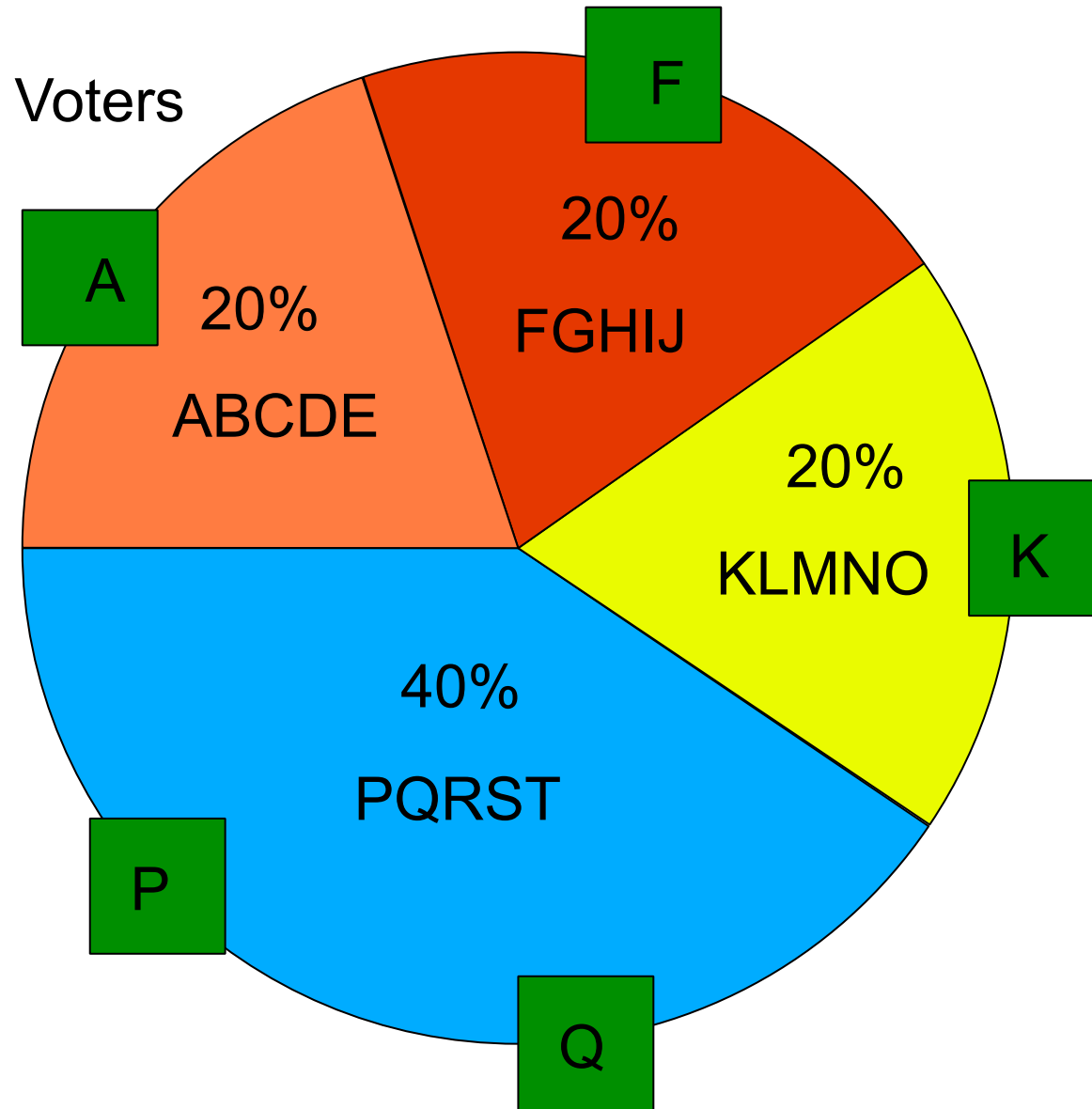
Problems of Plurality Rule

- **Better:** a proportional voting rule to let each large-enough group control their fair share of money

Proportional Voting Rule



Proportional Voting Rule



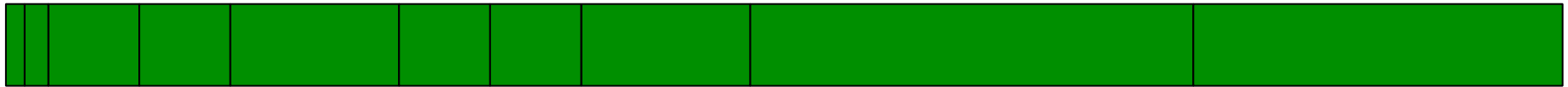
Cost-Aware Voting

- The old voting method doesn't account for even wide variations among the *costs* of projects
- In Chicago's pioneering 2010 PB vote, projects ranged from \$2,600 to \$230,000... almost the difference between pennies and dollars
- But the cheap project needed to win just as many votes as the costly project
- And a vote for the cheap project “used up” as much of a voter's power as the costly project

Cost-Aware Voting

- The most cost-effective projects maximize *voter satisfaction per dollar spent*
- So consider not only how many voters support a project, but also its *cost*
- In the Chicago example, take a look at how many dollars would be spent funding a project for every vote supporting it, the *dollars per vote*

Traffic/Pedestrian Signal @ Clark & Chase: \$230,000, 494 votes, \$466/vote



Intersection Safety @ Clark & Farwell: \$2,600, 334 votes, \$8/vote

Speed Humps on 1100-1200 W Greenleaf: \$3,500, 181 votes, \$19/vote

Police Camera @ Sheridan & Greenleaf: \$13,000, 246 votes, \$53/vote

Police Camera @ Damen & Rogers: \$13,000, 235 votes, \$55/vote

Free Wi-Fi on 1600-1700 W Howard: \$24,600, 334 votes, \$74/vote

St. Repair 1300-1500 Jarvis, 7000 Paulina: \$13,000, 171 votes, \$76/vote

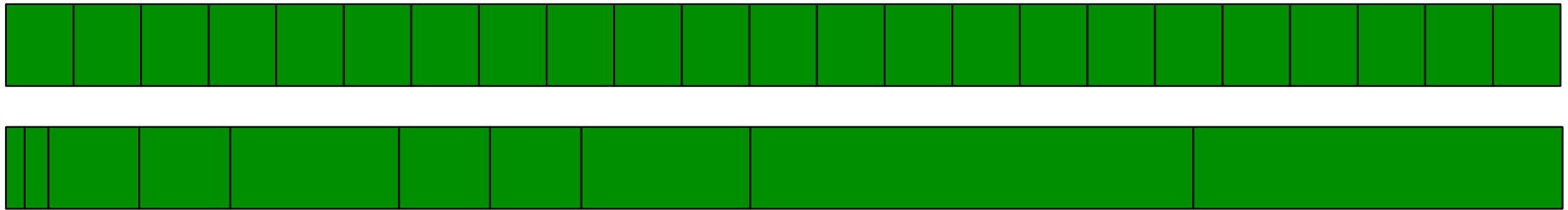
Street Lighting 1400-1600 W Juneway: \$13,000, 161 votes, \$81/vote

Renovate Cultural Center at Berger Park: \$25,000, 269 votes, \$93/vote

Street Lighting 1500-1600 W Greenleaf: \$65,000, 277 votes, \$235/vote

Police Camera at Lunt & Paulina: \$55,000, 155 votes, \$355/vote

Traffic/Pedestrian Signal @ Clark & Chase: \$230,000, 494 votes, \$466/vote



- 10 projects
- \$227,700
- 2363 votes (*not distinct voters!*)
- \$96 / vote

- Cost-aware voting gives *more voters more* of what they want for the same cost
- = more satisfied voters

PB in Cambridge Mass. 2015

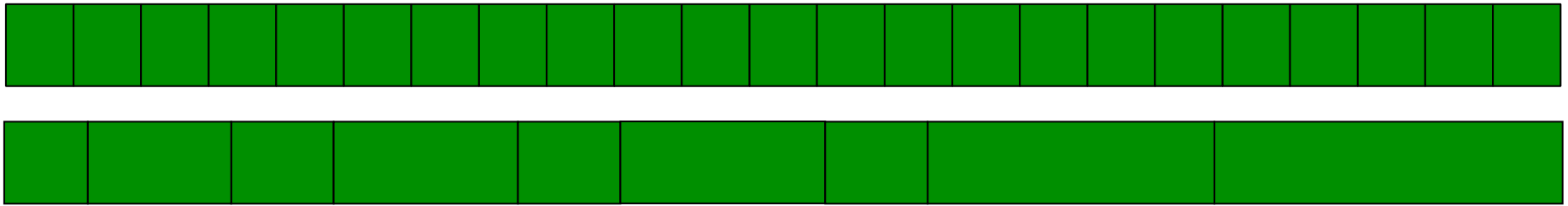
Central Square toilet \$320,000; 945 votes, \$339/vote



Little free libraries	\$13,000,	620 votes,	\$21/vote
Bus shelter real-time monitors	\$30,000,	748 votes,	\$40/vote
Wayfinding banners	\$15,000,	246 votes,	\$55/vote
O'Connell Library furniture	\$36,000,	634 votes,	\$67/vote
Russel Field mural	\$22,600,	289 votes,	\$76/vote
Planting materials	\$40,000,	506 votes,	\$79/vote
Raymond Park com. Garden	\$20,000,	193 votes,	\$104/vote
Danehy fitness equipment	\$65,000,	468 votes,	\$139/vote
83 bus shelter renovation	\$75,000,	271 votes,	\$277/vote

Central Square toilet

\$320,000; 945 votes, \$339/vote



- 9 projects
- \$316,000
- 3903 votes (*not distinct voters!*)
- \$81 / vote

- Cost-aware voting gives *more voters more* of what they want for the same cost
- = more satisfied voters

Contents

- Problems with the usual voting method used for Participatory Budgeting
- **Fair-Share Voting: a new voting method**

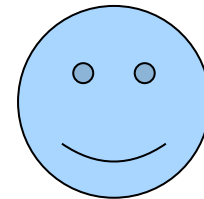
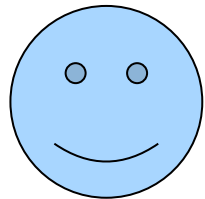
Fair-Share Voting: Core Idea

- Each voter controls an *equal share* of the money
- It will fund his/her favorite projects
- If the voter wants to spend money on a project which doesn't get enough support, the voter's money *moves* to his or her next favorite

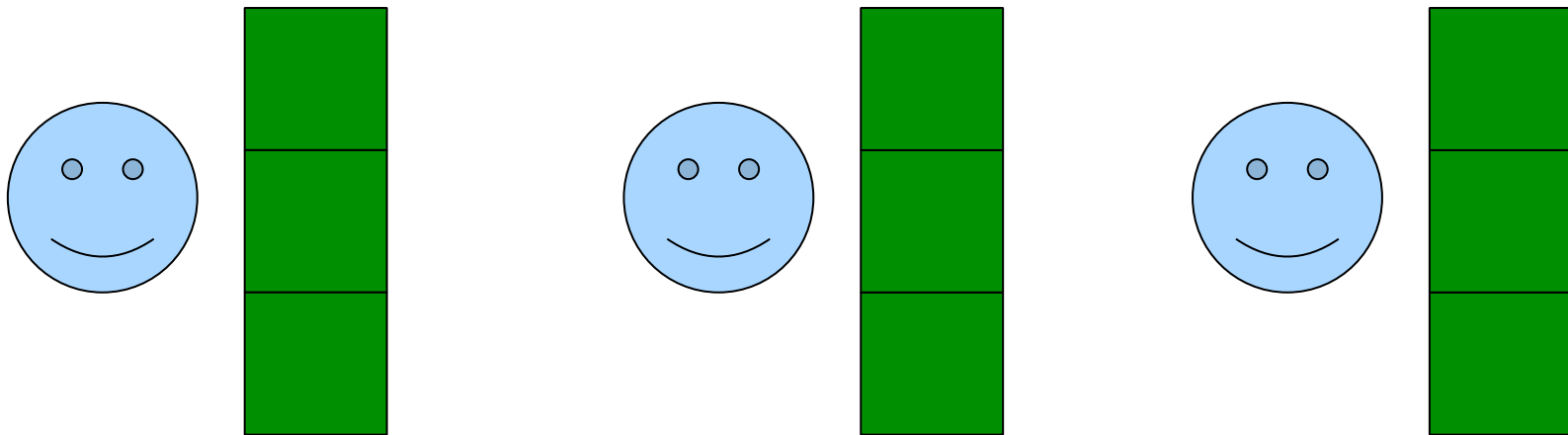
Fair-Share Voting: Example



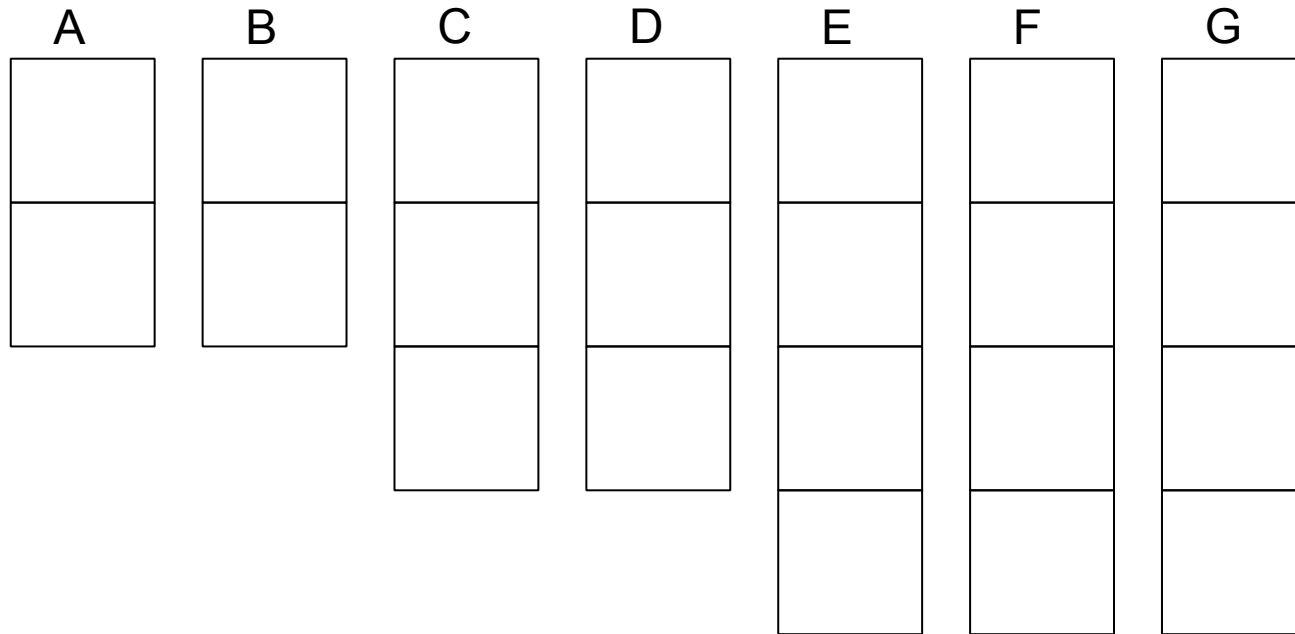
- \$9000, 3 voters
- Each voter has a \$3000 share



Fair-Share Voting: Example

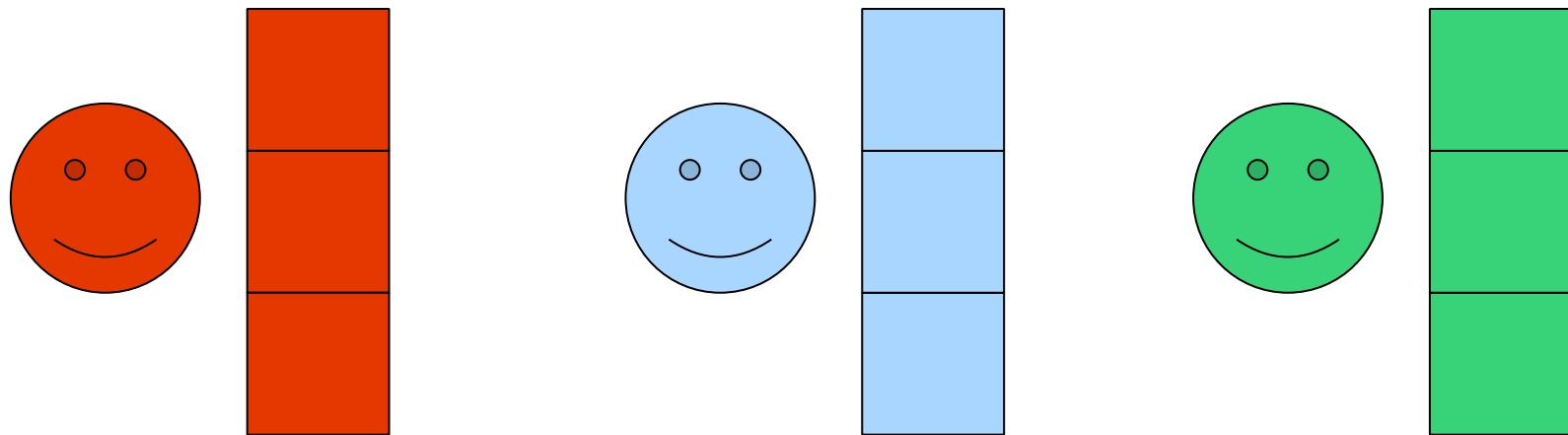
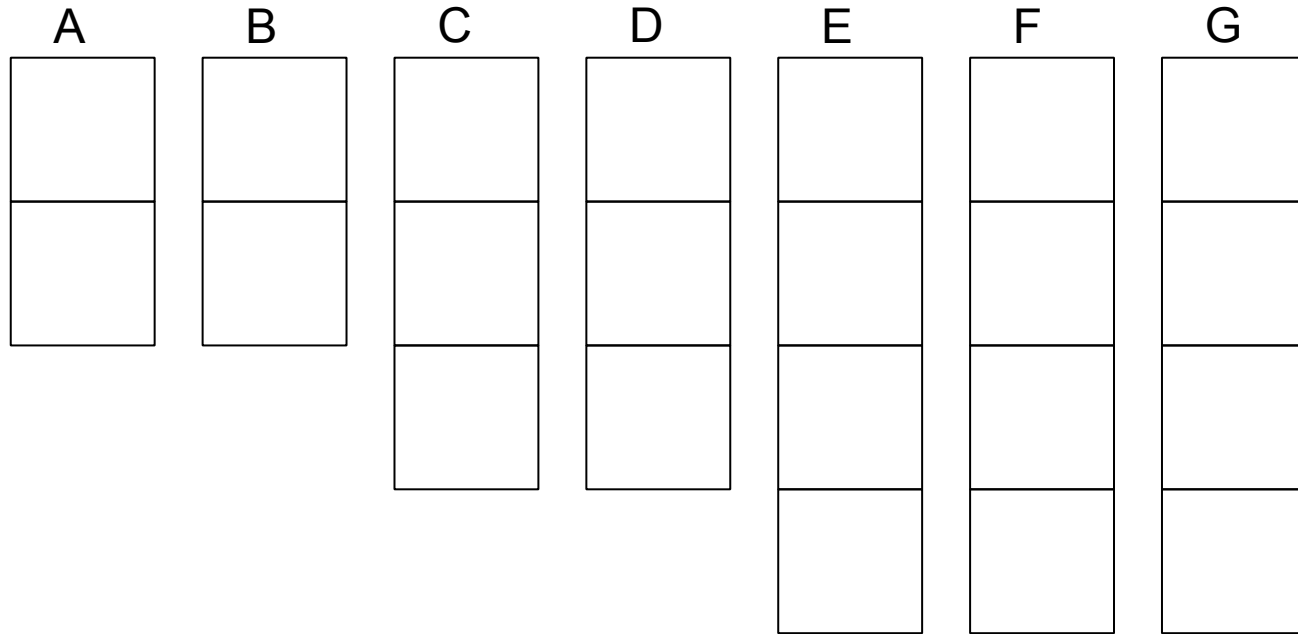


Fair-Share Voting: Example

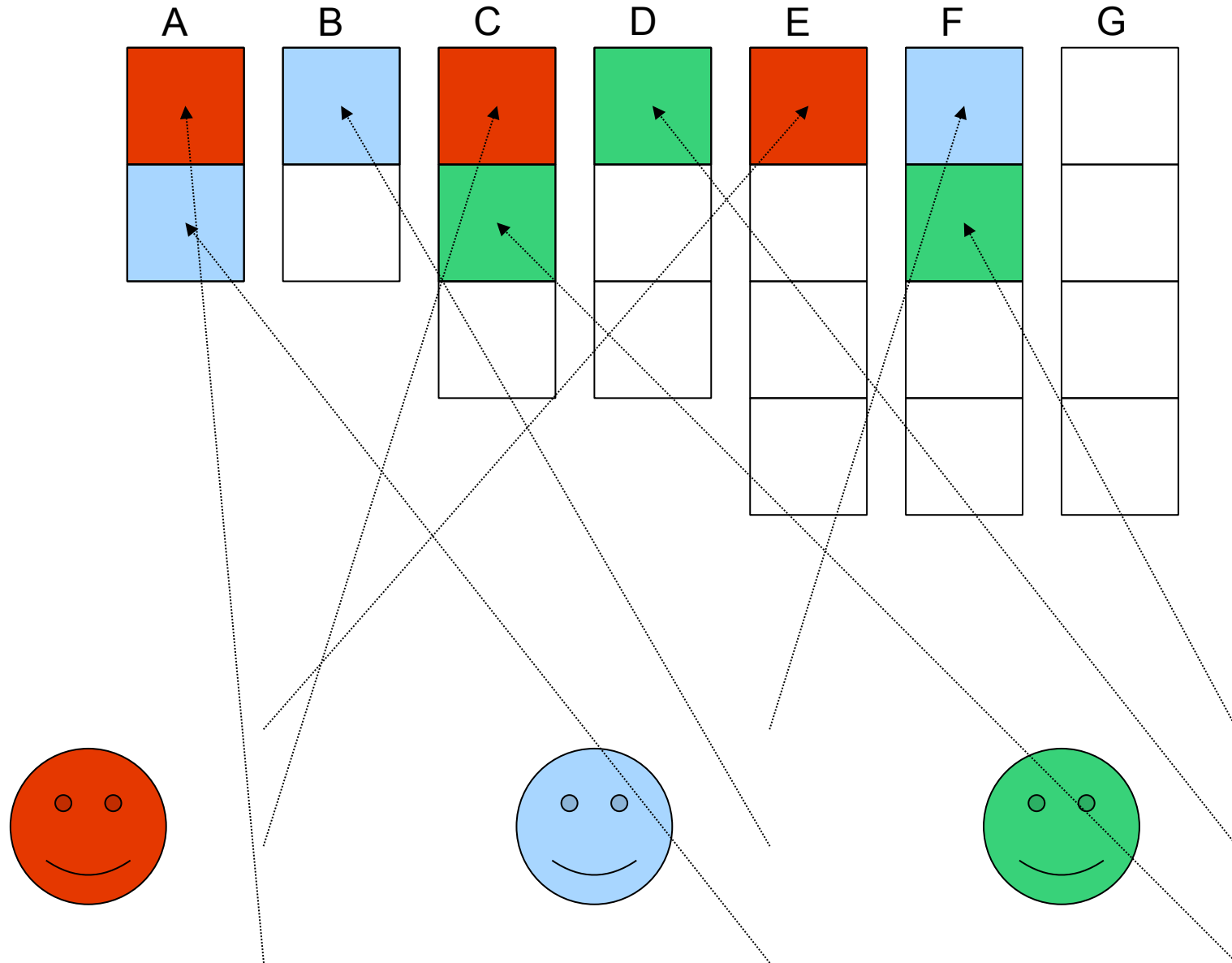


- Projects for \$2000, \$3000, or \$4000
- Each voter may distribute his or her share among the projects

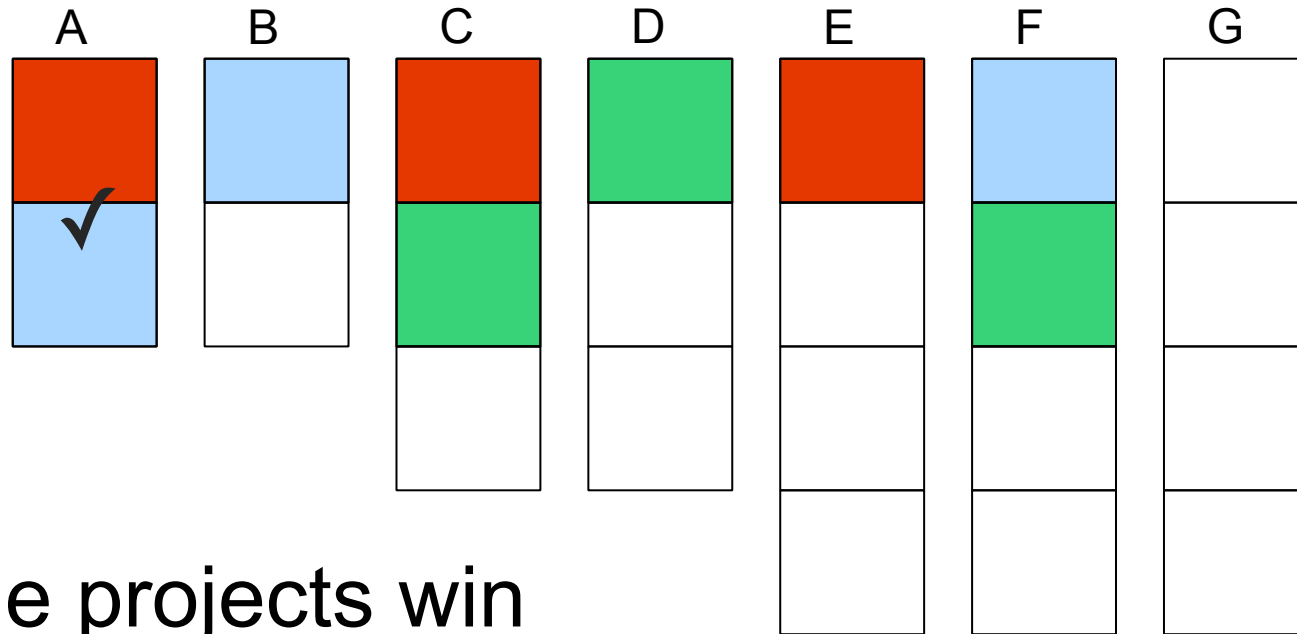
Fair-Share Voting: Example



Fair-Share Voting: Example

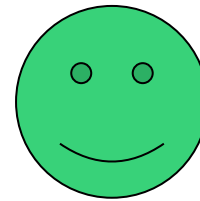
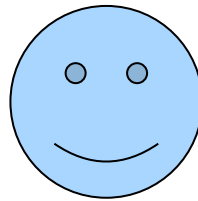
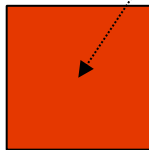
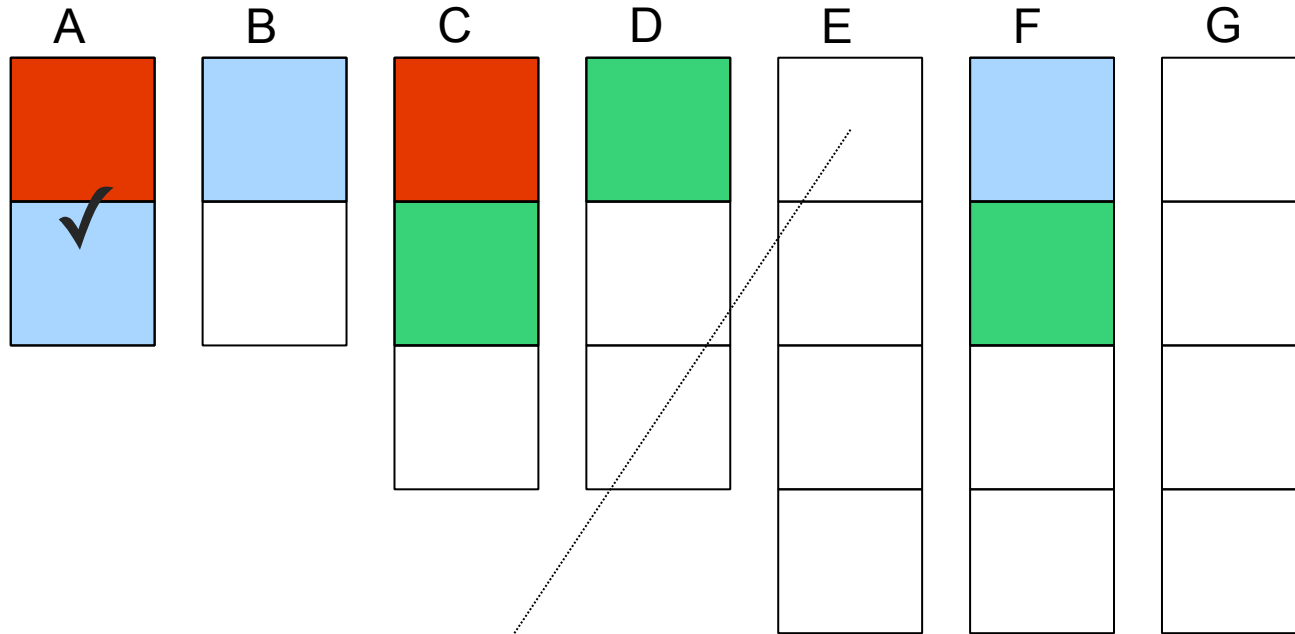


Fair-Share Voting: Eliminations

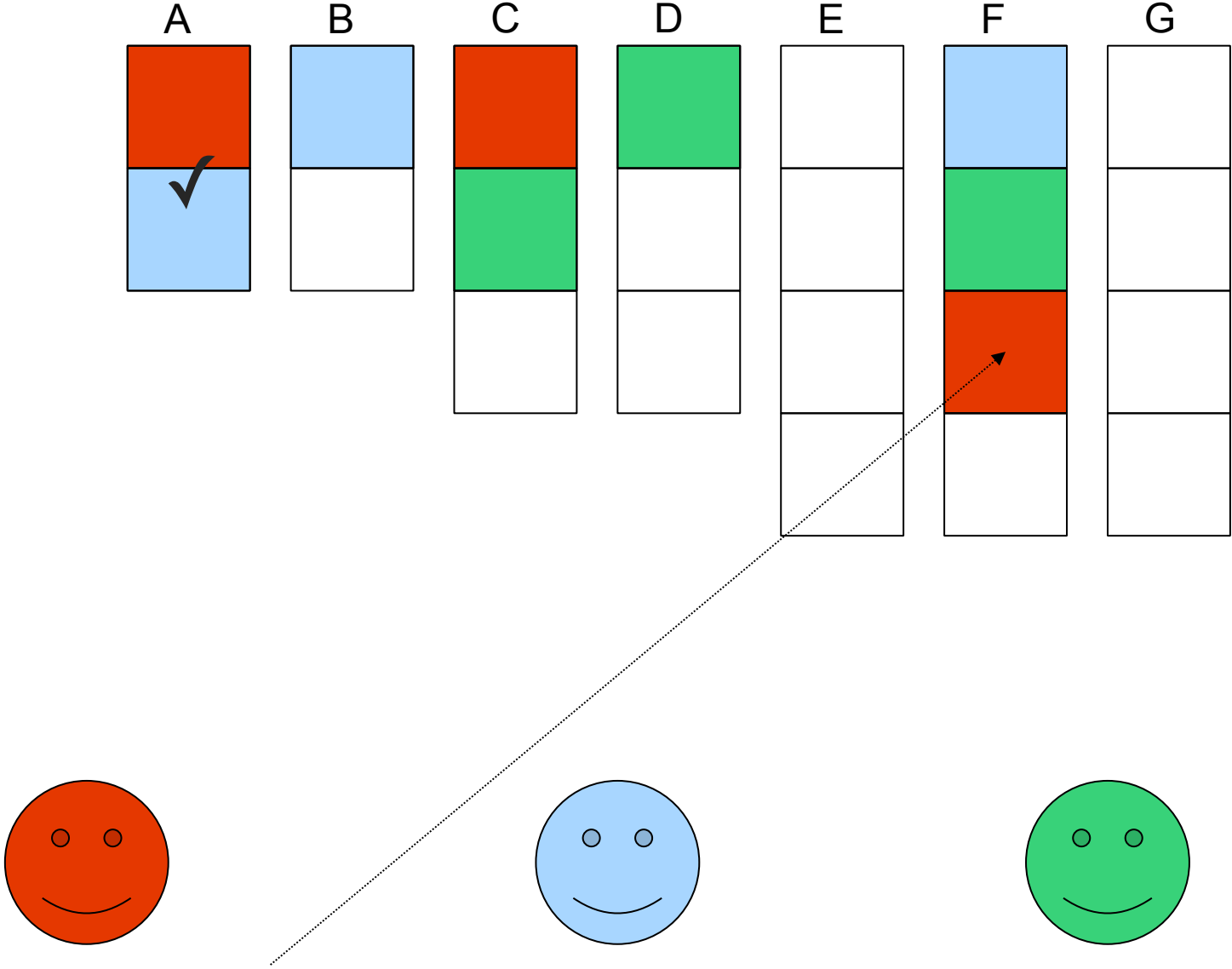


- Some projects win
- Not all projects can win
- So the least popular must lose
- But its voters *don't* lose their share of power
- Each guides their money to their next choice!

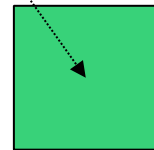
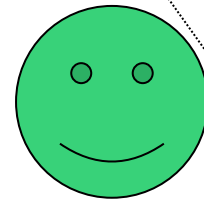
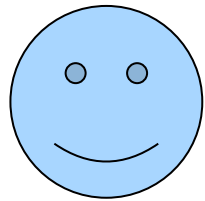
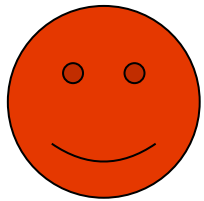
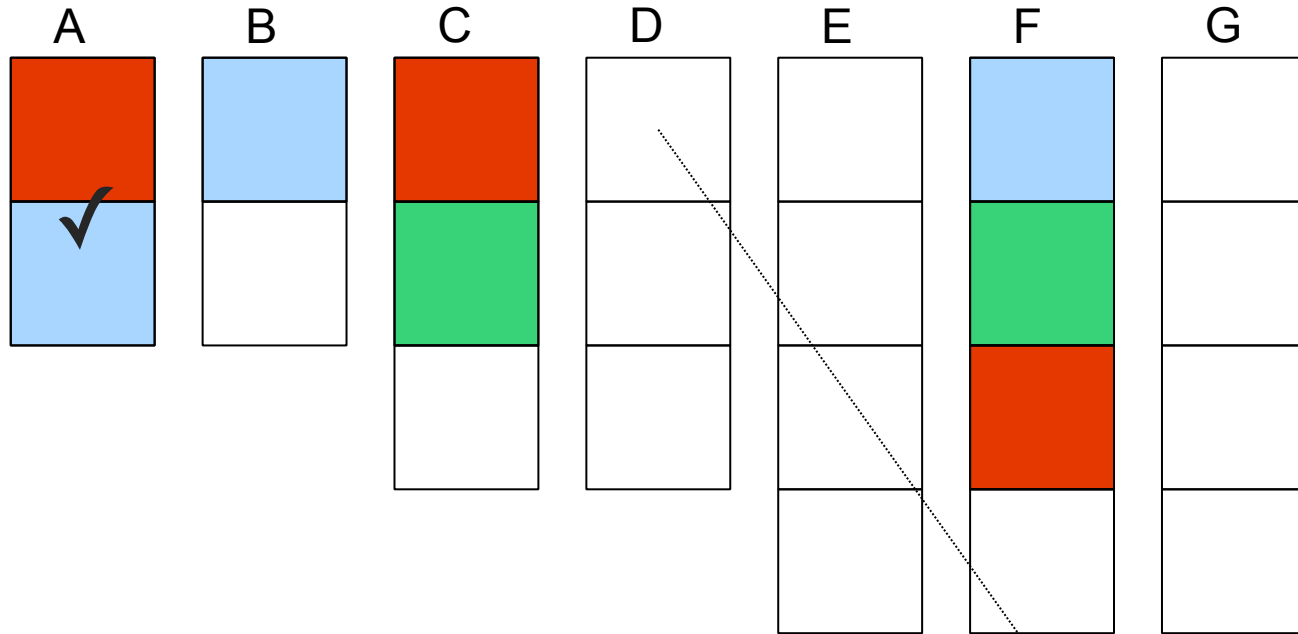
Fair-Share Voting: Eliminations



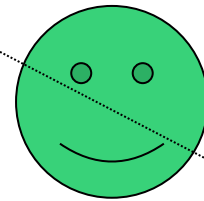
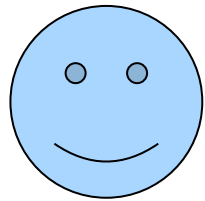
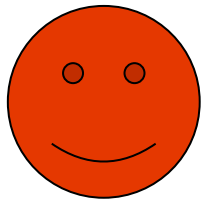
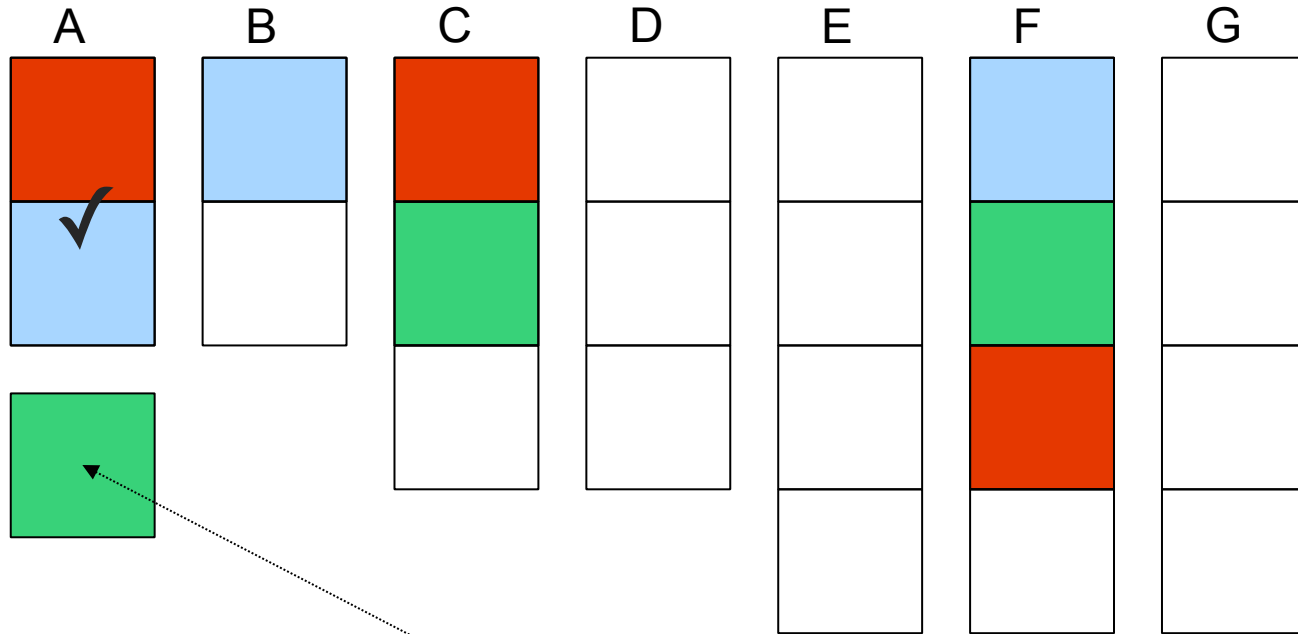
Fair-Share Voting: Eliminations



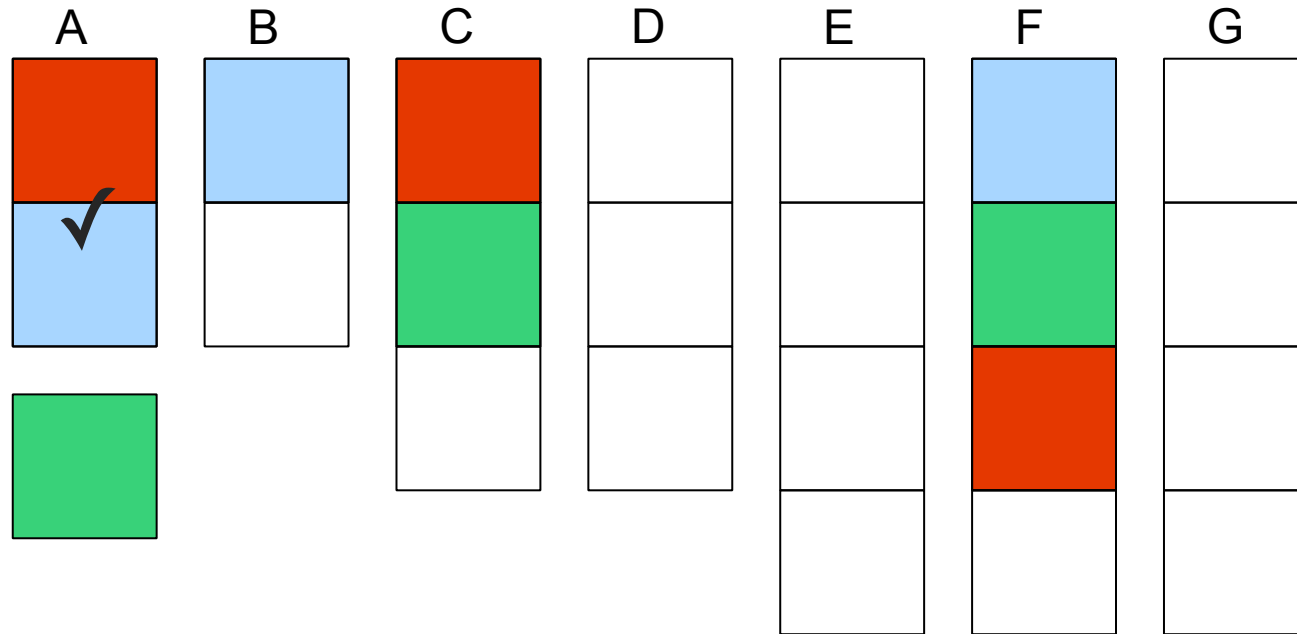
Fair-Share Voting: Eliminations



Fair-Share Voting: Eliminations

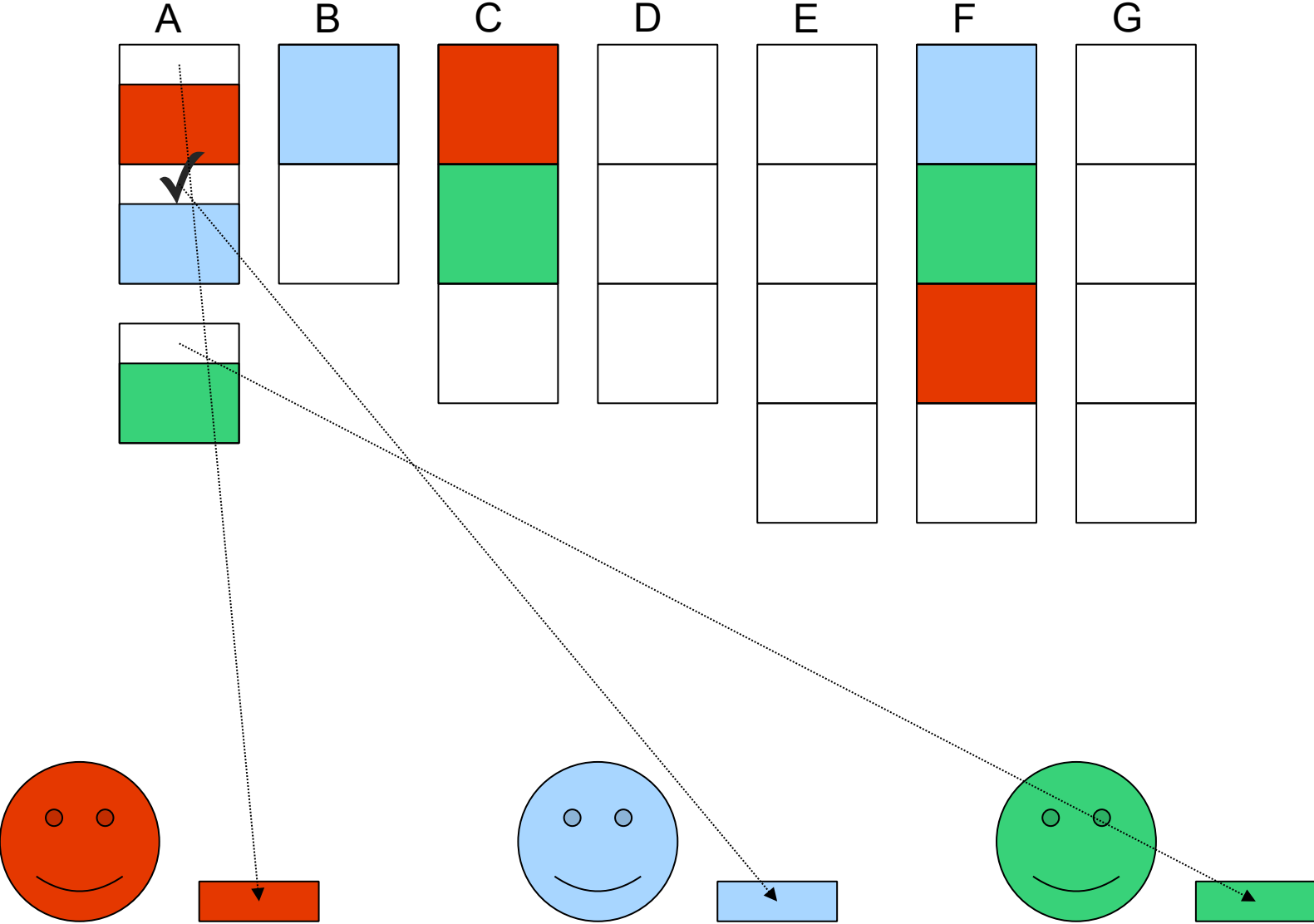


Fair-Share Voting: Surplus

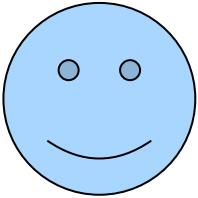
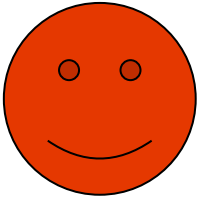
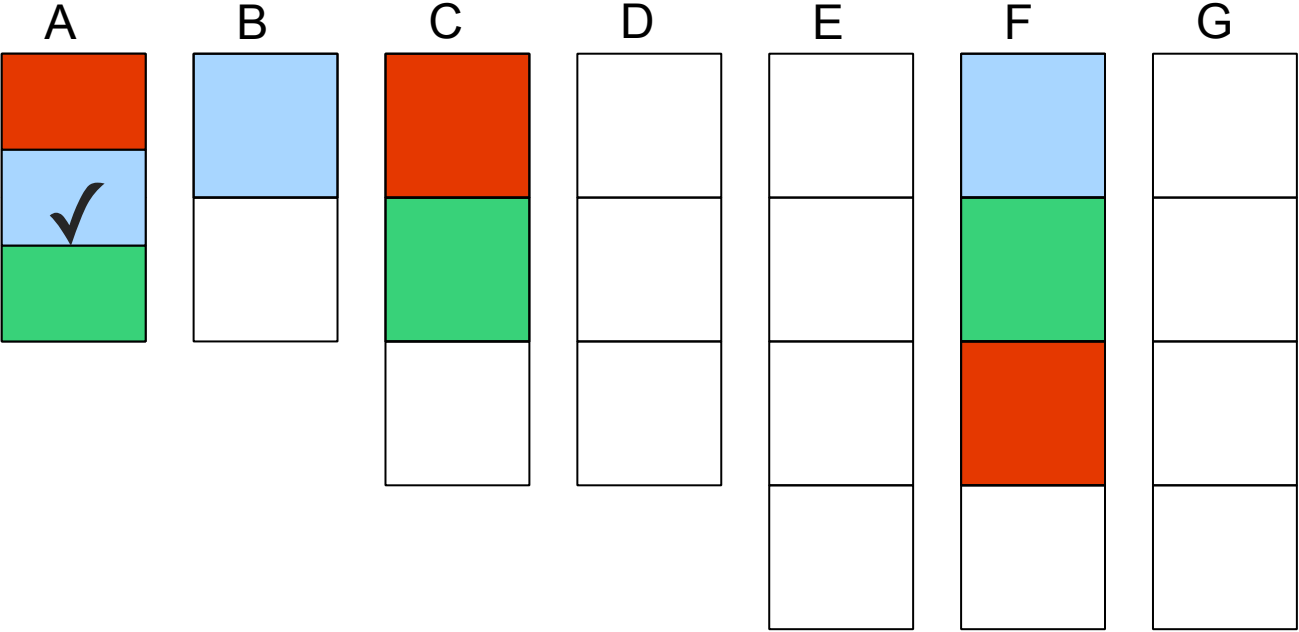


- If a project is offered more money than it needs:
- Let each voter transfer his/her part of the surplus to the voter's next preference!
- It costs less to support projects with many supporters!

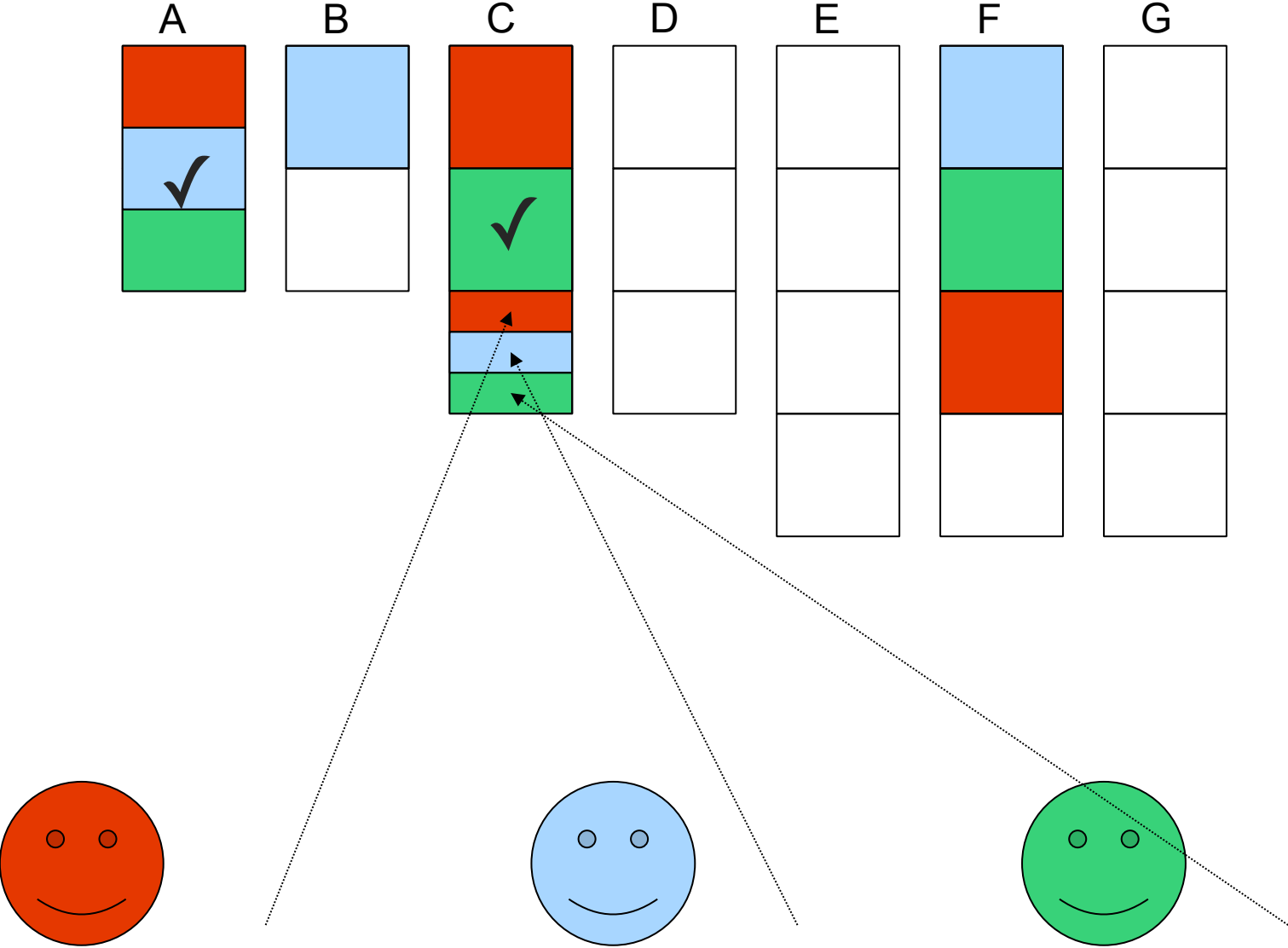
Fair-Share Voting: Surplus



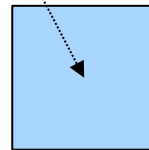
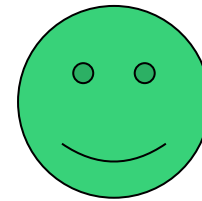
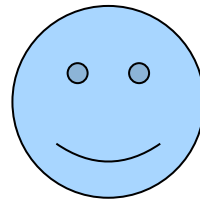
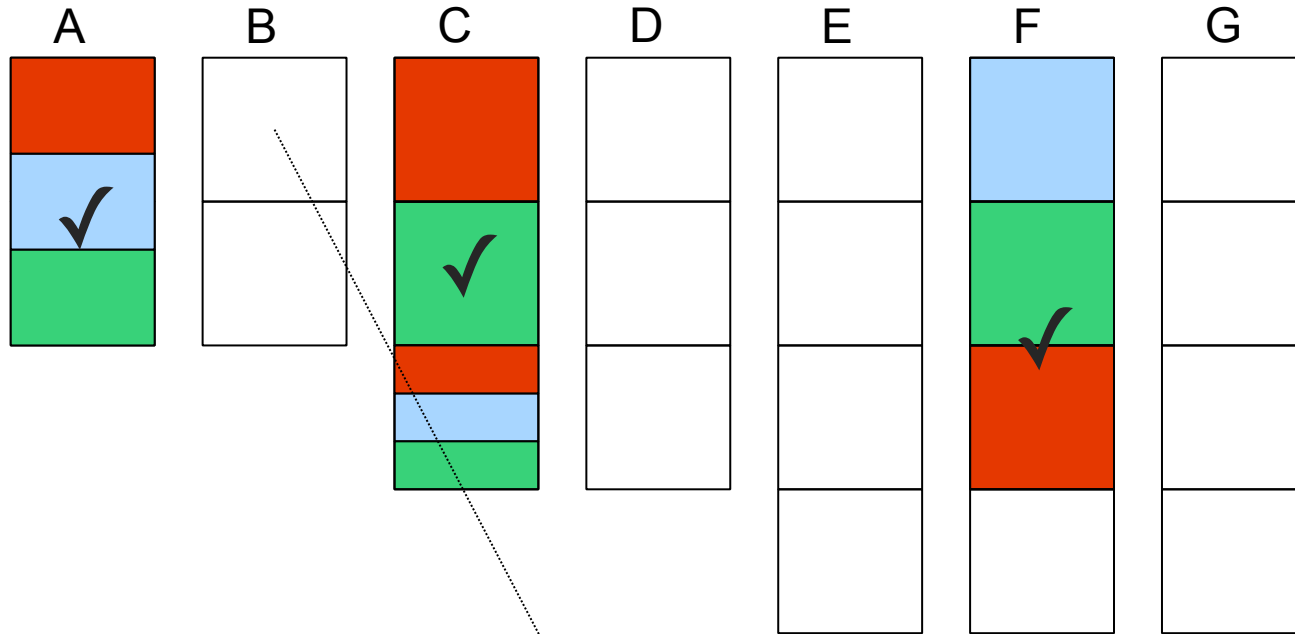
Fair-Share Voting: Surplus



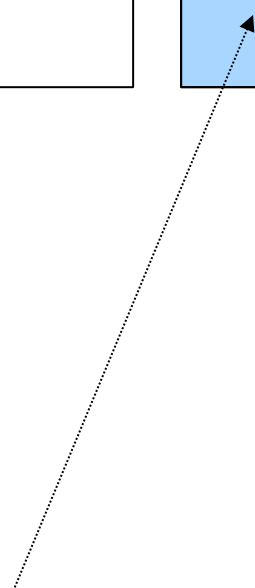
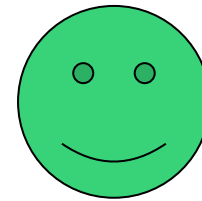
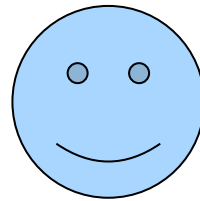
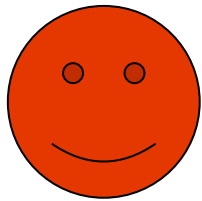
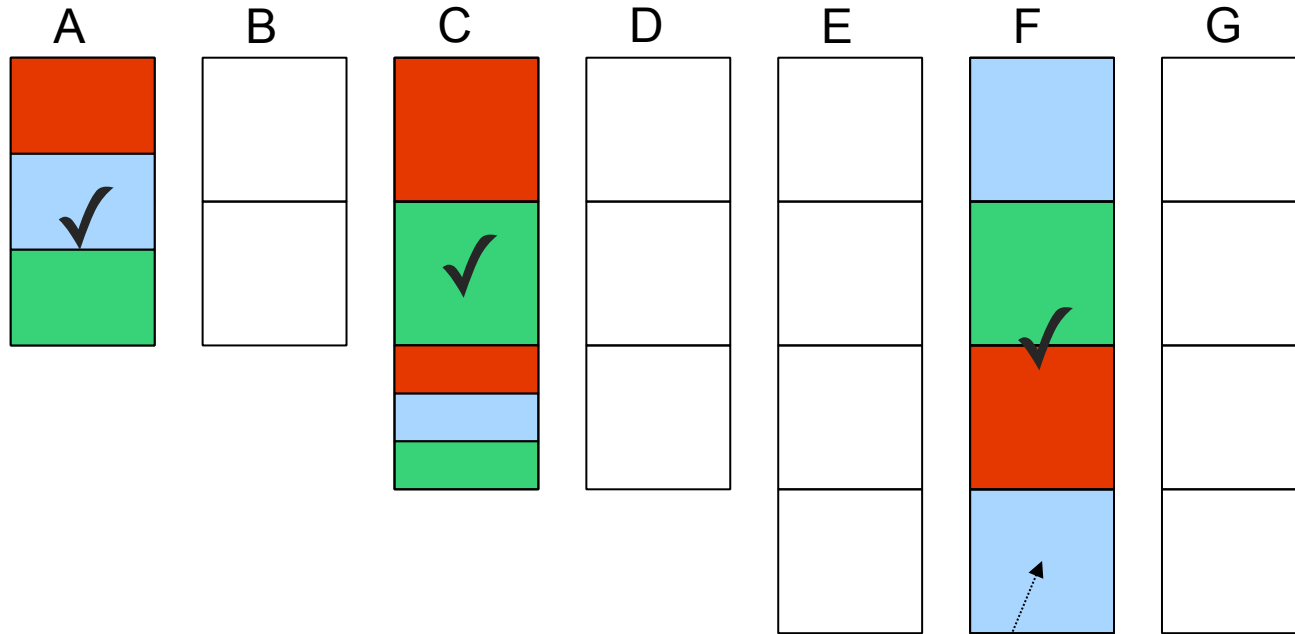
Fair-Share Voting: Surplus



Fair-Share Voting: Example

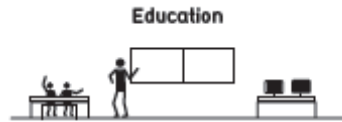


Fair-Share Voting: Example



Ranked-Choice Voting

- A real tally can't stop to ask each voter for their next choice if their top choice loses
- So we ask each voter to *rank* the projects



A. Carroll Gardens Library Community Space
 \$250,000
 Community meeting room renovation with upgraded acoustics, energy efficient lighting, new PA system, and stage.

B. International Mother Language Monument
 \$150,000
 Monument celebrating local cultural diversity, International Mother Language Day, and Bengali language movement, at Dome Playground.

C. Kensington Library Resources and Community Space
 \$80,000
 New books/DVDs for library & equipment for room for meetings, storytelling, rehearsals, and small performances promoting Kensington's cultural diversity

D. Projector for Celebrate Brooklyn & BRIC Art Center
 \$42,000
 High powered projector for large scale, free public performances at Celebrate Brooklyn in Prospect Park and at the new BRIC Media House.

E. Bathroom Renovation for the Children of PS 124
 \$150,000
 Renovate two dysfunctional bathrooms that serve over 136 of the youngest students daily in a high-needs elementary school.

F. JHS 62 Media Center Upgrade for Journalism Program
 \$80,000
 Electrical upgrade of multimedia room and purchase of new equipment to support school's news and journalism program.

G. PS 131 Auditorium Project
 \$150,000
 Auditorium improvement, beginning with the seats, for this high needs school, which is also a Performing Arts Magnet.

H. PS 39 Cafeteria Soundproofing Project
 \$150,000
 Wall/ceiling mounted sound panels on low roofs & cement walls to lessen extraneous noise in tiny cave-like cafeteria.

I. Technology: A Better Future for PS 154 / PS 130 Students
 \$140,000
 Install 15 smartboards at PS 130; and 45 13" Macbook computers with 2 carts and 2 wireless printers at PS 154 grades 1, 3, & 4.

J. Brooklyn Neighbors Composting
 \$165,000
 Build pest-free, smell-free compost system near Gowanus Canal, which will use 1 ton/day of kitchen food scraps collected at local greenmarkets and schools to create rich soil for gardens, parks, and trees.

Council Members Sara González and Stephen Levin may also contribute to this proposal.

K. Body Weight Fitness Equipment Area
 \$60,000
 Install new body weight fitness equipment in Prospect Park.

L. District 39 Tree Planting
 \$100,000
 Plant 100 new trees and install tree guards on blocks with few or no trees.

Parks Department will contribute an additional \$85,000 to this effort for tree planting if funded.

M. Pigeon Plaza Greenstreet Rehabilitation
 \$250,000
 Relurbish Pigeon Plaza (New Utrecht Ave, 45th St, Fort Hamilton Pkwy) with new landscaping, seating, fencing, and trash can.

N. Prospect Park Pedestrian Pathway Rehabilitation
 \$205,000
 Repair Prospect Park pedestrian paths near Park Circle and Long Meadow to prevent flooding, and add 10 trash cans in park.

O. 50th Street Repaving Project
 \$150,000
 Repave 50th St from Fort Hamilton Pkwy to 13th Ave to make it a safer, smoother street.

Council Member Greenfield has agreed to secure funding for repaving of blocks East of 13th Ave, which are in his district.

P. Pedestrian Hazards at the Prospect Expressway
 \$200,000
 Repairs & additions to badly damaged and dangerous 9 lane Prospect Expressway pedestrian crossing at Church Avenue, area, and landscape.

Q. Intersection Safety Improvements
 \$150,000
 Build sidewalk 'bulbs' at Carroll St & Third Ave to minimize pedestrian crossing distances.

R. E
 "Co
 \$50,0
 Insta
 the d
 next

*MTA
 Clock
 ward*

S. H
 Sub
 \$300
 Insta
 Carro
 can v
 make

T. F
 for
 Ft H
 \$325
 Impr
 subw
 green
 & pre

*If fun
 will b
 anoth*



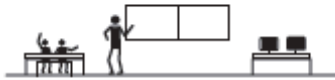
Culture and Community Facilities

Education

Environment

Parks and Recreation

Streets and Sidewalks



A. Carroll Gardens Library Community Space

\$250,000
Community meeting room renovation with upgraded acoustics, energy efficient lighting, new PA system, and stage.

E. Bathroom Renovation for the Children of PS 124

\$150,000
Renovate two dysfunctional bathrooms that serve over 136 of the youngest students daily in a high-needs elementary school.

3 J. Brooklyn Neighbors Composting

\$165,000
Build pest-free, smell-free compost system near Gowanus Canal, which will use 1 ton/day of kitchen food scraps collected at local greenmarkets and schools to create rich soil for gardens, parks, and trees.

Council Members Sara González and Stephen Levin may also contribute to this proposal.

4 K. Body Weight Fitness Equipment Area

\$60,000
Install new body weight fitness equipment in Prospect Park.

O. 50th Street Repaving Project

\$150,000
Repave 50th St from Fort Hamilton Pkwy to 13th Ave to make it a safer, smoother street.

Council Member Greenfield has agreed to secure funding for repaving of blocks East of 13th Ave, which are in his district.

R. E. "Co"

\$50,000
Insta... the d... next

MTA... Clock... ward

2 B. International Mother Language Monument

\$150,000
Monument celebrating local cultural diversity, International Mother Language Day, and Bengali language movement, at Dome Playground.

10 F. JHS 62 Media Center Upgrade for Journalism Program

\$80,000
Electrical upgrade of multimedia room and purchase of new equipment to support school's news and journalism program.

5 C. Kensington Library Resources and Community Space

\$80,000
New books/DVDs for library & equipment for room for meetings, storytelling, rehearsals, and small performances promoting Kensington's cultural diversity

9 G. PS 131 Auditorium Project

\$150,000
Auditorium improvement, beginning with the seats, for this high needs school, which is also a Performing Arts Magnet.

D. Projector for Celebrate Brooklyn & BRIC Art Center

\$42,000
High powered projector for large scale, free public performances at Celebrate Brooklyn in Prospect Park and at the new BRIC Media House.

H. PS 39 Cafeteria Soundproofing Project

\$150,000
Wall/ceiling mounted sound panels on low roofs & cement walls to lessen extraneous noise in tiny cave-like cafeteria.

7 I. Technology: A Better Future for PS 154 / PS 130 Students

\$140,000
Install 15 smartboards at PS 130; and 45 13" Macbook computers with 2 carts and 2 wireless printers at PS 154 grades 1, 3, & 4.

L. District 39 Tree Planting

\$100,000
Plant 100 new trees and install tree guards on blocks with few or no trees.

Parks Department will contribute an additional \$85,000 to this effort for tree planting if funded.

6 M. Pigeon Plaza Greenstreet Rehabilitation

\$250,000
Relurbish Pigeon Plaza (New Utrecht Ave, 45th St, Fort Hamilton Pkwy) with new landscaping, seating, fencing, and trash can.

N. Prospect Park Pedestrian Pathway Rehabilitation

\$205,000
Repair Prospect Park pedestrian paths near Park Circle and Long Meadow to prevent flooding, and add 10 trash cans in park.

1 P. Pedestrian Hazards at the Prospect Expressway

\$200,000
Repairs & additions to badly damaged and dangerous 9 lane Prospect Expressway pedestrian crossing at Church Avenue, area, and landscape.

Q. Intersection Safety Improvements

\$150,000
Build sidewalk 'bulbs' at Carroll St & Third Ave to minimize pedestrian crossing distances.

8 S. H. Sub

\$300,000
Insta... Carro... can v... make

T. F. for Ft H

\$325,000
Impr... subw... green... & pre

If fun... will b... anoth



Single Transferable Vote

- The Fair-Share Voting system – with ranked-choice voting and transfer of votes – develops from a voting method known as *the Single Transferable Vote (STV)*
- STV is the multi-winner version of *Instant-Runoff Voting (IRV)*, also known as the *Alternative Vote* or *Ranked-Choice Voting*

Single Transferable Vote

- Used nationally:
 - Ireland
 - Australia
 - Malta
- Used widely in local elections:
 - Scotland
 - New Zealand
- In North America:
 - Cambridge, MA
 - Minneapolis, MN

Fair-Share Voting: Benefits

- Fair-Share Voting is *fair*
 - Each ballot controls the same amount of \$
 - The largest group can't control more than its share
 - Large minority groups *can* control their shares of money
- Fair-Share Voting is cost-aware
 - Fair to less-costly projects and their supporters
 - Promotes efficient use of money
 - Increases voter satisfaction per dollar spent

Fair-Share Voting: Benefits

- Votes for unpopular projects aren't wasted, and votes for popular projects cost less
 - Less incentive for tactical voting
 - More votes for the winning set of projects
 - A stronger mandate for the decision
- Voters know that their vote counts
 - Literally: their ballot controls a fair share of the \$

Fair-Share Voting: Benefits

- With these benefits, we can hope to:
 - Increase voter turnout and satisfaction
 - Encourage more officials to entrust PB with more money in more cities

Fair-Share Voting

- Electoral reform is hard
- Because participatory budgeting is still young, we have a unique opportunity to introduce better voting methods now – voting methods that are more expressive and more fair

Fair-Share Voting

Proposing a New Voting Method
For Participatory Budgeting

Robert Tupelo-Schneck

schneck@gmail.com

Robert Loring

votingsite@gmail.com

www.AccurateDemocracy.com