MARICOPA COUNTY
Elections Department

The Vote Center Model

During the 2022 General Election, Maricopa County offered 223 Vote Anywhere Vote Centers located throughout the county at an average distance of less than 1.8 miles apart. The Vote Center model is a very popular option, with 756,780 voters (over 48%) visiting a Vote Center to cast a ballot in person or drop off an early ballot during the 2022 General Election. On Election Day, over 540,000 voters visited a site, which is more Election Day voters than all prior General Elections since 2008.

Nationally, one of the top complaints made by in-person voters is arriving at a voting location to find out they are at the wrong site. A Vote Center model eliminates this issue for voters. Other universal and frequent voter complaints include long lines, voting provisionally, and arriving at an unexpectedly closed location. In the 2022 General Election, Election Day voters waited in line an average of six minutes. If you include the voters that skipped the line to drop off their early ballots, the wait-time average is below 3 minutes. Maricopa County also provided a large number of in-person voting options beginning 27 days before the election (E27), in which voters experienced an average wait time of less than one minute. See below for the wait-times by voting phase.

- **12 Vote Centers** were open 27-Days before Election Day (Average Wait Time E27 – E12: 0 Minutes)
- **56 Vote Centers** were open 12-Days before Election Day (Average Wait Time E12 – E1: 0 Minutes)
- **128 Vote Centers** were open 1-Day before Election Day (Average Wait Time E1: Less Than 1 Minutes)
- **223 Vote Centers** were open on Election Day (Average Wait Time: 6 Minutes)

While a few[1] 2022 General Election locations encountered 80-115 minute wait-times on Election Day, Maricopa County posted these wait-times on our website (Locations.Maricopa.Vote) informing voters of other nearby options that had shorter wait-times. The Locations.Maricopa.Vote website was highly publicized leading up to and on Election Day. It was also referenced on the sample ballot mailer sent to all voters that had not requested an early ballot. As shown in the table below, the longest wait-time for 85% of Maricopa County Vote Centers ranged between 0 and 45 minutes.

Table 1: Vote Center Wait-Times

Longest Reported Wait-Time	# of Vote Centers	Comment
0 – 15 Minutes	114 (51%)	23 of 114 had a confirmed printer issue
16 – 30 Minutes	47 (21%)	8 of 47 had a confirmed printer issue
31 – 45 Minutes	28 (13%)	8 of 28 had a confirmed printer issue
46 – 60 Minutes	18 (8%)	4 of 18 had a confirmed printer issue
Over an Hour	16 (7%)	6 of 16 had a confirmed printer issue

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[1] Seven Locations experienced a wait time between 80 minutes – 115 minutes. Those locations include Asante Library in Surprise (81 minute avg. during 6pm hour), ASU West (95 minute avg. during 6pm hour), Biltmore Fashion Park (98-minute avg. during 5pm hour), Church of Jesus Christ LDS – Southern (88 Minute avg. during 5pm hour), Desert Hills Community Church (85 minute avg. during 3pm hour) Living Word Bible Church in Ahwatukee (114 minute avg. during 5pm hour), Red Mountain Community College (80 minute avg. during 4pm hour). Each of these locations had one or more nearby Vote Centers within a few miles that had a wait-time ranging from 1 minute to 25 minutes during the period they were experiencing their longest wait-times.

In addition to providing more convenience for voters, the Vote Center model also significantly reduces provisional ballots and adds a layer of redundancy if a voting location becomes inoperable due to power outages or other unforeseen situations. Prior to the Vote Center model, Maricopa County routinely issued tens or hundreds of thousands of provisional ballots during a General Election. In 2022, Maricopa County issued 6,915 provisional ballots on Election Day, a significant reduction from prior years as shown by the table below.

Table 2: Vote Center vs. Precinct Voting
Comparison of Provisional Ballots Casts 2014 – 2022

Year	# Provisionals (% of ED Voters)	# Voting Locations / Model
2022	6,915 (3%)	223 Vote Centers
2020	18,310 (10%)	175 Vote Centers
2018	16,409 (6%)	40 Vote Centers and 457 Precinct Locations
2016	52,173 (13%)	671 Precinct Locations
2014	39,577 (19%)	651 Precinct Locations

With over 12,000 ballot styles used in Maricopa County for the 2022 General Election, the only option for providing a Vote Center model is to print ballots on-demand at the voting location.

Ballot-on-Demand Printers

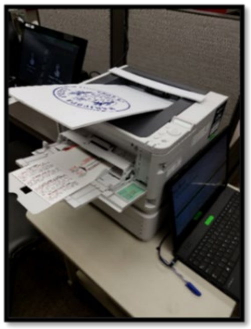
While our root cause analysis review is still underway, we can confirm that all printers used in the 2022 had updated firmware, were installed with uniform settings, and used the same settings that were used in prior Elections, including in the August 2022 Primary, November 2020 General, and the August 2020 Primary Elections.

Ballot-on-Demand Printer Fleet

In 2021, the County made significant investments to upgrade its ballot-on-demand printer fleet. The County replaced two older printer models, the Oki 9650 and the Lexmark 923 with Lexmark C4150 printers. In 2020, the County retrofitted its Oki B432 printers turning them into a Ballot-on-Demand printer. During the 2022 August Primary and November General Elections, the County used two Ballot-on-Demand printers, the Oki B432 and the Lexmark C4150. These are shown to the right.

Lexmark C4150

Oki B432



2022 General Election Day

Despite stress testing the printers before Election Day, installing the latest firmware, using uniform printer settings, and using the same settings as programmed in prior elections, the Oki B432 printer experienced an issue affecting the ability of the on-site tabulators to accept the ballot. If an on-site tabulator could not read the ballot, the voter was instructed to deposit the ballot into a secure ballot box (“Door 3”) to be counted at Maricopa County’s central counting facility. These 16,724 Door 3 ballots represent 1% of the total ballots issued to voters during the 2022 General Election

Using the central counting facility to tabulate Election Day ballots is common. So common that every Arizona county either uses it as their only method of counting Election Day ballots or as a backup plan like Maricopa County.

- Counties that place all Election Day ballots in a secure container at the voting location and tabulate those ballots at Central Count: Apache Co., Coconino Co., Gila Co., Mohave Co., Pima Co., Pinal Co., Santa Cruz Co., Yavapai Co.;
- Counties that use Central Count as a back-up plan to tabulate Election Day ballots: Cochise Co., Graham Co., Greenlee Co., La Paz Co., Maricopa Co., Navajo Co., Yuma Co.

On Election Day, our poll workers began reporting issues to our hotline around 6:30 a.m. We immediately began troubleshooting the issue and, consistent with the training, directed poll workers to have voters place their ballots into the secure ballot box below the tabulator (Door 3). The County also met with media outlets and published content on its social media platforms to inform voters of their voting options (Exhibit: #COUNTY ANNOUNCEMENT).

The secure Door 3 option has been a decades-long practice in Maricopa County. Despite this being a legal, secure, and reliable voting option, many high profile and influential individuals instructed voters to not deposit their ballots in Door 3 (Exhibit: #DOOR 3). Consequently, some voters refused to use this viable voting option.

As the morning progressed, County IT staff and technicians from our printer vendor worked in tandem both within our hotline and out in the field to troubleshoot and identify a solution. The techs tested a change to the printer heat settings so that the timing marks printed darker.

Our preliminary root cause analysis shows the issue was not with the ink or toner, instead it was the fuser. The printers have three profiles, one for each item that we print for voters, the ballot, receipt, and envelope. The ballot “media weight” setting was set to heavy, as recommended, and the receipt and envelope were on a lighter setting, as recommended. These settings were exactly the same as in prior elections. The solution implemented on Election Day for the 2022 General Election was to set all three “media weight” settings to heavy.

Once identified, we began guiding poll workers to make this change over the phone and dispatching technicians to make changes at the sites with reported issues. The changes had to be completed onsite at the Vote Center and could not be made remotely. We also asked technicians to proactively make these changes at other sites that had not yet reported an issue. By mid-afternoon, most sites were no longer experiencing the printer issue. See the timeline on the next page.

Table 3: Election Day Response Timeline	
Time	**Activity**
6:20-6:30 am	A few Vote Centers begin informing the hotline that tabulators were not reading ballots. The County reminded poll workers of the Door 3 option.
6:25-9am	County dispatches T-techs, tabulation technicians, and printer technicians into the field to troubleshoot the issue. Techs report back that installed printer settings were the uniform approved settings used in prior elections and stress tested (Fuser Settings: Control Slip Media Weight = Medium; Ballot Media Weight = Heavy; Envelope Media Weight = Medium) - (See Exhibits: # 2022 GE LOAD BALLOT OKI 458, # 2022 GE PREP OKI 458, # 2022 PE PREP OKI 458)
8:30-9am	Technicians begin reporting that some of the impacted sites were experiencing lighter or speckled timing marks printed on the back of the ballot. The County concludes it is not a tabulator issue and continues troubleshooting to find a solution to the printers.
8:30-10:45am	Hotline technicians and printer technicians work in tandem to test potential solutions.
10:14am	Printer technicians identified a potential solution to adjust printer settings. (Fuser Settings: Control Slip Media Weight = Heavy; Ballot Media Weight = Heavy; Envelope Media Weight = Heavy). Confirmed successful print and tabulation at one site.
10:15-11:30am	Begin testing the proposed solution of using the Heavy settings for all media weights at additional sites to verify the solution could be successfully implemented at other Vote Centers.
11:30am	Issued guidance to all technicians in the field to make setting changes to the Oki printers.
11:30am – 7:00pm	Visited 71 impacted sites to make changes to printer settings.

In total, our in-progress analysis has found that we responded to calls and changed the printer settings at 71 vote centers, which represents 31% of the 223 Vote Centers that were open on Election Day.

However, not all the 71 Vote Centers were experiencing a printer issue. During the Elections Department's in-progress review, 43 Vote Centers have been confirmed to have experienced an intermittent printer issue. We have also identified other common in-person voting factors that resulted in ballots being deposited into Door 3.

One of these other factors that resulted in ballots being deposited into Door 3 was the combined use of ballpoint pens and ovals completed with checkmarks. On nearly 1,600 of the 16,724 Door 3 ballots, we have found that the use of a ball point pen in combination with a checkmark or other thin mark on the ballot resulted in an oval not being sufficiently completed. This resulted in an ambiguous mark on the ballot. Ambiguous marks cannot be read by the Vote Center tabulator and result in the voter needing to either spoil and re-vote their ballot or place their ballot into secure Door 3. We found this occurred at over 180 vote centers. There were 19 Vote Centers that had between 20 and 40 ballots with ambiguous marks and this was likely the sole reason why those ballots were not being read by the tabulators at these locations.

The Elections Department has expanded its analysis to include 84 total Vote Centers, of which 21 have been ruled out as having a printer issue (Exhibit: #VOTE CENTER LOG).

When onsite tabulation became Maricopa County's process in the 1990s, Maricopa County recognized that printer and tabulator issues are routine Election Day issues that can occur. To overcome these challenges, Maricopa County implemented a redundant, legal, and secure process for voters to drop their ballots into the secure ballot box (Door 3).

While Maricopa County's printer issue in 2022 impacted more Vote Centers than normal, every voter was afforded the ability to legally and securely cast their ballot.

Election Day Check-out Process

Maricopa County uses a SiteBook (e-Pollbook) to check-in voters at voting locations. This technology allows voters to check-in, prove their identity, print their specific ballot, and to spoil their ballot if they make a mistake and need a new one. Voters commonly ask to spoil their ballots and poll workers are very familiar with the process of issuing them a new ballot. The ability to spoil a ballot using the SiteBook is covered during all in-person training courses and included on pages 115 of the training manual (Exhibit: #PW TRAINING MANUAL).

For the 2022 General Election, the Elections Department added additional SiteBook programming to allow a voter to check-out of a SiteBook and vote at an alternative voting location. This added functionality was implemented as a voter centric precaution if a voter needed to spoil their ballot and return to another, potentially more convenient, Vote Center later in the day.

To ensure poll workers were aware of the check-out procedure, we covered this topic during November 2022 General Election in-person trainings. We also included the check-out procedure (Exhibit: # CHECKOUT PROCEDURE) in every Inspector's packet of materials. The County provided weekly Inspector workshops where the check-out procedure was covered in detail. These weekly Inspector workshops provided in-depth training beyond standard in-person training and provide the Inspectors more hands-on opportunities to troubleshoot issues.

There were a total of 206 voters that checked-in at one location and then voted at a second location. Of these 206 voters, 84 successfully checked-out of the first voting location and checked-in at the second location. Since these 84 voters successfully checked out of their first location, they were issued a standard ballot at the second location. As shown in the chart on the next page, poll workers were aware of this check-out procedure and were able to implement it early in the day on Election Day.

Table 4: Voters that successfully checked-out of their first voting location and were issued a standard ballot at their second location	
Timeframe	Number of Voters that Successfully Checked-out of First Vote Center
6-8am	19 Voters
8-10am	28 Voters
10am-Noon	20 Voters
Noon-2pm	9 Voters
2pm-4pm	5 Voters
After 4pm	3 Voters
Total	84 Total Voters

The remaining 122 voters that voted at two locations on Election Day did not check out at their first location and were issued a provisional ballot at their second location. For these 122 voters, the Elections Department performed a review to confirm if there was a printer issue at the first location and if there was a variance in the number of check-ins as compared to the number of ballots tabulated.

After this review, the Elections Department determined that the provisional ballot should count for 109 of the 122 voters. There were two additional voters that the Elections Department would have counted their ballot, but the voter did not insert the provisional ballot into the provided envelope and then drop their envelope in the onsite early/provisional ballot box. The ballots for the remaining 11 voters were not counted because the Elections Department could not verify that a printing issue occurred at the voter's first location and/or that there was a variance between the number of check-ins and the number of ballots counted at the first voting location.

Secure Ballot Box (Door 3) Reconciliation

As described in the Ballot-on-Demand Printer section above, the Elections Department has used a secure ballot box (Door 3) as a reliable, legal, backup option for decades. In every election, there is a possibility that a tabulator or printer may experience an issue. These issues are not uncommon and can be caused by a variety of reasons including poll workers locking themselves out of the tabulator when they have entered the password too many times, a faulty outlet causing the tabulator to not have sufficient power to operate, or a printer misalignment occurring after replacing ballot paper. If an issue does occur, Door 3 provides voters with the option to drop their ballot into a secure ballot box until the issue can be resolved or for the ballot to be read at Central Count.

We train workers and instruct them that Door 3 ballots are segregated from the ballots read by the tabulator by a divider within the ballot box. When polls close, poll workers complete a Precinct Ballot Report (Exhibit: #PBR) that logs the number of ballots cast at the voting location, the number of misread ballots, and spoiled ballots. Poll workers return Door 3 ballots in a sealed envelope.

During the November 2022 General Election, the Elections Department provided direction to poll workers that they could use one of the two black ballot transport canvass bags that each Vote Center was provided to transport the Door 3 ballots if the quantity exceeded the capacity of the envelope. All ballots transported in the black canvass bags were sealed inside with the use of tamper evident seals. The seal numbers were logged on the Precinct Ballot Reports.

The following information is documented on the Precinct Ballot Report.

- Tamper Evident Seal Numbers
- Asset Tags
- Beginning Lifetime Tabulator Count balances
- Polls Closing Tabulator Counts on Screen
- Quantity of Misread Ballots, Spoiled Ballots, and Unused Ballot Stock

In addition to the Precinct Ballot Report, each tabulator in use at a Vote Center prints an opening and closing polls tally receipt. The opening tally receipts confirm and document that no votes were on the tabulator when the polls opened. The closing tally receipt confirms and documents the number of ballots and votes tabulated on each tabulator when the poll is closed. Poll workers sign these tally receipts and return them to the Elections Department. These receipts are hundreds of feet long and cannot be easily digitized. Both the Precinct Ballot Reports and the tally receipts are available for in-person review at the Elections Department.

As a decades-long practice and as required by the Elections Procedures Manual (see Chapter 10, Section II, Subsection H), the Elections Department performs an audit of check-ins, ballots received, and information from the Precinct Ballot Reports. If the Elections Department identifies variances, the Election Department is required to investigate and resolve those variances.

Variances between check-ins and ballots received are not uncommon. Some common causes for variances include the following:

- Fled Voter: A voter checks-in, receives a ballot and for some unexplained reason they choose not to vote the ballot (e.g., leave to get glasses, forgot their completed sample ballot at home, encounter a technical issue, and choose not to come back and vote). If this occurs, poll workers are trained to check the voter out of the SiteBook, however, voters do not always inform poll workers when they leave. If a voter does not alert the poll worker so they can be checked out, this will result in a variance.
- Provisional Ballots Inserted into Door 3: A voter is issued a provisional ballot. The voter may prefer not to have that ballot sent back to the Elections Department for research. That voter may attempt to insert their provisional ballot into the Vote Center tabulator. The Vote Center tabulator is programmed not to accept provisional ballots. When this occurs, the poll workers will ask the voter to insert the ballot into the provisional envelope that they received to have it researched and possibly counted by the Elections Department. At this point, it is the choice of the voter to place the ballot in the provisional envelope, spoil the ballot, or insert it into Door # 3. If the voter spoils the ballot or inserts the ballot into Door 3 without the envelope, this will create a variance.
- Early Ballot Voter with an Election Day Check-in: A voter may bring in their Early Ballot to use as a guide for completing their Election Day ballot at a Vote Center. Upon beginning to complete their Election Day ballot, the voter decides to insert their Early Ballot into the tabulator instead of the Election Day ballot. As a control to prevent double voting, our Vote

Center tabulators are designed to reject early ballots. At this point the voter is given the option to complete their Election Day ballot. If the voter chooses not to complete their Election Day ballot and they do not check out of the SiteBook, this will create a variance.

For the 2022 General Election, the Officer in Charge of Elections oversaw an audit reconciliation procedure to identify every location that had a variance between the number of check-ins and the number of ballots counted onsite at each Vote Center. The audit reconciliation was observed by members of the political parties[2] and included the following procedures.

1. Compare the number of check-ins with ballots reported by Vote Center (on memory cards from each tabulator) plus the number of ballots inserted into Door 3.
2. If the number of check-ins at a Vote Center equals the number of ballots reported on the memory cards for the tabulators at the Vote Center plus the number of ballots inserted into Door 3, accept the official results reported on Election Night along with the additional ballot scanned from Door 3.
3. If the number of check-ins at a Vote Center does not equal the number of voters reported on the memory drives for the tabulators at the Vote Center plus the number of ballots inserted into Door 3, audit the vote count from the Vote Center by comparing the number of check-ins against the returned ballots.

The results of the audit reconciliation are summarized below (Exhibit: #RECONCILIATION)

- 158 Vote Centers with no variance
- 35 Vote Centers with a variance of 1
- 16 Vote Centers with a variance of 2 – 3
- 14 Vote Centers with a variance of greater than 3 (and none greater than 22)

Two Vote Centers did not separate their Door 3 ballots and the ballots that were counted by the Vote Center tabulator. For these two Vote Centers[3], the Elections Department backed out the results that were reported Election Night and retabulated the entire batch of ballots to ensure that no ballot was double counted and that all ballots cast at the Vote Center were counted.

Vote Center Audit Reconciliation Comparison

When compared to other elections, the audit reconciliation for the 2022 General Election had a lower variance as a percent of Election Day voters than previous Primary and General Elections. See chart on the next page for comparison to prior elections.

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[2] As required by the Chapter 10 of the Elections Procedures Manual, the audit reconciliation was performed under the observation of political party appointees (2 Democrat Observers appointed by the County Party, 2 Republican Observers appointed by the County Party, 1 Republican Observer appointed by the "For Prop 309" Committee, and a "Republican Observer from the U.S. Congressional Delegation".

[3] Church of Jesus Christ of LDS Gilbert, Desert Hills Community Church.

Table 5: Comparison of Fled Voters, Early Voters with Check-ins, and Provisionals with Prior Elections

Year / Election	# of Reconciling Sites	# of Sites with a Variance	Total Variance (Fled, Early, Provisional) / % of Election Day Ballots Cast
2020 August Primary	62 of 100 (62%)	39 of 100	100 (.0019%)
2020 November General	122 of 210 (58%)	53 of 175	188 (.0011%)
2022 August Primary	92 of 210 (44%)	118 of 210	210 (.0019%)
2022 November General	155 of 223 (69%)	68 of 223	170 (.0007%)