

Mandatory Vote Count Audit

A Legislative & Administrative Proposal

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General Description:

Voters, candidates, citizens and election officials want high confidence in the integrity of the election process by subjecting electronic vote counts to independent manual audits; and by making reports available with which to evaluate rates of voter turnout, voting equipment allocation, under-votes, over-votes, spoiled ballots, voting equipment failure, absentee ballots, uncounted ballots, and provisional ballots. This bill requires routine independent audits of vote count accuracy and requires the release to vote count auditors of records and information necessary to verify the integrity of the vote count audits and to evaluate voter service levels.

Amend existing statute to extend the canvass period to 28 days. *[Note: The canvass period between Election Day and certification of election results should be 28 days to allow ample time for conducting vote count audits prior to certifying the election results – 28 days is a common canvass period in some states.]*

The board of county canvassers shall meet to canvass the returns no later than 28 days after the election.

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42 **Amend existing statute to require that all printed, unused, used, and spoiled ballots shall**
43 **be retained for the 24 month federal preservation period.** *[Note: All printed ballots must be*
44 *reconciled or accounted for during the audit to be able to enable detection of evidence of ballot substitution,*
45 *ballot box stuffing, and ballot tampering.]*

46

47 -----

48 **Section 1. Definitions.**

49 (a) "Auditable Election" means a regular primary election, regular general election, or the
50 presidential primary.

51 (b) "Auditable Election Contest" means all election contests for a state or federal office, all
52 state-wide ballot propositions; and all state, county, or municipal election contests for the
53 position of an election official such as the county clerk's office.

54 (c) "Auditable Vote Count" means a tally of votes for a particular candidate or ballot
55 proposition obtained from counting a group of one or more ballots that are counted at one place
56 and time. Auditable vote counts can be precinct or polling location vote counts, where each
57 vote count is associated with all the paper ballots or voter-verifiable paper records cast within a
58 precinct or polling location, or voting machine vote counts, where each vote count is associated
59 with the voter-verifiable paper ballot records cast on one voting machine, or batches of ballots
60 (counted by hand or by central count optical scan voting systems), where each vote count is
61 associated with a batch of ballots maintained as a group. A vote count may be an individual
62 ballot only if the voting system produces an auditable report of vote counts for individual
63 ballots and preserves ballot privacy.

64 (d) "Auditable Vote Count Report" means a report of all ballots printed, used, unused, and
65 spoiled for each reported auditable vote count for each auditable election contest subject to
66 audit for each type of vote (including absentee, early, early and provisional, election day,
67 election day and provisional) broken out by type of vote counting system (i.e. central count
68 optical scan paper ballots, hand-counted, DRE memory cards, precinct-based optical scan);
69 along with the vote counting device and serial number for each device used to tabulate each
70 unofficial machine vote count and the precinct and state and federal congressional district
71 identifiers for each vote count; plus the approximate number of uncounted ballots and the
72 reasons why any ballots are not yet counted.

73 (e) "Confidence-level" means 100% minus the maximum chance that an incorrect outcome
74 is certified. *[Note: Certifying an election outcome at 95% confidence-level means that there is*
75 *at most a 5% probability that any incorrect election outcomes that occur would be incorrectly*
76 *certified.]*

77 (f) "Election Audit & Recount Committee" means the independent entity established to help
78 develop, approve, and implement a plan to audit & recount vote counts of every auditable
79 election and to supervise and direct the vote count audit.

80 (g) "Election Outcome" means the specific winners and losers of an auditable election contest.

81 (h) "Hand-count" means a counting of the votes, wherein the handling of the voter verifiable
82 paper ballot records is done by human hand and the identification of each vote is determined
83 by a visual inspection of said records by human beings.

84 (i) "Machine vote counts" mean vote counts obtained through electronic means whether from
85 paper or electronic ballots.

86 (j) "Mandatory independent routine manual audit" means an independent audit of all auditable
87 elections and auditable contests conducted by vote count auditors, following the procedures
88 mandated by the Election Audit & Recount Committee, for the purpose of verifying the
89 accuracy of election outcomes by randomly selecting unofficial vote counts and comparing
90 hand-to-eye counts of voter-verifiable paper ballot records with the unofficial vote counts
91 recorded after each auditable election, by each of the following voting systems: touch-screen or
92 electronic voting machines, optical scanning equipment, provisional ballots, absentee ballots
93 and other ballots mailed to county and state elections officers, whether from a domestic or
94 overseas location, and ballots created through the use of a ballot marking device.

95 (k) "Manual count" or "manual recount" means a hand-to-eye count.

96 (l) "Random selection or random drawing" means that items are selected by using statistically
97 valid probability sampling methods including simple random samples or stratified random
98 samples.

99 (m) "Vote count audit" means a "mandatory independent routine manual audit".

100 (n) "Vote count auditor" means a person selected to conduct a vote count audit who meets the
101 criteria set out in the section below titled "Selection of Vote Count Auditors".

102 (o) "Vote Count Audit Plan" means the published plan containing the rules, standards, policies,
103 procedures, and methods developed by the Election Audit & Recount Committee for
104 conducting vote count audits.

105 (p) "Vote Count Audit Report" shall consist of, for each audited vote count, or precinct, or
106 polling location:

- 107 1. A comparison of the manual counts obtained during the vote count audit and the
108 unofficial vote tabulations reported in the auditable vote count report for each ballot
109 type (provisional, early, mail-in, Election Day,...) along with any explanations for the
110 discrepancies, and a description of the actions taken by the vote count auditors or
111 election officials for resolving the discrepancies, and
- 112 2. The number of voters registered to vote, the number of voters who are recorded in
113 the poll books and official registry as having signed in to vote, the number of ballots
114 cast on each ballot type the number of voters who requested mailed or provisional
115 ballots, with the number of ballots cast for each ballot types, and
- 116 3. A reconciliation of all voter-verifiable paper ballot records, including all printed
117 unused, used, cast, spoiled, counted, and uncounted ballots. I.e. the number of any
118 unused, spoiled, cast, counted, and uncounted ballots for each ballot type, and
- 119 4. The number of voting machine, memory card, or other electronic failures, and

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- 120 5. The amount of voting resources and machines allocated, and
121 6. The number of under-votes, over-votes for each ballot type, and
122 7. The number of missing or damaged voter-verifiable paper or electronic ballot
123 records, and number and type of any damaged or missing paper or electronic
124 election records.
125 8. An evaluation of the ballot reconciliation procedures, ballot security and chain of
126 custody procedures used in each county, along with any recommendations for
127 remedying any weaknesses found in such procedures.
- 128 (q) "Voter-verifiable paper record" means the following auditable records of votes cast:
- 129 a. A paper ballot marked by the voter for the purpose of being hand counted or read by
130 automatic tabulating equipment;
- 131 b. A paper ballot marked by the voter to be mailed to an election officer, whether from
132 a domestic or overseas location;
- 133 c. A paper ballot created through the use of a ballot marking device if, in each case, the
134 record permits the voter to verify that the record is correct before the ballot is cast; or
- 135 d. A human-readable paper printout of the voter's vote produced by a touch screen or
136 other electronic voting machine, or a voting device if, in each case, the record permits
137 the voter to verify that the record is correct before the ballot is cast.
- 138 (r) "Voting system" means a collection of one or more voting devices, voting machines,
139 automatic tabulating equipment and voting procedures which allow a voter to view ballots,
140 select candidates and cast votes, and that aggregates and tabulates all of the votes cast in each
141 election.

142 -----

143 **Section 2. Vote Count Audits -- General Provisions.**

144 (1) For every auditable election, each county shall, in accordance with this statute and using a
145 Vote Count Audit Plan approved by the Election Audit & Recount Committee, and under the
146 direction and supervision of the Election Audit & Recount Committee or their designees,
147 conduct a "vote count audit" of all auditable election contests after initial unofficial election
148 results are tabulated and publicly released.

149 **Procedures** for vote count audit shall include:

- 150 a) No later than noon on Election Day, each County Election Office shall submit to the
151 State Election Audit & Recount Committee and to the State Election Office a list of
152 voting machine serial numbers and the State Legislative districts in which each voting
153 machine is deployed to record votes, and a list of any voting machine not deployed in
154 the election.
- 155 b) **Auditable Vote Count Reports of Unofficial Results:** As soon as possible after polls
156 close and prior to the random selection of vote counts to be audited, each county

- 157 election officer shall submit to the State Election office, and publicly post, an auditable
158 vote count report, and shall publicly post the location of the facility for the manual
159 audit, along with a list of at least five dates prior to the official canvass date when the
160 facility will be available for conducting the vote count audit.
- 161 c) The State Election office shall compile a state-wide auditable vote count report which
162 combines all multi-county or state-wide election contests from the individual county
163 auditable vote count reports and publicly post its statewide auditable vote count report
164 on its web site and submit a copy to the State Election Audit and Recount Committee.
- 165 d) After receiving auditable vote count reports from all county election officers, State
166 Vote Count Auditors shall as soon as possible, shall determine and publicly publish the
167 formulas and methods used to calculate the vote count audit amounts and shall publicly
168 publish the audit amounts sufficient to verify each auditable election contest as
169 specified in Section (2) and shall provide 24 hours public notice of the time and place
170 of the public random selections of vote counts and the times and locations of each
171 county's manual audits.
- 172 e) **Random Selection of Vote Counts:** The State Vote Count Auditors shall in a publicly
173 observable and understandable process, randomly select machine vote counts to
174 manually audit. If a spreadsheet or program is used, the public shall be able to observe
175 the screen at close range during the process and a copy of the spreadsheet or program
176 used shall be made publicly available. Ten-sided translucent fair dice or other publicly
177 observable and understandable method of random selection may be used.
- 178 f) Immediately after randomly selecting vote counts for audit, the State Vote Count
179 Auditors shall provide to all county Vote Count Auditors, to all County Election
180 Officials, and shall publicly post, a list of all the vote counts identified for manual
181 auditing and the vote count audits shall begin immediately or within at most 24 hours
182 afterwards.
- 183 g) After the random selection of vote counts for audit and before the beginning of the
184 manual audit it shall be prohibited for anyone, including election officials, to access or
185 to handle any ballot records which have been counted and included in the auditable
186 vote count report, except to transport the ballot records, in a publicly observable
187 manner, from the location where ballots are stored and secured to the location of the
188 manual audit. *[Note: This is necessary because election officials in some states were
189 observed going through ballots selected for audit prior to the manual audit, putting the
190 integrity of the audit in question.]*
- 191 h) Reconcile that the number of unused, used, and spoiled ballots equals the number of
192 printed ballots and that the number of ballots in each vote count selected for audit is
193 equal to the number of voters recorded as having voted in such count. If necessary to
194 reconcile these overall numbers of ballots, additional vote counts may be examined.
- 195 i) Audit Tally Sheet: If more than one auditable election contest is being manually
196 counted at the same time, the tally sheet shall be organized in the same order as the
197 ballot, with sections for each auditable election contest and question and the name of

198 each candidate listed in the same order as they are listed on the ballot. There should be
199 a space following each name/question for one of the counters to put a hash mark for
200 each vote for that candidate/question. The tally sheet should have a space for the team
201 to write in the total votes for each candidate, and the total skipped, defective, cancelled,
202 and write-in ballots. A stack and count method may be used instead for counting
203 individual paper ballots one auditable election contest at a time.

204 j) **Manual Counts:** Voter verifiable paper records selected for audit shall be manually
205 counted in a publicly observable way prior to the final canvass. The public shall be
206 able to observe the manual audit at close range during the process. Auditors shall:

207 a. Rearrange the audit location for counting. All counting must occur where it is
208 visible to members of the public who wish to observe. A video camera may be
209 used to magnify the view of the ballot for public observers.

210 b. Identify all those who will be counting and swear them in.

211 c. Read the instructions for counting to all the auditors who will be counting.

212 d. Count the number of registered voters (including any who registered on
213 Election Day) who are recorded as having voted.

214 e. For each vote count selected for manual auditing the election official shall make
215 available the corresponding group of sealed paper ballot records or the journal
216 tape take-up canister for each DRE paper roll and the Vote Count Auditors
217 shall:

218 i. Examine the tamper evident seal

219 ii. Note any evidence of tampering on a log provided by the election officer
220 for that purpose.

221 iii. Ascertain the reasons for any evidence of tampering and record the
222 reasons on log provide by the election officer for that purpose.

223 iv. Remove the tamper evident tape seal

224 f. Each tally team shall have at least two members who look at the paper ballots to
225 determine the votes, and at least two members who look at the counts recorded
226 by the team to verify their correctness. Unless a sort and stack counting method
227 is used for counting individual paper ballots, each counting team shall include, a
228 reader who should read off the name of the candidate (the word “yes” or “no”
229 for questions) who received the vote on the ballot being counted, at least one
230 marker who should make a hash mark beside that name on a tally sheet. If a
231 voter has not voted for any candidate for a particular office the reader should
232 state “skipped” and the marker should mark the “skipped” row for that office on
233 the tally sheet. If the voter voted for two or more candidates for an office where
234 the ballot instructs to vote for one the reader should read off “defective” and the
235 marker should mark the “defective” row on the tally sheet. If the instructions are
236 that a voter should vote for two and the voter voted for three or more, follow

- 237 these same instructions. If a voter has cancelled the ballot, the reader should
238 state “cancelled” and the marker should mark the “cancelled” row for that office
239 on the tally sheet. If the voter wrote in a candidate, that name should be written
240 in on the tally sheet.
- 241 g. If an observer wishes to protest how the tally team is counting a particular ballot
242 he or she needs to do so at the moment in time when that ballot is being counted
243 by the team.
- 244 h. Disputed ballots, where voter intention cannot be clearly determined, may be set
245 aside and the number of disputed ballots included on the tally sheets
- 246 i. As each team completes its totals, the tally sheets should be turned in.
- 247 j. If discrepancies are found, the Auditors should investigate and attempt to
248 resolve each discrepancy with the County Election Official.
- 249 k. The same vote counts selected for auditing auditable election contests may be
250 used to manually audit other election contests that appear on the ballot at the
251 discretion of counties.
- 252 l. Tally and record the total number of votes hand-counted for each ballot
253 proposition and office, as well as the number skipped, defective, or cancelled on
254 a log provided by the election officer for that purpose.
- 255 k) **Audit Logs:** A log shall be kept by auditors on a log form provided by the election
256 officer for that purpose which shall
- 257 i. Record the total number of votes, and skipped, defective, and cancelled
258 ballots hand-counted for each auditable election contest.
- 259 ii. Note any differences between the hand-counted results and the auditable
260 vote count report results.
- 261 iii. Ascertain the reasons for any differences between the hand-counted and
262 the auditable vote count report results if possible and record the reasons.
- 263 iv. If applicable, note that an audited machine was used both in early voting
264 and on Election Day.
- 265 If a machine identified for audit failed on Election Day and was replaced by another
266 machine, the election officer shall audit both the replacement machine and, to the
267 extent possible, the failed machine.
- 268 l) Log all the other information required in this section.
- 269 m) Each election officer shall make all audit logs available for inspection by the board of
270 canvassers and available as a public record; and transmit a summary of the audit logs to
271 the State Election Office with the canvassers’ reports and to the State Election Audit
272 and Recount Office and preserve a copy with the election returns and voter registration
273 records as required by federal statute.

274 (2) **Amount of Election Audits:** Hand-counts of the voter-verifiable paper records
275 corresponding to each vote count shall be conducted such that:

276 (a) the number of auditable vote counts audited shall give at least 95% confidence-
277 level. I.e. the probability that at least one miscounted vote count will be in the audit
278 sample if the amount of miscounted vote counts were sufficient to reverse an election
279 outcome, taking into account the margins between the candidates and the number and
280 size of auditable vote counts in the auditable election contest using the number of
281 ballots cast to calculate margins and to measure the size of vote counts shall be at least
282 95%¹; and

283 (b) at least 1% (one per centum) of vote counts in which votes are cast shall be audited;
284 and

285 (c) in addition to the randomly selected auditable vote counts in a) and b) above, if at
286 least one auditable vote count has not been selected from each auditable election
287 contest in each county in which the auditable election contest occurs then one auditable
288 vote count shall be randomly selected for audit from within each county for each
289 auditable election contest; and

290 (d) in addition to the randomly selected auditable vote counts in a), b), and c) above,
291 two discretionary vote counts may be selected for audit by the leading runnerup for any
292 state-wide election contest and one discretionary vote count may be selected for audit
293 by the leading runner-up for any U.S. House election contest and one discretionary vote
294 count may be selected for audit by the leading runnerup for any other auditable election
295 contest; [or alternatively, vote counts which calculations show are “suspicious” as
296 compared to prior elections or to partisan voter registration or partisan turnout, shall
297 also be manually audited].²

298 [Note: *The intent is to make sure that at least one vote count for each auditable election contest is*
299 *audited in each county.*]

300 (3) **Auditor Access to Election Records:** Before the audit, each election officer shall take
301 whatever measures are necessary to make available to vote count auditors:

302 a. All written procedures for between-election, pre-election, during election, and
303 post-election chain of custody and security procedures for the security of voting
304 equipment, and also for the security of paper ballots and paper voter registration

57 ¹ Note: See <http://electionmathematics.org> Election Audit section for more information. Election audit efficiency
58 can be improved if voting systems are developed which are auditable at the individual machine or ballot levels.
59 This is one reason why a Election Audit & Recount Committee should to be permitted to approve alternative
60 election audit procedures in the future.

61 ² Note: Calculation of "suspicious" precincts could assume that at most a 20% vote shift per precinct or batch vote
62 count is not suspicious and compare the partisanship of voters to the partisanship of election results in the current
63 and prior audited elections as recorded in voter history files to determine vote counts having more than a 20%
64 shift, or another measure could be used for the upper limit of the amount of vote miscount that could occur in
65 any one auditable vote count. See Appendix G in [http://electionarchive.org/ucvAnalysis/US/paper-audits/History-](http://electionarchive.org/ucvAnalysis/US/paper-audits/History-of-Election-Auditing-Development.pdf)
66 [of-Election-Auditing-Development.pdf](http://electionarchive.org/ucvAnalysis/US/paper-audits/History-of-Election-Auditing-Development.pdf)

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- 305 and election records. Specific passwords and security keys shall be redacted,
306 and
307 b. all written procedures provided to poll workers and election judges, and
308 c. ballot definition files used by voting machines to cast or tally votes, and
309 d. voter verifiable paper ballot records of vote counts selected for the audit, and
310 e. poll books and precinct reconciliation records, and
311 f. electronic and paper voter registration records, and
312 g. records of absentee ballots and provisional ballots requested by, provided to,
313 and mailed back by voters, including those counted and not counted ballots
314 h. computerized voting equipment log and audit files, and
315 i. unused, used, and spoiled ballots and electronic ballot records, and
316 j. ballot definition files and documents, and
317 k. any summary records of votes or ballots, and
318 l. any addendum to the original auditable vote count report submitted originally to
319 the State Election Office and the State Audit & Recount Committee office
320 containing any changes to the number of counted and uncounted ballots and
321 votes, with the reasons for the changes documented.

322 **(3) Exceptions to Election Audits for Certain Auditable Election contests:** A vote count
323 audit shall not be required of a particular auditable election contest under this subtitle if

- 324 a. the winning candidate in the election had no opposition on the ballot; or
325 b. if a 100% manual recount has been, or will be, conducted of the same auditable election
326 contest.

327 **(4) Certification of Election Results:** Neither the State Election Office nor any county may
328 canvass or certify the results of any auditable election contest which is subject to a vote count
329 audit under this subsection prior to the completion of the audits and the announcement and
330 publication of the results of the vote count audits in all counties where votes are cast in an
331 auditable election contest.

332 -----
333 [Note: *The intent is to audit the state's election results **independently** of the state election office. The State Auditor*
334 *is an appropriate choice for overseeing a committee that must develop and implement auditing rules and*
335 *regulations that are given the full weight of law and includes processes of chance wherein vote count shall be*
336 *chosen for an audit using probability sampling methods and qualified vote count auditors may be chosen to*
337 *manually examine vote counts using probability sampling methods]*

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339 **Section 3. State Election Audit & Recount Committee**

340 (1) The State Auditor's Office shall:

- 341 (a) within thirty (30) days of the date this statute is signed into law, notify appropriate
342 organizations to appoint members for and accept appointments for members of the
343 State Election Audit & Recount Committee (E.A.R.C.). The E.A.R.C. shall consist of at

344 least seventeen (17) members who may serve a maximum of (2) two (4) four-year
345 terms in any (10) ten-year period, none of whom shall be or were:

346 (i) a member of the State's Voting Equipment Selection Committee or State
347 Help America Vote Act Plan Committee on Election Reform; or

348 (ii) an owner, employee or sub-contractor of a voting system company, or
349 voting system service company, or voting system supply company; or

350 (iii) working for any political candidate's campaign or ballot proposition.

351 (b) ensure that the E.A.R.C. committee includes 17 to 23 members (13 to 19 of whom
352 are voting members) including:

353 (i) three to four members who shall have at least a Master's Degree in
354 mathematics or statistics and be appointed by the chair persons of the four
355 largest university and college **mathematics or statistics** departments in the
356 State, all of whom shall be invited to appoint someone to serve on the
357 committee; and

358 (ii) two to three members who shall have at least a Master's Degree in
359 **computer science or computer engineering or computer security**; appointed
360 by the chair persons of the three largest university or college computer science
361 departments in the State, all of whom shall be invited to appoint someone to
362 serve on the committee; and

363 (iii) two to three members appointed by chair persons of the three largest
364 university or college government **political science** departments in the State, all
365 of whom shall be invited to appoint someone to serve on the committee, and

366 (iv) two members who are **financial auditors** appointed by the State's Chief
367 Auditor,

368 (v) two to three **political party** members appointed by the chair persons of the
369 three State political parties which garnered the most votes in the State in the last
370 federal election, all of whom shall be invited to appoint someone to serve on the
371 committee,

372 (vi) two to four members who are appointed by the trustees of grassroots
373 nonprofit **election rights or open government organizations** in the State and
374 who have served in a prior election as an election judge or poll worker,

375 (vii) at least four non-voting members who are **county election officers**,
376 appointed by the association of county election officials;

377 (viii) one non-voting member appointed by the State Election Office; and

378 (ix) an **attorney with expertise in election law** appointed by the State Attorney
379 General's Office to serve as a non-voting member of the committee to give
380 advice on the legality of the operations of and any rules and regulations
381 proposed by the E.A.R.C.

382 (c) ensure that the organizations which are qualified to appoint State E.A.R.C. members
383 are notified and E.A.R.C. members are appointed at least forty-five (45) days prior to
384 the second Monday in January in each auditable election year, and arrange for space,
385 teleconference and other facilities for E.A.R.C. meetings and to meet E.A.R.C.
386 requirements; and publicly publish any reports submitted by the E.A.R.C.

387 [Notes: Although input from county and state election offices is necessary for coordination (and
388 therefore county elections officers are included as members) voting system insiders should be
389 kept to a minimum in order to reduce the possibility of a conflict of interest. The size of
390 university and college departments shall be determined by the number of total students, staff, &
391 faculty currently in the department.]

392 (2) Compensation for the E.A.R.C.

393 (a) A member of the committee who is not a government employee may receive
394 \$50/hour up to \$5,000 compensation per each auditable election year for compensation
395 and benefits for the member's services, and may also receive per diem and expenses
396 incurred in the performance of the member's official duties at the rates established by
397 the appropriate State statute or agency. This amount may be adjusted annually for
398 inflation by whatever method the state uses to adjust for inflation.

399 (b) A member may decline to receive compensation or per diem and expenses for the
400 member's services.

401 (c) A state government officer or employee member who does not receive salary, per
402 diem, or expenses from the member's agency for the member's service may receive per
403 diem and expenses incurred in the performance of the member's official duties at the
404 rates established by the appropriate State statute or agency.

405 (d) A state government officer or employee member may decline to receive per diem
406 for the member's service.

407 [Note: There may be significant work required of some members, especially in the first auditable
408 election cycle after this legislation is passed.]

409 (3) The State Auditor shall fill any vacancies that occur on the committee between terms,
410 following the guidelines herein.

411 (4) The State Auditor's offices shall provide staffing for the committee.

412 (5) Terms of Office: The members of the E.A.R.C. shall have four year terms with half of its
413 initial members having at most one four year term during the first five years.

414 -----

415 **Section 4. Election Audit & Recount Committee (E.A.R.C.) Responsibilities**

416 (1) The E.A.R.C. shall meet at least ten times during auditable election years. [Note: Meetings
417 may be via teleconference.]

418 (2) The E.A.R.C. shall develop, evaluate, and update a Vote Count Audit & Recount Plan
419 (VCAR Plan) that includes:

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- 420 (a) a uniform format for reporting unofficial election data for the-auditable vote count
421 report of unofficial vote counts; [*Note: Standard XML/OASIS EML (Election Markup*
422 *Language) is recommended and is currently being used by California and is loved by press.*]
- 423 (b) a method or methods for determining vote count audit sample sizes that meets the
424 requirement for 95% confidence-level audits;
- 425 (c) a method or methods for making random selections of vote counts to audit selection
426 that may be proportional to the amount of margin error it could contain, and each vote
427 count has a nonzero chance for selection and each selection round selects at least one
428 auditable vote count;
- 429 (d) a method for deciding when to expand audit samples and when to certify election
430 results that meets the requirement for 95% confidence-level audits;
- 431 (e) rules, standards, policies, procedures and processes for conducting vote count audits
432 within the State;
- 433 (f) a method or methods to appoint a chief independent auditor to oversee each county's
434 election audits;
- 435 (g) a method or methods to select and assign vote count auditors to count specific vote
436 counts;
- 437 (h) a uniform format for auditing forms and for vote count audit reports, and
- 438 (i) methods for analyzing audit discrepancy results in order to decide whether or not to
439 certify the election or to expand the audit.
- 440 (2) The E.A.R.C. shall publish the VCAR Plan and provide for a period of public review and
441 comment on it before approving, publishing and implementing the VCAR Plan for each
442 auditable election.
- 443 (3) The E.A.R.C. is authorized to coordinate with the State Elections Office, State Auditor's
444 Office and with county election officers in auditing the vote count.
- 445 (4) The E.A.R.C. shall publicly publish a report evaluating the efficacy and efficiency of
446 election audits and advise the State Election Office and the State Legislature of any problems
447 or recommendations to reduce vote count errors or improve voting and election systems in
448 future elections.
- 449 (5) The E.A.R.C. shall advise the State Election Office and County Election Officials'
450 Association by evaluating the auditability of new voting systems considered for purchase
451 within the State.
- 452 (6) The E.A.R.C. shall advise the State Election Office on request for proposals (RFP) and on
453 the awarding of contracts for voting and election system studies or for purchasing voting and
454 election system equipment.
- 455 (7) The E.A.R.C. shall be subject to State open records and meetings laws.
- 456

457

458 **Section 5. Random Selection of Vote Counts to Audit**

459 The Election Audit and Recount Committee (E.A.R.C.) shall determine and publicly announce
460 the method of conducting the random drawings or random selections, at least 30 days before
461 the election. The random drawings or selections shall occur after the polls close and after each
462 county has publicly posted an auditable vote count report of its unofficial vote counts. Vote
463 counts audited under this subdivision shall be selected according to standards and procedures
464 required by this statute and developed by the E.A.R.C. that are announced in advance to the
465 public and the drawings shall be open to the public. The random selection of vote counts for
466 the mandatory vote count audit shall be made by a publicly transparent method by the
467 E.A.R.C. or its designees.

468

469 **Section 6. Selection of Vote Count Auditors**

470 The county election official shall determine the procedure for selecting the vote count auditors,
471 subject to any requirements made by the E.A.R.C. Vote count auditors shall *not* include any:

472 (a) employee or official of any county election official's office or anyone who
473 administered the auditable election,

474 (b) employee or elected official from the State Election office,

475 (c) employee or officer of any entity that designs, manufactures, or services a voting
476 system or supplier of any voting system used in the State,

477 (d) person who maintains or has special access to the voting system that a voter would
478 not normally have, prior to, or during the auditable election,

479 (e) person who acted as a poll worker or an election judge during the same auditable
480 election, or

481 (f) person serving in any position on any political campaign committee of any
482 candidate for political office or working for groups supporting propositions.

483

484 **Section 7. Public Notice, Access & Disclosure**

485 1. An auditable vote count report shall be made publicly available for each county and by
486 the State Election office for the entire state, as soon as possible after polls close and
487 before random selection of machine vote counts to audit.

488 2. The date, time and location of the random selections of vote counts to be audited and
489 the dates, times, and places of the manual vote count audits shall be noticed at least one
490 day (twenty-four hours) before the random selection is conducted.

491 3. The amount of the manual audits shall be noticed prior to the random selections. The
492 notice should include information on the number of recount teams that will be used so

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493 that the candidates have the opportunity to bring an appropriate number of
494 representatives to watch each recount team.

495 4. As soon as practicable after the completion of a vote count audit and analysis
496 conducted under this subsection, the vote count auditors shall announce and publish the
497 vote count audit report. The vote count audit report shall be prepared by the vote count
498 auditors, signed and forthwith filed with the elections officer, the state Vote Count
499 Audit Office, the State Auditor's Office, and the State Election Office and shall be
500 made publicly available on the Internet. The reconciliation sheets shall be open to
501 public inspection and may be used as prima facie evidence of a discrepancy in any
502 contest arising pursuant to the election statutes.

503 -----

504 **Section 8. Audit All Vote Types**

505 The voter-verifiable paper records of votes cast at the precinct or equivalent location on or
506 before the date of the auditable election, other than provisional ballots, shall be hand counted
507 by vote count auditors and those recorded manual counts compared with the auditable vote
508 count report for those auditable vote counts released prior to their random selection for
509 auditing. The voter-verifiable paper records of votes cast other than at the precinct or
510 equivalent location on or before the date of the auditable election, including votes cast by
511 absentee voters, absent uniformed services voters, and overseas voters, and votes cast by
512 provisional ballot, shall be hand counted by the vote count auditors and those recorded counts
513 compared with an auditable vote count report of those ballots that is released prior to their
514 random selection for auditing.

515 -----

516 **Section 9. Additional Audits If Cause Shown**

517 If the auditors are unable to reconcile the manual count with the electronic vote tabulation, then
518 the E.A.R.C. with the assistance of County Election Officials and the State Election Official
519 shall initiate or conduct such further investigation of the discrepancies as may be necessary for
520 the purpose of reviewing whether or not to certify the election results, or expand the vote count
521 audit, and may order a re-canvass in accordance with the provisions of the election code.

522 If any voter-verifiable, paper record is found to have been damaged or missing, then the
523 damaged or missing records shall be assumed to be discrepant with the machine counts
524 reported in the unofficial auditable vote count report, and a tabulation of such damaged and
525 missing paper records will be duly recorded, and an explanation sought. In the event of any
526 inconsistencies or irregularities between any electronic records and the voter-verifiable paper
527 records, the paper records shall be the true and correct record of the votes cast, except in the
528 case where evidence exists that indicates that the paper record has been tampered with or
529 damaged, in which case, if an outcome is in question, a court will decide.

530 Additional audits desired due to evidence uncovered during an audit of machine malfunction or
531 errors which are judged to exist in insufficient amounts to produce incorrect election outcomes
532 may be performed after the certification of the election results.

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533 If vote count auditors find sufficient discrepancies, due to any cause, between the unofficial
534 tallies and the manual audit tallies, then the E.A.R.C. shall randomly select and administer
535 manual counts of additional vote counts as considered appropriate to resolve any concerns
536 resulting from the audit until the election outcomes can be certified with at least a 95%
537 confidence-level.

538 -----

539 **Section 10. Time Table for Audit Process**

540 1. By noon on Election Day, all election officers shall provide a list of all voting and election
541 machinery and their corresponding serial numbers, and any corresponding precinct
542 identifiers, and corresponding congressional districts that machinery will be used for.

543 3. As soon as possible after polls close on Election Day, all County Election Officials shall
544 submit an auditable vote count report of detailed vote counts for each machine and precinct
545 in each election contest for each vote type to the State Election Office, to the State Vote
546 Count Auditor, and publicly post it.

547 4. Within 36 hours of receiving auditable vote count reports of vote counts from each county,
548 the State Election Office shall publicly release an auditable vote count report for multi-
549 county election contests and election contests submitted to voters in the state and provide a
550 copy to the State Election Audit and Recount members and post a copy publicly.

551 5. Within 36 hours of receiving the auditable vote count reports of vote counts, the E.A.R.C.
552 shall determine and then announce how many vote counts in the State must be audited for
553 each auditable election contest and publicly post this information and inform county election
554 officials and vote count auditors, and the E.A.R.C. and the State Election Office shall at the
555 same time publish a public notice, including in a prominent place on the State Elections
556 Office website, giving at least 24 hours (1 day) advance notice of the date, time and place,
557 including street address, building and room number, of the public random drawings of vote
558 counts, and the dates, times and places, including street address, building and room number
559 of the public manual vote counts audits.

560 6. The E.A.R.C. or its designees shall conduct public random drawings to determine which
561 vote counts in each county will be independently manually audited.

562 7. Immediately following the random drawing, election officers and auditors shall begin the
563 publicly observable vote count audit of all voter-verifiable paper ballot records associated
564 with the vote counts selected for auditing. Election officers and auditors shall conduct the
565 initial manual audit with sufficient auditors to complete the hand counts and other
566 verifications within 96 hours (4 days) of when audits are initiated.

567 10. As soon as practicable after the completion of a vote count audit conducted under this
568 statute, the county shall announce and publish the audit report.

569 11. Deadline for completion of audits: The counties shall complete the vote count audits and
570 announce and submit the results to the E.A.R.C. and the State Election Office for publication
571 of the information required under this section in time for the State Election Office to certify

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572 the results of the election and provide for the final determination of any controversy prior to
573 the deadline described in section 6 of the title 3, United States Code.

574

575 **Section 11: County Election Official – Responsibilities for Vote Count Audits**

576 County Election Officials or their official representatives shall:

- 577 (1) Remove any opaque plastic covers or any obstructions which obscure voters' view of
578 sealed voter-verifiable machine-printed paper roll ballot records, and
579 (2) Include, in all instructions for voters on how to vote, instructions telling voters to
580 review and verify the accuracy of any machine-printed voter-verifiable paper ballots,
581 and
582 (3) Plan and implement voting system procedures which, in all cases, allow a voter to
583 review and approve a human-readable paper record of the voter's ballot whenever an
584 electronic ballot record is cast [*Note: This is necessary to overcome the "three strikes you're
585 out" DRE paper roll programming that casts a ballot that was not approved by the voter after
586 two unsuccessful tries by the voter to create a matching paper ballot roll record; and to
587 overcome the problem of DRE printers that malfunction during voting.*], and
588 (4) At least one month prior to Election Day in any election covered by this audit
589 legislation, publicly post and provide to the State Election Audit and Recount
590 Committee a set of written procedures for between-election, pre-election, during
591 election, and post-election chain of custody and security procedures for the security and
592 integrity of voting equipment and electronic election databases and materials, and also
593 for the security of paper ballots and paper voter registration and election records,
594 redacting specific passwords and security keys, describing how the public can
595 participate in verifying security procedures, and
596 (5) By at least noon on Election Day in any election covered by this audit legislation,
597 provide a list of the number of precincts, along with the districts within each precincts,
598 and a list of vote tabulation machines to be used in the election, the serial numbers for
599 each vote-counting machine, along with the precinct(s) and the congressional district(s)
600 that each machine will handle, and
601 (6) Not print any paper roll ballot records after Election Day which voters have not had an
602 opportunity to verify in order to replace any damaged or missing voter-verifiable paper
603 roll ballot records, and
604 (7) Produce and publicly post auditable unofficial vote count reports, and
605 (8) Provide facilities and materials for conducting the manual vote count audits. Whenever
606 suitable facilities are available, the audits shall be administered at the location where
607 the ballots cast in the election are stored and counted after the date of the election, and
608 in the presence of those personnel who under statute are responsible for the custody of
609 the ballots, and
610 (9) Publicly post notices required by this statute regarding vote count audits, and
611 (10) Have staff present during vote count audits and oversee ballot transport and security to
612 and in the facility provided for the vote count audits, and

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- 613 (11)Provide a method for members of the public to observe the vote count audits and verify
614 the integrity and accuracy of the audit, and
615 (12)Provide election records and voter verifiable paper ballot records to auditors, and
616 (13)Work with vote count auditors to resolve and explain any discrepancies discovered
617 during a vote count audit, and
618 (14)Complete the verification and counting of the absentee and provisional ballots and
619 produce a final, updated auditable vote count report which includes the absentee and
620 provisional ballots within 21 days after Election Day.
621 (15)Not certify any election result until the completion of the vote count audits and the
622 public posting of the audit reports.
623

624 **Section 12: Absentee and Provisional Ballot Auditing**

- 625 1. All absentee and provisional ballots shall be examined for legality and counted, and
626 the auditable vote count report shall be updated to include all absentee and
627 provisional ballots within 14 days of Election Day.
628 2. The mandatory vote count audit may be conducted in two stages. Stage one, the vote
629 counts are audited without taking into account the provisional and absentee ballot
630 vote counts. Stage two, after the absentee and provisional ballots are evaluated for
631 legality and counted, then the audit is adjusted to account for the new vote counts.
632 a. The initial auditable vote count report, prior to stage one of the audit shall
633 clearly note whether or not it excludes the absentee or provisional ballots and
634 shall include the number of total absentee and provisional ballots that were
635 cast in each county, and
636 b. The updated auditable vote count reports which include the absentee and
637 provisional ballots shall be publicly posted under the same requirements as
638 for the initial auditable vote count reports, prior to the random selections for
639 stage two of the audits.
640 c. In a two stage audit, the absentee and provisional ballots shall be counted,
641 sorted, stored, and reported in the auditable vote count report in identifiable
642 batches that are equal or smaller in size to an average-sized vote count (in
643 number of ballots cast) in the county, or, if not, then all absentee and
644 provisional ballots shall be manually audited.
645 d. The Election Audit and Recount Committee shall determine the audit
646 amounts and procedures for two-stage vote count audits subject to the
647 requirements of this statute.
648 3. If absentee and provisional ballots are included in the initial auditable vote count
649 report and audited in a one-stage audit with other ballots in the election, then they
650 may be counted, sorted, stored, and reported according to the same identifiable
651 auditable vote counts or precinct vote counts as the election day and early voting
652 ballots. If they are not, then the absentee and provisional ballots shall be counted,
653 sorted, stored, and reported in the auditable vote count report in identifiable batches
654 that are, as close as possible, equal in size to an average-sized vote count (in number
655 of ballots cast) in the county.

656 4. The absentee and provisional ballots shall, if voting equipment or procedures permit,
657 also be reported by precinct in the auditable vote count report.
658

659 **Funding for Mandatory Vote Count Audits**

660 This bill authorizes \$260,000 (\$260 Thousand) per general election cycle (in even years) to
661 reimburse counties for the costs of conducting independent audits of vote count accuracy.
662 Funds shall be distributed after the audits are completed in an amount of up to \$100,000 to
663 cover expenses of the State Election Audit & Recount Committee for one auditable election,
664 and \$2,000 to be reimbursed to each county for administrative fees plus the remaining amount
665 to be distributed to each county to pay the vote count auditors and other expenses, in
666 proportion to the total number of ballots which are manually counted in the audits in each
667 county. All these amounts may be increased each year according to inflation according to the
668 method that the state uses to adjust for inflation.

669 *[Note: Change the amounts for your state. A more detailed analysis of costs can be done using election results*
670 *data from prior auditable elections for each county.]*

671

672

Formulas for Selecting Vote Counts to Audit

673 Error Bounds for Each Vote Count:

674 Within any one vote count, the maximum possible amount of error in the reported margin (in
675 votes) which could deny the closest runnerup a rightful win is equal to the number of ballots
676 cast plus the margin in votes between the lowest scoring winner and the highest scoring loser:

677
678
$$e_i = (b_i + r_{i1} - r_{i2})$$

679 Where $(r_{i1} - r_{i2})$ is the reported unofficial vote margin
680 between the lowest scoring winner and the highest scoring loser (or losing alternative in the
681 case of certain contests) and b_i is the number of ballots cast in the auditable vote count (or
682 precinct) numbered i. For example, the maximum possible margin error is 200% of all ballots
683 if the runnerup has zero reported votes but voters had actually given the runnerup 100% of
684 votes.

685
686 If desired, a multiplier of between 0 and 1 could be multiplied times e_i to reflect the fact that if
687 100% of all available ballots were incorrectly counted for the unofficial winner in any vote
688 count, then such a vote count would be immediately suspicious to voters, so that a vote
689 fraudster would be unlikely to switch 100% of available target ballots and any errors this large
690 would be immediately suspicious. This author recommends that any such multiplier should be
691 greater than or equal to 0.50 and, if a multiplier of less than 1 is used, then a minimum of one
692 vote count in each separately administered jurisdiction where an election contest occurs should
693 be randomly selected for audit in addition to the number selected by the formula for the
694 number of selection rounds below. Example: Using a multiplier of 0.50 with a minimum
695 requirement of 1 vote count audited per county for every county for each election contest,
696 results in an overall 5.5% audit of precincts in Utah's federal and state-level election contests
697 in its 2004 general election.

698

699 The Total Possible Error in Each Election Contest:

700

701
$$E = \sum_i e_i$$
 Sum the error bounds of all the reported unofficial vote counts.

702

703 Selection Probability for Each Auditable Vote Count:

704
$$p_i = \frac{e_i}{E}$$
 The weighted selection probability for each vote count is found by

705 dividing each vote count's upper bound for margin error by the total possible error in all vote
706 counts.

707

708 **The Overall Margin in Each Election Contest**

709

710
$$M = R_1 - R_2$$

711 Where M=margin in votes, R₁ = #votes for winner, and R₂ =

712 #votes for closest runner-up

713

714 **Number of Selection Rounds:**

715

$$t = \frac{\ln(\alpha)}{\ln(1 - M / E)}$$

716

717 The number of selection rounds t, is the natural log of alpha divided by
718 the natural log of the quantity one minus the margin M divided by the sum of the error bounds
719 for all auditable vote counts in the election contest. Alpha is 1 minus the confidence level. I.e.
720 alpha is the desired maximum probability that if there exists a subset T of auditable vote counts
721 with enough error sufficient to alter an election outcome, at least one member of T will be in
722 the audit. Eg. If the confidence-level is 95%, then alpha is 0.05 or 5%.

723

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