

# The Architecture of American Elections

Election Process Models Summaries



# What is this?

Recently years of effort culminated in the publication of a comprehensive document, *The Architecture of American Elections*. This is the first work of its kind offering a thorough summation of the functional stages necessary to administer an election in the United States. That work is fairly technical, so this slide deck was created as a gateway to the more complex document for a small subset of the process figures.



# #1: Pre-Voting

# #2: Voting Activity

# #3: Counting

Process 1.5.1 Lay Out Ballots .....	Diagram Lay Out Ballots .....
Process 1.5.2 Print Ballots .....	Diagram Print Ballots .....
Process 1.5.3 Publish Sample Ballots .....	Diagram Publish Sample Ballots .....
Process 1.5.4 Create Eligible Voter List .....	Diagram Create Eligible Voter List .....
Process 1.5.5 Prepare Poll Books .....	Diagram Prepare Poll Books .....
Process 1.5.6 Prepare Voting Devices .....	Diagram Prepare Voting Devices .....
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Process 2.2.2 Send Ballots by Mail .....	Diagram Send Ballots by Mail .....
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Process 3.1.2 Account for All Ballots .....	Diagram Account for All Ballots .....
Process 3.1.3 Tally .....	Diagram Tally .....
Process 3.1.4 Report Results .....	

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Vote in Person (Figure 10)

Maintain Election District Boundaries (Figure 16)

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Receive and Process Ballot Packages (Figure 48)

**These will all be available on  
electionline.org**

# Maintain Geographic Data

Figure 3

## ► **Maintain Geographic Data**

Maintaining geographic data and associating it with individual voters form the building blocks of everything else in election administration. Election officials need to maintain address information, district boundaries, precinct boundaries and precinct split information in order to determine what an individual voter is eligible to vote on in a given election.





## 1.1.1 Maintain addresses

Every election office needs to know where people in their jurisdiction could live.



## 1.1.2 Maintain district boundaries

Once we know where our voters live, we need to know which contests they can vote on.



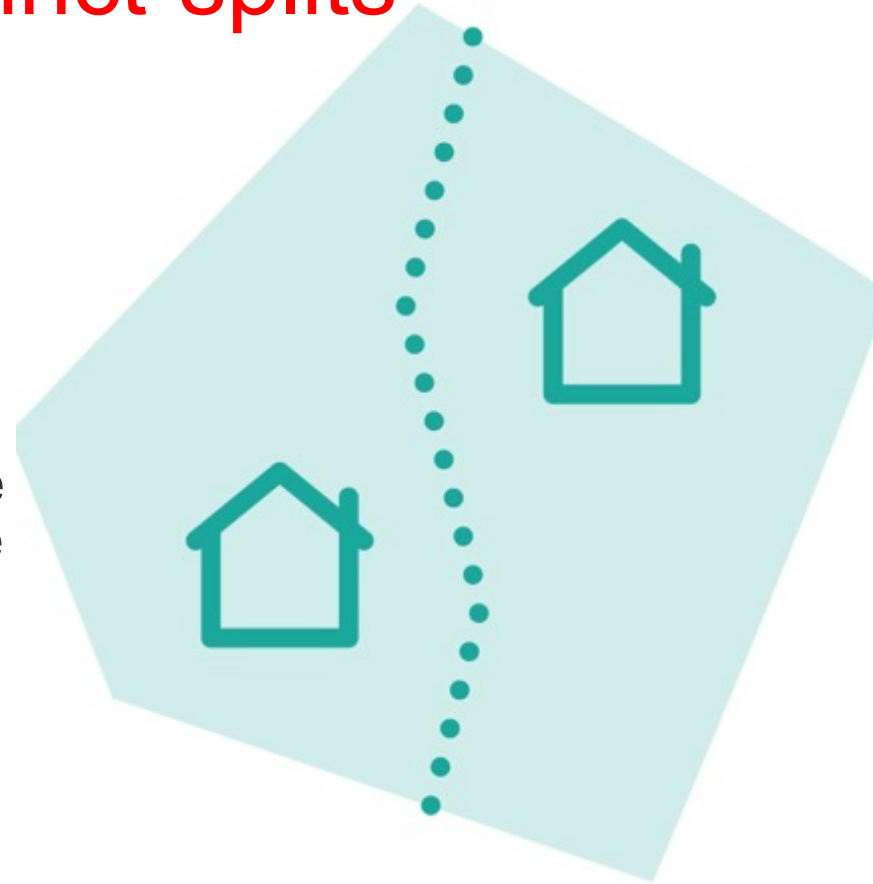
## 1.1.3 Maintain precinct boundaries

Based on where they live, each voter is assigned a specific precinct — a smaller district within the larger jurisdiction.



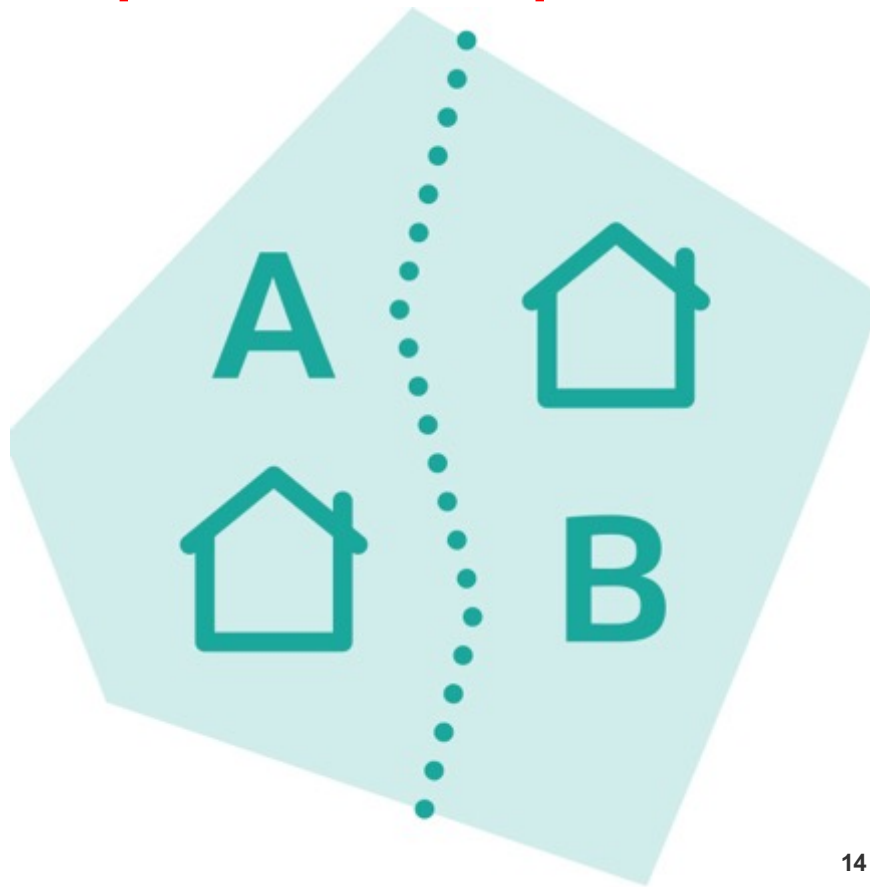
## 1.1.4 Determine precinct-splits

A precinct-split is the smallest subset of ballot configurations based on how the different districts overlap within a precinct. For instance, two addresses may share a congressional district but have different school districts. The precinct-split makes sure only one instance of every race is on the ballot.



## 1.1.5 Index address to precinct-split

Addresses are indexed to the appropriate precinct-splits, and voters are assigned accordingly.



# Vote in person

Figure 10

## ▶ **Vote in person**

**Voting in person is one of the most complex processes in elections, as it is expected to handle as many different voter situations as possible. Regardless of the voter's situation, the desired end result is for the voter to be able to cast a ballot that will count.**





#### 2.1.1 Open polling location

This usually includes setting up and checking equipment and posting signage.



#### 2.1.5 Determine initial eligibility

Most interactions at a polling location start with the voter identifying themselves by name and address. Then the poll workers will look up the voter in the poll book. If the voter is not listed or their information is out of date (for instance, if the voter moved or changed their name), it may be correctable at the polling location. Any issues with eligibility must be handled in a consistent and equitable manner.



#### 2.1.6 Vote and submit ballot

If the voter is able to vote, either on a standard or a provisional ballot, the poll worker will record their information in the poll book. The voter will receive their ballot or access to a voting machine with instruction on how to submit their ballot. The poll workers ensure the vote is counted or processed correctly.



#### 2.1.3 Close polling location

Poll workers will announce the closing, ensuring that anyone who was in line at that time has the opportunity to vote. When the polls are closed, the number of ballots cast is reconciled with the number of voters, and the votes are tallied as necessary per state or jurisdiction.

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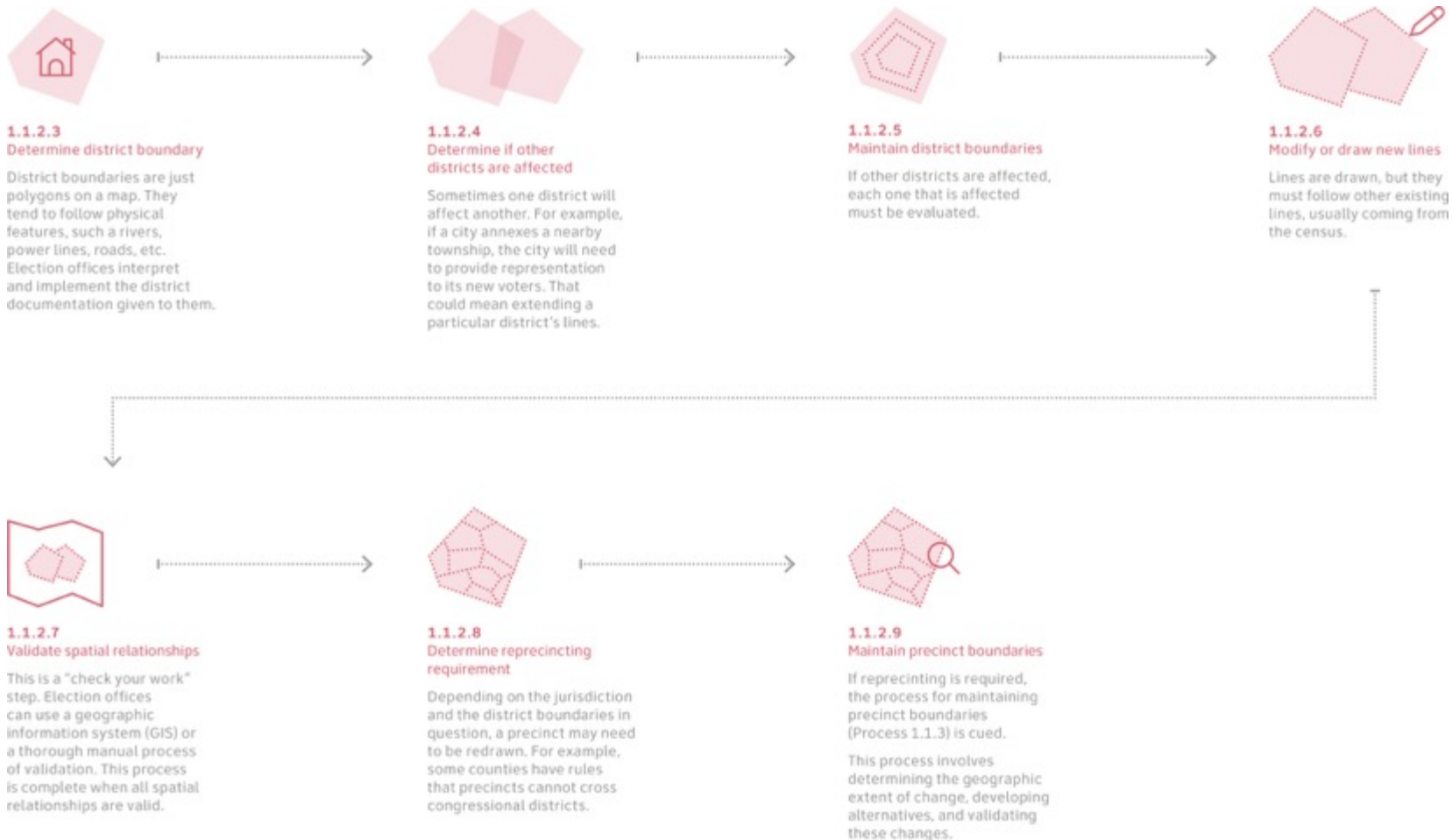


# Maintain Election District Boundaries

Figure 16

## ► **Maintain Election District Boundaries**

**Districts can change for a variety of reasons, but if the district has associated elected offices or taxing authority, then the election office needs to track it.**





### 1.1.2.3

## Determine district boundary

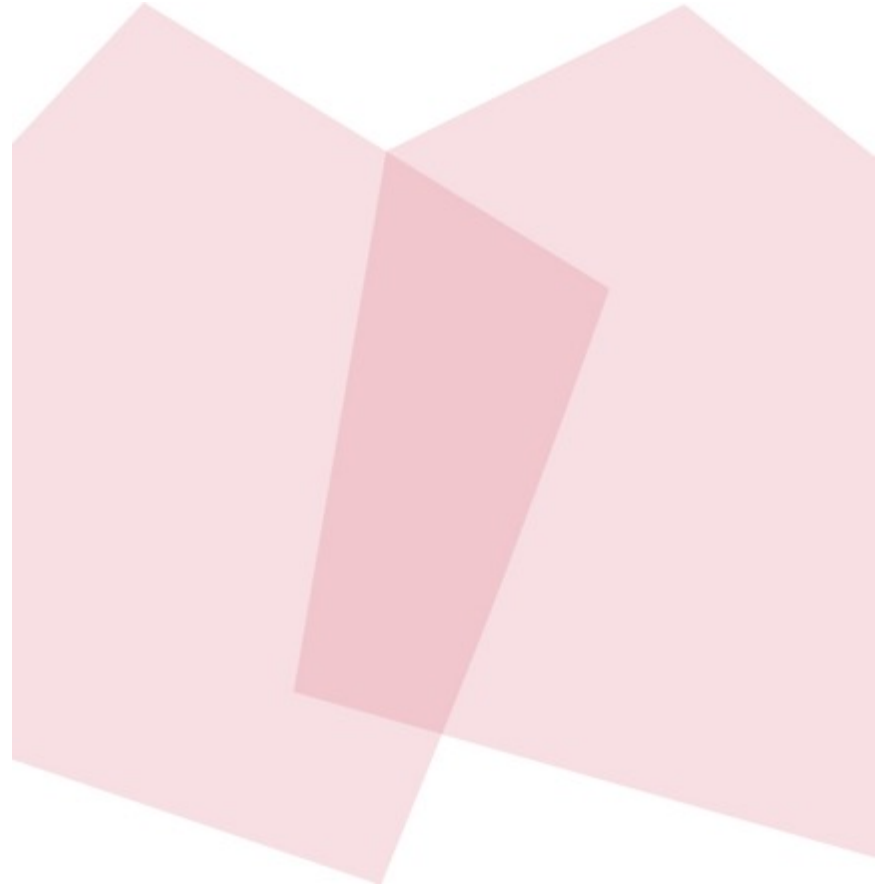
District boundaries are just polygons on a map. They tend to follow physical features, such as rivers, power lines, roads, etc. Election offices interpret and implement the district documentation given to them.



## 1.1.2.4

### Determine if other districts are affected

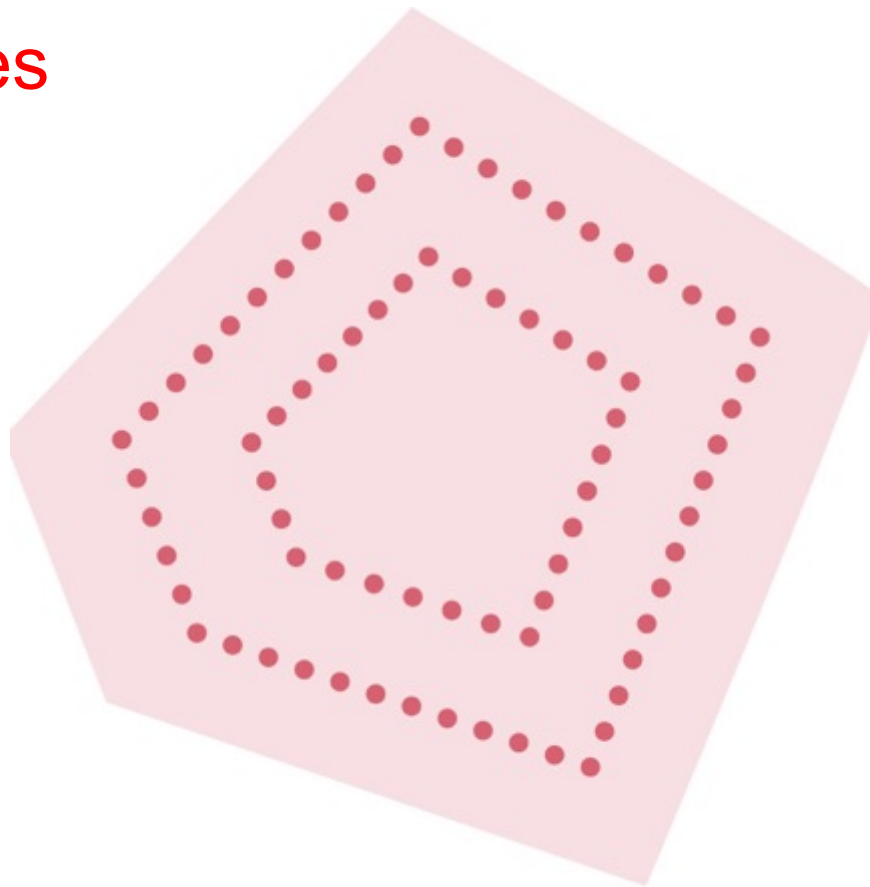
Sometimes one district will affect another. For example, if a city annexes a nearby township, the city will need to provide representation to its new voters. That could mean extending a particular district's lines.



## 1.1.2.5

### Maintain district boundaries

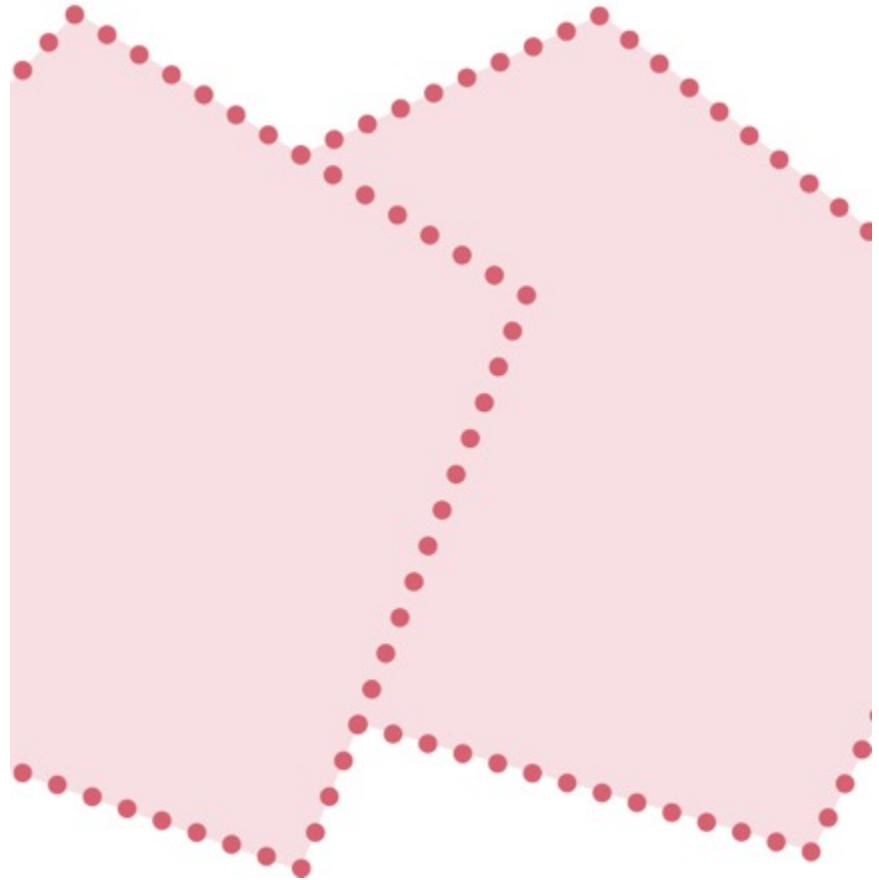
If other districts are affected, each one that is affected must be evaluated.



## 1.1.2.6

### Modify or draw new lines

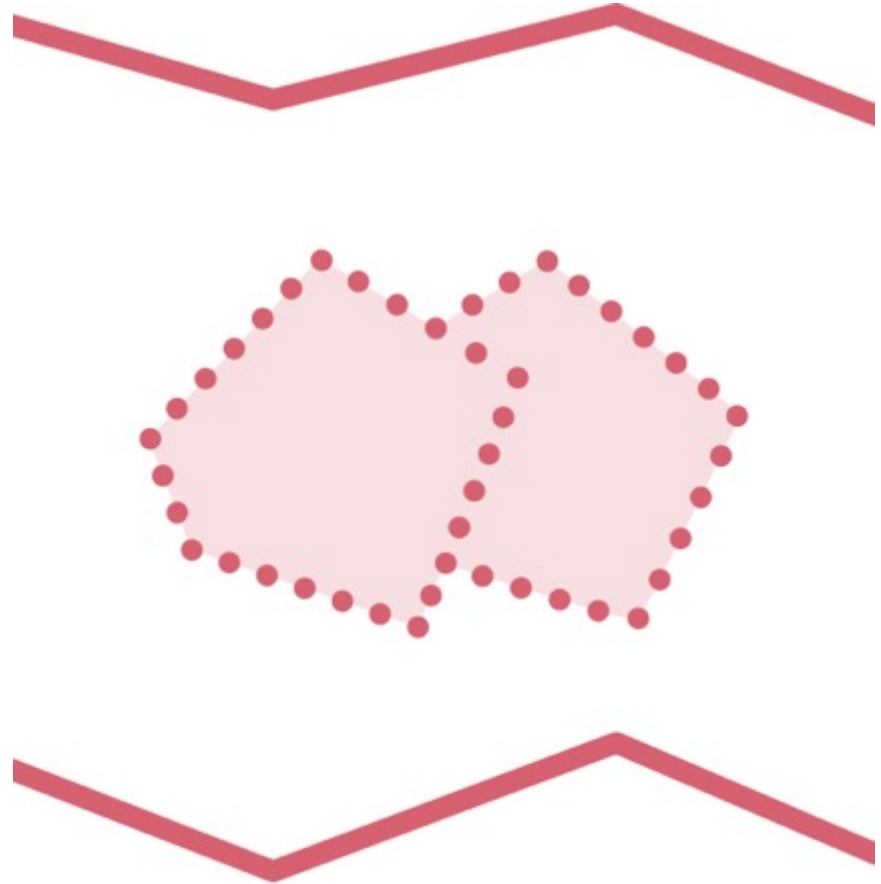
Lines are drawn, but they must follow other existing lines, usually coming from the census.



## 1.1.2.7

### Validate spatial relationships

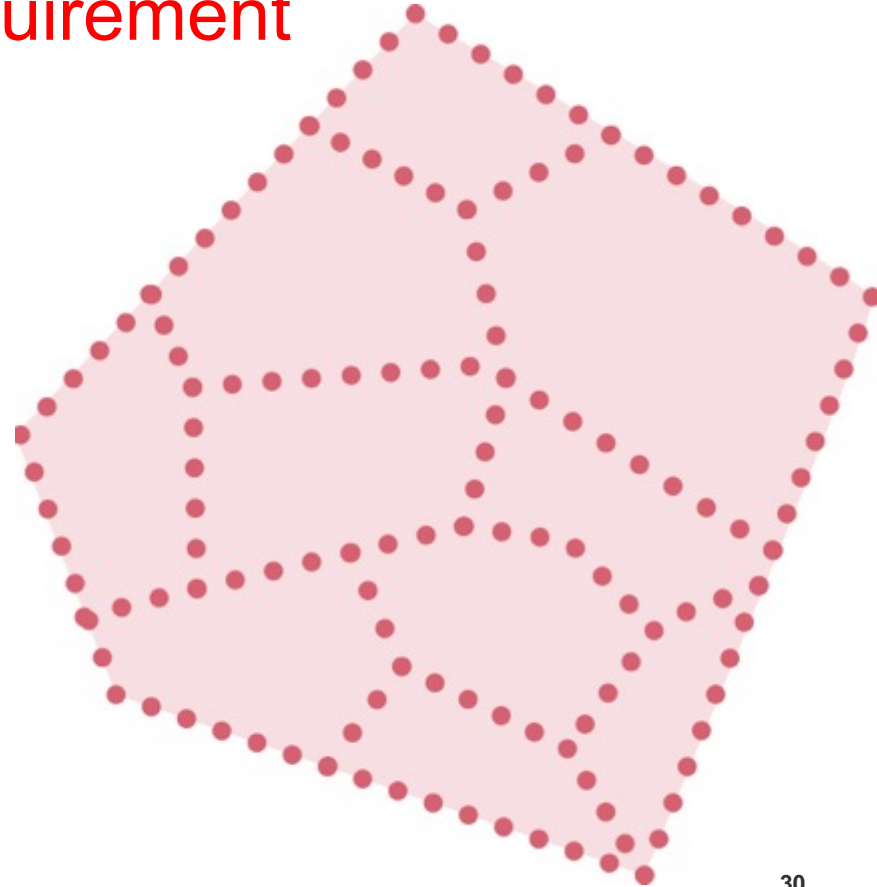
This is a “check your work” step. Election offices can use a geographic information system (GIS) or a thorough manual process of validation. This process is complete when all spatial relationships are valid.



## 1.1.2.8

### Determine reprecincting requirement

Depending on the jurisdiction and the district boundaries in question, a precinct may need to be redrawn. For example, some counties have rules that precincts cannot cross congressional districts.

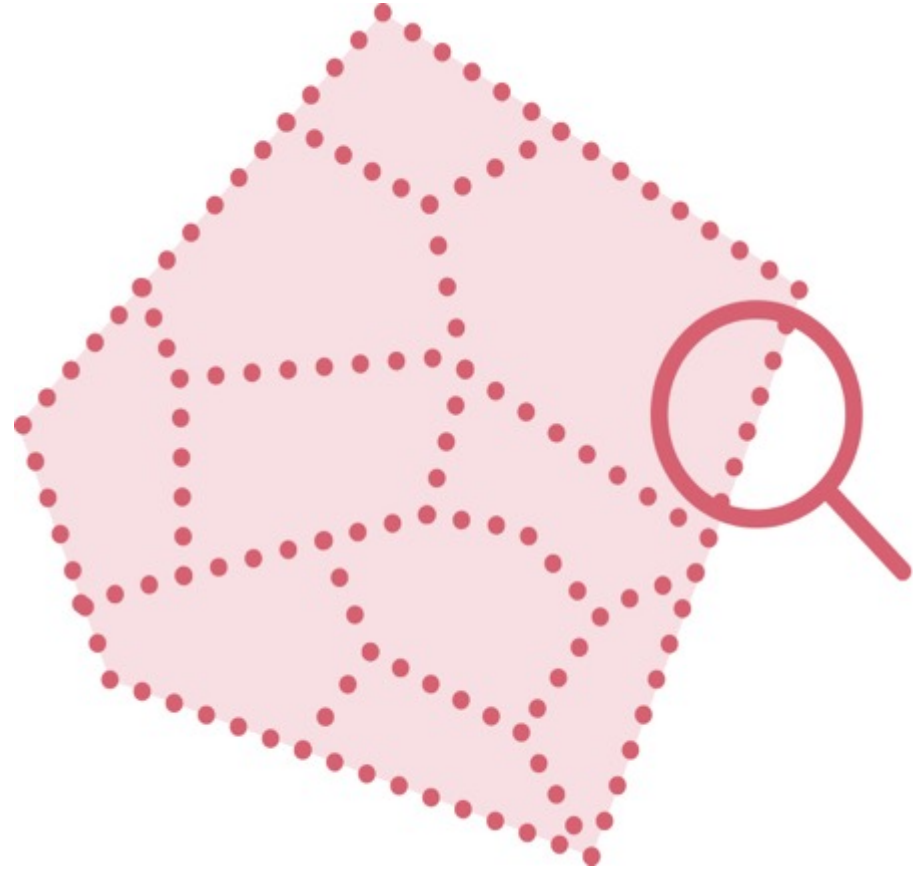


## 1.1.2.9

### Maintain precinct boundaries

If reprecinting is required, the process for maintaining precinct boundaries (Process 1.1.3) is cued.

This process involves determining the geographic extent of change, developing alternatives, and validating these changes.



# Updating Voter Addresses Under NVRA

Figure 25



## ► Updating voter addresses under NVRA

When a voter moves, they don't always remember to update their voter registration. Federal law (NVRA: National Voter Registration Act) requires election offices to use a variety of data sources to keep up with America's increasingly mobile population.



### 1. RECEIVE

Get updated addresses from trusted sources

The election jurisdiction will periodically work to determine if the voter has moved, checking the list of eligible voters against other sources of information, such as the US Postal Service's National Change of Address (NCOA) file, or the driver's license database of the motor vehicle authority.



### 2. COMPARE

Compare Addresses

The addresses are compared to see if they are different, which could indicate a move.

### 3. TAKE ACTION

Jurisdiction takes action



A. If the voter made a local move (i.e. within the election jurisdiction), the voter's address will be updated automatically. Depending on the jurisdiction, this may resolve that voter's address, or the election office may proceed to 3B.

AND/OR



B. The election office will follow up with the voter to see if the address has changed. This is often done by mailing a forwardable letter to the voter asking if they have moved.

### 4. WAIT FOR RESPONSE

Jurisdiction receives response from voter



A. The election jurisdiction waits for contact with the voter. If contact is made, the election jurisdiction will update their records.



B. If no contact is made, the voter will remain eligible to vote (under the original address) for two federal election cycles, then may be removed from the list of eligible voters.

**Note:** This outline is based on the "NVRA General Program" process in the Election Model. Some steps have been removed or combined for simplicity. Note that this process was modeled before the ruling in "Husted v. Randolph Institute."

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# Prepare Logic and Accuracy

Figure 40



## ▶ **Prepare Logic and Accuracy**

**Election offices need to know that the equipment they use will work on Election Day. A common method is to test the equipment in a way that mirrors how it would actually be used in the election.**



#### 1.5.7.2 Prepare ballot sets

The election office will produce a set of ballots that cover the different contests / options available to the voters using that machine.



#### 1.5.7.6 Provide notice to public

Logic and Accuracy tests may be open for public observation. If so, the election office will provide public notice.

#### 1.5.7.7 Perform logic and accuracy test

The exact steps taken in a test will vary depending on the nature of the system (touchscreen, paper ballot, or a mixture of both). Steps might include: feeding test ballots through the scanner, marking ballots using a touch screen or ballot marking device, and tabulating the votes to confirm they were counted properly. every race is on the ballot.



##### 1.5.7.5.1 Test mechanisms

Each part of the machine the voter may interact with is tested for proper function such as if touch screens respond to touch, if receipts print, if the scanner feeds the ballot properly.



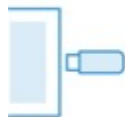
##### 1.5.7.5.2 Validate configuration

The machine is checked to ensure that pre-programmed information such as candidates and contests are loaded properly.



#### 1.5.7.8 Validate Reports

At the conclusion of the test, various reports are generated that can be used to validate the performance of the machines, such as vote total reports. If machines fail to perform or count properly, they may be repaired or set aside during the election.



#### 1.5.7.5 Configure machines

The machines are configured to read those ballots, just as they will be used on Election Day.



##### 1.5.7.5.4 Scan test deck

If the machine reads paper ballots, the paper test deck of ballots is run through the machine.

OR



##### 1.5.7.5.5 Vote ballot set

If the machine is a touchscreen, the selections are marked in accordance with the ballot set.



#### 1.5.7.9 Fix issue and retest

If issues are found during the test, the issues are investigated and resolved, and testing is redone until everything passes.

## 1.5.7.2

### Prepare Ballot Sets

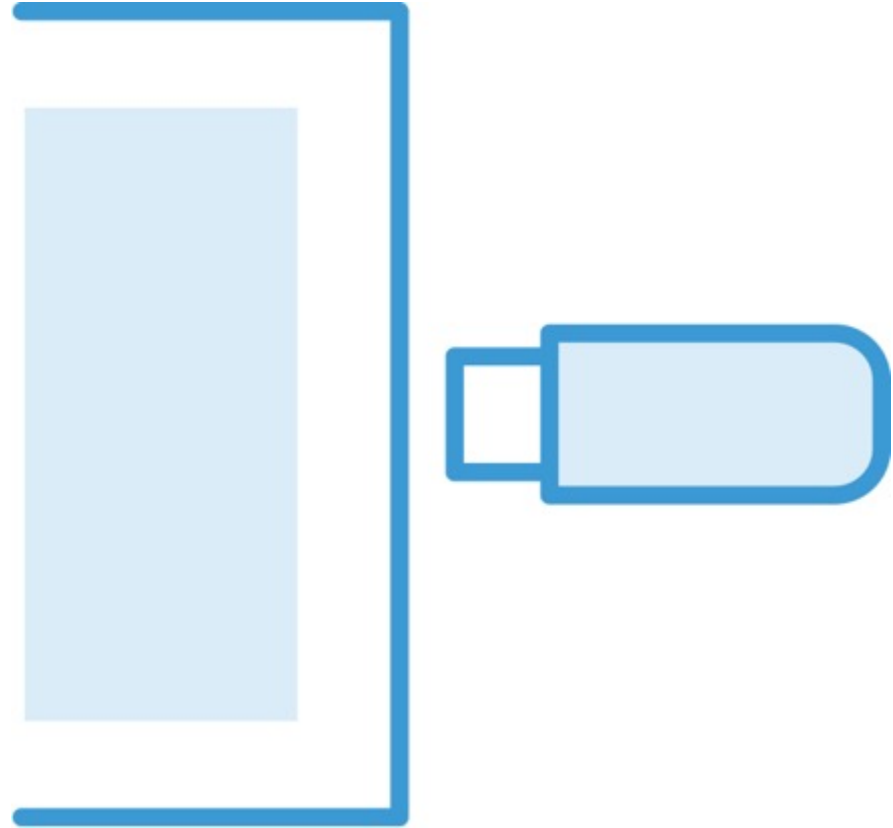
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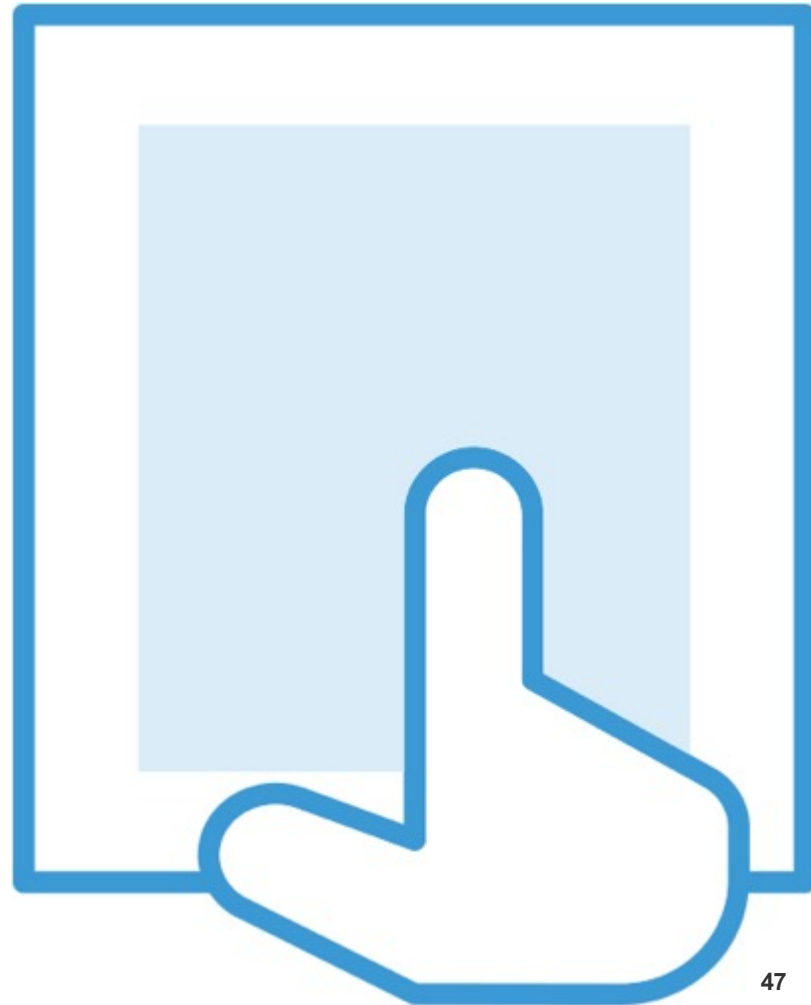
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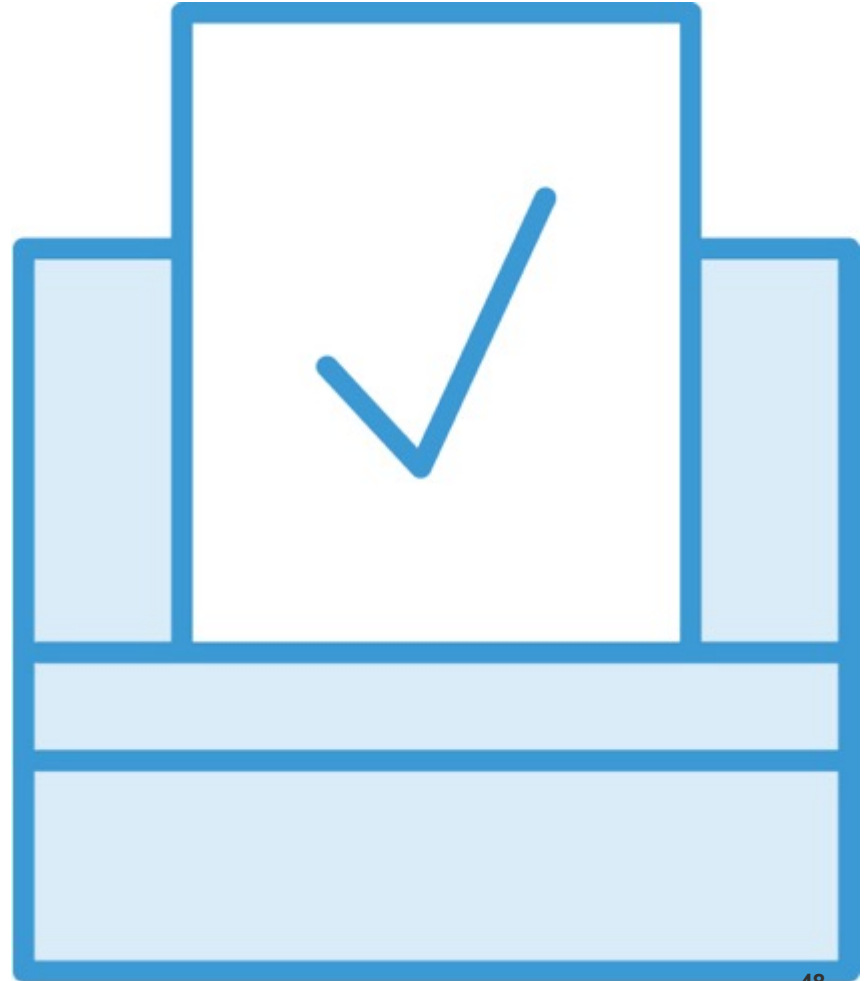
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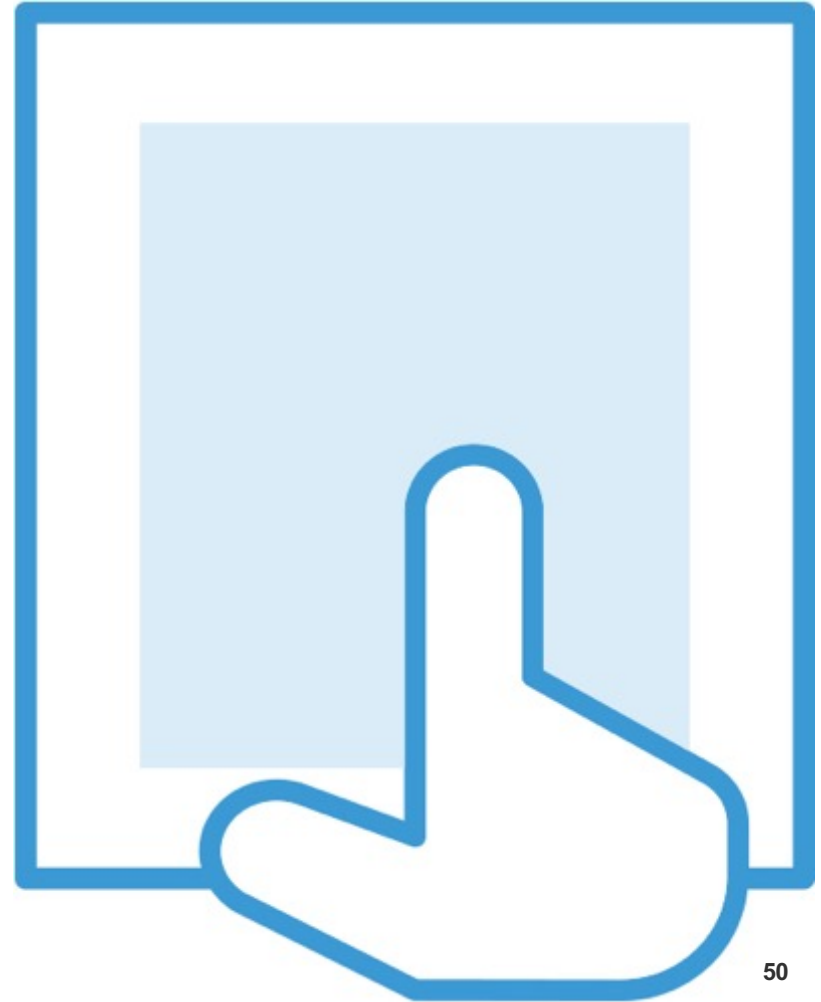
***OR***



## 1.5.7.5.5

### Vote ballot set

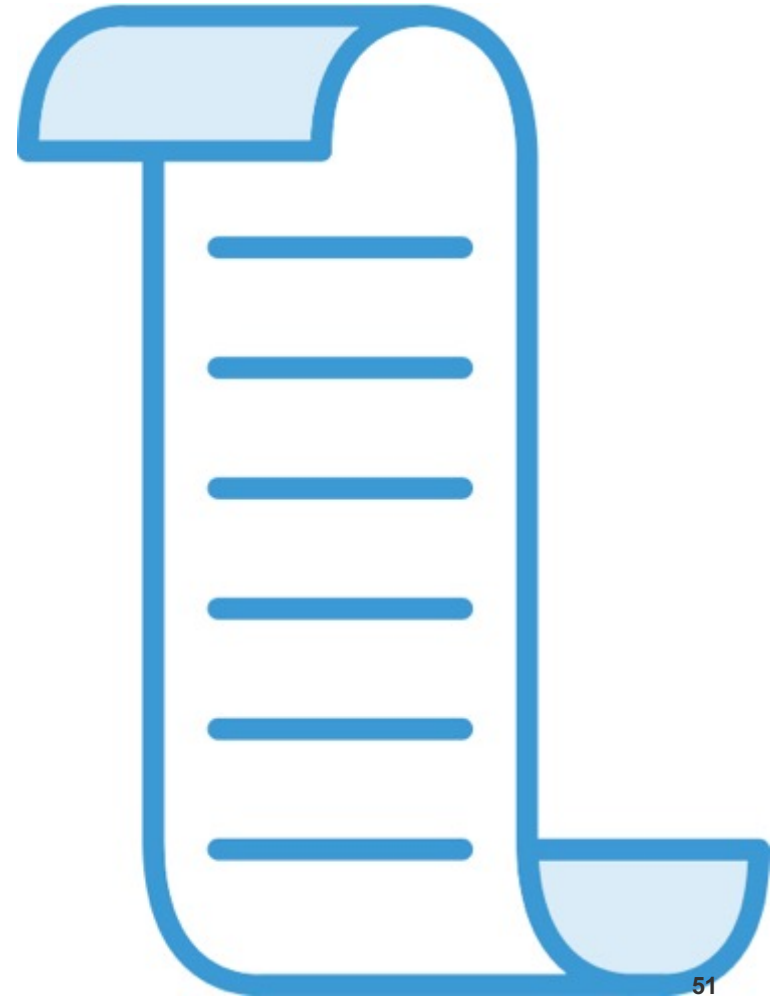
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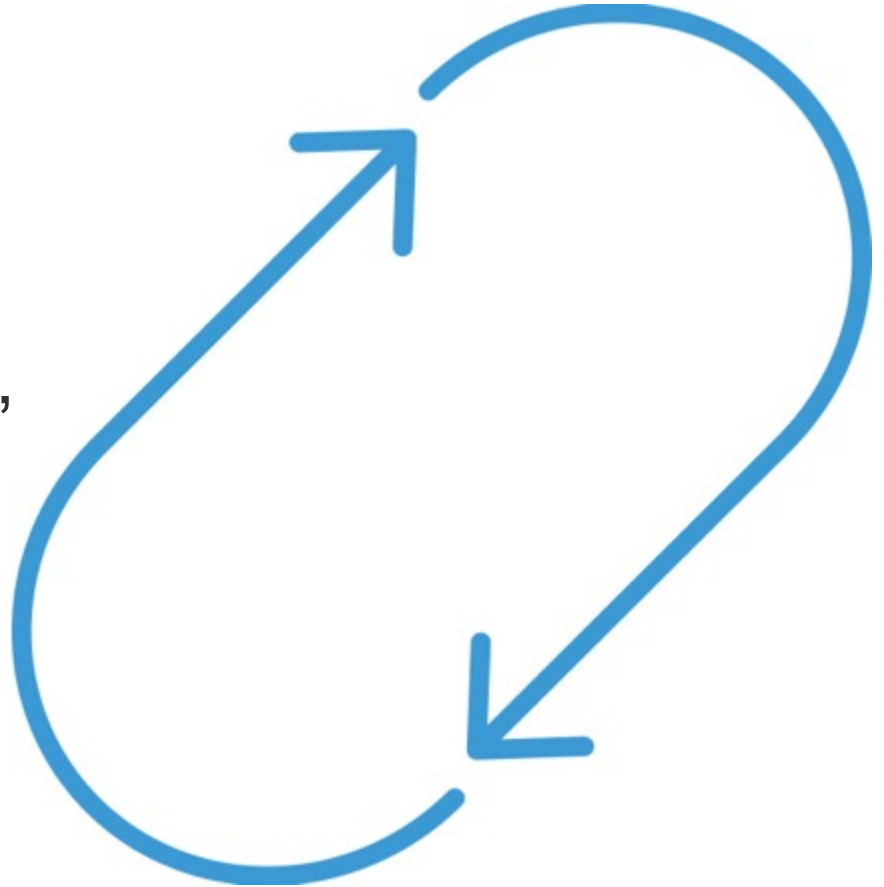
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# Receive and Process Ballot Packages

Figure 48

## ► **Receive and Process Ballot Packages**

The election office receiving the ballot is the first step in counting an absentee or provisional ballot.



#### 3.1.1.2 Determine eligibility to be counted

Each state will have different rules governing whether a ballot can be counted. Factors include when the ballot was mailed or received, whether the required forms were completed correctly, among others.



#### 3.1.1.4 Contact voter to correct deficiency.

In some cases, if the ballot package is incomplete — for example, if the voter forgot to fill something out — the election office may attempt to contact the voter. The voter may have a limited time to respond.



#### 3.1.1.6 Update voter record with ballot package received

The election office will record the receipt of the ballot package.



#### 3.1.1.9 Index ballot package as required

The ballot packages may be sorted so that they are ready to be counted.



#### 3.1.1.10 Separate ballot/paper Cast Vote Record (CVR) from voter package

Countable ballots will be separated from their package, anonymizing the ballot.



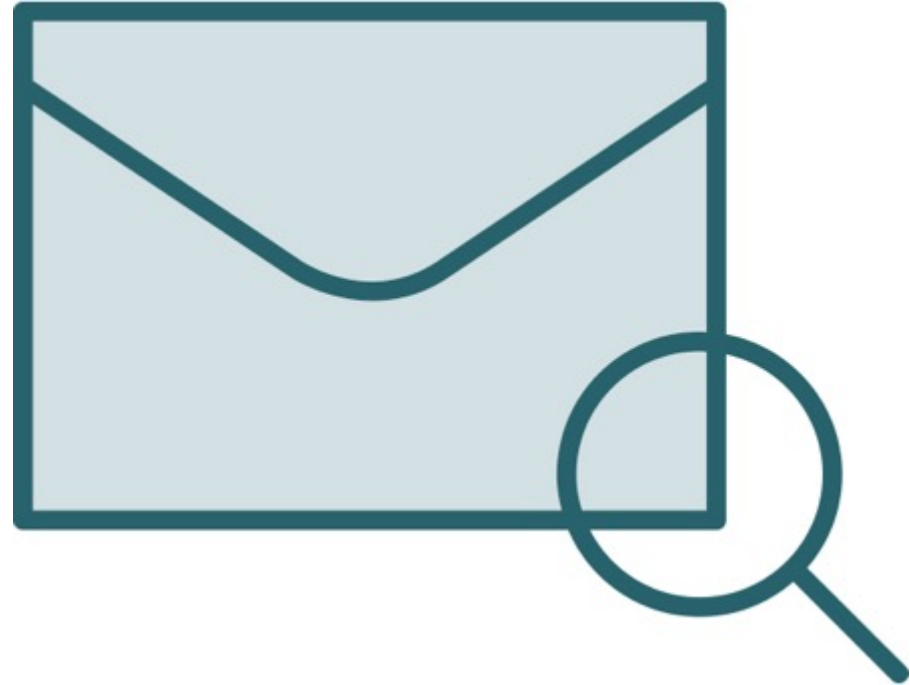
#### 3.1.1.12 Retain ballot delivery package

The ballot package is kept for reference purposes according to the state's retention requirements.

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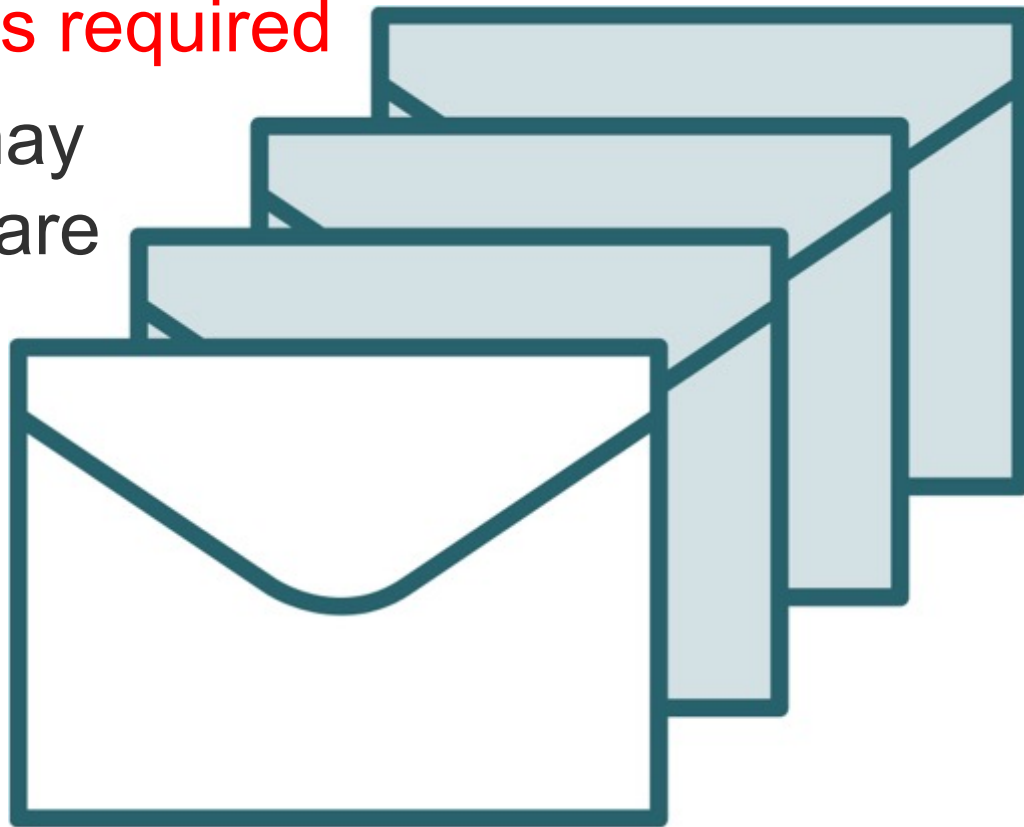
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# Acknowledgements

This work has been a collaborative effort of many over the years including, most recently, the NIST-EAC Interoperability Election Modeling Working Group under the tutelage of John Wack and the dedication of Kenneth Bennett, John Dziurlaj, and Katy Owens Hubler.

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