

John Nagle 8/4/21

My name is John Nagle. I live in Pittsburgh in the 45th senatorial district represented by Senator Costa and HD23 represented by Dan Frankel. I'm a professor emeritus of physics and biological sciences at CMU. Besides doing physics, I've also been studying redistricting since 2012 and I've published four peer-reviewed papers on this subject in Election Law Journal, arguably the premier journal on redistricting. I thank the LRC for this opportunity to share my views on this very important issue. I wish to advocate for maps that have overall partisan fairness and that are responsive. While I think these are the most important criteria, I realize that the PA constitution prioritizes the traditional, so-called neutral, criteria of compactness and minimizing splits of political subdivisions. I therefore simply advocate that you consider fairness and responsiveness as secondary criteria while still satisfying the traditional criteria. I'd like to emphasize that partisan fairness can be measured. I've done it in my papers following the paths of many political scientists. DRA now calculates many measures of bias for its users. A good and simple one is the seats bias which DRA users can find in the Advanced section. It is based on the obvious principle that when the total vote is equal for two parties, the map should on average award them each the same number of seats. DRA estimates that the current PA senate map has a seat bias of 8.8%. That translates to a most probable outcome of 21 Democratic seats in the PA senate versus 29 GOP seats when the vote is evenly split. That estimate is rather close to actuality. Another simple measure in DRA Advanced section is the votes measure. It gives the estimated deviation from 50% vote for half the seats. The current PA senate map has a vote deviation of 3.1%. That translates to Democrats having to win 53.1% of the vote for half the seats. Of course, actual elections do not usually result in 50% vote or 50% seats, but standard political science methodology enables filling in the gaps by drawing a seats-votes curve with quite small uncertainties of order 0.5%. DRA shows seat-votes curves in its Advanced section. Incidentally, the Proportionality rating in the DRA Analytics section is an inferior measure of bias – it doesn't even indicate which party the bias favors. I will be using DRA to evaluate partisan bias in maps in this next cycle. And I expect to have lots of company. It's going to be quite an interesting and different round of redistricting. I'd also like to brag a bit. Before DRA had installed this methodology, I used it to evaluate the 2018 Congressional map before the 2018 election and I nailed it. But I want to emphasize that the actual outcome of a 9 to 9 split in the congressional delegation only occurred when Democrats won almost 54% of the 2-party vote. That is still a 4% vote bias that favors the GOP. It's amusing that there have been complaints that the court drew a Democratic gerrymander. Another way to look at the 2018 congressional map is that if the GOP had won 54% of the vote, the GOP would likely have won 13 seats. So, why is the congressional map drawn under a Democratic court still biased in favor of the GOP? The reason is well known. It's because the traditional criteria for redistricting exacerbate the political geography of the state. These criteria automatically pack city Democrats in PA into fewer districts. The consequence is that the representation of progressive voters is diluted relative to that of conservative voters. Believing that the so-called neutral criteria of compactness and non-splitting will lead to fairness is what political scientists have called the myth of non-partisan cartography. They also call it unintentional gerrymandering. It's not done intentionally by a commission. It's done by the criteria. These traditional, so-called neutral criteria are simply unfair to progressive city voters like me. Unfortunately, that is our playing field and it ties the hands of the LRC. Nevertheless, the LRC's hands are not completely tied. You can choose the maps that are a bit fairer and more responsive to voters, while still satisfying the traditional criteria. Although Republicans will likely object, they should be comforted that even the fairest traditional map will probably still require Democrats to win 52% of the vote to obtain half the seats. This assessment is based on legislative maps I have seen that have been drawn by a variety of mappers. Let me finish by specifically commenting on responsiveness to voters. More responsiveness means that there is larger shift in the

composition of the legislature when the will of the people shifts. That requires competitive districts. Now, four members of this commission represent caucuses whose incumbents may not especially relish exchanging a safe district for a competitive one. Both parties have an interest in what is called bipartisan gerrymandering. So, I realize that this is not an easy sell. However, I think there is a valid concern that the dominant parties in safe districts tend to nominate candidates further from the political middle, and that their subsequent election makes governing more difficult. So, even though the caucus leaders may feel conflicted, I'm hoping that at least the chair will be sympathetic to considering responsiveness. In summary, to the extent possible, I'm urging you to consider reducing bias and increasing responsiveness as criteria to include in your deliberations. When you have collected many maps that satisfy the traditional criteria, please consider less bias and greater responsiveness as tie-breaking criteria. Thank you for giving me this time to testify.