



2024 General Election Risk-Limiting Audit: November 18 – 22, 2024.

Files must be uploaded to Arlo (<https://arlo.voting.works/>) no later than: November 15, 2024, at 6:00 p.m.

We will be completing a ballot comparison audit, referred to as a Risk Limiting Audit (RLA). It is important to note that attention to detail and accuracy of the audit board(s) is vital for a ballot comparison audit because a single data entry error may result in an expansion of the audit to a second round. But the ballot comparison method also typically involves retrieval of the fewest number of ballots for each audited contest.

| Ballot Comparison | |
|--------------------------------------------------|--------------------------------------------------------------|
| Where do ballots get scanned? | Central location |
| Ballot information needed from the voting system | Cast vote records generated by EMS |
| Ballot batch size | The smaller the better. 100 ballots are a good average size. |
| Ballots need unique, printed identifier | Yes |
| How are ballots validated? | RLA software |

In a **ballot comparison audit**, specific ballots are identified and retrieved. The audit team examines the ballot and enters the voter markings for the audited contest(s) exactly the way they appear on the ballot. In some cases, hand-marked paper ballots may require the audit team to make decisions about voter intent. The RLA software compares the voter markings entered by the audit team to the cast vote record created by the voting system. **The audit is looking for discrepancies between the two.**



Important Terminology

Arlo – the software purchased by the Secretary of State’s Office to conduct the audit. The link is <https://arlo.voting.works/> your county will need at least one person to get login credentials and will have to upload their Cast Vote Record and Ballot Manifest to participate in the audit.

For more information about Arlo and using Arlo to conduct a Risk-Limiting Audit, visit: [Risk-Limiting Audits with Arlo - https://docs.voting.works/arlo/](https://docs.voting.works/arlo/)

Ballot Manifest – this is a spreadsheet that your county will have to develop that shows the containers in which ballots are stored, the batches of ballots, and the number of ballots in each batch. This will be the tool that the counties use to retrieve the ballots indicated by the Arlo software to be audited.

Cast Vote Record (CVR) – this is a file that must be exported from your county’s election management software. The file is a spreadsheet that indicated in individual rows, how each ballot was interpreted for each contest and candidate by the tabulation equipment. The number of ballots in the CVR should equal the number of ballots cast in the election and should also equal the number of ballots in the Ballot Manifest.

Imprinter – a device installed on tabulation equipment to print a unique imprint ID on each scanned ballot. This imprint ID will be included as data in the CVR and is used by the Arlo software to identify specific ballots that must be retrieved for the audit. The imprint ID must be verified by the audit team before completing the data entry of that ballot’s votes into the Arlo software.

Opportunity Contest – contests that are audited in addition to the target contest (We will not be auditing this round)

Random Seed – this is a randomly selected number used to identify the ballots to audit. In this audit, every single ballot (mail, in-person, accepted provisional, EASE) will have an equal chance of being audited. The Secretary’s Office will use 10-sided dice to create a 20-digit seed that will be entered into the Arlo Software.

Target Contest – the contest (candidate or ballot measure) that is audited to determine whether the risk limit is met and therefore whether the audit can be concluded or whether it must continue to successive rounds.

Unique Identifier – this is a number assigned randomly by Dominion’s election management software to each ballot cast using the ICX equipment. This identified will also be included in the CVR for the Dominion counties.



Pre-Election Setup

Equipment Preparation

Your County should work with their respective election equipment vendor's customer service contacts to ensure that the tabulation equipment works properly.

Ballot Storage

One of the most important aspects of a risk-limiting audit is being able to efficiently locate the ballots that are selected for the audit. Therefore, it is vital that your county develops a ballot storage plan that will work best for their space, staff, and other resources. The Arlo software only requires the format of the ballot manifest that must be uploaded; everything else is flexible. The following is the format for the ballot manifest spreadsheet:

| Container | Tabulator | Batch Name | Number of Ballots |
|-------------------|-----------|------------|-------------------|
| Box: 1 Folder: A | 1 | 1 | 150 |
| Box: 1 Folder: B | 1 | 2 | 146 |
| Box: 1 Folder: C | 1 | 3 | 148 |
| Box: 1 Folder: D | 1 | 4 | 149 |
| Box: 15 Folder: A | 1 | 5 | 150 |
| Box: 15 Folder: C | 1 | 6 | 147 |
| Box: 20 Folder: A | 1 | 7 | 150 |
| Box: 20 Folder: B | 1 | 8 | 144 |
| Box: 20 Folder: C | 1 | 9 | 149 |
| Box: 20 Folder: D | 1 | 10 | 150 |

The columns for container, tabulator, batch name and number of ballots are required. However, your county can determine what information to put in the container column. For example, if it makes sense to store the ballots based on the ballot drop box that they were retrieved from, or the polling place where the VVPATs were used, or the day of early voting, or any other variable that will help the county staff retrieve the ballot. The information that is in this column will be printed on the placeholders that are generated by the Arlo software. What works for one county might not be what works for every county. A sample template is attached to this memo.

Depending on a county's number of mail ballots, the county might want to adjust the number of ballots in each batch to 100 or fewer to make it easier for the ballot retrieval team to locate a specific ballot. The point here is to record on the spreadsheet how you've stored the ballots so that they can be retrieved easily. For the voting machines, the county should store the VVPAT tapes with a label that identifies early voting vs. election day, by location used, by machine number, whatever works so that you can identify a specific tape or voting machine.



Post-Election/Pre-Audit Setup

Ballot Reconciliation

It is important that your Ballot Manifest and your CVR from your election software match at the end. What that means is, if your CVR says that 204 ballots were cast, then your ballot manifest must also have exactly 204 ballots. Just be sure to have a paper trail that accounts for any ballots that are rejected or spoiled or duplicated. Making sure that you have good practices in place now will make this easier for future elections.

Arlo Setup

The Secretary of State's Office has begun setting up the audit in Arlo. Your county will need to identify one or more people that will need to log into the Arlo software. These people will be responsible for uploading the CSV file and the ballot manifest. They will also be logged in on the day that the county chooses to complete the audit so that audit team members can input the votes from the audited ballots. The format is shown below:

| A | B |
|-----------------|--------------------------------------|
| Jurisdiction | Admin Email |
| Pershing County | rking@pershingcountynv.gov |
| Pershing County | bmedeiros.clerk@pershingcountynv.gov |
| Pershing County | ldonaldson@pershingcountynv.gov |
| Pershing County | srenfroe@pershingcountynv.gov |

Once the participant file is uploaded with all participants, you will be notified that your county participants will now be able to log into <https://arlo.voting.works/>. Use Chrome or Safari as your browser. This is what the log-in screen looks like:

State of Nevada

Secretary of State
Francisco V. Aguilar



2024 Risk-Limiting Audit

Ballot Comparison
Instructions



Participating in an audit in your local jurisdiction?

Enter your email to log in:

Log in to your audit

State-level audit administrators: [Log in as an admin](#)

When you enter your email and then click on the blue button, you'll get a 6-digit code sent to your email, and then you'll have to enter that on the next screen.

NOTE: Check your email for a new email with a subject "Welcome to Arlo - Use the Code in this Email to Log In" - enter the verification code. **This email comes from rla@vx.support, be sure to add this email address to your contacts, safe sender, or whitelist.**

You will now be able to select the audit, and you **MUST** upload your ballot manifest and CVR files. Please do this as soon as possible.

The Manifest and CVR files must be in .csv format. When you upload the CSV, you'll have to select the Election Management Software in Arlo.



Dominion File Uploading Instructions

When you generate the CVR Report in RTR, you'll need to check the box that says, "Include session details." This is the only way to ensure that the unique identifiers on the VVPAT votes get included in the CVR.

- ◆ Download the CVR file in the .xlsx format
 - Open in Excel
 - Resave the file as .csv
 Upload the CVR file into Arlo

- ◆ Open a New Excel Spreadsheet
 - Create Ballot Manifest (see example)
 - Save as Ballot Manifest .csv file
 - Upload into Arlo

Dominion Ballot Manifest Example

Container: Any name of your choice.

Tabulator: Pulled from Tabulator column in CVR

Batch Name: Pulled from BatchId column in CVR file

Number of Ballots: Total number of ballots from each Tabulator/BatchId (use CVR file to determine).

| Container | Tabulator | Batch Name | Number of Ballots |
|-----------|-----------|------------|-------------------|
| Box – 164 | 2 | 227 | 47 |
| Box – 165 | 4 | 228 | 35 |
| Box – 163 | 3 | 229 | 50 |
| Box – 144 | 4 | 230 | 100 |
| Box – A | 100-1 | 246 | 75 |
| Box – B | 100-2 | 247 | 80 |
| Box – C | 100-3 | 278 | 20 |

If you have questions or receive any error messages while uploading files, please contact me. I'm happy to help. Heather Hardy / hardyh@sos.nv.gov / 775 722-6710



ESS File Uploading Instructions

- ◆ Download the Ballot Review file in the .xlsx format
 - Open in Excel
 - Resave the file as .csv

- ◆ Download the CVR file in the .xlsx format
 - Open in Excel
 - Resave the file as .csv
 - Upload both the CVR file & the Ballot Review files (together) into Arlo by holding down the Ctrl key (on your keyboard) and selecting the CVR file & the Ballot Review file

- ◆ Open a New Excel Spreadsheet
 - Create Ballot Manifest (see example)
 - Save as Ballot Manifest .csv file
 - Upload into Arlo

ESS Ballot Manifest Example

Container: Any name of your choice.

Tabulator: Pulled from Machine column in Ballot Review file.

Batch Name: Pulled from Batch column in Ballot Review file

Number of Ballots: Total number of ballots from each Tabulator/Batch Name (use CVR file to determine).

| Container | Tabulator | Batch Name | Number of Ballots |
|-----------|---------------------------|----------------------|-------------------|
| EV – A | Central Count - 123456789 | A0070-Courthouse - 2 | 49 |
| EV – B | Central Count - 234567890 | A0071-Courthouse - 2 | 50 |
| EV – C | Central Count - 345678901 | A0072-Courthouse - 2 | 51 |
| A | Poll Place – 00456123 | A0009-Courthouse - 2 | 47 |
| A | Poll Place - 00567234 | A0010-Courthouse - 2 | 45 |
| A | Poll Place - 00678345 | A0011-Courthouse - 2 | 53 |

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Conducting the Risk-Limiting Audit

Room Preparation

Generally, the audit should be conducted in the location where ballots are stored. Ensure there is enough room in the facility to accommodate both staff while retrieving and examining ballots. If space is limited, consider retrieving ballots where they are stored and transferring the ballots selected for audit to an alternate location for the examination.

Since the audit team will be entering the voter markings directly into the audit software, it will be helpful to have a location with a projector and screen, or large monitors, connected to the computer running the audit software. This allows observers and participants to view the audit teams entries into the RLA software. A document projector can be helpful for allowing observers to view audited ballots.

Supplies

- Chain of custody logs and extra seals for verifying sealed ballot containers, resealing ballot containers, and recording new seal numbers. (In some jurisdictions, the label on the container serves as the chain of custody documentation.)
- Scissors (if needed to cut plastic security seals on ballot containers)
- Tally sheets (used only for conducting ballot polling and batch comparison methods).
- Voter intent guides for each Audit Board team
- Printer (for printing ballot retrieval lists and audit reports)
- Pens for checking off ballots retrieved for audit
 - Pens and ballots in the same work area can be viewed as a security risk. Consider limiting any pens used during the audit to something unique, like gold, or a color such as red that may not be recognized as a mark by the ballot scanner.
- Tubs or folder to house ballots or batches of ballots retrieved for audit
- Rubber fingers
- **Colored** cardstock to be used as placeholder sheets by the audit teams to identify ballots or batches of ballots removed from storage containers for audit.
- **Removeable** colored labels used by the audit teams to identify ballots retrieved for audit (not necessary if you scan ballots centrally and imprint a unique identifier on each ballot).

The quantity of colored cardstock and colored, removeable labels is determined by projected sample size plus extra for additional rounds.



Staffing

This is the part of the process where the ballots selected for audit are examined for votes. This process should be done by a minimum of two people, an Audit Board. There can be more than one Audit Board, based on the number of ballots to be audited. Each Audit Board member will designate themselves as Auditor #1 and Auditor #2.

Download List of Ballots to Audit

- Log in to the audit software
- Download the list of ballots to audit.
- Download placeholder sheets – during the pilots, it was useful to print two copies of the placeholders: one to place in the container for the audited ballot and another to use as a coversheet to go with the audited ballot. It is also useful to print these on a brightly colored paper that is easily differentiated from the ballots.
- Download Audit Board certification
- Print all downloaded documents (ballot placeholder sheets, audit list, audit board credentials). The Arlo software also provides labels that may be printed and affixed to the audited ballots but is not required.

Distribute Retrieval Documents to Audit Boards and Retrieve Ballots

The Arlo RLA software randomly selects ballots for audit from the ballot manifest and the mail ballots and VVPAT ballots will be mixed up. It may make sense to a county to sort the placeholder sheets in such a way as to make retrieval efficient, however the audited ballots **must** be entered into the Arlo Software in the order provided by the audit list.

- Locate the storage container for the ballot batch you are looking for.
- Verify the seals on the ballot storage container match the seals recorded on the chain-of-custody log (add something here about the label being used as the chain of custody log)
- Locate the batch you are looking for within the storage container.
- Replace the ballot or batch being removed with its corresponding placeholder sheet.
- Place the retrieved ballot/batch in the designated folder or tub.
- Check or initial the ballot/batch retrieval list to indicate the ballot/batch has been pulled for the audit.
- Re-seal the ballot container and record the seal numbers on the chain-of-custody log.



Ballot Review and Verification

Hand-marked paper ballots may require the audit team to make decisions about voter intent. Each auditing team should have a copy of the approved voter intent guidelines to use when making that determination. This ensures ballots are adjudicated during the audit the same way they were adjudicated for the election. Ensure all Audit Board teams are aware which contests need to be examined and recorded. If the voter's choices are not clear, and the Audit Boards cannot agree on what constitutes a valid mark, they can indicate "disagreement" in the software or on the tally sheet.

For ballots cast on the ICX voting machines, the counties will need to identify the correct voting machine used and then may need to go through multiple paper tape rolls to find the correct ballot. The unique identifier is shown below:



Precinct: 7561
Activation Code: 7561
Voting session identifier:
138953_7e9a162e-9cb9-4556-914c-07ff22a7d3d9
Unique identifier:
53_f140421a-6a82-40ba-b4aa-c7a8519b109a
Vote type: NO CONDITIONAL
Vote status: START

The identifier that starts with 53_f140421a will be shown on the placeholder and will appear at the beginning and end of that voter's ballot. The retrieval team must verify that identifier to ensure that the correct ballot has been located.

Once all of the ballots have been retrieved, the audit board team(s) must enter log into Arlo and work together to enter the votes cast for the audited contests using the following process. This process can seem tedious, but it is important to ensure that the audit board team uses proper attention to detail and reduces the risk of data entry mistakes.

One mistake in one county can force the entire state to go to a second round of auditing, which will require additional ballot retrieval and data entry.



1. Choose one team member to be the data entry clerk and one team member to read off the ballot. The data entry member (auditor #1) will log into RLA using the audit board credentials and will enter the names of both team members and then click the Start Auditing Button.

A screenshot of the Arlo web application showing the "Audit Board #1: Member Sign-in" form. The form has two identical sections for "Audit Board Member". Each section includes a "Full Name" text input field and a "Party Affiliation (optional)" section with radio buttons for Democrat, Republican, Libertarian, Independent/Unaffiliated, Other, and None. The "None" option is selected in both sections. A "Next" button is located at the bottom of the form.A screenshot of the Arlo web application showing the "Audit Board #1: Ballot Cards to Audit" page. The page includes a "Log out" button in the top right corner. Below the title, there is a paragraph of instructions. Two buttons are visible: "Start Auditing" (highlighted with a purple box) and "Auditing Complete - Submit Results". Below the buttons is a table with the following data:

| Container | Tabulator | Batch | Ballot Position | Status |
|-----------|-----------|-------|-----------------|-------------|
| Box 1 | 2 | 2 | 2 | Not Audited |
| Box 2 | 5 | 1 | 60 | Not Audited |
| Box 2 | 5 | 1 | 98 | Not Audited |



2. The first ballot to be audited will come up, and Auditor #2 will read off the imprint ID or unique identifier, while Auditor #1 will look at the information on the screen to verify that the team is looking at the correct ballot:

A screenshot of the Arlo software interface for "Audit Board #1: Ballot Card Data Entry". The interface shows "Enter Ballot Information" and "Auditing ballot 1 of 11". Under "Current ballot:", it lists "Tabulator:", "Batch: AVCB City of Lansing, Ward 1, Precinct 3 Batch 147", and "Record/Position: 7". To the right, a section titled "Are you looking at the correct ballot?" contains instructions: "Before continuing, check the 'Current ballot' information to make sure you are entering data for the correct ballot. If the ballot could not be found, click 'Ballot not found' below and move on to the next ballot." Below this text are two buttons: "Ballot 7 not found - move to next ballot" (highlighted with a red box) and "Return to audit overview" (highlighted with a blue box).

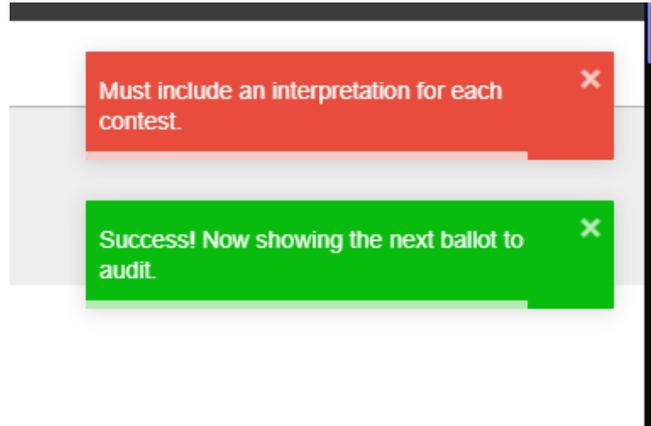
Then, Auditor #2 will read the vote cast by that voter on the first contest and Auditor #1 will make that selection on screen while Auditor #2 watches to ensure accuracy. If the team was unable to find that ballot, mark that selection and move on to the next ballot. After Auditor #1 enters the voter's selection, a verification screen will pop up and Auditor #1 must read that out loud, while Auditor #2 confirms by looking at the ballot that it was the correct selection.

3. The team can then move to the next contest and repeat that process. Once all audited contests for that ballot have been entered, Auditor #1 should click Submit & Next Ballot and continue until all ballots have been audited.



Additional Instructions and Troubleshooting

Error Message



If you receive the above error, this means you need to enter the ballot Information

Ballot Card Data Entry Screen Overview

There is a Ballot Card Data Entry screen for each ballot. Under Audit Board Selections the batch name and ballot number of the ballot being audited is listed. If the ballot has not been retrieved, use the “Ballot Not Found” button. Use the “All Ballots” button to return to the full list of ballots selected for audit.

Arlo Audit Board #1: Bob, Jane [Log out](#)

[← All Ballots](#) **Audit Ballot Selections**

Batch **ABM-3** Ballot Number **1** **Ballot Not Found**

Ballot Contests

Colors

White
Pink
Blue
Green
Yellow
Orange

Blank Vote
Not on Ballot
Invalid Write-In
Add Note

Instructions

1. Confirm that you are looking at the correct ballot for the batch and position. If the ballot was not located, select **Ballot Not Found** at the top of the screen.
2. For each contest, select all the candidate/choices which you see marked on the paper ballot. Select **Blank Vote** if the voter did not make any selections. Select **Not on Ballot** if the contest does not appear on the ballot. Select **Invalid Write-In** for a write-in adjudicated as invalid.
3. Once all votes are recorded, **Submit Selections** and proceed to the next ballot until all ballots have been audited.

[Back](#) [Submit Selections](#)



1. Select the candidate(s) marked on the ballot. Both audit board members should agree. Then select Submit Selections. No vote types: Overvote - select each candidate marked by the voter Contest not voted - select the Blank Vote button Contest not on ballot - select Not on Ballot button Invalid Write-In - select Invalid Write-In (if a contest has valid write-in candidates, a Write-In button will be listed with contest choices) If the audit board cannot agree - explain in the Add Note box.

Arlo Audit Board #1: Bob, Jane Log out

← All Ballots **Audit Ballot Selections**

Batch **ABM-3** Ballot Number **1** Ballot Not Found

Ballot Contests

Colors

White

Pink

Blue

Green

Yellow

Orange

Blank Vote

Not on Ballot

Invalid Write-In

Add Note

Back Submit Selections

Instructions

1. Confirm that you are looking at the correct ballot for the batch and position. If the ballot was not located, select **Ballot Not Found** at the top of the screen.
2. For each contest, select all the candidate/choices which you see marked on the paper ballot. Select **Blank Vote** if the voter did not make any selections. Select **Not on Ballot** if the contest does not appear on the ballot. Select **Invalid Write-In** for a write-in adjudicated as invalid.
3. Once all votes are recorded, **Submit Selections** and proceed to the next ballot until all ballots have been audited.

2. On the verification screen, review the ballot information for accuracy and select Confirm Selections to go to the next ballot.

Confirm the Ballot Selections ×

Batch **ABM-3** · Ballot Number **1**

Colors

Pink

Change Selections Confirm Selections



3. Once all ballots have been audited, select Submit Audited Ballots.

Arlo Audit Board #1: Bob, Jane Log out

17 of 17 ballots have been audited.
Audited: 17 Not Audited: 0

Submit Audited Ballots

| Batch | Ballot Number | Status | Actions |
|-------|---------------|-----------|-----------------------------------------|
| ABM-3 | 1 | ✓ Audited | <input type="button" value="Re-Audit"/> |
| ABM-3 | 12 | ✓ Audited | <input type="button" value="Re-Audit"/> |
| ABM-3 | 17 | ✓ Audited | <input type="button" value="Re-Audit"/> |
| ABM-4 | 10 | ✓ Audited | <input type="button" value="Re-Audit"/> |
| ED_14 | 4 | ✓ Audited | <input type="button" value="Re-Audit"/> |
| ED_17 | 2 | ✓ Audited | <input type="button" value="Re-Audit"/> |

Submit Audited Ballots

Instructions

1. Locate and retrieve the list of ballots to audit from storage.
2. Audit each ballot by indicating the votes you see marked.
3. Once all ballots are audited, click Submit Audited Ballots. Once results are submitted, no further edits can be made.

4. Enter auditor names exactly as they were entered at the start and click Sign Off.

Arlo Audit Board #1: Bob, Jane Log out

Audit Board #1: Board Member Sign-off

Thank you for completing the ballots assigned to your Audit Board. Please sign your name below to confirm that all ballots were audited to the best of your ability and in accordance with the appropriate state statutes and guidelines.

If another round of auditing is needed, you will be notified by election officials.

Audit Board Member: Bob
Full Name

Audit Board Member: Jane
Full Name



Once all ballots have been audited, **click Auditing Complete**. Submit Results and re-enter the Auditors' names.

The screenshot shows the Arlo software interface. At the top, there are navigation links: 'Audit Setup', 'Audit Progress', 'View Audits', 'New Audit', and 'Log out'. A purple banner at the top of the main content area reads 'Congratulations - the audit is complete!' with a 'Download Audit Report' button. Below this, there are two sections: 'Audit Progress' and 'Audit Progress by Jurisdiction'. The 'Audit Progress by Jurisdiction' section contains a table with the following data:

| Jurisdiction Name | Status | Total Audited | Remaining in Round |
|-------------------|----------|---------------|--------------------|
| Kalamazoo County | Complete | 0 | 0 |
| Kalkaska County | Complete | 0 | 0 |
| Kent County | Complete | 9 | 0 |
| Keveenaw County | Complete | 0 | 0 |

If you run into problems, or have questions, please don't hesitate to reach out.

Heather Hardy
hardyh@sos.nv.gov
775 722-6710