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# Knowing It's Right, Part Three

## Planning and Conducting a Risk-Limiting Audit Pilot

by Jennifer Morrell



## **ABOUT THE AUTHOR**

Jennifer Morrell is a nationally recognized election official with over eight years of experience managing local elections. Her work in Colorado was instrumental in the successful implementation of the first statewide risk-limiting audit and she has been an outspoken advocate of implementing election audit standards beyond just post-election audits and has a vision of creating uniform audit and testing standards for all critical components of the voting system. Bringing extensive expertise in election administration, Morrell serves as a consultant leading the Election Validation Project at Democracy Fund.

## **ABOUT DEMOCRACY FUND**

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## **ABOUT OUR PHOTOGRAPHS**

The photographs used throughout this report are provided courtesy of the author. Some capture real-world examples of risk-limiting audits being performed by election officials from around the country. The use of these photos is intended solely to illustrate how this work is done and should not suggest the subjects' endorsement of the content in this report.

On Cover: A member of the audit team for San Francisco Elections holds a handful of 10-sided dice for a pilot RLA.

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# Introduction and Overview

The best way to learn how a risk-limiting audit (RLA) works is through hands-on experience. Conducting an RLA pilot provides an opportunity for everyone involved to become familiar with the terms and procedures. It is a great first step for states that are considering RLAs, or those that have recently passed RLA legislation, to learn how an RLA might work in practice on a smaller scale.

This document is a guide for state and local officials who wish to collaborate on planning and conducting an RLA pilot program. The material provided is focused as much on the pre-pilot preparation as the pilot audit itself. Consider using this as a working document that will guide you through the initial planning stage, preparing for the pilot, conducting the pilot, and recording information to aid in making recommendations for future pilots or official RLAs. In other words, think of this as a detailed road map for developing a pilot program for your state.

# 1

## Step One: Form a Working Group

A collaborative working group is an important first step for implementing RLAs. The group should include state and local election officials responsible for conducting elections as well as those responsible for ballot programming, scanning, reconciliation, and storage. It is also helpful to include someone responsible for communication and public outreach. Allowing them to learn how RLAs work through the planning and preparation discussions will help when it comes time to craft outreach and public statements about the RLA pilot and future, official RLAs.

It is also helpful to have an RLA specialist or an election official with experience conducting an official RLA take part in the group or review pilot plans as they become documented. This ensures critical elements do not get overlooked. It also is an opportunity to learn from the experiences of others. Also, do not be afraid of including a representative from your voting system vendor as well. It is important for them to understand how an RLA

works and how their system is being audited, especially if they are being called on to help instruct officials on exporting cast vote records and other reports needed for the audit.

The goal of the advisory group is for all members to participate in both planning and conducting the pilot. This has the added benefit of forming a cadre of local RLA subject-matter experts to assist in scaling up the pilots and transitioning the state to RLAs as the official method of post-election auditing.

It is recommended that the RLA working group calendar regular meetings to discuss progress, ask questions, and identify potential problems. Some initial tasks might include reading and discussing RLA resource material such as **“Knowing It’s Right, Part One: A Practical Guide to Risk-Limiting Audits”** and **“Knowing It’s Right, Part Two: Risk-Limiting Audit Implementation Workbook.”** Also, consider using the material in this document as a framework for meeting agendas.



# 2

## Step Two: Establish Goals For the Pilot

Should the pilot include multiple jurisdictions or be limited to a single county? Should members of the public be invited to attend, or should it only be open to election officials? The goals and scope will vary with each pilot but should be considered at the outset of your pilot planning. There is nothing wrong with starting small.

In fact, many states and jurisdictions moving toward RLAs have opted to conduct more than one pilot. The important thing is documenting what takes place, recording lessons learned, and expanding the scope with each successive pilot.

The goal of a pilot is to test how your processes and forms will work when doing an official RLA of all ballots cast.

Initial goals of an RLA pilot might include:

- providing a comfortable, hands-on experience for election officials to learn how the RLA process works;
- confirming ballots are processed and accounted for in a way that supports an RLA; and
- learning how RLA software is used in conjunction with the audit.

These can be accomplished by limiting the pilot to just a handful of precincts or a subset of ballots, such as absentee/mail ballots.

With some experience under your belt, subsequent pilots can be scaled up with goals such as:

- testing the various RLA sampling methods;
- understanding how to estimate the workload ahead of the audit;
- understanding the effects of multijurisdiction contests; and
- documenting the time and resources required to complete the audit.

These can be accomplished by auditing all ballots (in-person, VBM, provisional, etc.) in one or more counties or jurisdictions.

Eventually, the goals of a statewide pilot should test:

- RLA guidelines and training materials;
- completing the audit within a determined window of time; and
- load and capacity of RLA software.

## When should the pilot take place?

This ultimately depends on your state laws regarding when ballots can be handled post-election. It is important to understand your state requirements before setting a date for the pilot. Ideally, it should be conducted immediately after an election has been certified and the period to request a recount or challenge the election has passed. In many states, this ensures there will be no legal issues with opening sealed ballot containers and examining ballots. It also ensures the processes involved in handling, scanning, and accounting for ballots is still fresh in everyone's mind.

Some state laws prevent ballot containers from being opened post-canvass. If a pilot must be conducted during the pre-canvass period, it is vital that you pay close attention to ballot accounting practices.

## Should the pilot be open or closed to outside observers?

Like everything related to elections, each state brings to the RLA pilot table its own unique challenges, voting culture, and election rules. These factors can impact the decision about whether to make your initial pilots a public affair. Pilots are not official audits and should be viewed

more like a training exercise. There is value in not making pilots open to the general public initially. It ensures election administrators can ask questions, learn from mistakes, and express concerns without the distraction of outside visitors. But do consider inviting election officials from other jurisdictions to observe and participate.

If you do decide to invite public observers, remind everyone that this is a pioneering endeavor, people will make mistakes, and it is important not to distract from the learning experience. It might help to set some ground rules about what non-election staff participants can and cannot do. Specifically, be mindful of any election rules that would impact visitors from actively participating in retrieving and examining ballots.

## What do you communicate about the pilot?

Be clear when issuing press statements about what the pilot is and isn't. Risk-limiting audits confirm the outcome of an election only when all ballots for the audited contest are included in the audit and an appropriate risk limit is being used. A pilot does not always include both, since we limit the scope to a few precincts or batches of ballots or inflate the risk limit to effectively meet our initial goals.

Some things you might communicate about the pilot:

- a coalition of election officials now understands why we audit, what constitutes a risk-limiting audit, and what the best practices are for conducting an RLA;
- many of the people involved with the pilot audit will go on to help form an RLA advisory committee to work out the policy and structure for implementing RLAs statewide; and
- pilot audits have informed state and local officials about important features to look for in a voting system that supports risk-limiting audits.

*An excerpt from the New Jersey Secretary of State press release:<sup>i</sup>*

*“The goal of these pilots is to introduce state and local officials to the terms and concepts of risk-limiting audits and understand how the process might work with the voting equipment being considered for purchase in New Jersey...”*

*The process for conducting the audit includes randomly selecting a sample of ballots based on the margin of victory for each race, locating each of the ballots selected for audit, and entering the selections from the voted ballot into audit software to be compared against the way the voting system interpreted and tallied the ballot.”*

<sup>i</sup> “Secretary Way, State Election Officials Take Part In Pilot Risk-Limiting Audit, Press Release, New Jersey Department of State, March 8, 2019, Accessed March 6, 2020. Available at: <https://nj.gov/state/press-2019-0308.shtml>.

# 3

## Step Three: Determine the Method(s) of RLA to Pilot

There are several methods for sampling ballots and conducting an RLA. You can refer to the definitions of the different types of sampling methods from **Knowing It’s Right, Part Two: Risk-Limiting Audit Implementation Workbook**. The definitions for the three most common methods are shown here. Which method you use will mainly depend on how your ballots are processed.

Ballots scanned centrally that can be associated with their corresponding cast vote record (CVR) can be audited using the ballot comparison method. Ballots scanned at a polling location can be audited using the ballot polling method or batch comparison method. For purposes of learning how an RLA works, it might be helpful to try one or more of the methods as you conduct pilots. Below is a brief overview of the ballot requirements for each of the three methods based on current voting technology.

	BALLOT COMPARISON	BALLOT POLLING	BATCH COMPARISON
<b>Where do ballots get scanned?</b>	Central location	Individual polling locations or central location	Individual polling locations or central location
<b>What ballot information is needed from the voting system?</b>	Cast vote records	None	Batch subtotal reports
<b>What size is the ballot batch?</b>	The smaller the better. 100 ballots are a good average size.	Not so large that a person can’t lift on their own	The smaller the better. 200 ballots are a good average size.
<b>Do ballots need unique, printed identifier?</b>	Yes	No	No
<b>How are ballots validated?</b>	RLA software	RLA software, manual tally sheets	RLA software, manual tally sheets



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.**

In a **ballot polling audit**, individual ballots are retrieved. The audit team examines the ballot and records the voter markings for the audited contest(s) on a tally sheet. Once all the ballots have been examined and voter markings recorded, the votes are totaled and the margin of victory for the winner(s) is compared to the margin of victory originally reported. **The audit is looking for a similar or greater margin.**

In a **batch comparison audit**, specific batches of ballots are identified and retrieved. The audit team examines the ballot and records the voter markings for the audited contest(s) on a tally sheet. Once all the ballots in the batch have been examined and voter markings recorded, the votes are totaled. The audit compares the manually recorded subtotals to the originally reported subtotals from the voting system. **The audit is looking for discrepancies between the two.**

Keep in mind that there is some tolerance for discrepancies depending on the margin of the target contest and the risk limit that has been set.

## IMPORTANT DEFINITIONS

**Ballot Comparison.** A ballot-level comparison audit is a type of RLA in which individual paper ballots are randomly selected, the voter markings are examined and interpreted manually, and the human interpretation of voter intent is compared to the voting system's interpretation of the same ballot, as reflected in the corresponding cast vote records.

**Ballot Polling.** A ballot-polling audit is a type of RLA in which individual paper ballots are randomly selected, the voter markings are examined and interpreted manually. If a large enough sample shows a large enough majority for the reported winner, the audit stops. This type of RLA cannot identify whether a specific ballot was mistabulated, but it can provide convincing evidence about whether the reported outcome is correct.

**Batch Comparison.** In a batch-level comparison audit, the voting system must export subtotals for identifiable physical batches of ballots, such as all ballots cast in a precinct or all mail ballots scanned together as a batch by a particular machine. The auditors add up those batch-level results to verify that they produce the reported contest outcomes. If so, some physical batches are selected at random. The votes in each selected batch are examined manually and tabulated, and the audit counts are compared to the voting system's reported subtotals.



# 4

## Step Four: Choose RLA Software

Software built to support RLAs is essential, especially when conducting a ballot comparison audit or a statewide or multijurisdiction audit. For all methods of sampling, RLA software can help with the following functions:

- determine the starting sample size;
- randomly select ballots for audit from the ballot manifest;
- account for discrepancies; and
- calculate when the risk limit has been met and the audit can stop.

See **Knowing It's Right, Part Two: Risk-Limiting Audit Implementation Workbook** for a more detailed overview of how RLA software works.

RLA software can also help make your audit more transparent. Reports generated by the software should include information about the target contest, the random seed, ballots selected for audit, discrepancies, and additional rounds of sampling (if needed), and indicate that the risk limit was met. All of this information can and should be made public.

It is recommended that you use the same software for your pilot that you plan on using for your official RLAs. Some things to evaluate during the pilot:

- How easy is it for state and local officials to use the software independently when:
  - Creating the audit?
  - Importing ballot manifests and applicable information from the voting system?
  - Conducting the audit?
  - Concluding the audit and exporting reports?
- How easy is it for audit boards to use when entering voter selections from ballots into the tool?
- What is the process for creating users and providing login credentials?
- How does the tool escalate the audit to additional rounds if the risk limit is not met with the initial sample size?
- What types of reports can be generated?

There are several RLA software prototype tools that can be used for

a small-scale pilot. A list of these resources can be found here: <https://risklimitingaudits.org/resources/>.

**VotingWorks** is nonprofit organization building an RLA tool called Arlo. The software is hosted in the cloud and runs on a web browser. The advantage to using Arlo is that it has been developed and tested by a team of experts dedicated to long-term support of the tool.

# 5

## Step Five: Pre-Audit Ballot Tracking and Organization

### Ballot accounting

Preparing for a pilot RLA is a good time to review the ballot accounting practices conducted in your state or local jurisdiction. This includes ballot tracking, ballot reconciliation, and chain of custody forms and procedures. These practices are the foundation of your RLA paper trail and ensure ballots have not been lost or added as a result of human error. They provide evidence that the paper trail is trustworthy.

Ballot accounting practices are the foundation of your RLA paper trail and the heart of your RLA.

We will talk more about a ballot manifest further on in this guide, but it is important to know that most of the time, it will be populated by information from your ballot accounting forms. Take the time to examine how that process is working and make any necessary changes before proceeding with your pilot.

All methods of sampling in an RLA rely on the election official locating a single batch of ballots and having an accurate count of the number of individual ballot sheets contained in the batch. A single batch might be all ballots scanned at a specific polling location, ballots scanned at a polling location and later subdivided into smaller units, or a predetermined quantity of ballots scanned in a central facility, such as mail ballots or UOCAVA ballots.

Regardless of what constitutes a batch, you must have a reliable system for:

1. Assigning a unique name or number to every batch.
2. Verifying the total number of ballots sheets in each batch independent of the voting system.

The following checklists are divided between ballots scanned at polling locations and ballots scanned centrally. They are meant to be adapted to your local process but will serve as a guide for the necessary ballot handling practices that should be employed to support RLAs.

## BALLOTS SCANNED AT POLLING LOCATIONS

- Poll workers are required to complete a ballot reconciliation form.
- Reconciliation form validates that the number of ballots issued (voters checked in) equals the number of ballots cast (everything that was scanned) plus any ballots segregated for scanning at a later time (provisional, contingency).
- Reconciliation form provides a place to alert election officials if there is a discrepancy and a place to record information to assist in researching or explaining the discrepancy.
- Ballots successfully scanned are transferred to a ballot storage container.
- The ballot storage container is labeled with enough information to show:
  - polling location and/or precinct;
  - unique ID number for the container;
  - total number of ballot cards sealed in the container;
  - security seal number;
  - individual(s) who verified quantity and sealed container; and
  - optional: unique ID number for the scanner(s).

- Ballots that could not be scanned are transferred to a separate ballot storage container. These containers should also be labeled with similar information as those scanned. These ballots will be tracked and scanned using the checklists for ballots scanned centrally.

Balancing ballots cast (using the display from the voting system), against voters checked in (from the pollbook), is one way to independently validate the total number of ballot cards that have been scanned.

FIGURE 1: EXAMPLE RECONCILIATION FORM

BALLOT RECONCILIATION FORM	
<b>Precinct:</b> 6273803212	
<b>Election Date:</b> Tuesday, July 24, 2018	
<b>Election Type:</b> Primary	
<b>County/City:</b> Grand	
<b>1</b>	<b>VOTERS CHECKED IN</b>
	Check in numbers from the poll book <span style="float: right;">740</span>
	Number of provisional ballot applications <span style="float: right;">3</span>
	<b>Total number of voters checked in</b> <span style="float: right;">743</span>
<b>2</b>	<b>BALLOTS CAST</b>
	Number of ballots scanned <span style="float: right;">740</span>
	Number of provisional ballot envelopes <span style="float: right;">3</span>
	<b>Total number of ballots cast</b> <span style="float: right;">743</span>

FIGURE 2: STORAGE LABEL FOR BALLOTS SCANNED AT POLLING LOCATIONS

<b>Precinct #:</b> 6273803212	
<b>Ballot Box:</b> 27	
<b>Scanner Name</b>	<b>Total Ballots</b>
4567	236
4568	507
<b>Total Ballots:</b> 743	
<b>Seal #</b> A95162	
<b>Poll Worker Initials:</b> TP	
<b>Poll Worker Initials:</b> JM	

SHOULD BE EQUAL

### BALLOTS SCANNED AT POLLING LOCATIONS AND SUBDIVIDED INTO SMALLER BATCHES AT THE ELECTION FACILITY

There are situations where ballots scanned at polling locations remain in the large ballot receptacles attached to the precinct scanner. Often, these containers hold thousands of ballots. Keeping them together as one batch makes performing an audit a physical challenge. One solution is to divide the batch into smaller units once the receptacle has been reconciled and returned to the election facility.

The same care should be taken in accounting for the number of ballots removed and who performed the task by using a label similar to the one shown for ballots scanned and sealed at the polling location.

### BALLOTS SCANNED AT CENTRAL LOCATIONS

- Election staff have a documented plan and a tracking form to account for all types of ballots from the time they are initially received in the facility to the point they are received in the scanning room.
  - This should include a place to verify the total number of ballots and who took custody every time they are moved or change hands.
- Verify the total number of ballot cards scanned (as indicated by the central scanner) equals the number of ballot cards in the batch (as indicated by the ballot tracking form).

- Ballots successfully scanned are transferred to a ballot storage container.
- Ballot storage containers are labeled with enough information to show (see right for example):
  - unique ID number for the container;
  - unique ID number for the scanner;
  - unique ID number for each batch;
  - total number of ballot cards;
  - security seal number; and
  - individual(s) who verified quantity and sealed container.
- When multiple batches are stored in a single container, each batch should also be labeled to indicate:
  - batch size (total number of ballot cards scanned);
  - unique ID number assigned to the scanner;
  - unique ID number for each batch; and
  - individual(s) who scanned the batch.

- Ballot reconciliation forms, ballot tracking forms, and chain of custody logs are reviewed, or audited, prior to an official RLA or in conjunction with it.
  - This includes verifying information from the forms against the batch and container labels.

FIGURE 3: BALLOT BATCH LABEL

<b>Pre-Scanning</b>	Beginning Count:	<i>100</i>
	Staff Initials:	<i>TP</i>
<b>Scanning Room</b>	Batch Size:	<i>99</i>
	Scanner Name:	<i>03</i>
	Batch Number:	<i>20</i>
	Staff Initials:	<i>JM</i>

FIGURE 4: STORAGE LABEL FOR BALLOTS SCANNED AT CENTRAL LOCATION

<b>Container Name: TC-5</b>		
<b>Scanner Name</b>	<b>Batch Number</b>	<b>Total Ballots</b>
<i>03</i>	<i>16</i>	<i>100</i>
<i>03</i>	<i>17</i>	<i>100</i>
<i>03</i>	<i>18</i>	<i>98</i>
<i>03</i>	<i>19</i>	<i>100</i>
<i>03</i>	<i>20</i>	<i>99</i>
<b>Total Ballots: 497</b>		
<b>Seal # A95162</b>		
<b>Poll Worker Initials: TP</b>		
<b>Poll Worker Initials: JM</b>		

## Ballot storage

All three methods of RLAs require the audit team(s) to correctly find and identify a specific batch of ballots. Whether it is a batch of 100 ballots stored in a folder or a batch of 900 ballots stored in the cartridge they were scanned into, answering the questions below during your pilot RLA will provide feedback for any changes that need to be made to your current storage system.

### What type of container will ballots, or batches of ballots, be stored in?

- Will availability, cost, etc., allow you to use the same containers for large and small elections? For overlapping elections?
- Are the containers uniform?
- Can the container be securely sealed?
- Can the containers be stacked on top of one another if needed for short- and long-term storage?
- Where and how will containers be stored prior to the RLA?
- How will containers be staged and organized for quick identification during the audit?
  - By container ID? Precinct? Polling location?
- What is the maximum number of ballots, or batches of ballots, the storage container can hold and comfortably allow for the ballots to be removed and reinserted?
- What type and size of label works best on ballot storage containers to clearly identify their contents?
  - Where is it placed?
  - Is it permanent?
  - Can it be easily removed or tampered with?

### If multiple batches of ballots are stored within a single container:

- Can an individual batch be identified without removing all the batches from the container?
- Can the ballots be easily removed from the batch folder or divider and replaced?
- What type and size of label works best on batch storage folders or dividers to clearly identify their contents? Where on the folder should it be placed?

## Ballot manifest

A ballot manifest is the star of your RLA! It provides validation, external from the voting system, of the total number of ballots included in the audit. It is used to randomly select the ballots to be audited and indicates where those ballots or batches are physically stored for easy retrieval. As a reminder, ballot manifests should never be generated by the voting system.

A pilot RLA gives you the opportunity to understand the connection between ballot accounting procedures, ballot storage procedures, and the ballot manifest. It is beneficial when conducting a statewide RLA to have a standard

template that all jurisdictions use. A pilot RLA is a good way to test templates and see how they work with the software.

A ballot manifest may be a simple spreadsheet where information is entered directly from the batch folders or ballot storage container labels. It might also be a more sophisticated ballot tracking or inventory management system (common in larger jurisdictions) that is formatted to produce a report with the necessary information. The key is to keep the ballot manifest simple!

### BALLOTS SCANNED AT POLLING LOCATIONS

We can take our same container label for ballots scanned at a polling


location and create the manifest below. In this case, a member of the elections staff would verify the container label information against the reconciliation documents and manually enter the precinct number, ballot box identifier, scanner number, and total number of ballots into the ballot manifest spreadsheet. A checkmark is placed on the container label to indicate the entry had been done. (See figure 5)

The containers for the RLA might be arranged sequentially by ballot box number. Within ballot container 27, there would be a labeled divider separating the ballots into two distinct batches with 236 ballots from scanner #4567 and 507 ballots from scanner #4568.

FIGURE 5: MANIFEST AND LABEL FOR POLLING PLACE WITH MULTIPLE SCANNERS.

BALLOT MANIFEST			
Precinct #	Ballot Box ID	Scanner Name	Total Ballots
6273803212	27	4567	236
6273803212	27	4568	507
6273814625	18	4965	761
6273814628	2	4243	358

<b>Precinct #:</b> 6273803212	
<b>Ballot Box:</b> 27	
<b>Scanner Name</b>	<b>Total Ballots</b>
4567	236
4568	507
<b>Total Ballots:</b> 743	
<b>Seal #</b> A95162	
<b>Poll Worker Initials:</b> TP	
<b>Poll Worker Initials:</b> JM	




If there is only one scanner per polling location, or we are not concerned about large batches, we may have a container label and ballot manifest that looks similar to this. In this case, a member of the elections staff would verify the container label information against the reconciliation documents and manually enter the polling location name, ballot box identifier, and total number of ballots into the ballot manifest spreadsheet. A checkmark is placed on the container label to indicate the information has been added to the ballot manifest. In this case, the containers could be physically arranged by polling location name. (see figure 6)

FIGURE 6: MANIFEST AND LABEL FOR POLLING PLACE WITH A SINGLE SCANNER.

BALLOT MANIFEST		
Polling Location	Ballot Box ID	Total Ballots
North Library	60	984
Corner Church	7	422
Civic Center	25	1,167

<b>Precinct #:</b> <i>North Library</i>
<b>Ballot Box:</b> <i>60</i>
<b>Total Ballots:</b> <i>984</i>
<b>Seal #</b> <i>A95162</i>
<b>Poll Worker Initials:</b> <i>TP</i>
<b>Poll Worker Initials:</b> <i>JM</i>




### BALLOTS SCANNED AT A CENTRAL LOCATION

Here, a member of the elections staff would verify the batches inside the container match what is recorded on the container label and seal the container. The scanner name, batch number, total number of ballots, and container name are manually entered into the ballot manifest spreadsheet. A checkmark is placed on the container label to indicate the entry had been done. (see figure 7)

FIGURE 7: MANIFEST AND LABEL FOR BALLOTS SCANNED AT A CENTRAL LOCATION.

BALLOT MANIFEST			
Scanner Name	Batch #	Total Ballots in Batch	Container Name
03	16	100	TC-5
03	17	100	TC-5
03	18	98	TC-5
03	19	100	TC-5
03	20	99	TC-5

<b>Container Name:</b> <i>TC-5</i>		
<b>Scanner Name</b>	<b>Batch Number</b>	<b>Total Ballots</b>
<i>03</i>	<i>16</i>	<i>100</i>
<i>03</i>	<i>17</i>	<i>100</i>
<i>03</i>	<i>18</i>	<i>98</i>
<i>03</i>	<i>19</i>	<i>100</i>
<i>03</i>	<i>20</i>	<i>99</i>
<b>Total Ballots:</b> <i>497</i>		
<b>Seal #</b> <i>A95162</i>		
<b>Poll Worker Initials:</b> <i>TP</i>		
<b>Poll Worker Initials:</b> <i>JM</i>		





## Some things to consider

Keep names the same. If the reconciliation form refers to the ballot storage container as *Ballot Box ID*, the container label and ballot manifest should also refer to it as *Ballot Box ID*. Be consistent with how each field is labeled and pre-print or pre-fill as much of the form, label, and manifest information as you can.

**Scanner Name:** This can be an assigned number, or the serial number of the scanner being used. It is most helpful in situations where more than one scanner is being used in a polling location but is essential to include for ballots scanned centrally. It is also good practice to assign all major equipment a number that is used to track where it is located and who has custody at any given point in time.

**Ballot Box ID/Container Name:** This is the name or number assigned to the container that the ballots will reside in at the time of the audit. This might be the container that ballots fell into originally at the time they were scanned. It might be a container that ballots are transferred to at the polling location so they can be physically delivered to the election office. It might be a container that ballots are subdivided into by election staff after the election. The container name can be a single point of data or several data points that get combined together in the ballot

manifest. For example, when ballots are scanned centrally, the tray and cart number or the date and time may be combined to become the container ID.

**Total Ballot Sheets:** This number should always be independently validated if it is being recorded directly from the voting equipment. Most likely it will come from the ballot reconciliation process as previously described. When in doubt, weigh or count ballot cards to verify the total quantity.

**Seal Number:** This is the final seal number applied to the ballot storage container. This number will be the one that audit teams verify before opening the container. It should come from a reconciliation or chain of custody form. It is also helpful to have an additional blank space for a new seal number and initials to be used by the audit teams who must reseal the container after they retrieve the ballots or batches to be audited.

**Staff Initials:** By including a place for staff or poll workers to sign or initial, the label becomes a chain of custody document of its own.

### Prior to the pilot:

- Perform a test run of the entire process using the ballot manifest.
- Determine how and when the information for the ballot manifest will be entered.

- Determine how and when the information in the ballot manifest will be verified.
- Ensure there is a step for validating the total number of ballots scanned in each batch.

### For ballot comparison audits:

- Identify the steps that will ensure ballots are kept in order.
- Ensure central scanner imprinting function is working correctly.
- Work with your voting system vendor to learn how to export the CVR in a .csv format for specific batches or contests.
- Verify that the fields included on the imprint (e.g., scanner, batch, sequence number) match the ballot manifest.

### Reconciliation:

- When ballots are scanned prior to Election Day, perform a daily reconciliation by comparing the totals from the ballot manifest to the CVR or some other subtotals report generated by the voting system.
- Prior to the audit, perform a ballot reconciliation process that compares the totals from the ballot manifest, voting system summary reports, and the voters who have been given credit for voting.
- Resolve any discrepancies in the above reconciliation before proceeding with the RLA.



# 6

## Step Six: Preparing for the Pilot

### Defining the scope of the audit

An official RLA should include all ballots cast in your election and ideally more than one audited contest. That can be a tremendous undertaking, especially if you are performing the steps of an RLA for the first time. Think about the initial goals suggested at the beginning of this document. Since the purpose of the pilot is to provide training and experience, you might consider limiting the scope of the pilot so there is time in a one-day setting for participants to perform all the steps that take place in an RLA and still allow time for discussion and feedback.

What this means is determining a reasonable number of ballots to

find, retrieve, examine, and tally in one day. This will depend as much on how many people will be participating as the method of sampling you use. Some ways to reduce the number of ballots to audit include choosing a contest to audit with a wide margin between the winner and loser and/or setting a higher risk limit. You can make this determination as soon as the election is complete and the contest margins are known.

On the day of the pilot, if you end up with a sample size that is too large to be completed in a day, you should feel comfortable pausing and moving to the next steps without having retrieved or examined all the ballots. I cannot stress enough that a pilot is all about learning, collecting information, and designing the process for your official RLA.

### Location

Try to conduct the pilot in the same space where all future audits will take place. Generally, this is where ballots are stored. The pilot can help you determine if there is enough room in the facility to accommodate both staff and observers while retrieving and examining ballots for an official audit. 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 and recording portion of the audit.

It is helpful to have a location with a projector and screen, or large monitors, connected to the computer running the audit software. A document projector can be helpful as well for viewing the ballot. This allows observers and participants to see how the audit teams interact with the RLA software.

Doing time studies during your pilots can be helpful as you plan future pilots and determine the time frame and staffing required for official RLAs.

## Supplies:

In addition to the ballots and ballot accounting documentation mentioned in the previous sections, you will need the following for the day of the pilot:

- 20, 10-sided dice
- Slips of paper/blank roster to write names of participants who want to roll the dice
- Two containers (one for slips of paper with individual names and one to contain the dice)
- Whiteboard or easel-style paper pad
- 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)
- Voter intent guides for each audit team if any hand-marked paper ballots will be included in the audit
- Printer (for printing ballot retrieval lists and reports)
- Pens for checking off ballots retrieved for audit (see sidebar)
- Tub or folder to house 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
- \*Removable 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, removable labels is determined by projected sample size plus extra for additional rounds.*

### IMPORTANT NOTE

Pens and hand marked paper ballots in the same area can be viewed as a security risk. Consider limiting any pens used during the audit to something unique, like gold or silver, or a color such as red that may not be recognized as a mark by the ballot scanner.

# Pre-Audit Reports and Reconciliation:

FIGURE 8: STEPS FOR PRE-AUDIT RECONCILIATION

STEP	BALLOT COMPARISON	BALLOT POLLING	BATCH COMPARISON
1	Finish tabulating all valid ballots that will be included in the audit.		
2	Generate a summary results report from the voting system for all ballots that will be audited. Make sure to include overvotes, undervotes, blank-voted contests, and valid write-in votes.		
3	Export a CVR file from the voting system using the same group of ballots as the summary results report.		Generate a summary results report by batch showing subtotals for each batch.
4	Verify that the total number of individual CVRs in the CVR export equals the aggregate number of ballots in the ballot manifest.	Verify that the total number of ballots cast in the summary report equals the aggregate number of ballots in the ballot manifest.	Verify that the total number of ballots cast in the summary report equals the aggregate number of ballots in the ballot manifest.
5	Verify that totals for all choices in all ballot contests in the CVR export equal vote totals in the summary results report.		Optional: Verify that the total number of ballots cast in each subtotal report equals the total number of ballots in the corresponding batch in the ballot manifest.
6	Commit CVR and ballot manifest to the audit software.	Commit summary report and ballot manifest to the audit software.	Commit batch subtotals report and ballot manifest to the audit software.
7	Consider where (website) you will publish your ballot manifest in an official audit.		

# 7

## Step Seven: Conducting the Pilot

The steps in this section are written for a pilot where a single, local election office is hosting the pilot in coordination with state election officials. It is beneficial for everyone to “roll up their sleeves” and be involved in each step of the process. For that reason, I have not assigned roles for who should conduct each step. It is also assumed that RLA software will be used for the pilot.

The written narrative is merely meant to help you think about what information to share with participants during the pilot and questions you might want to ask. It is not a script! I encourage you to take what is useful from the narrative and make it your own. If you are planning to invite media, VIPs, and citizen observers to your first pilot, consider using this guide for conducting a “dress rehearsal” with your team so everyone is confident in how to perform the necessary steps as well as talk about them.

### Time required

Plan for a full day. Pilot RLAs should be designed to create a safe learning

environment. That means giving people the freedom to ask questions, make mistakes, and get comfortable with the terms and steps of the process. Take the opportunity to stop at each section outlined below to provide information about what needs to happen and why. Allow time for questions and discussion of each step.

It is possible that you will encounter problems as you go through the RLA process for the first time. Allow for time in the pilot to assess and resolve problems as they are encountered. After the pilot RLA is complete, take time for a post-audit discussion to talk about the process, to resolve unanswered questions, and to solicit suggestions for how the process might be improved or made more efficient.

Provide enough time to ensure the ballot manifest, batch and container labels, and any other forms or reports work well at each step of the process. This is also a good time to test the audit software and ensure everyone is comfortable logging in, uploading files, and generating reports at the conclusion of the pilot.

# Introduction

## NARRATIVE

Welcome to our pilot risk-limiting audit, or RLA as we will be referring to it throughout the day. Our goal today is to provide all of you a comfortable, hands-on experience to understand how the RLA process works, confirm we process and organize ballots in a way that supports RLAs, and learn how RLA software is used in conjunction with an audit.

For those who might still be new to RLAs, we'll go over a few terms and concepts. A **risk-limiting audit** is a post-election tabulation audit where we examine a random sample of voted ballots to provide confidence that the outcome of the election is correct. As the name suggests, an RLA is designed to limit the risk that a contest is certified with the wrong winner. It does this by looking for statistical evidence that the outcome is right and will increase the initial sample until either the level of confidence has been met or a full recount has been performed.

So, let's start there, with the contest to be audited. More than one contest can be selected for auditing, but it is a single contest we select, called the **target contest**, that determines the initial number of ballots selected for audit. Unlike a traditional audit where the number of ballots reviewed is a fixed percentage, the number of ballots that need to be reviewed in an RLA is impacted by several factors including the margin of the target contest. We will refer to the number of ballots required to be audited as the **sample size** or the initial sample. If discrepancies are uncovered during an RLA, the initial sample size may increase and could lead to a full hand recount.

The other elements that affect the sample size are the risk limit and the sampling method we use to conduct the RLA. The **risk limit** is the largest chance that the audit will fail to detect and correct an incorrectly reported outcome. An **outcome** refers to the winner(s) of a contest, not the vote totals. For example, Colorado's first RLA had a risk limit of 9%, which meant there was at least a 91% chance that the audit would correct an incorrect outcome if the outcome was wrong. The risk limit is often set in administrative rule by the state or county official conducting the audit. Today, we will try to attain a risk limit of [x%]. Because this is a pilot, we won't necessarily do additional rounds of auditing if the results are not quite that strong.

There are three different sampling methods, or some combinations of these methods, used to conduct an RLA. Which method is used will also have an impact on the sample size. Today, we will be using the [ballot comparison, ballot polling, or batch comparison] method for our pilot audit. We will describe the [ballot comparison, ballot polling, or batch comparison] method in more detail as we go through the pilot process but it's helpful to have a basic understanding of how all three work.

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, or CVR, created by the voting system. The CVR is the voting system's record of how it counted the votes on that ballot. It reflects decisions made about voter intent during the human adjudication process. The audit is looking for any discrepancies between the two.

In a **ballot polling audit**, individual ballots are retrieved. The audit team examines the ballot and records the voter markings for the audited contest(s) on a tally sheet. Once all the ballots have been examined and voter markings recorded, the votes are totaled and the margin of victory for the winner(s) is compared to the margin of victory originally reported. The audit is looking for the same or greater margin.

In a **batch comparison audit**, specific batches of ballots are identified and retrieved. The audit team examines the ballot and records the voter markings for the audited contest(s) on a tally sheet. Once all the ballots have been examined and voter markings recorded, the votes are totaled. The audit compares the manually recorded subtotals to the originally reported subtotals from the voting system. The audit is looking for any discrepancies between the two.

### Helpful Tip

Providing an image of the ballot manifest at this point is much better than trying to describe it.

Finally, we will refer quite a bit today to a ballot manifest. A **ballot manifest** is a log of all voted ballots created by the local election official. It includes total quantities and where and how each physical ballot is stored. A ballot manifest is essential for all methods of RLAs and must be created independent of the voting system. The information included in the ballot manifest depends on how and where ballots are scanned.

Does anyone have questions about the things we have discussed so far?

We want this pilot to be an environment where everyone feels comfortable asking questions and challenging the process. That's how we all learn. As we go through each step today, we will describe the action taking place, perform that step, and solicit feedback before moving on.

## Creating a Random Seed

### NARRATIVE

RLAs rely on random sampling to ensure all ballots are equally likely to be selected for audit. This ensures that the audit process is not subject to manipulation or an inadvertent bias in selecting some ballots over others. The random sampling should not be predictable before the sample is selected and should provide a way to be publicly verified.

The random seed we are about to generate, used in conjunction with a pseudo-random number generator, eliminates the possibility that someone can game the system and know which ballots will be selected for audit.



*A random seed is a sequence of numbers used to begin the process of generating the pseudo-random numbers that will guide the sampling. There are many things that can be used to create the random seed, such as dice or playing cards, but two key features are important: 1) having a physical source of randomness — today that will be our dice; and 2) inputs from multiple parties — today that will be all of you as your names are drawn to roll the dice.*

*To provide further integrity to the process, we create the random seed in a public ceremony after the ballot manifest and (cast vote record if doing a ballot comparison audit, batch subtotals if doing a batch comparison audit, or summary results if doing a ballot polling audit) have been committed for the audit. There is no required number for the length of the random seed, meaning the number of dice rolls, but it should be long enough to be unpredictable. More is better! If someone could guess the seed we are starting with, they could know which ballots will be selected for the audit.*

*Today, we are going to create a 20-digit seed by drawing a name out of a hat. The person selected will draw one of the dice out of a hat. Once they roll their dice, the number will be recorded for everyone to see. We will repeat this process until we have 20 numbers.*

*Now that we have committed our 20-digit number to the tool, let's talk about what is happening behind the scenes. How are these 20 numbers used by the audit software to select specific ballots for the audit?*

*A pseudo-random number generator (PRNG) is a tiny computer program that takes a random seed and generates a sequence of numbers that look entirely random — but those numbers depend entirely on the seed. If you don't know the seed, you have no idea what the numbers will be, but once you know the seed, you can tell exactly what the numbers will be. In our case, those numbers will correspond to ballots. We don't want anyone to know in advance what ballots will be chosen, but after the audit, we want everyone to be able to check that the right ballots were chosen.*

*We could roll dice to select each ballot individually, this would definitely meet the requirement of a random sample. However, it would be incredibly time intensive, potentially taking an entire day or more just to create our starting sample of ballots. So besides being efficient, a PRNG with a publicly known algorithm will allow anyone with access to the random seed and the ballot manifest to confirm the ballot sample was selected correctly. In other words, it provides a way for the process to be publicly verified.*

See **Knowing It's Right, Part Two: Risk-Limiting Audit Implementation Workbook, p. 33**, for more information on how a PRNG works to select ballots from the manifest.

## Steps for Creating the Seed

- Blindly draw names one at a time (such as out of a hat) to randomly select who from the audience will participate.
- Dice should also be blindly drawn from a container and rolled one at a time.
- Provide a way to publicly record each number after it has been rolled (white board or easel style paper pad).
- Participating members of the pilot should have an opportunity to confirm the random seed before it is committed to the RLA software tool.
- Once the dice have been rolled and the sequence of numbers established, the seed can be entered into the audit software.
- Have whoever is entering the number into the software read it back so that participating members can ensure it matches the numbers written down from the dice roll.



# Generate List of Ballots Selected for Audit

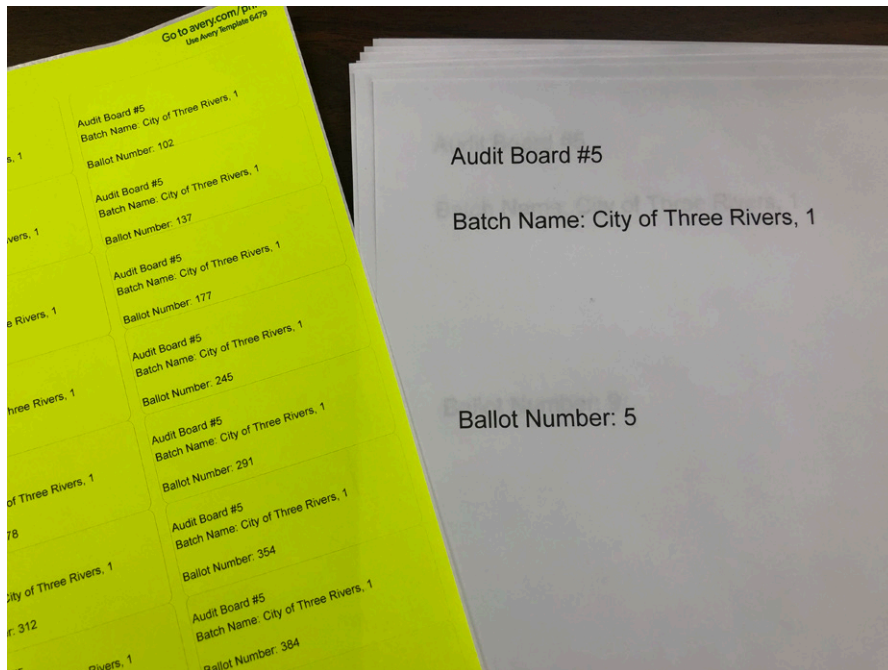
## NARRATIVE

*Prior to today we defined our pilot audit by selecting a target contest and risk limit. Now that the random seed has been entered, the RLA software will generate a list of ballots for us to audit. This is a good time to take a short break while we format the list for our “audit teams.”*

## TASK: EXPLAINING ROLES AND RULES

While the lists are being printed and formatted this might be a good place in the pilot for someone to describe the role of the audit team and discuss considerations for an official audit if rules have not already been set. Some possible discussion questions:

- Who will act as the audit board in each local jurisdiction? Staff? Appointed members of the public? Political party representatives?
- When will they be designated? Before or after Election Day?
- Who will be responsible for retrieving the ballots? The audit board members alone or with assistance from election staff?
- Who will be responsible for examining and verifying the selected ballots? The audit board members alone or with assistance from election staff?
- Will there be a requirement for the audit board to certify the audit similar to the way canvass board members certify the election?



Example of removable labels for ballots and placeholder sheets for ballot polling audit from the Michigan Bureau of Elections. Photo courtesy of the author.

## How Ballots Are Selected

- RLA software randomly selects ballots for audit from the ballot manifest (follow instructions from RLA software provider to initiate this step).
- Download the list of ballots selected for audit. This list should have similar fields as your ballot manifest.
- Format the file to provide the following, if your RLA software does not format it for you:
  - A separate checklist of ballots to retrieve for each audit team
  - Corresponding placeholder sheets with ballot information
  - Corresponding removable labels with ballot information (ballot polling only)

# Retrieve Ballots for Audit

## NARRATIVE

*(Explain your process for ballot reconciliation, chain of custody, and ballot storage practices. This should include instructing participants on how your ballots have been staged for the audit. Think of the list of ballots to be retrieved as coordinates on a map that will allow participants to find the ballots or batches of ballots selected for audit. You need to explain how those coordinates work, including the structure of your imprint ID if you are using one for a ballot comparison audit.)*

## TASK: STEPS FOR RETRIEVING BALLOTS

- Provide each audit board with their corresponding ballot retrieval list and placeholder sheets.
  - Include removable labels if performing a ballot polling audit.
- Audit boards retrieve ballots using the steps outlined below for the specific method of RLA.
- Ballots/batches should always be kept in the same order as they are listed on the retrieval list.
- The steps for retrieving ballots are repeated until all the ballots or batches have been retrieved and checked off the list.

FIGURE 9: STEPS FOR RETRIEVING BALLOTS

STEP	BALLOT COMPARISON	BALLOT POLLING	BATCH COMPARISON
1	Locate the storage container for the ballot batch you are looking for.		
2	Verify the seals on the ballot storage container match the seals recorded on the chain-of-custody log.		
3	Locate the batch you are looking for within the storage container.		
4	Within the batch, locate the ballot you need to retrieve using the identifying number printed on the ballot.	Within the batch, locate the ballot you need to retrieve by using the countdown method, k-cut method, weighing, etc.	Verify the ID number on the batch label matches the batch ID number listed on the ballot retrieval report.
5	Verify the printed ID number on the ballot matches the ballot ID number listed on the ballot retrieval report.	Place the pre-printed, removable label onto the ballot selected providing identifying information.	
6	Replace the ballot being removed with its corresponding placeholder.		Replace the batch being removed with its corresponding placeholder.
7	Place the retrieved ballot in the designated folder or envelope.		
8	Check or initial the ballot retrieval list to indicate the ballot has been pulled for audit.	Check or initial the ballot retrieval list to indicate the ballot has been pulled for audit.	Check or initial the batch retrieval list to indicate the batch has been pulled for audit.
9	Re-seal the ballot container and record the seal numbers on the chain-of-custody log.		

# Ballot Verification

## NARRATIVE

*This is the part of the process where we actually examine ballots for people's votes. Just like in a canvass or a recount, this process should be done by two people at a minimum. We will refer to this team of individuals as the "audit board" and individually as "auditor." For today's pilot, everyone will have a chance to act as an auditor.*

## TASKS: VERIFYING VOTER INTENT

Regardless of the sampling method used, 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.

Depending on the scope of the pilot, audit teams may be examining a single contest on the ballot, multiple contests, or all contests. Ensure everyone is aware which contests need to be examined and recorded. The RLA software as well as the manual tally sheets should include only the contests being audited.

- Performed by "audit board" teams:
  - Designate computer workstations for using RLA software
  - Using a projector or second monitor improves ability for observers to see the process
- Teams verifying ballots have clearly written voter intent guidelines to assist in making decisions on voter intent when necessary.
  - Acceptable not to agree on what is a valid vote.
  - RLA software should provide a way to indicate that the audit board cannot agree.
- Check or initial on the ballot retrieval list that the ballot has been reviewed and votes recorded.
- Be mindful of the time each team or person is assigned to examine and verify ballots. Rotating people on a regular basis reduces the potential for errors caused by fatigue.
- The steps for auditing ballots are repeated until all the ballots or batches have been examined and recorded.

## What We're Validating

This is also good point in the pilot to remind everyone participating what the audit is looking for to validate the outcome of the election.

In a **ballot comparison audit**, the audit team enters the voter markings exactly the way they appear on the ballot. 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 any discrepancies between the two.**

In a **ballot polling audit**, the audit team records the voter markings on a tally sheet. Once all the markings have been recorded, they are totaled and the margin of victory for the winner(s) is compared to the margin of victory originally reported. **The audit is looking for a similar or greater margin.**

In a **batch comparison audit**, the audit team records and tallies the votes for all ballots in the batch selected for audit. The audit compares the hand recorded subtotals to the originally reported subtotals from the voting system. **The audit is looking for any discrepancies between the two.**

**FIGURE 10: BALLOT VERIFICATION STEPS**

<b>STEP</b>	<b>BALLOT COMPARISON</b>	<b>BALLOT POLLING</b>	<b>BATCH COMPARISON</b>
<b>1</b>	Auditor#1: Log in to the RLA software.	Auditor#1: Enter or verify the information on the tally sheets for your audit board team.	Auditor#1: Enter or verify the information on the tally sheets for your audit board team.
<b>2</b>	Auditor#2: Read off the imprint ID from the audited ballot.	Auditor#2: Read off the information from the label attached to the ballot.	Auditor#2: Read off the information from the label attached to the batch folder.
<b>3</b>	Auditor#1: Use the RLA software to verify the correct ballot was retrieved.	Auditor#1: Record the label information (batch and ballot #) on the tally sheet.	Auditor#1: Record the label information on the tally sheet.
<b>4</b>	Auditor#2: Read out loud the voter selection(s) for each audited contest.	Auditor#2: Read out loud the voter selection(s) for each audited contest.	Auditor#2: Read out loud the voter selection(s) for each audited contest.
<b>5</b>	Auditor#1: Record the voter selections in the RLA software as they are read.	Auditor#1: Record the voter selections on the tally sheet for that specific ballot as they are read.	Auditor#1: Record the voter selections on the tally sheet for that specific ballot as they are read.
<b>6</b>	Auditor#1: Review the recorded selections by reading them out loud from the review screen.	Auditor#1: Review the recorded selections by reading them out loud from the tally sheet.	Auditor#1: Review the recorded selections by reading them out loud from the tally sheet.
<b>7</b>	Auditor#2: Compare what has been recorded in the RLA software to what is marked on the ballot.	Auditor#2: Compare what has been recorded on the tally sheet to what is marked on the ballot.	Auditor#2: Compare what has been recorded on the tally sheet to what is marked on the ballot.
<b>8</b>			Audit Board: Continue recording and reviewing votes for all ballots in the batch.
<b>9</b>			Audit Board: Tally all the votes for each contest once all ballots in the batch have been audited and recorded.
<b>10</b>	Auditor#2: Indicate on the checklist or attached label that the ballot has been audited.	Auditor#2: Indicate on the checklist or attached label that the ballot has been audited.	Auditor#2: Indicate on the checklist or attached label that the batch has been audited.
<b>11</b>		Audit Board: Tally all the votes for each contest once all ballots have been audited and recorded.	
<b>12</b>		Audit Board: Enter the tallies for each contest into the RLA software.	
<b>13</b>	Auditor#1: Log out of the RLA software once all ballots have been audited and recorded.	Auditor#1: Log out of the RLA software once all ballots have been audited and recorded.	Auditor#1: Log out of the RLA software once all ballots have been audited and recorded.

# Concluding the Pilot

## NARRATIVE

*Thank you for joining us as we learn how to make Risk Limiting Audits (RLA) work in our [state/county]. As we've experienced first-hand today, the level of thought and preparation for how ballots are accounted for as they are scanned and stored plays an important role in the RLA process. It seems appropriate to end our pilot the same way we started, by thinking about what an RLA is and why it's an important part of election administration. Just as its name implies, a risk-limiting audit mitigates the risk of an incorrect outcome by looking at individual ballots for strong evidence that the reported outcome is correct. The degree of confidence we require before concluding the audit is based on the chosen risk limit set before the audit, driven by a formal, documented, and transparent method for voters and candidates to feel confident that ballots were counted correctly. Hopefully this exercise has given each of you a more tangible understanding of what that can look like. Thank you.*

## TASKS

- Use the RLA software to confirm that all ballots or batches selected have been audited.
- Use the RLA software to identify any discrepancies (ballot and batch comparison only).
- Determine whether the risk limit has been met, or if additional rounds of auditing would be required in an official RLA.
- Generate and review the audit reports from the RLA software with pilot participants.
- Enjoy the cheers of jubilation that you got this far!

### Helpful Tip

When piloting a ballot polling audit, it is common to have a non-binding risk limit. That is, you may set 10% as your risk limit and you may do better or worse. The important thing is to not be “upside down,” meaning you don’t want the sample to have more votes for the loser than the winner.

# 8

## Step Eight: Post-Pilot Feedback and Reports

### Post-Pilot Feedback

Now that you've completed all the steps in planning for and conducting a pilot RLA it can be tempting to thank everyone and go home. Resist! The most important step is the feedback session at the conclusion of the pilot. It is so important to document the thoughts and lessons learned from everyone who participated.

- Review each step and ask participants for general impressions, what went well, and where improvement can be made.
- Ask the group to think specifically about ballot reconciliation, ballot handling, adjudication, ballot duplication, and ballot organization and storage. Are there specific things that could be improved to make the RLA more efficient?

- Is the physical space adequate for staging ballot storage containers and for retrieving and examining ballots? Will the same space be able to accommodate observers?
- Were the ballots selected for audit correctly retrieved? If not, what was the cause?
- Was the audit software easy to use?
- How much time and effort was needed to format the list of ballots selected for audit into placeholders, labels, etc.?
- How should we store the ballots that have been removed for audit?
- Do you use the placeholders to put them back into the original storage container or store them separately in a container labeled "ballots selected for audit"?
- What information should be publicly posted besides the ballot manifest and the random seed?
- How might an RLA affect recount procedures and policies?

### Post-Pilot Reports

Documenting your pilot can be a useful way to track goals of the pilot, data that were collected, and highlight recommendations for future pilots or official audits. See the New Jersey RLA case study on [electionline.org](https://electionline.org) as an example of what information might be useful to provide.

Some useful data to consider tracking:

- Time to retrieve ballots selected for audit.
- Time to examine a ballot and document the voter markings.
- Expenses incurred in conducting the audit.

# 9

## Step Nine: Scaling Up to a Statewide RLA

This guide illustrates how to conduct a pilot RLA for the first time. But many state officials are probably reading this and thinking, how am I going to implement this across all counties or local jurisdictions? Is there a model for scaling up from an initial pilot to a statewide pilot in a short amount of time? Based on my experience, it seems feasible that you can get there over the course of three separate elections by using this model.

### Form a Working Group

I cannot reiterate this point enough (see page 5). It is tempting to skip this and go right to conducting a pilot or to delegate the planning process to an outside organization. I would argue that shortcutting this step will actually lengthen the time it takes to scale up to an official, statewide RLA. I encourage you to include RLA experts and outside help in the planning process, but like so many things related to elections, the input from local election officials will be invaluable.

Try to include local officials from a small, medium and large jurisdiction – all with solid track records for ballot accounting! They can not only contribute to designing the RLA process in your state but also help define best practices for providing a solid audit trail through improved ballot accounting procedures. Also, think about including counties or jurisdictions that are seen as influencers. Those whose election procedures are regularly copied or shared among their peers.



## First Election

Conduct your initial pilot with just the mid-size jurisdiction. The ability to scale to a statewide RLA hinges on a uniform ballot manifest. That is, every jurisdiction using the same format to record the total number of ballots cast and where and how they are stored. Because of the volume of ballots coming into their facility at the close of the election, many large jurisdictions have software or inventory management systems to track returned ballots and where they are stored. For this reason, it is best to focus the initial pilot on a mid-size jurisdiction that will use a spreadsheet-type application to complete the ballot manifest and provide the final data. Doing this will make scaling up to a more automated process or scaling down to a more manual process fairly simple.

Just as this guide directs, consider this initial pilot as more of a training exercise. This is not the time to make your public debut. Invite officials and staff from the small and large jurisdictions on your working group to attend and participate. Invite all members of your advisory committee to attend. For this initial pilot, everyone will participate together at the designated location, taking part in each step of the process and performing all the roles. If you feel compelled to do a press release, follow a format similar to the example on page 7.

After the pilot, use available resources, like this guide, to begin drafting administrative rules and instruction and training material.

## Second Election

Your second pilot should include the same mid-size jurisdiction that participated in the initial RLA pilot, along with the small and large jurisdiction participating in the working group.

Now that there is a general sense of how the audit proceeds, it is useful for the state and the local jurisdictions involved in the pilot to each perform their individual roles separately. (See pages 24-27 of **Knowing It's Right, Part Two** for a breakdown of who performs which parts of the RLA.) In this second round of piloting, the state should administer the pilot from their office while the local officials perform their responsibilities independently. No hand holding for anyone!

Use this pilot to test the feasibility of any administrative rules that have been drafted. Most importantly, test the drafted procedures. They should form the foundation of your training and instructions material. This is an opportunity to test how well they work and highlight any issues that need to be addressed.

Consider inviting an election official from each region in your state who is not participating in the working group. Think about individuals who are naturally seen as mentors — who might be willing to take the initiative to help other officials in their region, share best practices, host a training event, etc.

Some things to consider sharing in a press statement:

- We are using this multijurisdictional pilot to identify challenges in scaling up to a statewide model.
- These pilots will help us further refine rules, process, and training.
- When performed across the state, this type of post-election audit will enhance our current security measures.
- These pilots are also helping us identify best practices for ballot accounting.
- We are developing a process that will be used to validate the outcome of future elections.
- The goal is to conduct a statewide pilot in the next election.



## Third Election

Now is your chance to deploy a training program for all election officials and further test the material that has been created by the working group.

With two RLA pilots under your belt and plenty of planning and input from your working group, you should be ready to conduct a statewide RLA pilot. Run this like you would an official audit using all of the requirements from your proposed draft rules and the training material created for local election officials. A pilot gives you protection if things do not go perfectly, but your target contests and risk limit should all be able to pass public scrutiny.

Now is the opportunity to herald your good work and start educating voters about why this process matters. A press statement might look something like the following:

*"[State name] has successfully piloted a statewide 'risk-limiting audit.' A process that involves randomly selecting voted ballots for evidence that the outcome of the election is correct. The pilot was an amazing success thanks to the dedication of our staff and our local [clerks/officials] who worked tirelessly over the last year documenting the procedures that will be used in [state name]. One of the unique characteristics of a risk-limiting audit is that it requires us to examine and verify more ballots in close races and fewer ballots in races with wide margins, providing voters with greater trust in the results of the election. This process exemplifies how seriously we take the security and integrity of our elections. Beginning in 202X, risk-limiting audits will become the official way of conducting our post-election audits."*

Congratulations! Getting to this point is a huge accomplishment. Make certain to wrap up your success by meeting one more time with your working group to identify what went well and where improvements can be made in the training material. Next, refine your draft rules (or start working on draft legislation if RLAs are not a state requirement). Finally, set the date for your next official RLA!

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The pictures highlighting sample container labels, tally sheets, ballot manifests, etc., come from the brave election officials who allowed me to participate, observe, and assist with their pilots. It is their work and the belief in peer-to-peer sharing that is helping the concept of RLAs and election audits spread. Hats off to the amazing election professionals in California, Colorado, Michigan, Ohio, Rhode Island, and Washington.

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