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Logic & Accuracy Testing

DIVISION OF ELECTIONS

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Topics

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- **100% L&A**
- **Public L&A Testing**
- **Public L&A Testing (Absentee Tabulators)**
 - **2nd absentee test and post-absentee test**
- **2nd public test**
- **Optional “pre-public” L&A**
- **L&A Test Deck**
- **Public L&A – Suggested Steps**

Logic & Accuracy Test Requirement

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- After maintenance and programming of electronic or electromechanical voting systems, logic & accuracy (L&A) testing of all voting devices and the system used for tabulation will be conducted to ensure that:
 - System is properly programmed
 - Election is accurately defined on the voting system
 - Input, output, and communication devices are working correctly

[Ref: s. 101.5612(1), F.S.]

100% L&A

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- **“All” electronic or electromechanical voting systems means testing 100% of the programmed voting devices that you will use in the election. This includes:**
 - All programmed precinct voting devices
 - All programmed ADA voting devices
 - Tabulators that will be used for absentee ballots
- **The 100% L&A may be done before or after the public test**

Public L & A Testing

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- **Publicly test automatic tabulation equipment** [s. 101.5612(2), F.S.]
 - Provide at least 48-hour advance public notice
 - On the SOE website and once in the newspaper – or if no newspaper, then post notice in four conspicuous locations in the county
 - Notice to candidates & party committee by applicable qualifying officer
 - Testing must be satisfactorily completed on any day not more than 10 days before early voting begins to ascertain that equipment will correctly count the votes cast for all offices and all measures

“Automatic tabulation equipment” is defined as the apparatus necessary to automatically examine, count, and record votes

Public L & A Testing

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- **Public L&A includes all or a sample of precinct count tabulators, including early voting equipment and ADA voting devices, and all central count (absentee) tabulators**
 - If a “sample” is chosen, it must consist of a random selection of at least 5% or 10 precinct optical scan devices (whichever is greater) and 2% of the ADA touchscreen systems [s. 101.5612(4)(a), F.S.]
 - Although early voting devices must be tested, no further guidance exists. Therefore, the overall number to be tested is at the discretion of the Supervisor
 - ADA devices must have the capability to satisfy the requirement for an audio ballot [ss. 101.56062(1)(n) & (2), F.S.]

Public L & A Testing

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- Testing requires producing / processing of a set of predetermined valid votes for each candidate and on each measure, as well as one or more overvoted ballots for each contest
 - Commonly called the “test-deck”
 - A comparison is made between the predetermined test deck results and a printout of tabulator results to ensure that the “expected” vote total outcome was achieved [s. 101.5612 (4)(a)1., F.S.]
 - Traditionally, the “test-deck” has often been done using a “1-2-3 pattern.*”

** A “1-2-3 pattern” means that one test ballot is marked on the 1st oval (“vote target”) in each contest on the ballot. Then two test ballots are marked on the 2nd oval in each contest on the ballot, and so on.*

Public L & A Testing

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- **Strong recommendation: Conduct test as a “simulated election,” including:**
 - Upload absentee, early voting, and election day ballots into the election management system
 - Include modeming, if applicable
 - Produce election night summary results file using the vendor’s XML utility
 - Upload XML file to SOE File Transfer Utility application
- **Provide a copy of the election database to the BVSC within 24 hours of the L&A activity** [s. 101.5607(1)(b), F.S.]

Public L & A Testing (Absentee Tabulators)

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- **All absentee tabulators to be used in the election must be included in the public L&A**
 - Includes satisfactory processing of a preaudited test deck
 - After completion of public L&A, the election definition and test deck must be sealed and retained under the custody of the canvassing board
 - If it is determined that additional absentee tabulators are needed after the conclusion of public testing, additional tabulators must also be publicly tested

[s. 101.5612 (3), F.S.]

Public L & A Testing (Absentee Tabulators)

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- **If there is an error during L&A testing of any tabulator used to process absentee ballots, a 2nd round of testing must be done, along with a post-absentee L&A**
 - The 2nd L&A occurs immediately before the start of the official count and a post L&A is done after completing the official count
 - There is no further guidance given on the definition of “immediately,” but it is believed to be just before starting the tabulation of the official absentee count
 - It is expected that, although it is not specifically stated, both the 2nd round of testing and the post-absentee L&A are to be conducted as public tests

2nd Public L & A Test

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- If election day (*i.e.*, polling place) ballots are not available at the time of scheduled public testing, the Supervisor may conduct additional testing not more than 10 days before election day [s. 101.5612(2), F.S.]
- The 2nd public L&A includes only election day tabulators and is done only if election day ballots are not used as a part of the original public L&A testing

Optional Pre-Public L & A

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- **A pre-public L&A is an optional method to simulate the same activity that will occur at the public L&A testing**
- **Allows the election official to verify the accuracy of the election definition and the pre-audited test deck results before the public L&A test**

L&A Test Deck

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- The “test deck” is a set of ballots with preaudited results, meaning that they have a pre-determined number of valid votes that are unique for each candidate on each measure
- Preaudited results may be manually determined, electronically generated (*i.e.*, spreadsheet), or produced during a pre-public L&A test
- Preaudited results are used to verify the accuracy of the public L&A test by comparing the preaudit results to the public test results

L&A Test Deck

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- Include all ballot styles in the test deck
- Include actual ballots, using the same paper stock as will be used in the election, for all ballots types, including Early Voting, Absentee, and Election Day
- Include a sample of ballot-on-demand ballots, if the county uses this type of technology
- Include hand-marked ballots, AutoMark marked ballots, at least one blank ballot and one or more overvoted ballots for each contest

[s. 101.5612(5), F.S.]

L&A Test Deck

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- **Caution: The simple traditional “1-2-3” test deck pattern may not be the most adequate way to verify that the paper votes are being tabulated correctly**
- Create an “enhanced” test deck with non-traditional vote patterns
- Add more test ballots to make up unique votes for each candidate

Public L&A - Suggested Steps

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- 1. Test all or a sample of the voting devices to be used in the election. If sample, randomly select:**
 - At least 5% or 10 of optical scan devices, whichever is greater
 - At least 2% of 'touchscreen devices' used by persons with disabilities
- 2. Produce set of ballots with a predetermined (preaudited) number of valid votes for each candidate and on each measure, also include ballots marked to ensure that overvoted contests are handled correctly.**
- 3. Process the set of ballots and compare the tabulated results to the expected results.**

Public L&A - Suggested Steps

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4. If an error in tabulation is found on a piece of voting equipment, deem that device to be “unsatisfactory:”
 - Take steps to find out cause of error
 - Determine whether other devices have the same error
 - Test a sufficient number of devices to ensure that error was isolated and that all other devices are satisfactory

** The canvassing board has the option to test all devices or to declare all devices unsatisfactory*
5. If the error is in operation or output of particular device, report the problem to the canvassing board. Canvassing board must then determine whether an operation or output error is cause to deem the device unsatisfactory.

Public L&A - Suggested Steps

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6. After completion and acceptance of test results, reset and seal devices that passed pre-election test in presence of canvassing board or representatives, political parties, and candidates.

7. Prepare a written statement, executed by the canvassing board or representative, to include:
 - Statement that devices were tested
 - Test results
 - Protective counter number, if applicable
 - The number of the seal securing each tabulation device
 - Any problems reported to the canvassing board
 - Whether each device tested satisfactory or unsatisfactory

Public L&A - Suggested Steps

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8. **Devices deemed to be ‘unsatisfactory’ may be used in the election after recoding, repair, or replacement, but only after the device(s) is re-tested at a publicly noticed time / place.**
9. **Within 24 hours of the conclusion of L&A testing, provide a copy of the election database to the Bureau of Voting Systems Certification.**
10. **Retain all pre-election testing records and make them available for public inspection.**

Public L&A - Suggested Steps (Absentee)

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- 1. Test all voting devices to be used for the purposes of tabulating absentee ballots.**
- 2. Produce set of ballots with a predetermined (preaudited) number of valid votes for each candidate and on each measure, also include ballots marked to ensure that overvoted contests are handled correctly.**
- 3. Process the set of ballots and compare the tabulated results to the expected results.**

Public L&A - Suggested Steps (Absentee)

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4. If a tabulation error is detected on any absentee voting device:

- Determine the cause and attempt to correct the error
- Repeat the test until an errorless count has been attained
 - An absentee tabulator shall not be used in an election unless the “errorless count” is achieved

Public L&A - Suggested Steps (Absentee)

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- 4a. If an error is found on an absentee tabulator (even after the error has been corrected), the following additional activities must be completed:**
- Immediately before the start of the official count of ballots and again at the conclusion of the official count, repeat the L&A test to ensure that the voting device remains error free
 - The same test deck used for L&A should be used for these tests
- 5. All programs and test ballots are to be sealed and retained under the custody of the canvassing board.**

Comments / Questions

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