



# Maryland Online Ballot Marking Tool

## *Usability Testing Report*

**JAN 13, 2014**

Submitted to:  
Maryland State Board of Elections



Dr. Kathryn Summers, Caitlin Rinn, Emily Rhodes, Noël Alton, and Jaime Lee

# table of contents

About this Report 1

Summary of Results 2

Methods 7

Unresolved Usability Issues 10

Resolved Usability Issues 18

# About This Report

This report documents the findings from two rounds of qualitative iterative testing of the online ballot marking system. Most of the findings from the two rounds of testing have been resolved through changes to the interface, the underlying interaction, and/or the instructions. This report describes improvements that were made during Round One and Round Two and remaining issues to be resolved.

The MD State Board of Elections usability testing process included several valuable opportunities for iteration. During the first round of testing, many findings were implemented immediately, allowing for immediate verification that the solution had worked and/or immediate additional refinement as needed. Further improvements were made in between the first and second formal rounds of testing. During and immediately after the second round of testing, additional changes were made in line with usability recommendations from the usability and development teams. Within this report, findings are presented in three sections: usability results from Round One that have already been implemented, usability results from Round Two that have already been implemented, and usability issues that have not yet been resolved.

The primary purpose of this usability testing was to ensure that these systems are usable for a broad spectrum of voters, particularly voters with accessibility needs, lower literacy skills, mild cognitive disabilities, and age-related impairments. Participants included voters with no vision, low vision, dexterity issues, cognitive impairments, hearing impairments, and low literacy skills. Elderly voters were included in these categories.

Research questions for the testing included:

- *Are voters able to access the ballot independently?*
- *Are voters able to mark and print their ballots independently?*
- *Can voters verify that the printed ballot matches the voter's intent?*
- *Can voters submit the ballot successfully (by identifying the mailing address)?*

# Summary of Results

*Many usability challenges were identified and resolved during the two rounds of testing. Some usability problems are still being addressed, or will be addressed in 2015. Many opportunities for simplified language, visual interface, and process were identified and implemented. These simplifications will benefit nearly all voters, not just voters with disabilities or other challenges.*

## ROUND ONE IMPROVEMENTS

In the first round of testing, participants experienced difficulties in logging in. Some participants failed to understand the key message that they would need to print and mail their ballot in order to cast their vote. Some users had trouble navigating the ballot and getting into the review screen. Voters using screen readers had trouble writing in candidates. When voters—particularly voters relying on screen readers—tried to leave the review screen in order to revisit contests or change a vote, they got lost and were sometimes unable to get back to the review screen in order to complete the process.

The most substantive change to the online ballot marking tool that resulted from the testing in Round One was to create a **more focused, guided interaction** for two key processes: 1) writing in a candidate name on the ballot, and 2) leaving the review screen in order to revisit a ballot choice. Both of these key processes were revised to provide a focused, guided interaction that keeps voters on track. For the write-in ballot, a new screen

was created that allows voters to write-in their candidate on a dedicated screen, then return to the race. This revised interaction was successful in supporting screen readers, avoiding bugs, and keeping voters on track. For the review screen, voters who elected to revisit a race were taken to that race, then returned to the review screen. Returning voters to the review screen, as an anchor for further revisions, eliminated the problem of voters getting lost in the ballot and losing their place, which had been a significant problem for voters in the early testing.

Other improvements included **eliminating the dropdowns** that had caused browser errors for users with limited internet experience, posed manipulation challenges for voters with limited dexterity, and created access challenges for voters using ZoomText.

The **login process** was made significantly easier to understand and to complete.

- *Instruction text was minimized and simplified, and unnecessary distractions (such as links to download supported browsers) were eliminated. The page asking voters if they would need assistance with voting was shortened and made more accessible.*
- *The visual treatment and text of the **navigational buttons** was refined to help voters find them more successfully. However, even in the second round of testing some users continued to have trouble figuring out that the navigational buttons were navigational. Further refinements were made including making the cursor turn into a “hand” when the voter mouses over the button. This change should help improve the click rate of the navigation buttons though the issue merits further attention when the online ballot marking tool is deployed.*
- *The voter’s choice between marking the ballot online versus printing a blank ballot to mark by hand was clarified with a dropdown choice and separated from the navigational buttons.*

During the second round of testing, most users were able to login successfully.

## **Using the ballot**

- *The visual treatment and placement of the previous, next, and review & print buttons were adjusted to make them easier to find and use.*
- *A review and print option was added to the left navigation, to support voters using ZoomText who were relying on the left navigation to move through the ballot.*
- *Checkmarks were added to the left navigation to show progress through the ballot, and the left navigation tab corresponding to the current race was increased in size, to aid in communicating the voter's current location.*
- *The error message alerting users that they were attempting to overvote a contest went through several revisions to make it easier to notice and understand.*
- *The original visual treatment on the review page to help voters identify and resolve undervotes worked well for most voters, but did not work well for voters who needed to reverse the contrast in order to read the screen. **During Round Two testing**, multiple alternative treatments were explored until a treatment was found that would work more universally.*

## **Issues specific to screen readers**

The testing uncovered some usability barriers relating specifically to the use of screen readers, such as difficulty manipulating dropdown menus, problems with reading user input back to users, and issues with identifying the status of check boxes. All of these issues were resolved by the second round of testing. The first version of the online ballot marking tool also generated a browser warning about insecure content. This kind of warning could potentially worry voters—especially those who have less internet experience—but this browser warning was particularly disruptive for participants using screen readers. The screen reader would read the error message first on every single page of the ballot marking tool, and sometimes participants would inadvertently select links in the error message when they were attempting to interact with page content. By the second round of testing, the code for the ballot marking tool had been refined and this browser warning was eliminated.

The testing also identified some opportunities for **improving the screen-reader experience**, such as refining the “skip to main content” links and reducing the amount of background code that is read before the main page content.

## ROUND TWO IMPROVEMENTS

During the second round of testing, the ballot interaction itself worked well. Thus, the focus of the second round of testing was on how successfully voters could access the online ballot marking tool using the email and instructions they received from the State Board of Elections, and on how successfully voters could print their marked ballot at the end of the process.

Changes to the email made during this round of testing helped voters to be much more successful in accessing their ballots. The changes included reducing the amount of text in the email, highlighting key information in the email, and increasing the prominence and clarity of the link that automatically passes in the ballot access code to make it easier to find. Some inconsistent language between the email and the ballot login pages was also eliminated.

The printing process presented the most challenges, and some issues remain in this area. Improvements included revising the print process to start with the ballot rather than the envelope (voters who couldn’t print envelopes failed to move past this step to get to the ballot printing interaction). A simple checklist to help voters complete the full process of signing the oath and mailing the ballot was added. Instructions on the print pages in the ballot marking tool were refined to be more clear, and a link was provided to allow voters to download a PDF of their marked ballot if they had trouble printing. The flow of the printing process was also refined to encourage voters to log out of the ballot marking tool successfully—an important consideration for security.

## REMAINING ISSUES

Some **accessibility problems** still remain. The printing and mailing instructions are not yet available through a screen reader; they print in a non-accessible PDF. This problem could be resolved by adding invisible instructions that are read by screen readers but do not display for other voters, or by making the PDF of the ballot accessible for screen readers.

The print process is still an area of risk. Not all voters recognize their ballot in the preview provided in the print dialog box. Making the first page of the PDF a more recognizable link to the ballot will probably help. Other improvements might include reducing the number of extra pages in the printed document, and refining the order of printed materials to put the ballot earlier in line.

Perhaps most importantly, the State Board of Elections needs to plan ahead for some additional phone support for printing during the next election. The phone number for phone support should be provided on the pages of the online ballot marking tool relating to printing. Planning ahead for adequate support will increase the likelihood of a continued positive response to this convenient, accessible ballot delivery system.

Finally, our testing identified an unforeseen challenge with users who continue to use the outdated AOL browser. Only 0.01% of internet users continue to use the AOL browser; this potentially represents about 30,000 Maryland voters (3,702,608 registered voters in MD, estimated 81% internet penetration, 0.01% AOL browser market share). For comparison purposes, according to the National Federation of the Blind, Maryland has about 102,400 individuals with visual disabilities (<https://nfb.org/factsaboutblindnessintheus>).

We do not actually recommend that the MD State Board of Elections spend time and resources to test for compatibility with the AOL browser; rather, we recommend that the Board of Elections screen emails requesting online ballot access for AOL email addresses, and then send these voters special instructions to help them use another browser successfully.

# Methods

---

We performed two rounds of iterative, qualitative testing—one round of in-person testing at the University of Baltimore User Research Lab, and one round of remote testing with voters located in their own homes. Both rounds of testing were observed and recorded. During testing, voters were asked to fill out a ballot from a Maryland 2012 general election. Voters filled out most of the ballot without overt direction from the moderator. However, at the end of the ballot, voters were prompted to complete any of the following tasks that had not yet occurred naturally: filling in a write-in candidate, attempting to overvote, identifying and revising an undervote, changing a vote in one or more contests, and printing the ballot. If voters paused, looked uncertain, showed evidence of confusion or surprise, made a comment, or did anything unexpected, the moderator asked follow-up questions. During the remote sessions, voters were also asked to “think aloud” during the voting process.

When possible, improvements to the prototype were made as problems were identified—sometimes between

sessions. Making iterative changes as soon as possible has several important benefits. First, sometimes smaller problems can be obscured by larger issues, so fixing issues as they are identified can allow smaller issues to surface. Thus, fixing issues as they are identified allows more issues to be identified overall. Second, some issues that are identified during testing are complex, and the solutions are not obvious. By implementing possible solutions immediately, the value of these solutions can be evaluated, and the solutions can be refined or alternative solutions tried.

The first round of testing involved 17 participants, and occurred in the user research lab at the University of Baltimore from Wednesday, October 9 through Friday, October 11. A Tobii T60 eye tracker was used for all sessions except those with participants who had low vision or who were blind. Those who needed only screen magnification used ZoomText or used the browser's own zoom feature. Blind participants had the option to use Window-Eyes or Jaws, although none of the test participants opted to use Window-Eyes.

Eye tracking provided several benefits for this study. First, eye tracking allowed us to test without a think-aloud protocol, which has historically been a necessary evil in usability testing: a think-aloud protocol helps researchers understand what participants are doing, but it also may change what they are doing. Most significantly, the think-aloud protocol slows participants and changes their patterns of attention—often leading to artificially enhanced performance. In contrast, eye tracking provides directly collected real-time information about participants' patterns of attention and their problem solving. As a result, we were able to let participants vote on their own, interrupting with questions only when we needed clarification or deeper understanding.

Second, the eye tracking provided additional insight into whether (a) key information is being discovered but not understood, or (b) key information is being missed completely. This tells us whether we need to focus on the visual and locational aspects of the information, or revise for informational content. If participants do not find the information they need, eye tracking also provides the advantage of knowing clearly where they looked for it.

The second round of testing included 17 participants, and was conducted remotely from Monday, November 18 through Friday, November 22. Because the online ballot marking system will be used by voters in their homes or other locations, it was essential to test the usability of the ballot marking system using participants'

own systems. Sessions were observed using GoToMeeting, allowing observers to see and hear what participants did on their own computers while interacting with an email that provided a link to the ballot marking tool, using the tool, and attempting to print their resulting ballot.

In order to allow observation and recording of each session, participants for the second round of testing were only included if they had a high-speed internet connection and were able to install and run GoToMeeting. Even with this prerequisite, the remote testing allowed us to observe voters with a range of computer setups and a range of computer expertise. However, some potential participants were screened out due to these technical constraints. It is possible that more issues remain to be discovered during launch, when voters with older equipment and perhaps with less internet experience attempt to use the online ballot marking tool.

## PARTICIPANT DEMOGRAPHICS

	Low Vision	Blind	Hearing Impaired	Limited Dexterity/ Mobility	Low Literacy	Mild Cognitive Impairment	Senior	Total Participants
Round One	3	3	3	7	3	3	2	17
Round Two	5	3	3	6	0	0	5	17

*\* Note that some participants fit into multiple categories; additional demographic data is available in the appendix of this report on page 41*

# Unresolved Usability Issues

## ***Round One***

---

All usability issues from round one were resolved.

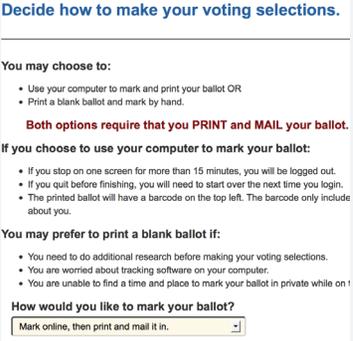
# Unresolved Usability Issues

## *Round Two*

The following tables indicates unresolved usability issues noted during round two testing which occurred remotely over GoToMeeting. Participants accessed the ballot from their personal computers, either at home or at work.

LOCATION	OBJECT	OBSERVATION	SEVERITY	RECOMMENDATION
Login	<p>1.</p> 	<p>Nearly one-third of our participants (5 out of 17) relied primarily on the AOL browser for their Web use. In the next election, this issue could potentially affect up to 30,000 voters.</p> <p>This browser is not fully supported for the ballot marking tool. This may be a problem when the ballot marking tool is deployed, since many older users and other “at-risk” users still use AOL, and AOL users are typically less web-savvy than others. Yet these users face mobility issues that may make the convenience of absentee voting attractive.</p> <p>Additionally, AOL email does not display links unless users request that links be displayed, which many of the users did not know to do. These users were forced to cut and paste the link and ballot key.</p> <p>Several users were unable to cut and paste successfully. Some users did not capture the full link when copying. One user then pasted the link into the search bar.</p>	High	<p>If voters submit an “@aol.com” email address, send them a special version of the email with their ballot key that helps them use a different browser.</p> <p>Or, continue to make the ballot compatible with the AOL browser (it got more compatible by the end of the week of testing).</p> <p><b><u>Types of Users this will benefit:</u></b></p> <p>✓ SENIOR</p>

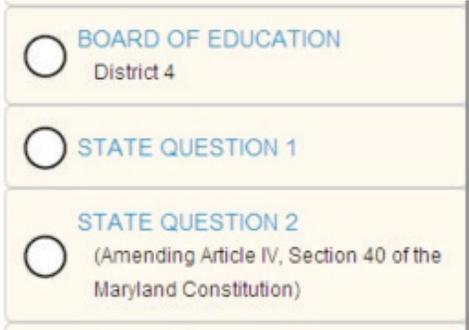
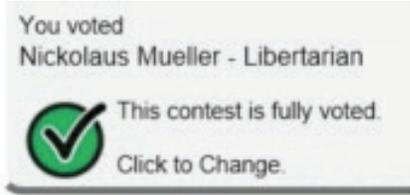
# Unresolved Usability Issues - Round Two

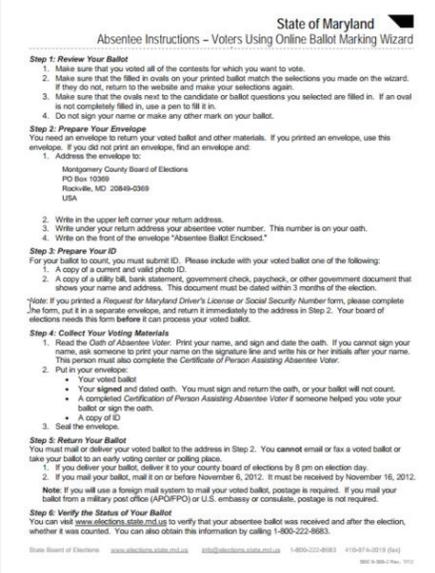
LOCATION	OBJECT	OBSERVATION	SEVERITY	RECOMMENDATION
	<p>2.</p> 	<p>One user had great difficulty loading the ballot on his computer since he exclusively accesses email through an iPad, which the ballot does not currently support.</p> <p>As a result he was forced to load his email on his computer, a process with which he was unfamiliar.</p>	<p>Low</p>	<p>Since mobile devices are more accessible for some users, consider adding mobile support or a mobile option in the future.</p> <p><b><u>Types of Users this will benefit:</u></b></p> <p>✓ IMPAIRED MOBILITY</p>
<p>Login</p>	<p>3.</p>  	<p>Inconsistent text regarding the ballot across screens. The user is asked the same question three different ways which has the potential for confusion:</p> <ul style="list-style-type: none"> <li>• Tell us how you want to download your ballot</li> <li>• How would you like to mark your ballot?</li> <li>• Decide how to make your voting selections</li> </ul>	<p>Low</p>	<p>On the “Check your computer” screen, change button text from “Next: Tell us how you want to download your ballot” to <b><i>“NEXT: Choose how to mark your ballot”</i></b></p> <p>The header on the subsequent page should be changed from “Decide how to make your voting selections” to <b><i>“Decide how to mark your ballot”</i></b></p> <p><b><u>Types of Users this will benefit:</u></b></p> <p>✓ ALL</p>

# Unresolved Usability Issues - Round Two

LOCATION	OBJECT	OBSERVATION	SEVERITY	RECOMMENDATION
Login	<p>4.</p> <p>5 – How do I return my ballot? You must mail or hand deliver your absentee ballot to your local board of elections. You cannot email or fax your voted ballot or take your ballot to an early voting center or polling place.</p> <ol style="list-style-type: none"> <li>1. If you hand deliver your ballot, you must deliver it to your local board of elections by 8 pm on election day.</li> <li>2. If you mail your ballot:             <ol style="list-style-type: none"> <li>a. For the primary election, you must mail it on or before election day (June 24, 2014) and it must be received by your county board of elections by 10 am on July 7, 2014.</li> </ol> </li> </ol>	<p>Instructions for mailing the ballot only appear on the printed ballot form, which is not accessible for blind or low vision users.</p>	<p>High</p>	<p>Provide an option for users to hear the mailing instructions if needed.</p> <p><b><u>Types of Users this will benefit:</u></b></p> <ul style="list-style-type: none"> <li>✓ BLIND</li> <li>✓ LOW VISION</li> </ul>
	<p>5.</p> <p>• Go to the following website and copy and paste in your ballot key on the login screen: Website: <a href="https://voterservices.elections.state.md.us/ballot_wizard_redesign">https://voterservices.elections.state.md.us/ballot_wizard_redesign</a> Ballot Key: e168af21-0669-4f79-be57-4c79488ac62d</p> <p><b>Ballot Access Code: required</b> This is in the email you received from Maryland State Board of Elections.</p> <p>730cd231-244d-46fc-8560-7eaf0c14e43</p>	<p>The email describes the ballot access code as a ballot key while the ballot itself describes it as a ballot access code. Inconsistent language caused some users to paste over the code which had already been passed in.</p>	<p>Low</p>	<p>Label both items as a ballot access code.</p> <p><b><u>Types of Users this will benefit:</u></b></p> <ul style="list-style-type: none"> <li>✓ LOW VISION</li> <li>✓ BLIND</li> <li>✓ SENIOR</li> <li>✓ LOW LITERACY</li> <li>✓ MILD COGNITIVE IMPAIRMENT</li> </ul>

# Unresolved Usability Issues - Round Two

LOCATION	OBJECT	OBSERVATION	SEVERITY	RECOMMENDATION
Ballot	6. 	<p>State Question 1 has no subheading; all other questions do.</p> <p>These subheadings depend on the way data is entered into the underlying database.</p>	Low	<p>Continue to work with the database team, in order to support the inclusion of brief identifying text in the navigation panel and review screen for ballot questions.</p> <p><b><u>Types of Users this will benefit:</u></b></p> <p>✓ ALL</p>
Review	7. 	<p>When a user re-enters a contest using the "Click to change" option from the review screen, the font size used for the candidates name is significantly smaller than the font size on the full ballot.</p>	Medium	<p>The very small text works against the readability and usability of the rest of the ballot design. This issue showed up after the testing.</p> <p><b><u>Types of Users this will benefit:</u></b></p> <p>✓ LOW VISION ✓ SENIORS</p>
	8. 	<p>IE 8 BUG: When JAWS was reading through the review screen for each contest, the screen reader read "click to button" and "change button" as two separate buttons, not as a "click to change button"</p>	Low	<p>Work with a JAWS coding expert to find a solution.</p> <p><b><u>Types of Users this will benefit:</u></b></p> <p>✓ BLIND ✓ LOW VISION</p>

LOCATION	OBJECT	OBSERVATION	SEVERITY	RECOMMENDATION
<p>Print</p>		<p>The ballot PDF is not accessible, which means there is no way for blind users to vote completely independently with this tool.</p>	<p>High</p>	<p>Additional explanation for screenreaders only may help answer questions about the printed ballot for those who rely on screenreaders.</p> <p>Possible additions to be read only by screenreader:</p> <ul style="list-style-type: none"> <li>• Instructions for preparing and mailing the ballot</li> <li>• A courteous explanation about why the PDF is not accessible</li> <li>• A reminder that fully accessible voting will be available in polling places</li> </ul> <p><b>Types of Users this will benefit:</b></p> <ul style="list-style-type: none"> <li>✓✓ BLIND</li> <li>✓✓ LOW VISION</li> </ul>
<p>10.</p>		<p>Users who looked at the PDF, or at the preview page on the print dialog, did not always recognize their ballot.</p> <p>One user exited the PDF thinking it had saved the wrong document.</p> <p>This problem does not exist with users who printed the document successfully because they are able to see all the pages at once.</p>	<p>Medium</p>	<p>The revised first page, with its simplified list, was an improvement. Add an introductory title and a MD state logo to this page.</p> <p><b>Also, the documents should print in the order listed on the page (i.e. "Your ballot, oath, and other documents will be ready for printing in a moment")</b></p> <p><b>Types of Users this will benefit:</b></p> <ul style="list-style-type: none"> <li>✓✓ LOW VISION</li> <li>✓✓ IMPAIRED MOBILITY</li> <li>✓✓ SENIOR</li> <li>✓✓ LOW LITERACY</li> <li>✓✓ MILD COGNITIVE IMPAIRMENT</li> <li>✓✓ HEARING IMPAIRED</li> </ul>

# Unresolved Usability Issues - Round Two

LOCATION	OBJECT	OBSERVATION	SEVERITY	RECOMMENDATION
Print	11. <b><i>On Review Screen, viewing Next: Print Ballot Button:</i></b>  <b><i>"I didn't know I had to print"</i></b>  <b><i>-Participant 8</i></b>	<p>A handful of users did not know they had to print until the print screen.</p> <p>The mental model of submitting a form online is very strong. Users expect to be able to cast the vote as well as mark the ballot online.</p> <p>The messages about needing to print are already very clear. The next step will be clarity in advertising the online ballot marking opportunity.</p>	Low	<p>At some point in the future, it will reduce dissonance for voters if the ballot can be submitted as well as marked online.</p> <p><b><u>Types of Users this will benefit:</u></b></p> <p>✓ ALL</p>
General Issue	12. (No Image Available)	<p>Several issues/bugs with Jaws occurred intermittently across browsers. These included:</p> <ul style="list-style-type: none"> <li>- Jaws not reading drop downs</li> <li>- Jaws not reading written information (such as name etc) back to user</li> <li>- Not reading the status of the check box to the user (i.e. "Checkbox unchecked"), which made one user have to guess how to mark the ballot since she was given not instruction</li> </ul>	Medium	<p>Small code changes sometimes affect screen reader function. Make sure that the final version is thoroughly tested with JAWS.</p> <p><b><u>Types of Users this will benefit:</u></b></p> <p>✓ BLIND ✓ LOW VISION</p>
		<p>Some users were unable to print and would have needed to call phone support if not for direction from the moderator.</p>	Medium	<p>The phone number for phone support should be provided on the pages of the online ballot marking tool relating to printing</p> <p><b><u>Types of Users this will benefit:</u></b></p> <p>✓ ALL</p>



---

Resolved Usability Issues  
***Round One Iterative Changes***

# Resolved Usability Issues - Round One

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
Login	<p>1. All participants were prompted with a “Only secure content is displayed” notification at almost every screen. Unfortunately, screen readers read this notification before the rest of the page, telling the user that a “notification requires response, press Alt+N”. Upon pressing Alt+N, the browser skips to the next page before the screen reader reads ANY of the content of the introductory pages.</p> <p>The website only displays secure content and no longer brings up this message.</p>		<p>(Notification no longer displays)</p> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>
	<p>2. Some users finished the ballot, expecting to be able to submit it online.</p> <p>A brief explanation about why it cannot be submitted online was provided.</p>	<p><b>This tool allows you to print your absentee ballot</b></p> <p><b>Please note:</b></p> <ul style="list-style-type: none"> <li>You must print and MAIL your ballot.</li> <li>Ballots may NOT be returned online, by email, or by fax.</li> <li>This website will not store your votes.</li> </ul> <p><b>Next</b></p>	<p>This tool allows you to print your ballot.</p> <ul style="list-style-type: none"> <li>You must print and MAIL your ballot.</li> <li>You cannot submit your ballot online, by email, or fax. State law says that ballots must be mailed.</li> <li>The website will not store your votes. After you make your selections, you must print your ballot.</li> <li>You cannot save your votes and return later to finish.</li> </ul> <p><b>NEXT: make sure your computer meets the requirements.</b></p> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ SENIOR</p> <p>✓ LOW LITERACY</p> <p>✓ IMPAIRED MOBILITY</p>
	<p>3. Header logos and other links were read by screen readers before any page content, distracting and frustrating blind users.</p> <p>Social media icons and SBE logo were removed from the header, header text and language options were reorganized in the code of the document, and the “Print Ballot” and “Log Out” links in the upper right corner of the webpage were removed</p>		 <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ BLIND</p> <p>✓ LOW VISION</p>

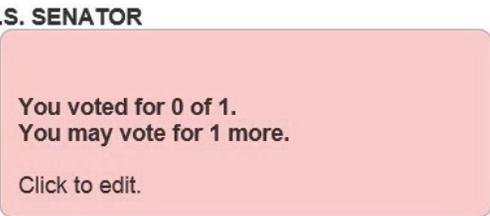
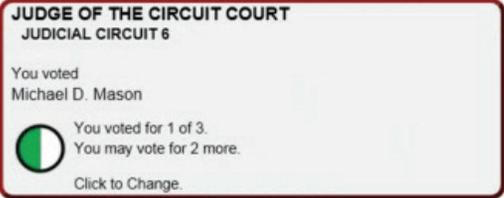
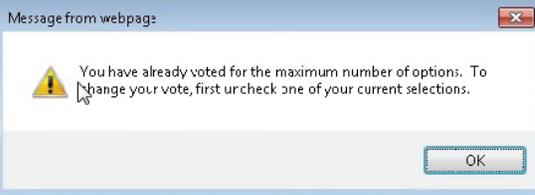
LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
Login	<p>4. Some users are unaware that they need to print the ballot at the time of the vote, and only have limited access to printers.</p> <p>Simplified introductory text explains why ballots need to be printed.</p> <p>Also a brief explanation was added about why the ballot cannot be saved at the point of printing.</p>	<p>This tool allows you to print your absentee ballot</p> <p><b>Please note:</b></p> <ul style="list-style-type: none"> <li>You must print and MAIL your ballot.</li> <li>Ballots may NOT be returned online, by email, or by fax.</li> <li>This website will not store your votes.</li> </ul> <p><a href="#">Next</a></p>	<p>This tool allows you to print your ballot.</p> <ul style="list-style-type: none"> <li>You must print and MAIL your ballot.</li> <li>You cannot submit your ballot online, by email, or fax. State law says that ballots must be mailed.</li> <li>The website will not store your votes. After you make your selections, you must print your ballot.</li> <li>You cannot save your votes and return later to finish.</li> </ul> <p><a href="#">NEXT: make sure your computer meets the requirements.</a></p> <p><b>Types of Users benefited from change:</b></p> <ul style="list-style-type: none"> <li>✓ SENIOR</li> <li>✓ LOW LITERACY</li> <li>✓ IMPAIRED MOBILITY</li> </ul>
	<p>5. The word “absentee” is difficult to understand for low literacy users.</p> <p>The word “absentee” was removed from the text in the log-in pages.</p>	<p>This tool allows you to print your absentee ballot</p> <p><b>Please note:</b></p> <ul style="list-style-type: none"> <li>You must print and MAIL your ballot.</li> <li>Ballots may NOT be returned online, by email, or by fax.</li> <li>This website will not store your votes.</li> </ul> <p><a href="#">Next</a></p>	<p>This tool allows you to print your ballot.</p> <ul style="list-style-type: none"> <li>You must print and MAIL your ballot.</li> <li>You cannot submit your ballot online, by email, or fax. State law says that ballots must be mailed.</li> <li>The website will not store your votes. After you make your selections, you must print your ballot.</li> <li>You cannot save your votes and return later to finish.</li> </ul> <p><a href="#">NEXT: make sure your computer meets the requirements.</a></p> <p><b>Types of Users benefited from change:</b></p> <ul style="list-style-type: none"> <li>✓ SENIOR</li> <li>✓ LOW LITERACY</li> <li>✓ IMPAIRED MOBILITY</li> </ul>
	<p>6. Inactivity time limit was increased to 15 minutes.</p> <p>The original 5 minute limit was not enough time, especially if users needed to ask for help or call someone to help them with their ballot.</p>	<p>If you stop on one screen for more than five minutes you will be logged out.</p>	<p>For security purposes, the system will no longer work after 15 minutes of inactivity.</p> <p><b>Types of Users benefited from change:</b></p> <ul style="list-style-type: none"> <li>✓ ALL</li> </ul>

# Resolved Usability Issues - Round One

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
Login	<p>7. The use of the term “agent” (in the context of people prohibited from aiding the user during voting) and the word "template" (referring to the example envelope to be printed if the user cannot print directly on an envelope) was unclear to users.</p> <p>Rephrased: “your employer, or a representative of your employer.”</p> <p>The word template was removed.</p>	<p><b>Any person can help you, except:</b></p> <ul style="list-style-type: none"> <li>• a candidate on your ballot</li> <li>• your employer or an agent of your employer</li> <li>• an officer or agent of your union</li> </ul>	<p>Any person can help you, except:</p> <ul style="list-style-type: none"> <li>• A candidate on your ballot</li> <li>• Your employer or a representative of your employer</li> <li>• An officer or representative of your union</li> </ul> <p><b>Types of Users benefited from change:</b></p> <p>✓ LOW LITERACY</p>
	<p>8. Some users have trouble copying and pasting the ballot access code from the email.</p> <p>Users are allowed to access their ballot access key by clicking on a link that pastes their ballot access code for them.</p>	<p><b>Ballot Access Code: required</b> Copy and paste this from the email you received from Maryland State Board of Elections.</p> <p>553</p> <p>Log in</p>	<p><a href="#">Access your ballot now by selecting this link.</a></p> <p>If the link above does not work for you:</p> <p>1. Copy and paste the following link into your browser: <a href="https://voterservices.elections.state.md.us/ballot_wizard_redesign">https://voterservices.elections.state.md.us/ballot_wizard_redesign</a></p> <p><b>Types of Users benefited from change:</b></p> <p>✓ SENIOR</p> <p>✓ LOW VISION</p> <p>✓ BLIND</p> <p>✓ IMPAIRED MOBILITY</p>
	<p>9. Computer requirements page was streamlined. The problematic “My computer meets the requirements” button was replaced with a “Next” button.</p> <p>The links to browsers led users away from the ballot marking tool and they had trouble finding their way back. Also, the “My computer meets the requirements” button did not provide a clear call to action; some users did not know how to continue to the next page.</p>	<p><b>Check your computer.</b></p> <p>Before Proceeding, make sure your computer has all of the below:</p> <ul style="list-style-type: none"> <li>- a connected, working printer</li> <li>- Adobe Reader 8.0 or higher </li> <li>- a recent version of one of the following Web browsers:</li> </ul> <ul style="list-style-type: none"> <li> Chrome</li> <li> Firefox</li> <li> Internet Explorer</li> <li> Safari</li> </ul> <p>My computer meets the requirements.</p>	<p><b>Check your computer.</b></p> <p>Before proceeding, make sure your computer has all of the below:</p> <ul style="list-style-type: none"> <li>- a connected, working printer</li> <li>- Adobe Reader X or higher </li> </ul> <p>Next</p> <p><b>Types of Users benefited from change:</b></p> <p>✓ ALL</p>

# Resolved Usability Issues - Round One

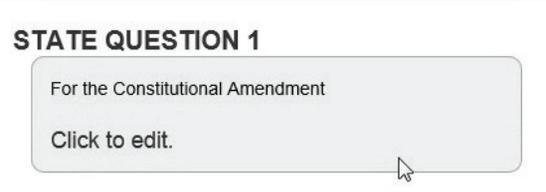
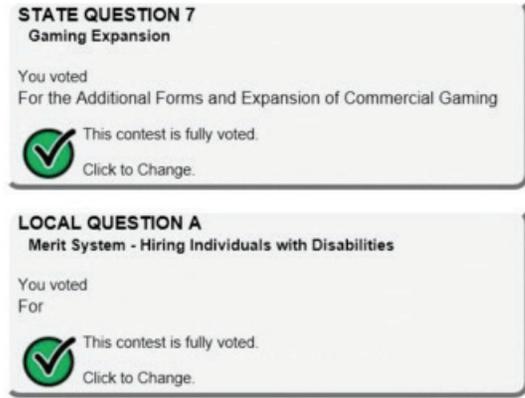
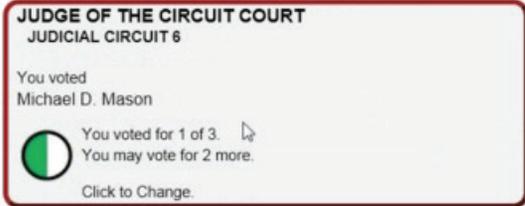
LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
Login	10. Ballot Marking options turned into a drop down menu instead of buttons. A "Next" button was added to provide a consistent path to the next page.	<p>You may prefer to print a blank ballot if:</p> <ul style="list-style-type: none"> <li>• You need to do additional research before making your voting selections.</li> <li>• You are worried about tracking software on your computer. &lt;link to more info&gt;</li> <li>• You are unable to find a time and place to mark your ballot in private while on the computer.</li> </ul> <p>Mark Online, Then Print    Print Blank Ballot, Then Mark By Hand</p>	<p>How would you like to mark your ballot?</p> <p>Mark online, then print and mail it in.</p> <p><b>Next: tell us who you are</b></p>
Ballot	<p>11. Lack of distinction between the two Board of Election contests caused confusion for users. There was no distinction between the contests on the navigation tabs or in the review screen.</p> <p>Districts were added to inform the users that there are more than one Board of Election contest.</p>	<p>BOARD OF EDUCATION</p> <p>BOARD OF EDUCATION</p>	<p>BOARD OF EDUCATION AT LARGE</p> <p>BOARD OF EDUCATION District 2</p> <p>BOARD OF EDUCATION District 4</p> <p><b>Types of Users benefited from change:</b></p> <p>ALL</p>
	<p>12. The text within each contest was made larger.</p> <p>Larger text makes the ballot easier to see for low vision users, and may reduce or obviate the need for zoom text or browser zoom.</p>	<p>JUDGE, COURT OF SPECIAL APPEALS AT LARGE Stuart R. Berger</p> <p>Vote Yes or No For Continuance in Office</p> <p>YES</p>	<p>JUDGE, COURT OF SPECIAL APPEALS AT LARGE Stuart R. Berger</p> <p>Vote Yes or No For Continuance in Office</p> <p>YES</p> <p><b>Types of Users benefited from change:</b></p> <p>LOW VISION</p>

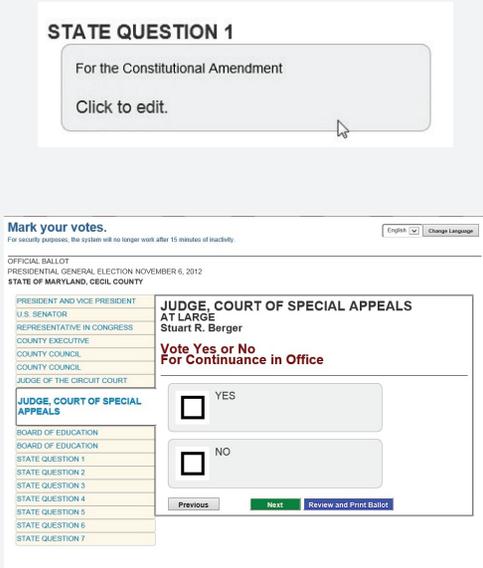
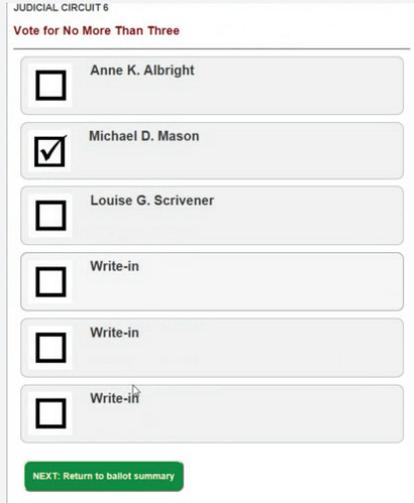
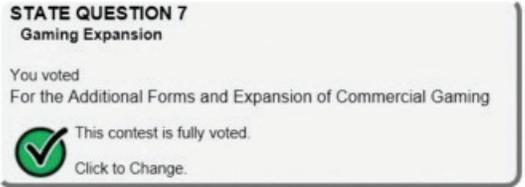
LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
Ballot	<p>13. Previously the ballot did not alert the user when they had undervoted until the review screen.</p> <p>Visual cues were added to the navigation tabs on the left hand side to indicate partially voted or blank contests. These cues proved useful for sighted users.</p>		  <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>
	<p>14. The overvoted contest message was not descriptive, was difficult for screen readers to read, and alarmed some participants. The prompt name was uninformative: "Message from webpage:"</p> <p>The new overvote error message deployed in Round Two is more successful.</p> <p><b>Further visual refinement of this error message is in progress.</b></p>		 <p><b><u>Types of Users benefited from change:</u></b></p> <ul style="list-style-type: none"> <li>✓ SENIOR</li> <li>✓ LOW VISION</li> <li>✓ BLIND</li> <li>✓ IMPAIRED MOBILITY</li> </ul>

# Resolved Usability Issues - Round One

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
	<p>15. Skip to content link did not accurately skip to content. Those who used this feature still had to listen to or tab through header links.</p> <p>The code has been altered so the skip to content link now points to main content.</p>	<pre>&lt;div class="skipNav"&gt; &lt;a href="#primary_content_Block"&gt; Skip to Main Content&lt;/a&gt;&lt;/div&gt; &lt;div id="mdgov_globalSiteWrapper"&gt; &lt;!--begin primary content area--&gt; &lt;a id="primary_content_Block" name="primary_content_Block" &gt;&lt;/a&gt;</pre>	<p>(No image available)</p> <p><b><u>Types of Users this will benefit:</u></b></p> <ul style="list-style-type: none"> <li>✓ BLIND</li> <li>✓ LOW VISION</li> </ul>
<p><b>Ballot</b></p>	<p>16. The "Previous", "Next" and "Review Ballot and Print" buttons were made larger and the color and spacing changed for added distinction. Also the "Review Ballot" button changed to "Review and print ballot".</p>		 <p><b><u>Types of Users benefited from change:</u></b></p> <ul style="list-style-type: none"> <li>✓ IMPAIRED MOBILITY</li> <li>✓ SENIOR</li> <li>✓ LOW LITERACY</li> <li>✓ MILD COGNITIVE IMPAIRMENT</li> <li>✓ HEARING IMPAIRED</li> </ul>
	<p>17. The "Write-in Candidate" box can now accept punctuation.</p> <p>The previous text box generated an error if punctuation was used. For one blind user, the screen reader did not read the message and she continued to the next contest thinking her vote had been correctly recorded when in fact it had been erased.</p>		<p><b>PRESIDENT AND VICE PRESIDENT</b></p>  <p><b><u>Types of Users benefited from change:</u></b></p> <ul style="list-style-type: none"> <li>✓ ALL</li> </ul>

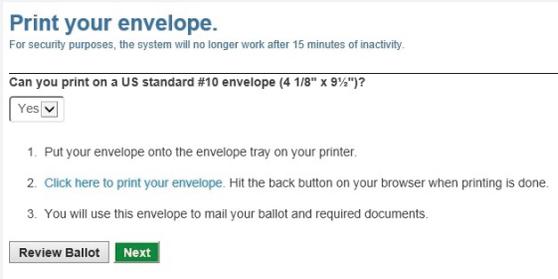
# Resolved Usability Issues - Round One

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
<p>Review</p>	<p>18. For ballot measures and questions, the information on the review ballot screen was too incomplete for participants to accurately ensure that their vote was cast correctly. Constitutional amendments were only listed by question number. Without additional text, users were not sure if they had voted correctly. The only way to ensure accuracy in this matter is to re-enter the contest with the “click to edit” option.</p> <p>Summary information about the questions/constitutional amendments was added within the review screen.</p>	 <p>STATE QUESTION 1</p> <p>For the Constitutional Amendment</p> <p>Click to edit.</p>	 <p>STATE QUESTION 7 Gaming Expansion</p> <p>You voted For the Additional Forms and Expansion of Commercial Gaming</p> <p><input checked="" type="checkbox"/> This contest is fully voted. Click to Change.</p> <p>LOCAL QUESTION A Merit System - Hiring Individuals with Disabilities</p> <p>You voted For</p> <p><input checked="" type="checkbox"/> This contest is fully voted. Click to Change.</p> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>
	<p>19. Users who inverted webpage colors for readability experienced low contrast on the log-in and review pages. Text boxes were difficult to see and the highlighting which occurs when a contest is under-voted is difficult to distinguish from fully voted contests.</p> <p>New visual cues added to signal an undervote were easier to see on an inverted contrast screen; however, this cue proved less effective than the previous one. (See changes from Round Two for final version.)</p>	 <p>BOARD OF EDUCATION</p> <p>You voted for 0 of 1. You may vote for 1 more.</p> <p>Click to edit.</p> <p>STATE QUESTION 1</p> <p>For the Constitutional Amendment</p> <p>Click to edit.</p> <p>First Name: <b>required</b></p> <p>Middle Name:</p> <p>Last Name: <b>required</b></p>	 <p>JUDGE OF THE CIRCUIT COURT JUDICIAL CIRCUIT 6</p> <p>You voted Michael D. Mason</p> <p><input checked="" type="checkbox"/> You voted for 1 of 3. You may vote for 2 more. Click to Change.</p> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ LOW VISION ✓ SENIOR</p>

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
<p>Review</p>	<p>20. Upon selecting “click to edit” in the review screen, blind participants did not know they had been returned to the ballot until they had navigated all around the ballot. Furthermore, returning to the review screen was difficult for them. This issue presented as a problem to other users as well: “You would think that it would go back to the review ballot screen instead of the next question.” “It’s starting from the beginning?”</p> <p>“Click to edit” now returns the user to a specific contest instead of returning them to the entire ballot.</p>		 <p><b>Types of Users benefited from change:</b></p> <p>✓ ALL</p>
<p>Review</p>	<p>21. On the review page, both low literacy and low vision users were reading the text “Click to edit” as “Click to exit”. This made it difficult for these users to figure out how to change who they voted for in a contest.</p> <p>The text “Click to edit” was replaced with “Click to Change”.</p>		 <p><b>Types of Users benefited from change:</b></p> <p>✓ LOW LITERACY ✓ LOW VISION</p>

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
<p><b>Print</b></p>	<p>22. Some users do not have the understanding or printing capability to print an envelope. This was a challenge for older users with limited problem-solving skills, and users with low vision, low dexterity, and blindness, who may not be able to copy an address from the instructions onto a blank envelope.</p> <p>Also, the page headline text on this screen reads “choose your envelope type,” which is misleading because no choice is given. You only choose if you can or cannot print an envelope.</p> <p>Text was changed on the intro screen to say: “You must print and MAIL your ballot and envelope”.</p> <p>The intro screen also includes a brief explanation about why ballots are not saved or submitted electronically.</p>		<p>This tool allows you to print your ballot.</p> <ul style="list-style-type: none"> <li>You must print and MAIL your ballot.</li> <li>You cannot submit your ballot online, by email, or fax. State law says that ballots must be mailed.</li> <li>The website will not store your votes. After you make your selections, you must print your ballot.</li> <li>You cannot save your votes and return later to finish.</li> </ul> <p><b>NEXT: make sure your computer meets the requirements.</b></p> <p><b>Congratulations! You have finished your ballot.</b></p> <p>Don't forget to:</p> <ol style="list-style-type: none"> <li>Read and follow the instructions.</li> <li><b>Sign the oath.</b> Only ballots returned with a signed oath will be counted.</li> <li>MAIL your ballot in an envelope. Only mailed ballots will be counted.</li> <li>Log out!</li> </ol> <p><b>NEXT: Log out</b></p> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>
	<p>23. “Print Envelope” is now a button instead of a link.</p>	<ol style="list-style-type: none"> <li>Put your envelope onto the envelope tray on your printer.</li> <li><a href="#">Click here to print your envelope.</a> Hit the back button on your browser when printing is done.</li> <li>You will use this envelope to mail your ballot and required documents.</li> </ol>	<p><b>Next: Print Envelope or log-out</b></p> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>

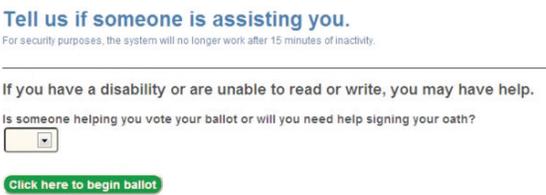
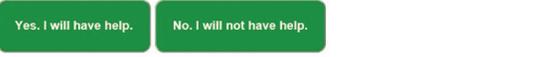
# Resolved Usability Issues - Round One

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
<p><b>Print</b></p>	<p>24. The printing order of the ballot and envelope has been switched to better fit the user's mental model. The ballot now prints first instead of the envelope.</p>		<p>Your ballot, oath, and other documents will be ready for printing in a moment.</p> <p><a href="#">Download Ballot here if the print window does not appear.</a></p> <ul style="list-style-type: none"> <li>You must mail in your ballot for your votes to count. This tool does not save your vote.</li> <li>Paper or font size do not matter. If your selections are readable, your votes will count.</li> <li>In the next step you may print an envelope or logout.</li> </ul> <p><a href="#">Return to ballot summary</a> <a href="#">Next: Print Envelope or log-out</a></p> <p><b><u>Types of Users benefited from change:</u></b></p> <p> ALL</p>



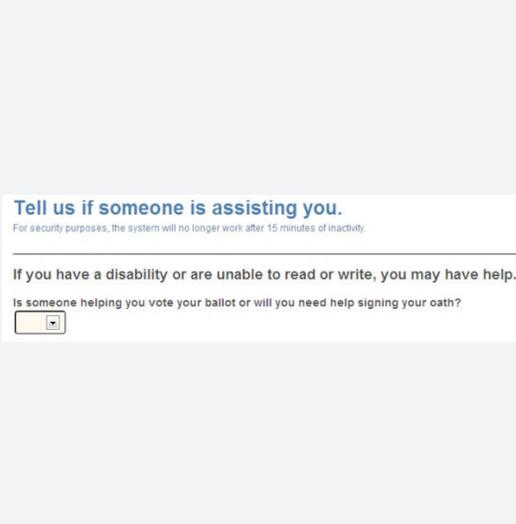
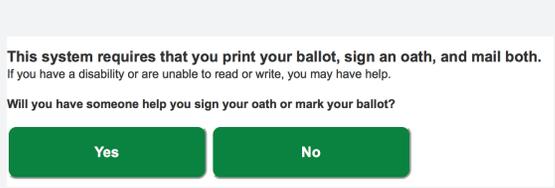
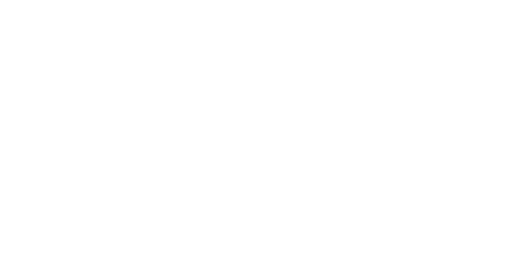
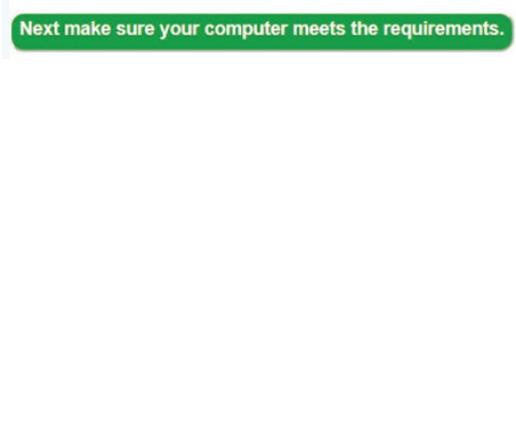
---

Resolved Usability Issues  
***Round Two Iterative Changes***

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
Login	<p>Some users did not find the buttons to move forward to the next screen.</p> <p>Changes to buttons improved their click rate:</p> <ol style="list-style-type: none"> <li>-Buttons were made much larger</li> <li>-Colons, capitalization, and additional information were added to buttons (i.e. Next: Print Envelopes)</li> <li>-Punctuation was removed</li> </ol>		 <p><b>Types of Users benefited from change:</b></p> <p>✓ ALL</p>
	<p>The page about getting assistance was not working well with screenreaders.</p> <ol style="list-style-type: none"> <li>The new page, with simple buttons, works well with screenreaders and provides a simpler, cleaner interaction. Eliminating the dropdown increases accessibility.</li> </ol>		 <p><b>Types of Users benefited from change:</b></p> <p>✓ ALL</p>
	<p>Change to the computer requirements page:</p> <p>Old text: "A recent version of your favorite Web Browser. If you use internet explorer, it must be at least version 9."</p> <p>New text: "An up-to-date version of a supported Web Browser: Firefox, Chrome, Safari, Opera, or Internet Explorer."</p>		 <p><b>Types of Users benefited from change:</b></p> <p>✓ SENIOR ✓ IMPAIRED MOBILITY ✓ LOW LITERACY</p>

# Resolved Usability Issues - Round Two

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
	<p>4. The instructions located under the Ballot Access Code entry went through several iterations which continued to cause confusion for users. At one point the instructions directed the user to copy and paste the ballot code from the email they received, even though sometimes this field was pre-populated. This caused users to delete the code already present and return to the email and copy and paste the code in.</p> <p>Now the directions under the ballot access code read, "If this is blank, copy and paste the ballot access code from the email you received from the Board of Elections."</p>		 <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>
<p><b>Login</b></p>	<p>5. The dropdown menu was difficult to use for some users with ZoomText/screen magnification as it would deploy up instead of down, causing users these users to miss the drop down options. The drop down is also a hassle for blind users who need the screen reader to read each year to them.</p> <p>Drop down menus were also difficult to click for users with limited manual dexterity. Users struggled with the small size of the arrows and moving their mouse to just the right part of the scroll button.</p> <p>To increase ease of use and reduce the time to log-in for blind users, the birth date dropdown boxes were replaced with text boxes so users can manually enter their birth date.</p>		<p><b>Date of Birth:</b></p> <p>Month: Day: Year:</p> <p>01 01 1920</p> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
	<p>6. Users were unclear as to the level of assistance required to check yes on the "Tell us if someone is helping you" page.</p> <p>One blind user asked "If they show me where the line is, is that helping me sign?" Another blind user stated "I have to mark yes because I'm not sure how the signing of the ballot is going to work."</p> <p>An additional line of text was added to alert users what is involved in the ballot marking process, the text now reads, "This system requires that you print your ballot, sign an oath, and mail both."</p>		 <p><b>*Solution not yet confirmed by testing.</b></p> <p><b><u>Types of Users benefited from change:</u></b></p> <ul style="list-style-type: none"> <li>✓ LIMITED DEXTERITY</li> <li>✓ BLIND</li> <li>✓ LOW VISION</li> </ul>
<p><b>Login</b></p>	<p>7. Users did not recognize that the "Next make sure your computer meets the requirements" button on the initial login page button was clickable. Users searched for how to proceed, and did not know how to move forward. Once users were prompted to click the button, they figured the rest of the pages out easily.</p> <p>Blind users relying on screen readers also skipped over this link thinking there would be additional text or information about computer requirements below.</p> <p>Making this button larger, and refining the text helped, but further improvements may be necessary.</p> <p>The cursor now turns into a "hand" when the user mouses over the button. This should help.</p>	 	 <p><b><u>Types of Users this will benefit:</u></b></p> <ul style="list-style-type: none"> <li>✓ SENIOR</li> <li>✓ COGNITIVE IMPAIRMENT</li> <li>✓ LOW LITERACY</li> </ul>

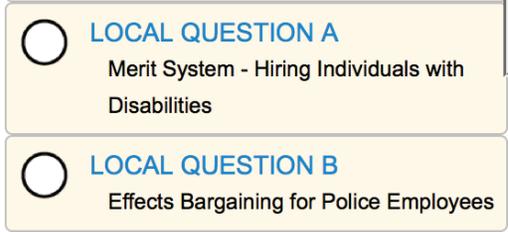
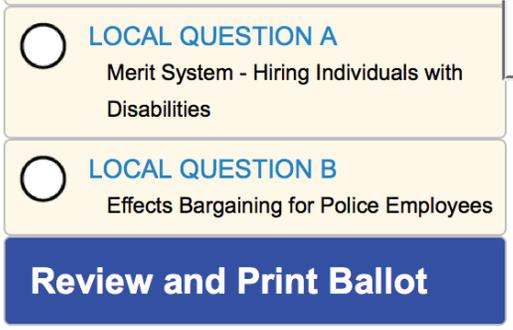
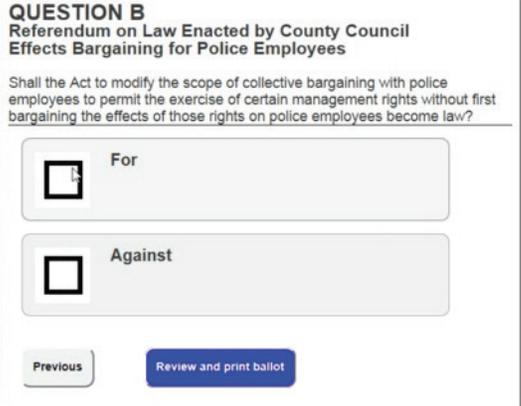
LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
Login	<p>8. In the log-in page, one user had trouble logging in due to a suffix on his name.</p> <p>A more robust error message was added for when the voter's name is not found. It reads as follows:</p> <p>“That voter and ballot key combination is not valid. Before trying again, please check the following:</p> <p>1) Enter your name the same way your registered to vote. For example, if you registered to vote as ‘Jeff’ instead of ‘Jeffrey, use ‘Jeff’ for the search.</p> <p>2) Do not include a suffix such as Jr. or Sr. in the last name field.</p> <p>3) If you changed your name recently, enter your former name.</p> <p>4) If you moved recently, enter the zip code where you lived before.”</p>		<p><b>*Change not yet functional at time of report</b></p> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>
	<p>9. The options of “You can use your computer to vote your ballot OR Print a blank ballot and mark by hand” makes it seem as if there is an option to vote entirely online.</p> <p>Options now read “You can use your computer to mark and print your ballot OR Print a blank ballot and mark by hand”</p>	<p><b>You may choose to:</b></p> <ul style="list-style-type: none"> <li>• Use your computer to vote your ballot OR</li> <li>• Print a blank ballot which you will vote by hand.</li> </ul>	<p><b>You may choose to:</b></p> <ul style="list-style-type: none"> <li>• Use your computer to mark and print your ballot OR</li> <li>• Print a blank ballot and mark by hand.</li> </ul> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>

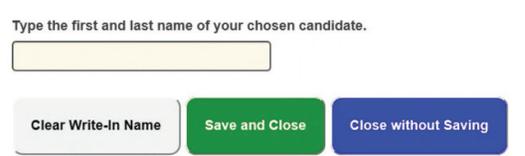
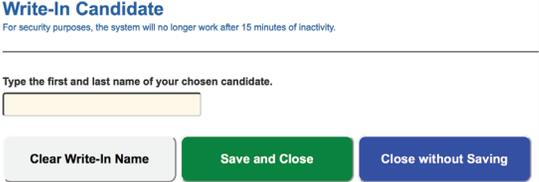
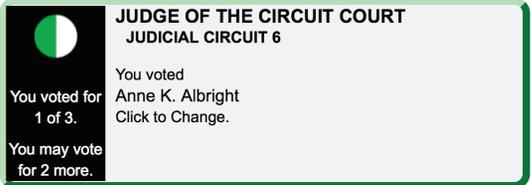
LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
<p><b>Login</b></p>	<p>10. Many users clicked the link that accesses the ballot and passes in the key without realizing that the code is automatically put into the ballot. This may be because users do not know what “pass in your code” means. As a result some users would go back and cut and paste the ballot access code from their email, even though the ballot access code field was pre-filled.</p> <p>The text in the email was simplified to read as follows:</p> <p>"<a href="#">Access your ballot now.</a>"</p> <p>If the link above does not work for you:</p> <ol style="list-style-type: none"> <li>1. Copy and paste the following link into your browser:</li> </ol> <p><a href="https://voterservices.elections.state.md.us/ballot_wizard_redesign">https://voterservices.elections.state.md.us/ballot_wizard_redesign</a></p> <ol style="list-style-type: none"> <li>2. Copy the following BALLOT KEY when prompted.</li> </ol> <p>8ee1cda3-10c5-4451-82a3-f071772ee9d6"</p>		<p><a href="#">Access your ballot now.</a></p> <p>If the link above does not work for you:</p> <ol style="list-style-type: none"> <li>1. Copy and paste the following link into your browser: <a href="https://voterservices.elections.state.md.us/ballot_wizard_redesign">https://voterservices.elections.state.md.us/ballot_wizard_redesign</a></li> <li>2. Copy the following BALLOT KEY when prompted. <b>8ee1cda3-10c5-4451-82a3-f071772ee9d6</b></li> </ol> <p><b><u>Types of Users this will benefit:</u></b></p> <ul style="list-style-type: none"> <li>✓ LOW VISION</li> <li>✓ BLIND</li> <li>✓ SENIOR</li> </ul>

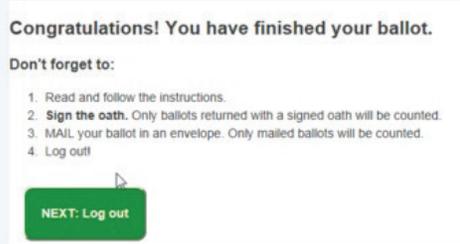
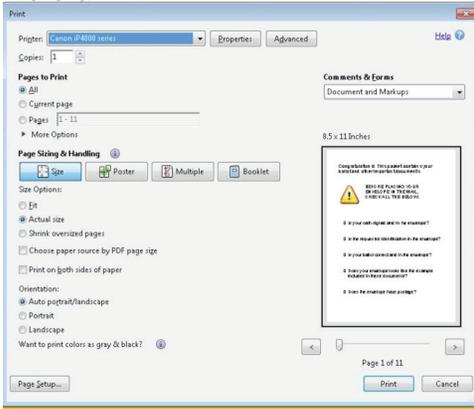
LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
Ballot	<p>11. The write-in process had bugs that impacted use, and was not easy to use with screenreaders.</p> <p>Solution: The write-in process was made an out-and-back interaction with its own screen. This version worked well with screen readers.</p>	 <p>The screenshot shows a 'Write-in' button with a checkmark icon. To its right is a text input field with the label 'Type the first and last name of your chosen candidate.' Below the input field is a tooltip with the same text. At the bottom are three buttons: 'Previous', 'Next', and 'Review and print ballot'.</p>	<p><b>Write-In Candidate</b> For security purposes, the system will no longer work after 15 minutes of inactivity.</p> <hr/> <p>Type the first and last name of your chosen candidate.</p> <input type="text"/> <p>Clear Write-In Name Save and Close Close without Saving</p> <p><b><u>Types of Users benefited from change:</u></b></p> <ul style="list-style-type: none"> <li>✓ SENIOR</li> <li>✓ LOW VISION</li> <li>✓ BLIND</li> <li>✓ LOW LITERACY</li> </ul>
	<p>12. There was no mention in the email or on the site about whether mobile devices can be supported, causing one user to try and retrieve the ballot on his iPad.</p> <p>The following text was added to one of the initial log-in screens to indicate that mobile devices are not currently supported: "Note: this system has not yet been tested on mobile devices. It may or may not work for your mobile device."</p>	<p>(no image available)</p>	<p>Check your computer. <span>English Change Language</span></p> <hr/> <p>Note: this system has not yet been tested on mobile devices. It may or may not work for your mobile device.</p> <p><b><u>Types of Users benefited from change:</u></b></p> <ul style="list-style-type: none"> <li>✓ ALL</li> </ul>

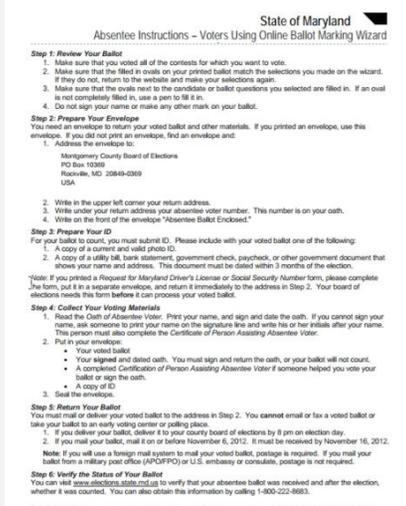
LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
<p><b>Ballot</b></p>	<p>13. The title of the overvote error message was unhelpful (“the page at http://voterservices.elections.state.md.us says”), which caused it to look like a general browser error, and was not fully read by all participants.</p> <p>Also, one ZoomText user could not even see the error message since the position of the message defaults to the middle of the page, which was not in the user’s field of view at the time. After over-voting, he attempted to navigate to the next contest using the side navigation tabs but could not proceed, and he did not know why. He had no idea that there was an error message present that required his attention to proceed.</p> <p>The new overvote error message has a more helpful title (“Maximum selections made.”). Additionally, the error box was formatted with a bright stroke around the entire edge so as to create a stronger visual cue for users with screen magnification or ZoomText, who may only have the edge of the error message in their visual field.</p> <p><b>Further visual refinement of this error message is in progress.</b></p>		 <p><b>Types of Users benefited from change:</b></p> <ul style="list-style-type: none"> <li>✓ SENIOR</li> <li>✓ LOW VISION</li> <li>✓ LOW LITERACY</li> </ul>

# Resolved Usability Issues - Round Two

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
Ballot	<p>14. A few users relied on the side navigation bar in order to progress through the ballot, yet they had no way to review their ballot from this menu. This was a significant problem for one ZoomText user who relied exclusively on the side navigation and could not see the “Review and print ballot” button located under the contest due to her limited field of vision.</p> <p>A blue “Review and Print Ballot” button was added to the side navigation bar.</p>		 <p><b>Types of Users benefited from change:</b></p> <p>✓ ALL</p>
	<p>15. When users reach the end of the ballot, they no longer reach a blank screen that has the buttons “Previous” “Next” and “Review and Print Ballot”.</p> <p>Now they see the last contest, with only the “Previous” and “Review and Print Ballot” buttons available.</p> <p><b>*Though this issue was resolved in a previous iteration, it has since re-occured and is currently being resolved.</b></p>		 <p><b>Types of Users benefited from change:</b></p> <p>✓ ALL</p>

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
<p><b>Ballot</b></p>	<p>16. Some users hesitated when figuring out which button to choose after writing in their ballot selection.</p> <p>The three buttons were made to be the same width, so that the “Save and Close” button has equal weight with the others.</p> <p><b>This solution has not yet been confirmed by testing.</b></p>		<p><b>Write-In Candidate</b> For security purposes, the system will no longer work after 15 minutes of inactivity.</p> <p>Type the first and last name of your chosen candidate.</p>  <p><b><u>Types of Users this will benefit:</u></b></p> <ul style="list-style-type: none"> <li>✓ LOW VISION</li> <li>✓ IMPAIRED MOBILITY</li> <li>✓ SENIOR</li> <li>✓ LOW LITERACY</li> <li>✓ MILD COGNITIVE IMPAIRMENT</li> <li>✓ HEARING IMPAIRED</li> </ul>
<p><b>Review</b></p>	<p>17. The updated visual cue for undervoted contests was not strong enough for users to easily detect. Many users missed undervoted or partially voted contests.</p> <p>Additional visual cues were added to show that a contest is undervoted. The visual cue was deigned to be strongly visible, even when the screen contrast is inverted.</p>		 <p><b><u>Types of Users benefited from change:</u></b></p> <ul style="list-style-type: none"> <li>✓ SENIOR</li> <li>✓ LOW VISION</li> </ul>

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
<p>Print</p>	<p>18. Many users do not proceed to the log out page, especially those who know they cannot print an envelope, as they see no reason to continue to the next page.</p> <p>Button text on the “Your Ballot is Printing Page” has been revised to say “Print Envelope or log-out” and a log-out button was created on the subsequent page.</p>		<p>Your ballot, oath, and other documents will be ready for printing in a moment.</p> <p><a href="#">Download Ballot here if the print window does not appear.</a></p> <ul style="list-style-type: none"> <li>You must mail in your ballot for your votes to count. This tool does not save your vote.</li> <li>Paper or font size do not matter. If your selections are readable, your votes will count.</li> <li>In the next step you may print an envelope or logout.</li> </ul> <p><a href="#">Return to ballot summary</a> <a href="#">Next: Print Envelope or log-out</a></p> <p>You have finished your ballot.</p> <p>Don't forget to:</p> <ol style="list-style-type: none"> <li>Read and follow the instructions.</li> <li>Sign the oath. Only ballots returned with a signed oath will be counted.</li> <li>MAIL your ballot in an envelope. Only mailed ballots will be counted.</li> <li>Log out!</li> </ol> <p>Can your printer print out a US standard #10 envelope (4 1/8" x 9 1/2")?</p> <p><a href="#">Return to Print Ballot</a> <a href="#">Yes: Print Envelope</a> <a href="#">No: Log Out</a></p> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>
	<p>19. The print dialog is very slow to appear and for some the print dialog never appears at all. This creates problems as users search for additional options to print.</p> <p>The text that was added to this screen (“Your ballot, oath, and other documents will be ready for printing in a moment”) helped users.</p> <p>Option to download PDF and reprint was also helpful.</p>	<p>You should have just printed a document containing your ballot and other important documents. If it did not print, <a href="#">download the pdf now.</a></p> 	<p>Your ballot, oath, and other documents will be ready for printing in a moment.</p> <p><a href="#">Download Ballot here if the print window does not appear.</a></p> <p><b><u>Types of Users benefited from change:</u></b></p> <p>✓ ALL</p>

LOCATION	OBSERVATION/RECOMMENDATION	ORIGINAL WEBSITE	ITERATIVE CHANGE
<p>Print</p>	<p>20. Users had trouble finding key information in the ballot instructions. A simplified ballot checklist was added to beginning of the printed ballot packet</p> <p><b>Further improvements will make this ballot checklist easier to identify as part of the MD ballot package</b></p>		 <p><b>Types of Users benefited from change:</b></p> <p>✓ ALL</p>
	<p>21. Not all users were finding the link to “download the pdf now” if their ballot did not print.</p> <p>The new link starts on a new line, and provides more information. The text about what documents are printing was also improved:</p> <p>Old text: “You should have printed a document containing your ballot and other important documents”</p> <p>New text: “Your ballot, oath, and other documents will be ready for printing in a moment.”</p>	<p>You should have just printed a document containing your ballot and other important documents. If it did not print, <a href="#">download the pdf now</a>.</p>	<p>Your ballot, oath, and other documents will be ready for printing in a moment. <a href="#">Download Ballot here if the print window does not appear.</a></p> <p><b>Types of Users benefited from change:</b></p> <p>✓ SENIOR ✓ LOW VISION</p>

## Participant Demographics - Round One

Participant #	Age	Gender	Race/ Ethnicity	Factors Affecting Computer Use	Assistive Technology Used
p1	52	Male	African American	Low Literacy	None
p2	75	Male	Caucasian	Low Vision, Senior	ZoomText
p3	28	Female	Caucasian	Impaired Mobility	None
p4	54	Female	Caucasian	Blind	JAWS
p5	47	Female	African American	Low Literacy	None
p6	54	Male	Caucasian	Hearing Impaired, Mild Cognitive Impairment, and Impaired Mobility	None
p7	48	Male	African American	Impaired Mobility, Low Literacy	None
p8	58	Female	African American	Low Vision	None
p9	34	Female	Caucasian	Blind	JAWS
p10	48	Male	Caucasian	Blind	JAWS
p11	54	Female	African American	Low Literacy	None
p12	60	Male	African American	Hearing Impaired, Impaired Mobility, Impaired Dexterity	None
p13	62	Male	Caucasian	Hearing Impaired, Low Vision	Increased Browser Magnification
p14	54	Female	African American	Impaired Mobility Mild Cognitive Impairment	None
p15	79	Female	Caucasian	Impaired Mobility, Senior	None
p16	60	Female	African American	Impaired Mobility	None
p17	23	Male	African American	Mild Cognitive Impairment	None

## Participant Demographics - Round Two

Participant #	Age	Gender	Race/ Ethnicity	Factors Affecting Computer Use	Assistive Technology Used
p1	23	Female	Caucasian	Low Vision	Increased Browser Magnification
p2	38	Male	Caucasian	Blind	JAWS
p3	27	Female	African American	Impaired Mobility and Dexterity	None
p4	36	Male	Caucasian	Impaired Mobility	None
p5	65	Male	Caucasian	Hearing Impairment, Senior	None
p6	66	Male	Caucasian	Impaired Mobility and Dexterity, Senior	Dragon NaturallySpeaking
p7	60	Male	Caucasian	Blind	JAWS
p8	24	Male	African American	Impaired Mobility	None
p9	46	Male	African American	Low Vision	JAWS
p10	39	Male	Caucasian	Low Vision	Increased Browser Magnification
p11	58	Female	Caucasian	Blind	Increased Browser Magnification, JAWS
p12	51	Female	Caucasian	Impaired Mobility	None
p13	67	Male	African American	Senior, Impaired Mobility	None
p14	83	Female	Caucasian	Hearing Impairment, Senior	None
p15	83	Male	Caucasian	Hearing Impairment, Senior	None
p16	47	Male	Caucasian	Low Vision	Increased Screen Resolution
p17	34	Female	Caucasian	Low Vision	JAWS