

The NC Coalition for Verified Voting,
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North Carolina State Board of Elections
506 North Harrington St,
Raleigh, NC 27603

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To the Members of the State Board of Elections:

Thank you for this opportunity to comment on the drafted Goals, Standards and Criteria for Implementation and Evaluation for the Instant Runoff Voting (IRV) Pilot Program running through 2009, 2010 and 2011. Our comments are provided herein and in the referenced documents.

The SBoE has a very difficult task – conduct instant runoff elections without compatible voting machines, without a thorough fiscal analysis beforehand, and without state funding. The State Board of Elections has been asked, in effect – “to put a square wheel on a car.”

The State Board of Elections is charged with implementing the pilot program in a manner consistent with general election law. This is difficult because “instant runoff” elections represent a dramatically different system of how votes are cast, counted and valued. “IRV” has typically been used in a few foreign countries with very different political structures and ballots.

The NC Coalition for Verified Voting will provide an outline of how the “Instant Runoff Voting” Pilot can be conducted in a fair, transparent accurate and auditable fashion without sacrificing the requirements of our nationally respected election integrity laws. More detailed explanation follows the outline.

1. There is no software to tabulate IRV that meets the standards of our state law according to the NC SBoE Voting Systems Project Manager. Under S1 draft guidelines, the State Board of Elections proposes to use an uncertified method of vote tabulation with DRE machines that allows for an “electronic sort” using uncertified software that requires five pages of over 100 single spaced instructions. Vote counting methods are untested as reflected in NCSBoE “CI 3,” criteria for implementation. Steps for vote counting *“will have undergone full logic and accuracy testing by March 1, 2009.”* Further, NCSBoE Cons 1 of SBoE Draft document incorrectly implies that NC’s voting machines can automatically tabulate IRV, which is incorrect.

To comply with existing state law, IRV must be counted manually until IRV software and its accompanying algorithm is federally approved. This is workable with optical scan ballots, but in order to count the touch-screen paper trails, the vendor should be made to modify the software to print a ballot summary. Touch-screens currently print all selections made by voters, but not a final summary. While a simple contest can be recounted on the touch-screen paper trail, an IRV contest would be more laborious. For a simpler process, touch-screen counties could borrow or purchase optical scan machines for IRV elections.

2. (SBoE Cons 2.) IRV ballots cast on election day must be counted where they are cast just as “regular” ballots are counted as per § 163-182.2. Initial counting of official ballots. In Cary, NC - the 2nd and 3rd choice votes cast for the “instant runoff” were not counted on election night. Instead, they were carried away from where they were cast and then counted at a later date. This differs from the treatment of absentee ballots and early voted ballots might be tabulated at the central office, these are “retrievable ballots”, not cast on election day. **All votes cast at the polls on election day, including IRV ballots,** are to be counted at the polls on election night once the polls close. The solution is to count all votes, 1st, 2nd and 3rd on site using the “Australian” method.

3. There was no Election night reporting for voters' second and third choices. See (SBoE Cons 3. and G1) Law requires reporting of votes on election night. To do otherwise violates the principle stated in NC SBOE **G 1** (Goals). IRV ballots are not retrievable and cannot be reported at another date.

4. All votes must be counted. In free, fair and open elections, all votes are recorded and counted. (See SBoE Cons 2, G1 and G4). G4 promises to use evaluative data to inform whether to continue to experiment with IRV or to stop. The most objective way to fulfill this goal is to count and record all votes so as to determine if voters understand and use IRV. This means counting all votes, whether 1st, 2nd or 3rd choices. To do otherwise violates a core principle of democracy and tells voters that their choices and votes do not matter. Candidates, voters and officials want to know the breakdown of the votes. Votes must be counted for transparency sake. In the 2007 Pilot program, only partial data was reported for the District B contest where voters' second and third choices were ultimately counted. In Cary's other IRV contests for City Council, no 2nd or 3rd place data was recorded or reported at all. This

5. Provisional ballots must be counted before advancing to the 2nd round. In the 2007 IRV pilot, Provisional ballots were not counted until after the 2nd and 3rd choices were counted, and supposedly "added" back in. Since IRV is not "additive", it is not clear how these votes could possibly be added back in without doing a complete recount.

6. Absentee ballots must be counted before advancing to the 2nd or 3rd round. It is not clear when the absentee ballots were counted, so the question is - were they counted with the first, second and third rounds? They must be counted with the first round of voting before going to the next.

7. Canvassing of all first round votes, absentee and provisional ballots must be done before counting a second round of ballots. This has to be done to get an accurate vote count.

8. Audit protocols will have to be developed in coordination with the state appointed statistician and according to current state laws. Each round of voting must be proven correct if the subsequent round is to be trusted. Audits and recounts must be publicly announced and observed, and notice must be given in time for the public to attend.

9. Voter education is expensive, must be repeated, and is not necessarily effective.

10. (NCSBoE Cons 5) Overvote protection lacking. North Carolina state law and the Federal Law, Help America Vote Act requires that voters be notified of over votes. NC's voting machines are unable to notify the voters if they have "overvoted" in the IRV contests - if voters rank the same candidate more than once. The Help America Vote act defines overvotes: "In every election, some voters make more choices than are permitted in a contest, which creates what are called overvotes." http://www.eac.gov/program-areas/research-resources-and-reports/copy_of_docs/eds-2006/overvotes-and-undervotes.pdf/attachment_download/file
With IRV, voters are not permitted to vote for the same candidate more than once in a given contest. To do so, renders their 2nd and 3rd choices invalid.

11 "Instant runoff voting" should be renamed "Ranked Choice Voting". Instant runoff incorrectly infers that the method provides the same results as a runoff election and does so instantly. It can take days or weeks to get the results of an IRV election. . See (NCSBoE Cons 6).

12. IRV does not guarantee a majority winner and did not provide a majority winner in the "instant runoff" contest in Cary, District B City Council in October 2007.

13. (NCSBoE Cons 4). IRV provides the same results as plurality elections. Cons 4 mistakenly implies that IRV is an improvement over plurality elections, but the fact is that most often, “Instant runoff voting” historically provides the same result as a plurality election, only with more effort. Further, Cons 4 proposes that the SBoE will determine the threshold for winning a contest, something that should already be standard, not adjustable.

14. (NCSBoE S 4). Instant runoff’s inherent properties violate item S 4 of the SBoE proposal. Instant runoff voting is non-monotonic. In other words, you can hurt your preferred candidate by voting for him or her.

15. CE 1. Exit polls, if conducted, should be conducted by election officials and not advocates, in order to preserve the appearance of objectivity in the results. Exit polls should be carefully crafted to avoid being push polls. Pierce Co Washington mailed surveys to 91,000 voters, to be completed in the privacy of their homes.

This letter, along with my comments and recommendations set forth in the documents referenced above, and expanded upon in following pages, is my testimony.

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(See next page for beginning of extended comments and documentation).

NC Verified Extended Comments With Documentation

1. There is no federally approved software to tabulate IRV. According to the State Board of Elections:

“There are no provisions on ES&S equipment to tabulate IRV.” (January 7, 2008 email from Keith Long, NC State Board of Elections Voting Systems Project Manager.
[http://www.ncvoter.net/downloads/Keith Long Machines Not IRV Compatible.pdf](http://www.ncvoter.net/downloads/Keith%20Long%20Machines%20Not%20IRV%20Compatible.pdf))

Further, using uncertified software and uncertified algorithms to tabulate IRV can be dangerous. San Francisco, California used uncertified software for 3 years before discovering that the algorithm was flawed. http://www.sfgov.org/site/elections_index.asp?id=62751

Recommendation: rather than use an uncertified work around, these jurisdictions should either manually sort and count the VVPATS, or they should use optical scan ballots, which can be more easily counted by hand. If the State Board of Elections still wants to have allow instant runoff on use touch-screen machines, they should work with the vendor to have the touch screen printers create an easy to read, voter verified ballot summary. Currently, touch-screen printers do not print a summary of the ballot, and voters choices are printed as they are made, as are all selections and de-selections.

Background: The State Board of Elections developed a “work around” for counting IRV on touch-screens for the 2007 pilot. This work requires the use of uncertified software and a complex algorithm as part of the voting system. This is not just using excel to simply tally votes.

Direct Record Electronic – The initial count of the DRE ballots was to be conducted using the automated machine count. In case a runoff was necessary, a procedure was developed to read the voting machine data into the SBE certified Unity software and reports would then made available from the Unity Software to provide a method to review the individual vote records to insure that voters did not vote for the same candidate multiple times. “The NC State Board of Elections’ report to House and Senate Leadership”
[http://www.ncvoter.net/downloads/IRV NCSBOE Report 12 17 2007.pdf](http://www.ncvoter.net/downloads/IRV_NCSBOE_Report_12_17_2007.pdf)

The complex “work around” for counting IRV on touch-screens turns Excel into part of the voting system, an untested and uncertified part. The procedure to use with “Direct Record Electronic” machines, also called touch screen machines, called for the use of uncertified software (Excel) as part of the vote tabulating system. Excel was not used merely to display vote data, which would have been acceptable, but vote data from the ES&S Unity software was to be exported to excel, and then tabulated using a complicated and also uncertified algorithm. In other words, excel was to become part of the voting system.

- a. neither word pad, note pad or excel have been tested for their vote tabulation ability.
- b. this process erases audit data as it progresses, excel does not have an audit trail, and some versions of excel have bugs.
- c. it is not known what happens to the data as it is moved from the ES&S vote tabulation system to a non ES&S vote tabulation system.
- d. the IRV algorithm is not federally certified.

1. There is no federally approved software to tabulate IRV (continued)

The State Board of Elections devised the “work around” to make it easier for touch screen jurisdictions like Henderson County to volunteer for the previous pilot. It is much harder to manually count the paper trail roll from the machines, and counting IRV would be much more difficult. Luckily there was no “runoff” so the work around was not used. This work around violates North Carolina election law that requires all vote counting systems and software to be federally certified.

The purpose of the “work around” for “Direct Recording” or touch screen machines - is to avoid having the laborious if not impossible task of manually counting the votes recorded on the “paper trail”, and there is no other way to count IRV on the touch screens at this time. There are over 100 steps in the work around process for counting IRV on touch screens. These include instructions like “click on the red tab, or click on the blue tab”, and one single keystroke error would change the outcome of the election, and there is no audit trail for this process. Audit data is deleted as steps are performed. See Appendix A for the 5 page step by step instructions used in this “work around”.

The use of uncertified software or uncertified voting systems could result in permanent allowance for uncertified software because of “emergencies” like IRV that set precedence to using uncertified systems/software. This could decrease/void vendor responsibility & accountability - how can the vendor be responsible for a system that uses untested/uncertified software?

The State Board of Elections’ Touch Screen IRV tabulation “work around” violates sections of NC Election Law relating to voting systems, and voting vendors:

§ 163-165.7. Voting systems: powers and duties of State Board of Elections. **(a)** Only voting systems that have been certified by the State Board of Elections in accordance with the procedures and subject to the standards set forth in this section and that have not been subsequently decertified shall be permitted for use in elections in this State.

...The State Board may certify additional voting systems only if they meet the requirements of the request for proposal process set forth in this section...

(1) That the vendor post a bond or letter of credit to cover damages resulting from defects in the voting system. Damages shall include, among other items, any costs of conducting a new election attributable to those defects.

(2) That the voting system comply with all federal requirements for voting systems.
<http://www.sboe.state.nc.us/getdocument.aspx?ID=249>

**1. There is no federally approved software to tabulate IRV (cont'd cont'd)
Can we violate our own law without voiding the statewide vendors obligations?**

§ 163-165.9A. Voting systems: requirements for voting systems vendors; penalties.

(a) Duties of Vendor. – Every vendor that has a contract to provide a voting system in North Carolina shall do all of the following:

(1) The vendor shall place in escrow with an independent escrow agent approved by the State Board of Elections

all software that is relevant to functionality, setup, configuration, and operation of the voting system,

including, but not limited to, a complete copy of the source and executable code, build scripts, object libraries, application program interfaces, and complete documentation of all aspects of the system including, but not limited to, compiling instructions, design documentation, technical documentation, user documentation, hardware and software specifications, drawings, records, and data. The State Board of Elections may require in its request for proposal that additional items be escrowed, and if any vendor that agrees in a contract to escrow additional items, those items shall be subject to the provisions of this section. The documentation shall include a list of programmers responsible for creating the software and a sworn affidavit that the source code includes all relevant program statements in low level and high level languages.

(2) The vendor shall notify the State Board of Elections of any change in any item required to be escrowed by subdivision (1) of this subsection.

(3) The chief executive officer of the vendor shall sign a sworn affidavit that the source code and other material in escrow is the same being used in its voting systems in this State. The chief executive officer shall ensure that the statement is true on a continuing basis.

(4) The vendor shall promptly notify the State Board of Elections and the county board of elections of any county using its voting system of any decertification of the same system in any state, of any defect in the same system known to have occurred anywhere, and of any

(page 159) <http://www.sboe.state.nc.us/getdocument.aspx?ID=249>

2. IRV ballots should be counted where they are cast.

In Cary, NC - the 2nd and 3rd choice votes for the "instant runoff" were not counted on election night. Instead, they were carried away from where they were cast and then counted at a later date. NC law does not allow for non retrievable ballots to be counted away from where they are cast. This would put those choices at risk of tampering after being hauled away from the polling places and put into storage.

While absentee ballots and early voted ballots might be tabulated at the central office, these are "retrievable ballots" that have been tallied by the machines. IRV ballots are not retrievable and the machines cannot even record the 2nd and 3rd choices at all.

Recommendation: officials should count the 2nd and 3rd choices of votes by at the polling places, using the "Australian" method of communicating with the central office. More detail lower down.

§ 163-182.2. Initial counting of official ballots . (a) The initial counting of official ballots shall be conducted according to the following principles:

(1) Vote counting at the precinct shall occur immediately after the polls close and **shall be continuous until completed**.

(2) Vote counting at the precinct shall be conducted with the participation of precinct officials of all political parties then present. Vote counting at the county board of elections shall be conducted in the presence or under the supervision of board members of all political parties then present.

(3) Any member of the public wishing to witness the vote count at any level shall be allowed to do so. No witness shall interfere with the orderly counting of the official ballots. Witnesses shall not participate in the official counting of official ballots.

(From page 180 & 181 from [NC Election Law](#) posted online)

The whole reason for 161-182.2 (a) (1) is for transparency and fraud prevention

Recommendation. Count the 2nd and 3rd choices of votes by communicating with the central office. (Provisional ballots and absentee ballots must also be counted) and after provisional ballots are approved/rejected. This method has been used in Australia successfully. See the Australian method of counting IRV in the precincts on the next page.

2. IRV ballots should be counted where they are cast. (continued) The Australian Method

Yes. IRV *can* be counted in precincts if there is *two-way communication* between precincts and headquarters – headquarters informs all precincts who to eliminate next, then precincts report their top-rank totals (among remaining candidates) and then the cycle repeats.

....So yes, it will still work. And according to Rob Richie (June 2008 web post), "In Ireland there are 43 counting centers in the presidential race. Election administrators count ballots and report their totals to a national office that in turn instructs the administrators at each counting center on what to do next. The entire process takes less than a day even though more than a million ballots are cast."

... First, doing this *requires* modern communication technology, e.g. computer networks

Second, this *is* a centrally-directed scheme. There still is no such thing as a "district subtotal." If a district counts its ballots locally under central direction, then *it cannot publish its subtotals* because there is no such thing as a district subtotal. That reduces the transparency and checkability of elections.

.....And doing this could require all workers at *every* location to keep counting and recounting until every single last vote everywhere gets counted, which'd be a very long workday (or perhaps a better word than "day" is "month"...). If indeed, every precinct in the USA (I think there are over 100,000 of them) were to try to count ballots under central direction as Richie has in mind, that could require every precinct-worker in the entire USA to keep counting for 1 month. That would raise the cost of elections astronomically. So in fact (to avoid that) really the counting would need to happen at a much higher level than "precinct," such as "statewide." Which is fine – but then it is not local anymore and it is a big change from today's organization of elections with local, not central, counting.

The way many IRV countries actually do it is, they do a single pass making a *probabilistic model* of who is likely to be eliminated and in what order. If the model turns out to be correct, then everything goes smoothly. If it turns out to be wrong, then they get into trouble and have to start recalling the election workers and doing more counts... If it gets it wrong in more than one way we can really get into huge difficulties... but fortunately this in practice seems rare, probably because all IRV countries so far have been 2-party dominated. In Australia's 24 November 2007 elections, the Election Commission was unable to determine the composition of parliament until over 1 month later because of numerous races which were difficult for them to count.

<http://www.rangevoting.org/lrvNonAdd.html>

Warren D. Smith, Center for Range Voting. Temple University Math Dept
<http://www.math.temple.edu/~wds/homepage/myresume.html>

3. In the 2007 IRV Pilots, there was no Election night reporting for voters' second and third choices. IRV ballots are not “retrievable as are absentee and early votes, and must be counted on election night. With the 2007 pilot, there are no election night reports/poll tapes for these results because the machines cannot count the 2nd and 3rd choices, and officials did not themselves count the 2nd and 3rd choices on election night. North Carolina's voting machines are incapable of doing such reporting,

Recommendation. Manually record and report the voters 2nd and 3rd choices.

The only way to account for the voters choices and secure them against fraud would be to count all second and third choices on election night at the polling places and create a manual report of that data, since the voting machines are not able to do so.

§ 163-182.2. Initial counting of official ballots

(5) Precinct officials shall provide a preliminary report of the vote counting to the county board of elections as quickly as possible. The preliminary report shall be unofficial and has no binding effect upon the official county canvass to follow.

(From page 180 & 181 from NC Election Law posted online)

A legal method of reporting vote data must be created or the pilots should not be conducted.

4. Incomplete vote data is unacceptable and illegal. Failing to record and count all votes, whether 1st, 2nd or 3rd choices, violates a core principle of elections - that all votes be recorded and counted. Votes must be counted for transparency sake. Candidates, voters and officials want to know the breakdown of the votes. In the 2007 Pilot program, only partial data was reported for the District B contest where voters' second and third choices were ultimately counted. In Cary's other IRV contests for City Council, no 2nd or 3rd place data was recorded or reported at all.

The Wake County Board of Elections showed the breakdown of votes for 2 of the 3 candidates, Don Frantz and Vickie Maxwell. The BoE omitted the breakdown for Nels Roseland. Here is the official contest summary of all municipal elections

http://msweb03.co.wake.nc.us/bordelec/downloads/2007OCT_summary-official.htm

And here are the only IRV results posted by the Wake BoE, for 2 candidates only:

http://msweb03.co.wake.nc.us/bordelec/downloads/cary_irv_results.htm

Recommendation. Manually record and report all vote data, including exhausted ballots. After each "instant runoff" election, the City of San Francisco provides the public with **all** vote data in the form of a [CityWide RCV Ballot Image Report \(ZIP\)](#) so that the public can check to see that the vote count and vote transfers are accurate. See the San Francisco Department of Elections website here http://www.sfgov.org/site/elections_index.asp?id=70720 Please observe below how IRV election results are reported at the San Francisco Board of Elections website:

November 2, 2004

District 11 - Ranked-Choice Voting

Go To: [Election Results](#) | [Neighborhood Statistics](#) | [RCV-1](#) | [RCV-2](#) | [RCV-3](#) | [RCV-5](#) | [RCV-7](#) | [RCV-9](#) | [RCV-11](#)

Official Results

Candidate		Pass 1	Pass 2	Pass 3	Pass 4	Pass 5	Pass 6
JOSE MEDINA		2869	2989	3359	3867	4683*	
MYRNA VIRAY LIM		4280	4884	5248	5719	6760	7628
ANITA GRIER		2806	3080	3522	3829*		
FIL M. SILVERIO		307*					
REBECCA REYNOLDS SILVERBERG		1816	1946*				
GERARDO SANDOVAL	(Winner 58.333%)	7477	7637	7919	8553	9256	10679
ROLANDO A. BONILLA		2293	2356	2571*			
TOM YUEN		1328*					
WRITE-IN		*					
	Eligible Ballots	23176	22892	22619	21968	20699	18307
	Exhausted Ballots	1726	2010	2283	2934	4203	6595
	Total Ballots	24902	24902	24902	24902	24902	24902

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5. Provisional ballots were not counted until after the 2nd and 3rd choices were counted, and supposedly "added" back in. Since IRV is not "additive", it is not clear how these votes could possibly be added back in without doing a complete recount. Provisional ballots would definitely affect the outcome of the first choices of votes and how the 2nd and 3rd choices come into play.

Wake County didn't count provisionals until after the 2nd and 3rd rounds of voting were done.

"A double-checking of votes today in Cary's razor-thin District B Town Council election showed that Don Frantz appears to be the unofficial winner after all...Because dozens of provisional ballots had yet to be verified, a Maxwell victory could not be ruled out.

Across Cary, a total of 52 provisional votes have yet to be tallied -- not all of which are expected to involve District B, because there were three other council races that day."

Oct 12, 2007 Recount widens Frantz lead in Cary Raleigh News & Observer

<http://www.newsobserver.com/news/story/735111.html>

Recommendation. Count provisional ballots before moving beyond the first round of votes:

§ 163-182.2. Initial counting of official ballots . (a)

(4) Provisional official ballots shall be counted by the county board of elections before the canvass. If the county board finds that an individual voting a provisional official ballot is not eligible to vote in one or more ballot items on the official ballot, the board shall not count the official ballot in those ballot items, but shall count the official ballot in any ballot items for which the individual is eligible to vote. Eligibility shall be determined by whether the voter is registered in the county as provided in G.S. 163-82.1 and whether the voter is qualified by residency to vote in the election district as provided in G.S. 163-55 and G.S. 163-57. If a voter was properly registered to vote in the election by the county board, no mistake of an election official in giving the voter a ballot or in failing to comply with G.S. 163-82.15 or G.S. 163-166.11 shall serve to prevent the counting of the vote on any ballot item the voter was eligible by registration and qualified by residency to vote.

(Page 177 of NC Election Law)

6. Absentee ballots. It is not clear when the absentee ballots were counted, so the question is - were they counted with the first, second and third rounds? They must be counted on election day with the first round of voting before going to the next. Absentee ballots have to be approved by the local County Board of Elections before being counted:

§ 163-234. Counting absentee ballots by county board of elections.

All absentee ballots returned to the county board of elections in the container-return envelopes shall be retained by the board to be counted by the county board of elections as herein provided.

.....(2) The county board of elections shall meet at 5:00 p.m. on election day in the board office or other public location in the county courthouse for the purpose of counting all absentee ballots except those which have been challenged before 5:00 p.m. on election day. Any elector of the county shall be permitted to attend the meeting and allowed to observe the counting process, provided the elector shall not in any manner interfere with the election officials in the discharge of their duties.

Provided, that the county board of elections is authorized to begin counting absentee ballots between (page 247 of NC Election Law)

7. Canvassing of all first round votes, absentee and provisional should be done before counting a second round of ballots. Instead, canvassing was done after counting the 2nd and 3rd rounds of ballots for District B. Provisional ballots were not included in the count of the 2nd and 3rd rounds of voting. Officials say they "added" these votes in later. All votes should be counted in the 2nd and 3rd round, provisional votes and absentee votes included.

§ 163-182.5. Canvassing votes.

(a) The Canvass. - As used in this Article, the term 'canvass' means the entire process of determining that the votes have been counted and tabulated correctly, culminating in the authentication of the official election results. The board of elections conducting a canvass has authority to send for papers and persons and to examine them and pass upon the legality of disputed ballots.

(b) Canvassing by County Board of Elections. - The county board of elections shall meet at 11:00 A.M. on the tenth day after every election held on the same day as a general election in November of the even-numbered year, and at 11:00 A.M. on the seventh day after every other election, to complete the canvass of votes cast and to authenticate the count in every ballot item in the county by determining that the votes have been counted and tabulated correctly. If, despite due diligence by election officials, the initial counting of all the votes has not been completed by that time, the county board may hold the canvass meeting a reasonable time thereafter. The canvass meeting shall be at the county board of elections office, unless the county board, by unanimous vote of all its members, designates another site within the county. The county board shall examine the returns from precincts, from absentee official ballots, from the sample hand-to-eye paper ballot counts, and from provisional official ballots and shall conduct the canvass.

(page 180 and 181 of NC Election Law)

8. Audits protocol and recount procedures must be developed to comply with state law and must be publicly announced and observed. If the IRV ballots are counted in any other way besides hand to eye, then the ballots are subject to auditing per § 163-182.1. (b)(1). The state appointed statistician must be consulted with to develop a “statistically significant” audit protocol for the IRV contests. Auditing IRV elections is more complex than auditing regular elections.

Notice must be given in time for the public to attend to prevent instances as in Wake County where citizens did not get to observe an audit that developed into a full recount. (Oct 30, 2007 Critics Take Runoff Concerns To Elections Board NBC 17)

The North Carolina’s State Board of Elections consults with Dr. William Kalsbeek, a professor in the department of Biostatistics and director of the Survey Research Unit at the UNC School of Public Health. (919) 962-3249, email kalsbeek@email.unc.edu

§ 163-182.1. Principles and rules for counting official ballots.

(b)(1)

For optical scan and direct record electronic voting systems, and for any other voting systems in which ballots are counted other than on paper by hand and eye, those procedures and standards shall do both of the following:

(1) Provide for a sample hand-to-eye count of the paper ballots or paper records of a statewide ballot item in every county. The presidential ballot item shall be the subject of the sampling in a presidential election. If there is no statewide ballot item, the State Board shall provide a process for selecting district or local ballot items to adequately sample the electorate. The State Board shall approve in an open meeting the procedure for randomly selecting the sample precincts for each election. The random selection of precincts for any county shall be done publicly after the initial count of election returns for that county is publicly released or 24 hours after the polls close on election day, whichever is earlier. The sample chosen by the State Board shall be of one or more full precincts, full counts of mailed absentee ballots, full counts of one or more one-stop early voting sites, or a combination. The size of the sample of each category shall be chosen to produce a statistically significant result and shall be chosen after consultation with a statistician. The actual units shall be chosen at random. In the event of a material discrepancy between the electronic or mechanical count and a hand-to-eye count, the hand-to-eye count shall control, except where paper ballots or records have been lost or destroyed or where there is another reasonable basis to conclude that the hand-to-eye count is not the true count. If the discrepancy between the hand-to-eye count and the mechanical or electronic count is significant, a complete hand-to-eye count shall be conducted.

(Page 176 and 177 of NC Election Law)

9. Voter education is challenging and expensive. Education must reach diverse groups including minorities and disabled voters, must be provided well ahead of the election. Education must be repeated. since new voters come into the system continuously and others may have been missed in previous efforts. Voters need to be aware of the ranked choice contests ahead of time, so that they can do the research to make informed choices. Educational efforts for the 2007 pilot in Cary and Hendersonville were simply not enough:

Bill Modlin wasn't happy with his first experience with the new "instant runoff" voting when he cast his ballot for Hendersonville City Council on Thursday. ... "It doesn't make any sense to me, and I can guarantee you because of the way they have it set up there are people in this town that are going to lose their vote," he said. ... "I call it instant confusion," he said. Oct 19, 2007 Voter finds new system frustrating. By Harrison Metzger Times-News (cached)

http://www.ncvoter.net/downloads/IRV_Oct_19_Voter_finds_new_system_frustrating.pdf

Winning candidate Frantz said he heard from many confused voters on the campaign trail. "I found myself, when I was at some places, that's all I was doing ... explaining the new voting system," he said. Oct 17, 2007 To stem runoff votes, new ballots have voters rank top 3 By Jordan Schrader, USA TODAY. CARY, N.C (Cached).
http://www.ncvoter.net/downloads/IRV_Oct_17_USAToday_To_stem_runoffs_new_ballots.pdf

In the Cary IRV pilot, I can tell you that many voters left their backup choices blank, and that many other voters wrote in backup candidates with names such as "Mickey Mouse" and "Donald Duck." This is direct evidence that many voters did not understand or accept IRV. Candidates involved in the IRV pilot in Cary have voiced doubts about the process. "Instant Runoff Voting is no solution, says election official who was there"

Debra Goldberg • Asheville Citizen Times. August 27, 2008

<http://www.citizen-times.com/apps/pbcs.dll/article?AID=200880826043>

<http://irvbad4nc.blogspot.com/2008/08/north-carolina-instant-runoff-voting-is.html> (archived)

Recommendation: It is not enough to educate voters on how to mark a ballot, although that is a large challenge. It is essential that the voters be taught just what "IRV" does and that they be prepared to make choices when they come to the polls. Most voters have enough trouble making a single choice. Voter education should be in advance of the election, should be repeated over time, and should be in media that reaches the most economically challenged. Political parties should be contacted and provided materials.

IRV may serve as a literacy test for some, since at least 18% of North Carolina citizens have serious literacy difficulties according to the NC Literacy Resources Center.

http://www.ncccs.cc.nc.us/basic_skills/docs/pdf_documents/LitNCApril2002.PDF

This report may be outdated, but indicates a need to consider low literacy voters in our state.

Voter education also can be expensive. In 2004, San Francisco spent \$776,000 on IRV related voter education for 421,094 registered voters, with \$210,000 specifically allotted to the community organizations for their efforts. That amounts to about \$1.87 per registered voter. The city held 700 public outreach events. See http://www.sfgov.org/site/elections_page.asp?id=61472

2008 Grand Jury report. In spite of their voter education efforts, a July 3, 08 San Francisco Grand Jury Report stated that poll workers and voters do not understand instant runoff:

9. Voter education is challenging and expensive. (continued)

The 2007-2008 San Francisco Civil Grand Jury review of five elections for the city/county of San Francisco

Excerpts of the Grand Jury Report

The 2007-2008 San Francisco Civil Grand Jury reviewed the materials provided by the Department of Elections for the November 2007 and February 2008 elections.

Ranked-Choice Voting and Absentee (Vote By Mail) Ballots RCV ballots were used in the November 2007 election for the offices of Mayor, District Attorney, and Sheriff. Some poll workers and voters told the Jury that they did not understand how to vote for candidates where RCV ballots were used. In the November 2008 election, RCV ballots will be used for some local offices. Additional education and outreach need to be provided to the voters to clarify the RCV process so that the ballots accurately reflect the intentions of the voters.

Findings:11. Some poll workers and voters do not understand the procedures for voting for candidates where Ranked-Choice ballots are used. Findings14. While the DOE does meet these legal requirements, additional outreach efforts are needed on voter registration requirements and deadlines, the Ranked-Choice Voting process and the requirements for submitting a valid Absentee Ballot.V Recommendations3. The DOE should publicly establish a date certain by which Sequoia must receive the Secretary of State's certification regarding the counting of RCV ballots. This date should be no later than September 15, 2008.

http://www.sfgov.org/site/uploadedfiles/courts/divisions/Civil_Grand_Jury/year-of-five-elections-for-sf.pdf

10. (NCSBoE Cons 5) Overvote protection lacking. North Carolina state law § 163-182.1. (b)(2) and the Federal "Help America Vote Act" requires that voters be notified of over votes. NC's voting machines are unable to notify the voters if they have "overvoted" in the IRV contests - if voters rank the same candidate more than once. This resulted in some voters in Cary, North Carolina making invalid choices on their ballots. The Help America Vote act defines overvotes: *"In every election, some voters make more choices than are permitted in a contest, which creates what are called overvotes."*

http://www.eac.gov/program-areas/research-resources-and-reports/copy_of_docs/eds-2006/overvotes-and-undervotes.pdf/attachment_download/file

Voting/ranking the same candidate more than once is an over-vote, because with IRV, voters are not permitted to vote for the same candidate more than once in a given contest. To do so, renders their 2nd and 3rd choices invalid.

In the October 2007 Cary Municipal election, these types of overvotes were not reported by the voting machines, because our voting machines cannot see/read the 2nd and 3rd choices, so an important protection was lost. This is especially important considering that one of the Cary candidates was telling voters to rank him 1, 2 and 3 - many voters' 2nd and 3rd choices would not count in a "runoff".

In an email to the State Board of Elections, Bob Hall described how one of the candidates for the Cary District B City Council race asked voters to rank him 1st, 2nd and 3rd:

"--during the campaign he (Nels Roseland) told his supporters to vote for him as their 1st, 2nd and 3rd choice, a confusing message that effectively instructed voters to pick nobody else as a second choice."

http://www.ncvoter.net/downloads/Bob_Hall_Nels_Says_Vote_for_me_all_three_10_11_07.htm

NC State law regarding over-vote warning:

§ 163-182.1. Principles and rules for counting official ballots.

(b) (2) Provide that if the voter selects votes for more than the number of candidates to be elected or proposals to be approved in a ballot item, the voting system shall do all the following:

- a. Notify the voter that the voter has selected more than the correct number of candidates or proposals in the ballot item.
- b. Notify the voter before the vote is accepted and counted of the effect of casting overvotes in the ballot item.
- c. Provide the voter with the opportunity to correct the official ballot before it is accepted and counted."

(Page 175 of NC election law)

11. The name “Instant runoff” is misleading and should be changed to “Ranked Choice Voting”. The name implies that the process is instant, and that it provides the same results as a runoff election.

San Francisco renamed IRV and calls it Ranked Choice Voting:

Since the runoff process can be time-consuming, the San Francisco Department of Elections officially renamed the procedure “ranked choice voting,” so as not to raise expectations that the results would be made available “instantly.”
From “Ballot-Marking Errors in the First San Francisco Instant Runoff Election”
By Greg Dennis gdennis at mit dot edu http://www.gregdennis.com/voting/sf_irv.pdf

Pierce County Washington passed a charter amendment calling for “instant runoff voting” and immediately renamed it Ranked Choice Voting:

Please note that from this point forward this method of voting will be referred to as 'Ranked Choice Voting'. The first Ranked Choice Voting election will be held on November 4, 2008.
<http://www.co.pierce.wa.us/pc/abtus/ourorg/aud/elections/RCV/ranked/rcv.htm>

Instant runoff is not instant, two and a half weeks after the election, they were still counting:

As of Friday, Nov 23rd, Pierce County was still tabulating the votes:
“Official algorithm results available Tuesday, November 25, 2008.”
<http://www.co.pierce.wa.us/pc/abtus/ourorg/aud/elections/RCV/ranked/rcvresults.htm>

As of Friday, Nov 23rd, San Francisco’s seven districts were still counting IRV ballots:

THIS RESULT IS NOT FINAL SINCE BALLOT COUNTING IS CONTINUING

No candidate in this contest has received a majority of first-choice selections from the ballots counted as of today.

In order to release this preliminary report, the ranked-choice voting method was applied to this contest using the votes counted as of today. No candidate is being declared the winner or being eliminated from the contest. As in all elections, the Department will count all ballots cast in the election for this contest before determining the winner.

This is a preliminary report and it does not represent the final result for this contest

Last Updated: 11/21/2008

http://www.sfgov.org/site/elections_index.asp?id=70720

12. IRV does not guarantee a majority winner. Recommendation: educate the officials, lawmakers, and the public that IRV does not guarantee a majority winner. The one contest in North Carolina where the second and third choices came into play was in Cary NC. The winner did not receive a majority of the votes:

Don Frantz won the District B City Council contest with 46.36% of the total ballots cast for that contest.

The Wake BoE, in its published final results, showed Don Frantz winning District B with 50.87%, but that is not of 3,022 ballots, but of 2,754 votes. The total number of votes cast in that contest was 3,022.

**October 9, 2007, Raleigh, Cary, Board of Education
Wake County and Raleigh Bonds**

Summary:

COUNCIL MEMBER C-B 1 CARY MUNICIPAL DISTRICT B

You may vote for 1

don Frantz 1,151 38.09

Vickie Maxwell. 1,075 35.57

Nels Roseland 793 26.24

WRITE-IN. 3 .10

http://msweb03.co.wake.nc.us/bordelec/downloads/2007OCT_summary-official.htm

Total votes cast **3,022**

After running voters 1, 2nd and 3rd choices, Don Frantz obtained 1,401 votes, which is 46.36% of all votes cast in the Cary District B contest.

http://msweb03.co.wake.nc.us/bordelec/downloads/cary_irv_results.htm

The majority obtained by the winner of an IRV election is not always a majority of valid ballots cast, but rather a majority of ballots that indicated a preference between the runoff finalists.

13. “Instant runoff voting” is not superior to “plurality” or winner take all voting. Often IRV provides the same results as plurality elections, just with more trouble.

Recommendation: provide disclosure to jurisdictions, candidates, and officials considering participating in the Instant Runoff Pilot. The fact is, with IRV, in most cases, with very few exceptions, whoever gets the most votes in the first round of the election ends up being the winner, after tallying the 2nd and 3rd choices.

Proof: Out of 20 RCV elections that have been held in San Francisco since the IRV referendum establishing it passed, when IRV was used, it elected a plurality winner. (Which is also what happened in Cary, North Carolina).

4 elections were uncontested. 9 elections were won with a majority in the first round. 7 elections went into RCV vote transfer. For every one of the 7 elections using RCV, the candidate with a plurality in the first round went on to win the election after transfers were complete. In every one of these elections, the winner did not obtain a majority of ballots cast. In every one of these elections, the runner-up in the first round remained the runner-up in the last round. One election had 22 candidates; the winner had 33.65% of the vote. Below are results that are more detailed. Notice that relative position of the winner and the runner-up did not change much with vote transfers.

The data was taken from the [San Francisco Department of Elections Archive](#)

San Francisco election for Board of Supervisor, November 2, 2004.
District 1: 7 candidates. First round plurality: Jake McGoldrick, 11815/30721 votes. runner up: Lillian Sing, 8989 After transfers: Jake McGoldrick, 14011/30721 votes, 45.61%. runner up: Lillian Sing, 11929
District 2: 5 candidates, won with 61.25% first round.
District 3: 4 candidates, won with 62.55% first round.
District 5: 22 candidates. First round plurality: Ross Mirkarimi, 9947/39255, 33.65% runner up: Robert Haaland, 5124. After transfers: Ross Mirkarimi, 13211/39255 runner up: Robert Haaland, 7272.
District 7: 13 candidates. First round plurality: Sean R. Elsbernd, 10505/34905, 39.63%. runner up: Christine Linnenbach, 6784 After transfers: Sean R. Elsbernd, 13834/34905. runner up: Christine Linnenbach, 10491.
District 9: 6 candidates, won with 50.73% first round.
District 11: 8 candidates First round plurality: Gerardo Sandoval, 7477/24902 runner up: Myrna Viray Lim, 4280 After transfers: Gerardo Sandoval, 10769/24902, 43.25% runner up: Myrna Viray Lim, 7628

13. “Instant runoff voting” is not superior to “plurality” or winner take all voting. (continued)

November 8, 2005
Assessor-Recorder: 4 candidates First round plurality: Phil Ting, 94062/225370 runner up: Gerardo Sandoval, 71850 After transfers: Phil Ting, 110053/225370, 48.83% runner up: Gerardo Sandoval, 79261
Treasurer: 4 candidates, won with 61.36% first round.
City Attorney: uncontested
San Francisco election for Board of Supervisor, November 7, 2006.
District 2: 2 candidates, 80.13% first round.
District 4: 6 candidates. First round plurality: Ed Jew, 5184/21985 votes. runner-up: Ron Dudum, 5134 votes. After transfers: Ed Jew, 8388/21985 votes, 38.15%. runner-up: Ron Dudum, 5072 votes
District 6: 8 candidates. First round plurality: Chris Daly, 8746/19915 votes. runner-up: Rob Black, 7115 votes. After transfers: Chris Daly, 8968/19915 votes, 45.03%. runner-up: Rob Black, 7303 votes.
District 8: 3 candidates, 66.24% first round.
District 10: 7 candidates, 56.17% first round.
Assessor/Recorder: uncontested.
Public Defender: uncontested.
November 6, 2007. No RCV analysis necessary for any election
Mayor: 12 candidates. Majority winner first round (73.66%)
City Attorney: uncontested.
Sheriff: 2 candidates, majority winner first round (73.69%)

<http://www.instantrunoffvoting.us/majority.html>

14. With IRV, voters can hurt their preferred candidate by voting for them. This violates item S 4 of the SBoE proposal. Instant runoff voting fails the monotonicity criterion for measuring election methods. Also called non-monotonicity – when a candidate can lose if more voters favor him/her or win when fewer voters favor him/her. **Recommendation:** Provide disclosure to officials and the public so that they can make an informed decision about participating in the IRV Pilot.

Dr. Steven Brams of New York University provides scenarios where North Carolina voters could harm their preferred candidate by voting for him or her.

"The example below... shows how nonmonotonicity can occur when all except the top two candidates are eliminated.." 12/09/07

Here's the nonmonotonicity example from Approval Voting, pp. 142-143, with four classes of voters (total: 17 voters) ranking three candidates:

Here's the nonmonotonicity example from Approval Voting, pp. 142-143, with four classes of voters (total: 17 voters) ranking three candidates:

Class	Number of Voters	Rankings
1	6	A B C
2	5	C A B
3	4	B C A
4	2	B A C

Candidate "A" wins . Because nobody has a majority of 9 votes on the 1st round, C, the candidate with the fewest first-place votes (5), is eliminated. His 5 votes go to A, who wins with 11 (6 + 5) votes.

Here are the same classes of voters, with class # 4's rankings changed:

Here are the same classes of voters, with class # 4's rankings changed:

Class	Number of Voters	Rankings
1	6	A B C
2	5	C A B
3	4	B C A
4	2	A B C

Candidate "C" wins. Now assume the 2 class (4) voters change their preference ranking to the following: 4'. 2: ABC (as above)

Again, nobody has a majority of 9 votes on the 1st round. Because B gets the fewest first-place votes (4), he is eliminated, and his 4 votes go to C, who wins with 9 (5 + 4) votes.

In summary, candidate "A" wins when he is ranked second by the class (4) voters, but he loses (to C) when he is ranked first by these voters. Thus, "A" wins when fewer voters favor him, and he loses when more voters favor him.

This example is not as dramatic as my earlier example, when raising a candidate from last to first place--instead of second to first--causes him to lose, but it is still an example of nonmonotonicity. It shows that when one drops all except the top two candidates in the 1st round (in this example, only one candidate since there are a total of three), nonmonotonicity can still occur. This example can be easily extended--by adding voters and candidates--so that when one drops more than one candidate on the 1st round to eliminate all except the top two, nonmonotonicity can still occur.

Steven J. Brams
 Dept. of Politics, 19 West 4th St., 2d Fl. E-mail: steven.brams at nyu.edu
 New York University, New York, NY 10012

15. Exit polls, if conducted, must be objective, transparent, follow certain ethical standards and good practices. Exit polls must not be used as tools of advocacy. They should be conducted by election officials and not advocates, in order to preserve objectivity in the results. Exit polls should be carefully crafted to avoid being push polls.

One way to avoid the influence of partisans or advocates in conducting exit polls is to utilize a mail in type survey. Pierce County Washington sent a survey to approximately 91,000 voters who were voting by mail.

90,738 Pierce County voters answered a questionnaire included with their ballots that asked, "Did you like this new Ranked Choice Voting method?" See the News Tribune out of Tacoma Washington. <http://www.thenewstribune.com/293/story/559306.html>

See "WAPOR GUIDELINES FOR EXIT POLLS AND ELECTION FORECASTS" for standards.

Excerpt:

1. Exit polls conducted for public consumption should be impartial and non-partisan. Exit polls are scientific research designed to collect data and report information on electoral outcomes. They are not tools for partisan advocacy.
2. Methods should be transparent, public, and well-documented. These goals can be achieved by publicly describing the methods prior to conducting the exit poll and by adhering to the standards of minimal disclosure delineated in this document. It is also recommended that when the exit poll is used for analysis, the data set (without individual identifiers) along with appropriate survey documentation be deposited in public archives and/or on web sites for general access.
3. Data collectors must adopt study designs for their exit polls that are suitable for producing accurate and reliable results and that follow specific procedural and technical standards stipulated in this document.
4. When reporting results from exit polls, data collectors and analysts must be careful to keep their interpretations and statements fully consistent with the data. Speculation and commentary should not be labeled as data-based reporting. Limitations and weaknesses in the design of an exit poll, its execution, and the results must be noted in all reports and analysis. Results should be released to the public and other interested parties through the general media and simultaneously made accessible to all.

<http://www.unl.edu/WAPOR/ISSC/ISSC%202006.doc>

Appendix A

Instant Runoff Uncertified Workaround to tabulate touch screen votes. Information provided by the North Carolina State Board of Elections.

Hendersonville County IRV Tabulation Procedures

Determine if there are any candidates that have received the 50% threshold to be declared winner(s). Use document - Henderson County IRV Tabulation – Threshold.

To tabulate a runoff election follow these procedures:

1. Announce the two (2) candidates that are in the Instant Runoff.
2. Print document - Hendersonville IRV-Ballot Position Numbers.pdf to determine the voting positions for each candidate in the Instant Runoff.
3. Remove the “Compact Flash Cards” from the iVotronic voting devices in the City of Hendersonville precincts.
4. Capture the Election Data in ERM;
 - a. Clear Audit Data in ERM.
 - b. Import Compact Flash Audit Data
 - c. Collect Audit Data - From Specified Drive –
c:\elecdata\7GNCHEND\GNGFLASH\ADT.
 - d. Select machines from Armory Precinct only.
 - e. Consolidate Audit Data.
 - f. Create Vote Image Log.
 - g. Print Vote Image Log – Select Contest/Precinct, Numbers Only, Printer.
 - h. Select EL155 from the Report File Utility and click on Copy – Name the file IRV_Armory.txt and copy to a location that you can retrieve from (desktop, portable flash drive, etc).
 - i. Clear Audit Data in ERM.
 - j. Collect Audit Data - From Specified Drive –
c:\elecdata\7GNCHEND\GNGFLASH\ADT.
 - k. Select machines from Southwest Precinct only.
 - l. Consolidate Audit Data.
 - m. Create Vote Image Log.
 - n. Print Vote Image Log – Select Contest/Precinct, Numbers Only, Printer.
 - o. Select EL155 from the Report File Utility and click on Copy – Name the file IRV_Southwest.txt and copy to a location that you can retrieve from (desktop, portable flash drive, etc).
 - p. Clear Audit Data in ERM.
 - q. Collect Audit Data - From Specified Drive –
c:\elecdata\7GNCHEND\GNGFLASH\ADT.
 - r. Select machines from all remaining Hendersonville precinct machines.
 - s. Consolidate Audit Data.

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- t. Create Vote Image Log.
- u. Print Vote Image Log – Select Contest/Precinct, Numbers Only, Printer.
- v. Select EL155 from the Report File Utility and click on Copy – Name

the file IRV_All and copy to a location that you can retrieve from (desktop, portable flash drive, etc).

5. Open a blank Excel Spreadsheet and import.
 - a. Change “files of type” to All Files - Select file IRV_Armory.txt to import – Click on OK.
 - b. Select Fixed width and click on Next.
 - c. Place separators at 10, 15, 20, 25, 30, 35, 40, 45 and 50.
 - d. Press Next and then Finish. Save the Excel File with the name IRV_Armory.xls and a location that you can retrieve.
6. Open a blank Excel Spreadsheet and import.
 - a. Change “files of type” to All Files - Select file IRV_Southwest.txt to import – Click on OK.
 - b. Select Fixed width and click on Next.
 - c. Place separators at 10, 15, 20, 25, 30, 35, 40, 45 and 50.
 - d. Press Next and then Finish. Save the Excel File with the name IRV_Southwest.xls and a location that you can retrieve.
7. Open a blank Excel Spreadsheet and import.
 - a. Change “files of type” to All Files - Select file IRV_All.txt to import – Click on OK.
 - b. Select Fixed width and click on Next.
 - c. Place separators at 10, 15, 20, 25, 30, 35, 40, 45 and 50.
 - d. Press Next and then Finish. Save the Excel File with the name IRV_All.xls and a location that you can retrieve.
8. Open file Hendersonville IRV Tabulation Form.xls.
9. Open the Excel file that you created in Step 5d.
 - a. Delete Column B
 - b. Sort data on Column A
 - c. Delete all rows without machine numbers.
 - d. Highlight all the data for Armory Precinct and copy.
 - e. Copy the data into Hendersonville IRV Tabulation Form.xls in the RED Tab 1st-2nd Choice – click in Cell A9 and then copy.
 - f. Highlight the imported data (A9 to the end) and sort on Column B
 - g. Using the file created in Step 5d, highlight all the data for Southwest Precinct and copy.
 - h. Copy the data into Hendersonville IRV Tabulation Form.xls in the BLUE Tab 1st-2nd Choice – click in Cell A9 and then copy.
 - i. Highlight the imported data (A9 to the end) and sort on Column B

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- j. Using the file created in Step 5d, highlight all the data for all the other precincts in the City of Hendersonville (excluding Armory and Southwest) and copy.
 - k. Copy the data into Hendersonville IRV Tabulation Form.xls in the BLACK Tab 1st-2nd Choice – click in Cell A9 and then copy.
 - l. Highlight the imported data (A9 to the end) and sort on Column B.
10. Verify that the vote totals for the candidates match the ERM Report.
 - a. Click on Yellow Tab Grand Totals – Totals for each candidate should match the report on ERM.
 - b. Print copy of YELLOW Tab Grand Totals.
11. Click on BLACK Tab 3rd Choice – Remove all votes for Runoff candidates from 1st & 2nd Choice.
 - a. Column B should already be sorted.

- b. Highlight all rows that have a vote for the runoff candidates from 1st & 2nd Choice (Voting positions 3 thru 7 – example: Caldwell=3, Caraker=4, etc.).
 - c. Delete the selected rows.
 - d. The votes for the runoff candidates should now reflect the votes cast for the runoff candidates that were a 3rd Choice but not a 1st or 2nd choice (Voting positions 13 thru 17).
 - e. Highlight the remaining data (A8 to the end) and copy.
12. Click on BLACK Tab 4th Choice – Remove all votes for Runoff candidates from 3rd Choice.
- a. Paste the data from Step 9e into cell 9a.
 - b. Highlight all rows that have a vote for the runoff candidates from 3rd Choice (Voting positions 13 thru 17 – example: Caldwell=13, Caraker=14, etc.).
 - c. Delete the selected rows.
 - d. The votes for the runoff candidates should now reflect the votes cast for the runoff candidates that were a 4th Choice but not a 1st, 2nd, or 3rd choice.
 - e. Highlight the remaining data (A8 to the end) and copy.
13. Click on BLACK Tab 5th Choice – Remove all votes for Runoff candidates from 4th Choice.
- a. Paste the data from Step 10e into cell 9a.
 - b. Highlight all rows that have a vote for the runoff candidates from 4th Choice (Voting positions 20 thru 24 – example: Caldwell=20, Caraker=21, etc.).
 - c. Delete the selected rows.
 - d. The votes for the runoff candidates should now reflect the votes cast for the runoff candidates that were a 5th Choice but not a 1st, 2nd, 3rd or 4th choice.

Page 3

14. Click on RED Tab 3rd Choice – Remove all votes for Runoff candidates from 1st & 2nd Choice in Armory Precinct.
- a. Column B should already be sorted.
 - b. Highlight all rows that have a vote for the runoff candidates from 1st & 2nd Choice (Voting positions 16 thru 20 – example: Caldwell=16, Caraker=17, etc.).
 - c. Delete the selected rows.
 - d. The votes for the runoff candidates should now reflect the votes cast for the runoff candidates that were a 3rd Choice but not a 1st or 2nd choice (Voting positions 26 thru 30).
 - e. Highlight the remaining data (A8 to the end) and copy.
15. Click on RED Tab 4th Choice – Remove all votes for Runoff candidates from 3rd Choice.
- a. Paste the data from Step 12e into cell 9a.
 - b. Highlight all rows that have a vote for the runoff candidates from 3rd Choice (Voting positions 26 thru 30 – example: Caldwell=26, Caraker=27, etc.).
 - c. Delete the selected rows.
 - d. The votes for the runoff candidates should now reflect the votes cast for the runoff candidates that were a 4th Choice but not a 1st, 2nd, or 3rd choice.

- e. Highlight the remaining data (A8 to the end) and copy.
16. Click on RED Tab 5th Choice – Remove all votes for Runoff candidates from 4th Choice.
- Paste the data from Step 13e into cell 9a.
 - Highlight all rows that have a vote for the runoff candidates from 4th Choice (Voting positions 33 thru 37 – example: Caldwell=33, Caraker=34, etc.).
 - Delete the selected rows.
 - The votes for the runoff candidates should now reflect the votes cast for the runoff candidates that were a 5th Choice but not a 1st, 2nd, 3rd or 4th choice.
17. Click on BLUE Tab 3rd Choice – Remove all votes for Runoff candidates from 1st & 2nd Choice in Armory Precinct.
- Column B should already be sorted.
 - Highlight all rows that have a vote for the runoff candidates from 1st & 2nd Choice (Voting positions 11 thru 15 – example: Caldwell=11, Caraker=12, etc.).
 - Delete the selected rows.
 - The votes for the runoff candidates should now reflect the votes cast for the runoff candidates that were a 3rd Choice but not a 1st or 2nd choice (Voting positions 21 thru 25).

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- e. Highlight the remaining data (A8 to the end) and copy.
18. Click on BLUE Tab 4th Choice – Remove all votes for Runoff candidates from 3rd Choice.
- Paste the data from Step 15e into cell 9a.
 - Highlight all rows that have a vote for the runoff candidates from 3rd Choice (Voting positions 21 thru 25 – example: Caldwell=21, Caraker=22, etc.).
 - Delete the selected rows.
 - The votes for the runoff candidates should now reflect the votes cast for the runoff candidates that were a 4th Choice but not a 1st, 2nd, or 3rd choice.
- e. Highlight the remaining data (A8 to the end) and copy.
19. Click on BLUE Tab 5th Choice – Remove all votes for Runoff candidates from 4th Choice.
- Paste the data from Step 16e into cell 9a.
 - Highlight all rows that have a vote for the runoff candidates from 4th Choice (Voting positions 28 thru 32 – example: Caldwell=28, Caraker=29, etc.).
 - Delete the selected rows.
 - The votes for the runoff candidates should now reflect the votes cast for the runoff candidates that were a 5th Choice but not a 1st, 2nd, 3rd or 4th choice.
20. Click on YELLOW Tab Grand Totals – The votes displayed in the grand totals for the Runoff Candidates should be the final results.

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[http://www.ncvoter.net/downloads/Henderson County IRV%20Tabulation.pdf](http://www.ncvoter.net/downloads/Henderson%20County%20IRV%20Tabulation.pdf)