

Heuristic Evaluation of Official Website for Virginia's EZ Pass System

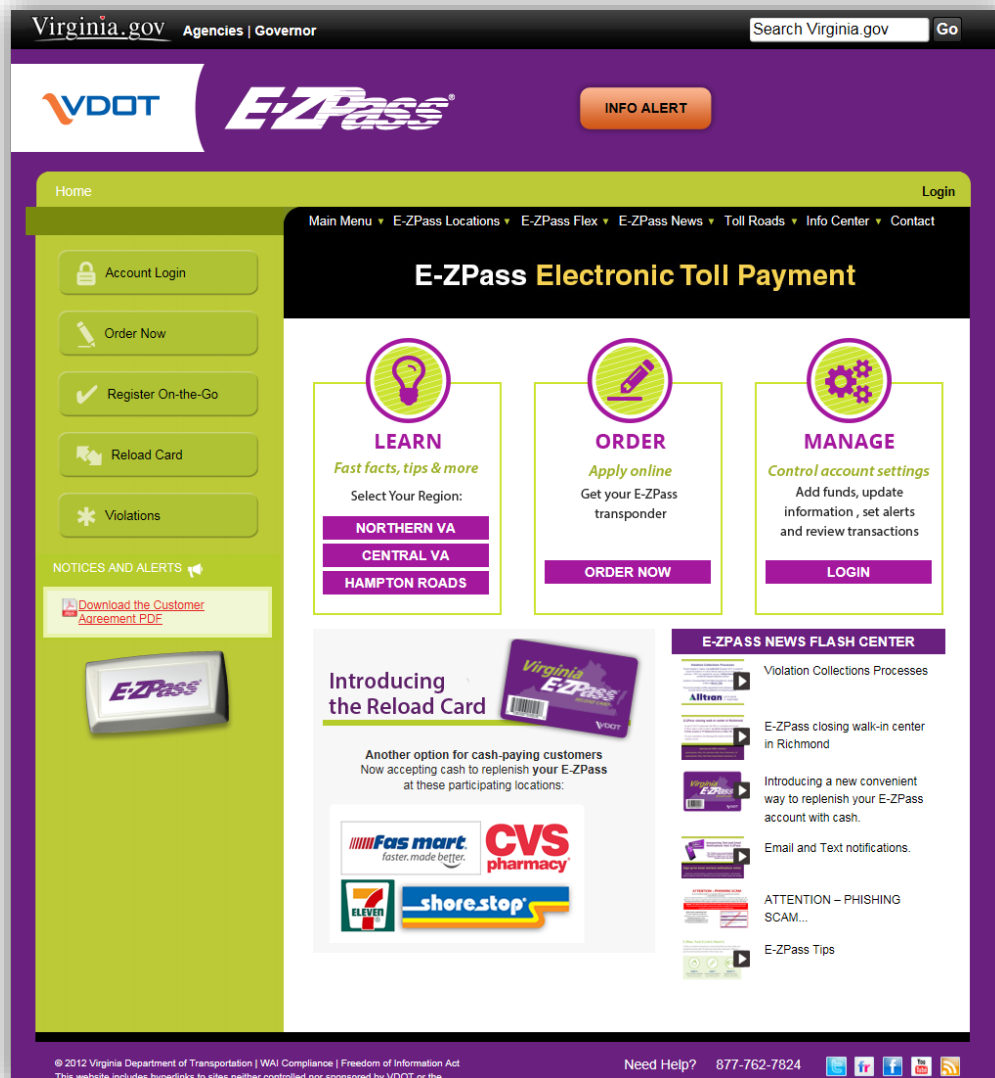


In Fulfillment of the Exercise 5
HCIN – 610 Foundations of Human-Computer Interaction
Presented by Group 2

General Information

Organization	Official Website for Virginia's EZ Pass System
URL	http://www.ezpassva.com
Set of Guidelines	<ol style="list-style-type: none">1. Nielsen's 10 principles2. WebAim's WCAG 2.0 Checklist3. Gestalt Principles

Visualization of the Website

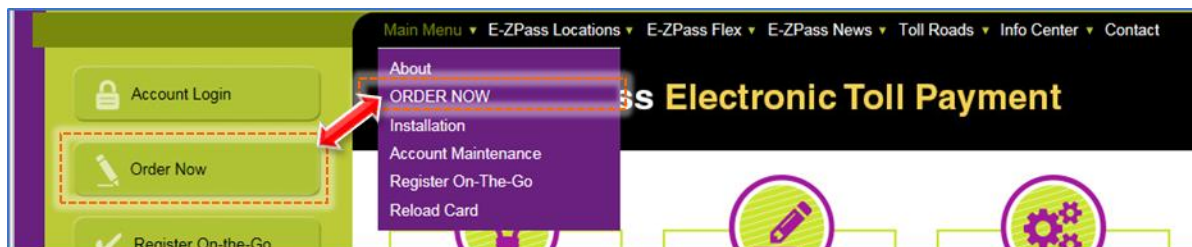


Heuristic Evaluation Results

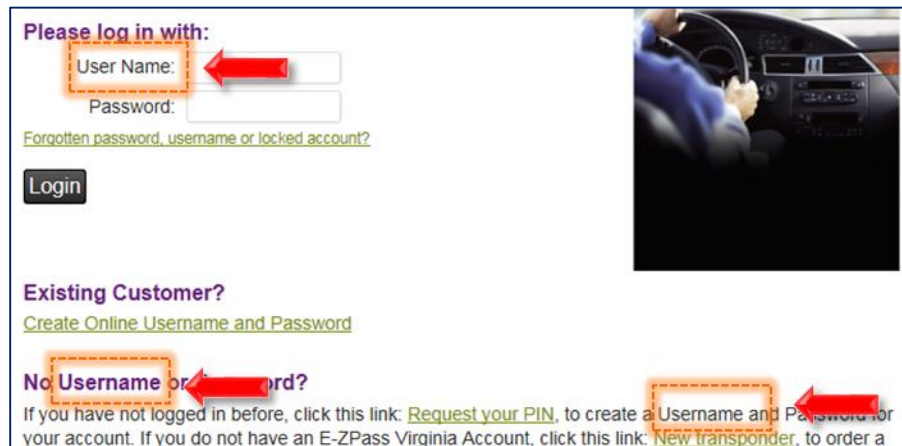
PROBLEM 1	
STANDARD	Consistency and Standards (Nielsen's 10 Heuristics)
SEVERITY	3
DESCRIPTION	There are many menus and submenus with too many confusing options. The hierarchy of the website organization is not clear. Many menu options are similar, but not quite the same, leading to confusion due to the inconsistency.
SOLUTION	Rework information architecture and establish a clearer navigation system with more streamlined menu options.
SCREENSHOT (IF ANY)	



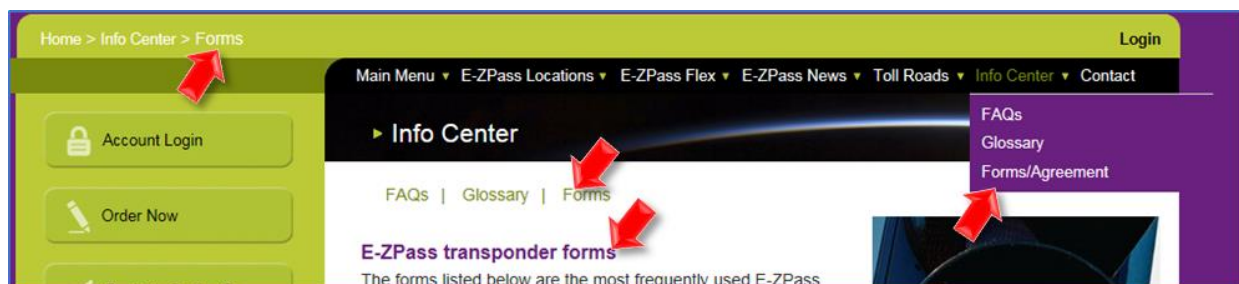
PROBLEM 2	
STANDARD	Consistency and Standards (Nielsen's 10 Heuristics)
SEVERITY	1
DESCRIPTION	The "ORDER NOW" menu option is sometimes listed in ALL CAPS and in CamelCase elsewhere, leading to confusion due to the inconsistency.
SOLUTION	Convert any instances of "ORDER NOW" to "Order Now".
SCREENSHOT (IF ANY)	



PROBLEM 3	
STANDARD	Consistency and Standards (Nielsen's 10 Heuristics)
SEVERITY	1
DESCRIPTION	The "Username" field name is sometimes listed as one word, and as two words elsewhere, leading to confusion due to the inconsistency.
SOLUTION	Convert any instances of "User Name" to "Username".
SCREENSHOT (IF ANY)	



PROBLEM 4	
STANDARD	Consistency and Standards (Nielsen's 10 Heuristics)
SEVERITY	1
DESCRIPTION	On the Info Center page, the dropdown Submenu says "Forms/Agreement", the page's submenu says "Forms" and the header says "E-Zpass transponder forms" leading to confusion due to the inconsistency.
SOLUTION	Convert "Forms/Agreement" and "E-Zpass transponder forms" to "Forms".
SCREENSHOT (IF ANY)	



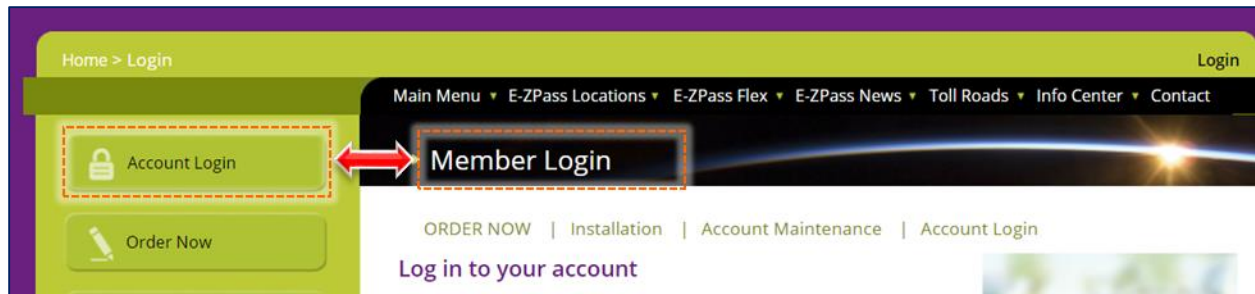
PROBLEM 5

STANDARD Consistency and Standards (Neilsen's 10 Heuristics)

SEVERITY 2

DESCRIPTION The "Account Login" menu option phrase is sometimes used and "Member Login" is used elsewhere. This confuses users as to what the difference is between these two phrases or are these both the same?

SOLUTION Convert any instances of "Member Login" to "Account Login".

SCREENSHOT (IF ANY)**PROBLEM 6**

STANDARD Consistency and Standards (Neilsen's 10 Heuristics)

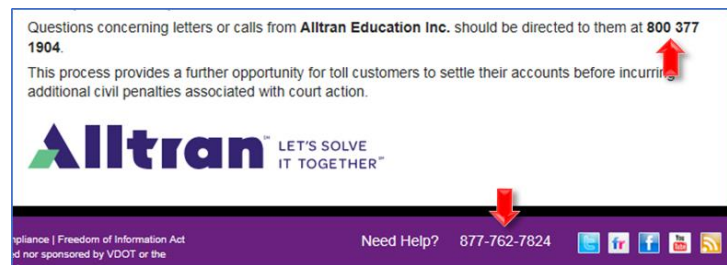
SEVERITY 2

DESCRIPTION After clicking "E-Z Pass Locations" menu option, the page title and breadcrumb say "Store Locations". There is some confusion due to the inconsistency whether E-Z Pass Locations is the same thing as Store Locations.

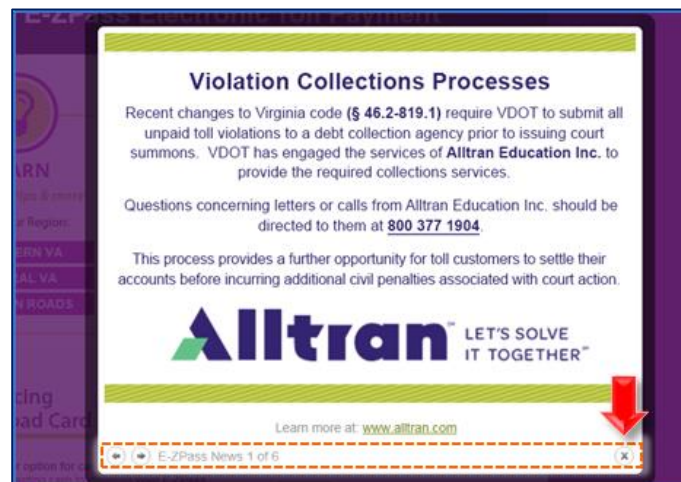
SOLUTION Change any instances of "Store Locations" to "E-Z Pass Locations".

SCREENSHOT (IF ANY)

PROBLEM 7	
STANDARD	Consistency and Standards (Neilsen's 10 Heuristics)
SEVERITY	1
DESCRIPTION	On the Violations page, there are 2 different formats for phone numbers- one with hyphens and one without. One of the instances has the phone number split onto 2 lines which hinders readability and understanding.
SOLUTION	phone numbers should all be in the same format – (XXX) XXX-XXXX and kept on the same line
SCREENSHOT (IF ANY)	

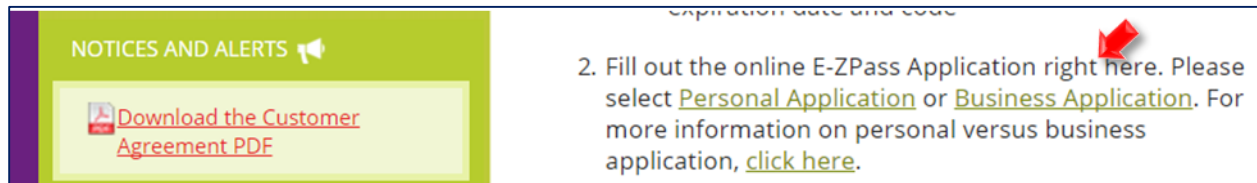


PROBLEM 8	
STANDARD	Consistency and Standards (Neilsen's 10 Heuristics)
SEVERITY	3
DESCRIPTION	After clicking the play buttons on the home page, the popup windows have an "X" for closing in the bottom right corner instead of the top right, not following standard conventions which users are used to.
SOLUTION	Move the X in the popup windows to the upper right corner.
SCREENSHOT (IF ANY)	

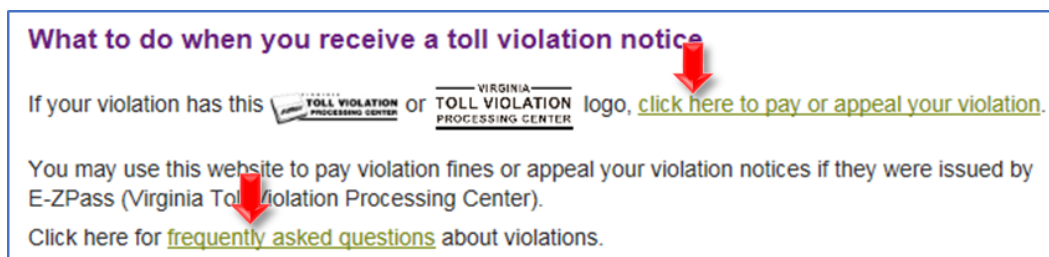


PROBLEM 9

STANDARD	Link Purpose - Link Only (WebAIM 2.4.9)
SEVERITY	2
DESCRIPTION	On "ORDER NOW" page, Step 2: "Fill out the online E-Z Pass Application right here", there is no link on "right here" and the words "right here" are not necessary. The "click here" link is not descriptive for screen readers or concise for easy reading. "Fill out the online E-Z Pass Application" should be hyperlinked.
SOLUTION	Make hyperlink text more concise. Remove words such as "click here" or "right here".
SCREENSHOT (IF ANY)	

**PROBLEM 10**

STANDARD	Link Purpose - Link Only (WebAIM 2.4.9)
SEVERITY	2
DESCRIPTION	On the Violations page, "Click here for frequently asked questions about violations". There is no link on "click here" and the words "click here" are not even necessary. The link is not descriptive for screen readers or concise for easy reading.
SOLUTION	Make hyperlink text more concise. Remove phrases such as "click here". "Frequently Asked Questions about violations" would be better hyperlink text.
SCREENSHOT (IF ANY)	



PROBLEM 11

STANDARD	Link Purpose - Link Only (WebAIM 2.4.9)
SEVERITY	2
DESCRIPTION	On the ORDER NOW page, the links are not concise or descriptive. "Click here for more information" is not necessary. The link is not descriptive for screen readers or concise for easy reading.
SOLUTION	Shorten links and make them descriptive for screen readers. Remove "click here for more information" as it's not necessary or descriptive.
SCREENSHOT (IF ANY)	

If you prefer, there are several other ways to get your E-ZPass:

Visit a Customer Service Center or location. [Find a location near you by clicking here.](#)
 Apply via mail. [Click here for more information.](#)
 Apply by telephone (credit card required). [Click here for more information.](#)

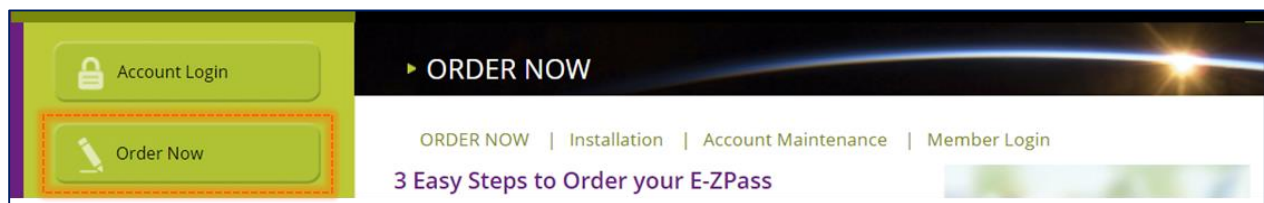
PROBLEM 12

STANDARD	Images of Text (WebAIM 1.4.5)
SEVERITY	3
DESCRIPTION	On the Violations page, these images which contain important information do not have descriptive enough alt tags so the information is accessible to those using screen readers. The current alt tags say "Violation Logo". How will those using screen readers know what these logos actually display?
SOLUTION	The alt tags should say "EZPass Toll Violation Processing Center" and "Virginia Toll Violation Processing Center" so that users relying on screen readers will perceive the same content as fully sighted users.

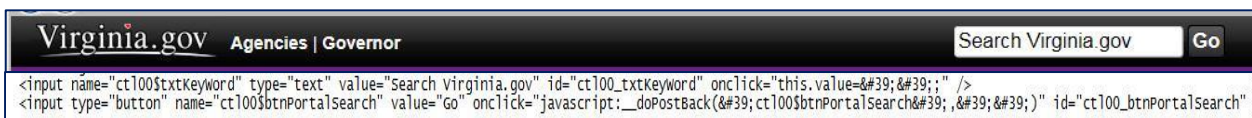
SCREENSHOT (IF ANY)

PROBLEM 13

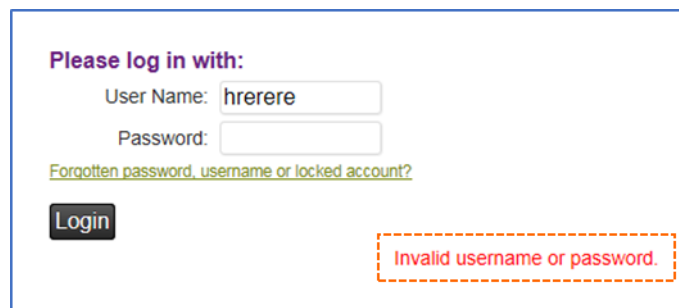
STANDARD	Visibility of System Status (Nielsen's 10 Heuristics)
SEVERITY	2
DESCRIPTION	(Sub)Menu options are not highlighted or visibly differentiated from other menu options after being clicked on. This makes it harder for users to understand where they are on the site and to remember what they clicked to get there. With all of the possible menu options on this site, this lack of visual cues makes it more difficult to understand the organization of the site.
SOLUTION	Although the header of the page shows the appropriate title, additional reinforcing visuals to highlight the selected menu option would be helpful, especially for those with reading difficulties, for instant recognition on where one is and what the user had selected

SCREENSHOT (IF ANY)**PROBLEM 14**

STANDARD	Non-text Content (WebAIM 1.1.1)
SEVERITY	2
DESCRIPTION	According to the HERA evaluation tool, there is no label for the search form at the top of the site in the HTML, which makes it not accessible for screen readers.
SOLUTION	Add a label to the search form field in the code.

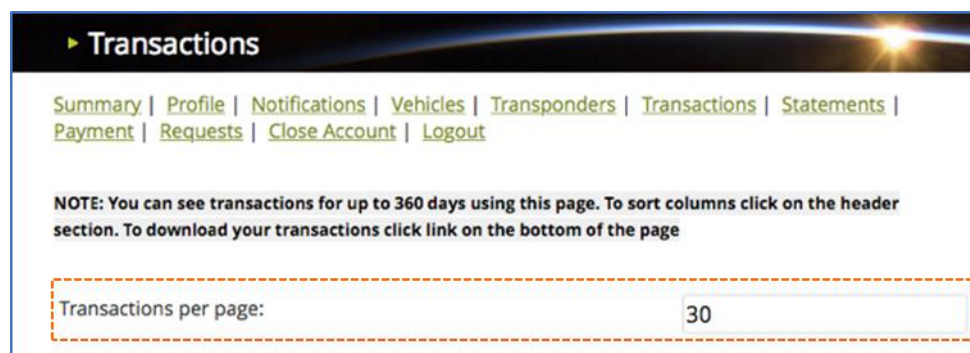
SCREENSHOT (IF ANY)

PROBLEM 15	
STANDARD	Help users recognize, diagnose, and recover from errors (Neilsen's 10 Heuristics)
SEVERITY	2
DESCRIPTION	On the Member Login page, the error message should be displayed closer to the applicable fields so that it is more visible and noticeable to where the user is visually focused. The feedback could be more specific whether the problem is the username or the password to aid in troubleshooting.
SOLUTION	Move error message up closer to the fields. Specify whether the issue is the username, the password, or both.
SCREENSHOT (IF ANY)	



The screenshot shows a login form titled "Please log in with:". It contains two input fields: "User Name:" with the text "hrerere" and "Password:". Below the password field is a link: "Forgotten password, username or locked account?". A "Login" button is positioned below the fields. An error message, "Invalid username or password.", is displayed in a red dashed box at the bottom right, which is not directly adjacent to the input fields.

PROBLEM 16	
STANDARD	Proximity (Gestalt Principles)
SEVERITY	2
DESCRIPTION	On the Transactions page, the field input is displayed very far from its label. Therefore it is unclear if they belong together.
SOLUTION	Move field and label much closer together.
SCREENSHOT (IF ANY)	



The screenshot shows a "Transactions" page. At the top, there is a navigation bar with links: Summary | Profile | Notifications | Vehicles | Transponders | Transactions | Statements | Payment | Requests | Close Account | Logout. Below this is a note: "NOTE: You can see transactions for up to 360 days using this page. To sort columns click on the header section. To download your transactions click link on the bottom of the page". At the bottom, there is a label "Transactions per page:" followed by an input field containing the number "30". The label and input field are enclosed in a red dashed box, indicating the proximity issue mentioned in the problem description.

PROBLEM 17	
STANDARD	Error Prevention (Neilsen's 10 Heuristics)
SEVERITY	2
DESCRIPTION	On the Account Notifications page, the note "NOTE: You must click the "Update" button when finished to save your changes" should not be necessary. The "Update" button is at the very bottom of the long screen where users would likely need to scroll. Users would likely forget to save their changes because they cannot see the Update button, which is why they needed to add this note on this already busy page.
SOLUTION	Place an additional Update button near the top of the page, make the button stand out, and this Note would not be necessary. When leaving the page, ask the user if they want to save their changes if they have not clicked Update button after making changes.
SCREENSHOT (IF ANY)	

Account Notifications

Summary | Profile | Notifications | Vehicles | Transponders | Transactions | Statements | Payment | Requests | Close Account | Logout

NOTE: You must click the update button when finished to save your changes.

Email notification settings

☒ Account Balance Warning
You will receive an email when your balance reaches a value less than:

☒ Account is in Insufficient status
You will receive an email notification when your balance reaches zero or below.

☒ Payment Receipt Notifications
You will receive an email notification when a payment posts to your account.

☒ News and Information on E-ZPass and Virginia Toll Facilities
You will receive emails with toll facility and E-ZPass news and information relevant to E-ZPass customers.

Text Message Notifications

2. Any regional detention center vehicle operated by or under the direction of a correctional officer responding to an emergency call or operating in an emergency situation;
3. Any vehicle used to fight fire, including publicly owned state forest warden vehicles, when traveling in response to a fire alarm or emergency call;
4. Any ambulance, rescue, or life-saving vehicle designed or used for the principal purpose of supplying resuscitation or emergency relief where human life is endangered;
5. Any Department of Emergency Management vehicle or Office of Emergency Medical Services vehicle, when responding to an emergency call or operating in an emergency situation;
6. Any Department of Corrections vehicle designated by the Director of the Department of Corrections, when (i) responding to an emergency call at a correctional facility, (ii) participating in a drug-related investigation, (iii) pursuing escapees from a correctional facility, or (iv) responding to a request for assistance from a law-enforcement officer; and
7. Any vehicle authorized to be equipped with alternating, blinking, or flashing red or red and white secondary warning lights pursuant to § 46.2-1029.2.

☐ Yes, I have read the VIRGINIA E-Z PASS "Text Alerts" ACKNOWLEDGMENT and accept its terms and conditions.

Mobile Phone Number

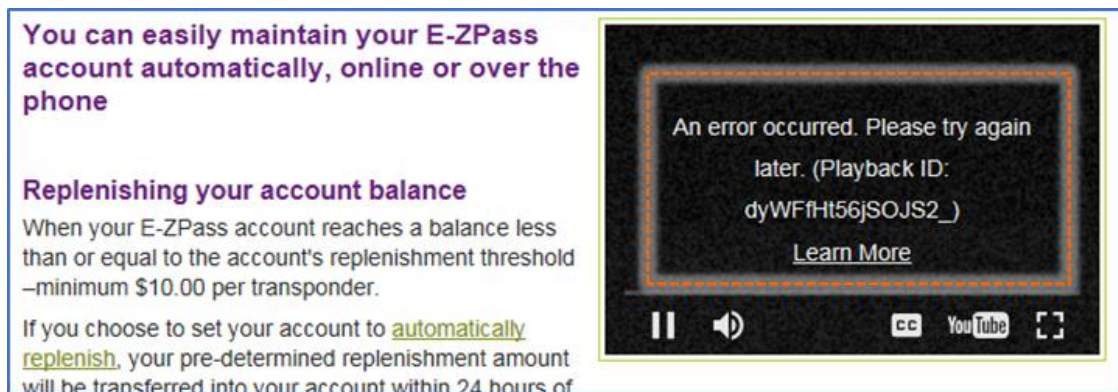
You will receive a Verification Code in your Text Message.

☐ Text Message: Account Balance Warning
You will receive a Text Message when you balance reaches your Account Balance Warning:

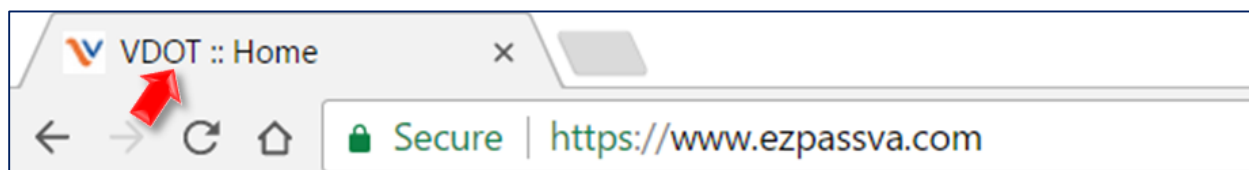
☐ Text Message: Account is in Insufficient status
You will receive Text Message notification when your balance reaches zero or below.

PROBLEM 18

STANDARD	Error Prevention (Nielsen's 10 Heuristics)
SEVERITY	3
DESCRIPTION	On the Account Maintenance page, the video did not play as expected and an error displayed with technical jargon (the long Playback ID number) which could be confusing and intimidating to the user.
SOLUTION	Troubleshoot video link/upload.
SCREENSHOT (IF ANY)	

**PROBLEM 19**

STANDARD	Page Titled (WebAIM 2.4.2)
SEVERITY	1
DESCRIPTION	The HTML page title is not very descriptive, stating simply "VDOT : Home". There is no mention that it is the home page for E-ZPass, which makes it less accessible.
SOLUTION	Solution- make HTML page title more descriptive, saying it is the home page for Virginia E-ZPass

SCREENSHOT (IF ANY)

PROBLEM 20	
STANDARD	Page Titled (WebAIM 2.4.2)
SEVERITY	2
DESCRIPTION	The language of the site is not identified using the HTML language attribute.
SOLUTION	Add language (English) tag to the HTML
SCREENSHOT (IF ANY)	None
PROBLEM 21	
STANDARD	Focus Visible (WebAIM 2.4.7)
SEVERITY	2
DESCRIPTION	When tabbing through the page, the selected menu items and fields are not visibly highlighted when using Tab on the keyboard for those who use keyboards to navigate the website.
SOLUTION	Make all menu options available by tabbing.
SCREENSHOT (IF ANY)	None
PROBLEM 22	
STANDARD	Match Between System and the Real World (Nielsen's 10 Heuristics)
SEVERITY	2
DESCRIPTION	There is no description of what On-The-Go is. It is unclear if this is their name for all transponders or if this is a special type of transponder, since they just use the term "transponder" frequently on the website and also use the phrase "Flex Transponder" elsewhere.
SOLUTION	Begin this section with a sentence or two about what On-The-Go is and if it is synonymous with "transponder".
SCREENSHOT (IF ANY)	



PROBLEM 23	
STANDARD	Match between system and the real world (Neilsen's 10 Heuristics)
SEVERITY	3
DESCRIPTION	In the "Log in" page – when a user want to create his/her new account, it is prone to be confusing for the user. The phrase "Existing Customer?" is not clear in terms of what it means. Moreover, the user can be uncertain about the difference between the "Existing Customer" and "No Username or Password" options.
SOLUTION	In this case, the user needs to have account number and PIN beforehand. The page should be redesigned with logical order with step-by-step methods or using wizard to prevent user from being confused.
SCREENSHOT (IF ANY)	

Log in to your account

Please log in with:

User Name:

Password:

[Forgotten password, username or locked account?](#)

Login


Existing Customer?

[Create Online Username and Password](#)

No Username or Password?

If you have not logged in before, click this link: [Request your PIN](#), to create a Username and Password for your account. If you do not have an E-ZPass Virginia Account, click this link: [New transponder](#), to order a new transponder and open an account. If you are registering a retail transponder and do not have an existing account, click this link: [Register retail tag](#), to register your transponder by opening a new account.

You will receive your PIN and account reset instructions by email.



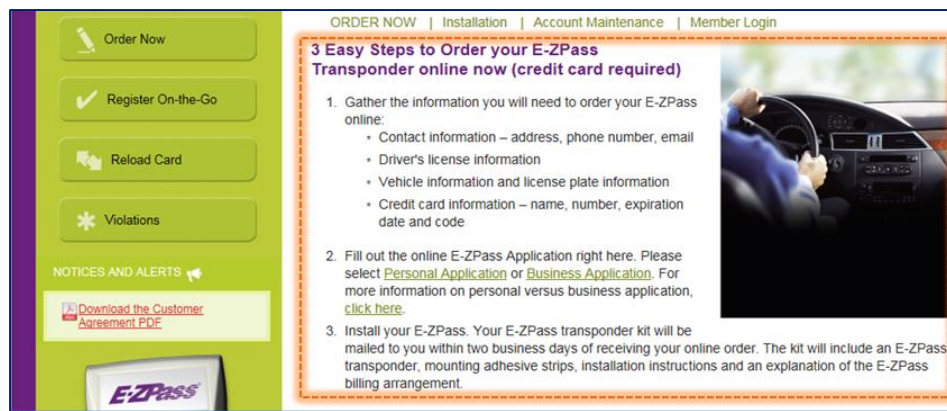
PROBLEM 24

STANDARD Aesthetic and Minimalist Design (Neilsen's 10 Heuristics)

SEVERITY 2

DESCRIPTION On the "ORDER NOW" page, the "3 Easy Steps to Order" section is very verbose, lengthy, and could be hard to understand for users, especially for those with cognitive dysfunction. There are many steps, sub-steps, and links which could be confusing to some users.

SOLUTION Simplify text and make it more concise.

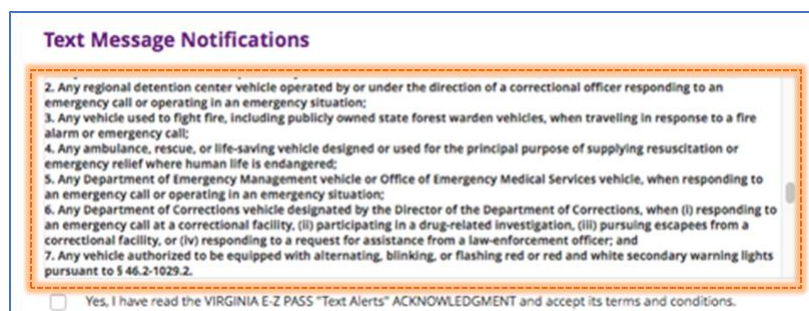
SCREENSHOT (IF ANY)**PROBLEM 25**

STANDARD Aesthetic and Minimalist Design (Neilsen's 10 Heuristics)

SEVERITY 2

DESCRIPTION On the Notifications page, the Terms and Conditions section is very wordy and hard to read. It may not be legally necessary to display all of this content, and may be able to be simplified.

SOLUTION If deemed unnecessary by legal department, remove or simplify as much as possible by lawyers.

SCREENSHOT (IF ANY)

PROBLEM 26**STANDARD** Aesthetic and Minimalist Design (Neilsen's 10 Heuristics)**SEVERITY** 2**DESCRIPTION** On the Vehicles page, all of the fields for a new vehicle do not need to display right away unless the user wants to add a new vehicle. There is too much-crowded information and the Add Vehicle link is buried in content and hard to notice.**SOLUTION** Move the new vehicle form fields to a new page or hidden screen. User can come to this page, see the existing vehicles, and click a button to add a new vehicle if they choose.**SCREENSHOT (IF ANY)**

License Plate No. * State

Make * Model *

Year * Color *

Vehicle Type

Vehicle Description

Add Vehicle

Plate No.	State	Plate Type	Vehicle Description	Make	Model	Year	Color	
VA		Automobile and Sport Utility	2 axles, 4 tires (up to 7,000 lbs) = class 72	FORD	FUSION	2012	BLUE	Delete Edit

PROBLEM 27**STANDARD** Aesthetic and Minimalist Design (Neilsen's 10 Heuristics)**SEVERITY** 1**DESCRIPTION** On the Vehicles page, this note is too wordy and unnecessary. If users want to add a new vehicle, it should be intuitive that they click a distinctive Add Vehicle button or link and fill out the forms. If form fields are on a page, users should know they can be filled out. Clear Edit and Delete buttons or links should also be self-explanatory without needing detailed instructions.**SOLUTION** Remove the note. The form fields should be enough to inform users that they can be filled out.**SCREENSHOT (IF ANY)**

Vehicle Information

NOTE:
 To add a new vehicle to your account, enter the vehicle information in the form below, and click 'Add Vehicle'.
 To make changes to an existing vehicle, click on the 'Edit' link next to the vehicle, edit the information in the form below, and click 'Update Vehicle'.
 To remove a vehicle from your account, click the 'Delete' link next to the vehicle.

License Plate No. * State

PROBLEM 28	
STANDARD	Aesthetic and Minimalist Design (Nielsen's 10 Heuristics)
SEVERITY	2
DESCRIPTION	On the Account Maintenance page- The verbiage is too wordy and the columns are too wide (over 80 characters). This makes it too difficult to read, especially for those with reading and other cognitive dysfunction disabilities.
SOLUTION	Simplify and make the language more concise. Make columns <80 characters wide.
SCREENSHOT (IF ANY)	

► Account Maintenance

Installation | Account Maintenance | Member Login

You can easily maintain your E-ZPass account automatically, online or over the phone

Replenishing your account balance

When your E-ZPass account reaches a balance less than or equal to the account's replenishment threshold –minimum \$10.00 per transponder.

If you choose to set your account to [automatically replenish](#), your pre-determined replenishment amount will be transferred into your account within 24 hours of reaching the replenishment threshold. If you experience problems, you should contact the E-ZPass Customer Service Centers.

If you choose to [replenish manually](#), that's easy, too. You can add funds to your account by phone or online with a credit card, or mail your payment to one of our [E-ZPass Customer Service Centers](#). It can take up to 24 hours for new accounts, payments, and new transponders to be activated and reflected at Virginia toll plazas, and up to 48 hours out of state.

If you are traveling out of state and replenish your account by cash, it's a good idea to check your balance before you go.

Managing your account information

[Free quarterly account statements](#) are available online to help you keep track of your E-ZPass expenses. [Detailed monthly statements](#) are also available starting at \$1.00 per month. Additionally, free transaction reporting is available online.

If you move, get a new vehicle, or change your credit card or bank account, you can update that information securely online, by phone at (877) 762-7824, or at your nearest [E-ZPass Customer Service Centers](#).

Should you wish to get an additional transponder, transfer a transponder, get a privacy statement or close an account, you can download all the necessary [forms and information](#), or log into your account to request these actions to be processed.

Introducing convenient email and text notifications

Email notifications are a convenient way to be alerted when you reach a low balance threshold and/or run out of funds. Now, E-ZPass also offers convenient text notifications.


You can [sign-up](#) to receive email and text alerts when your account reaches a low level or insufficient status.

(Please note: A valid email address is required to receive email notifications. A valid cell phone number is required to receive text notifications, and your carrier's standard text message rates will apply.)

Email is the fastest way for us to contact you regarding other issues with your account so please make sure we have a current email address for you.

Exchanging for a new transponder

If your transponder stops working or you would like to exchange your transponder for a different type, you can log into your account online and request an exchange on the transponders page, mail it to the E-ZPass Customer Service Centers, P.O. Box 1234, Clifton Forge, VA 24422-1234, or drop it by the [E-ZPass Customer Service Centers](#) nearest you.



Conclusion

After evaluating the Virginia E-ZPass website, our team has concluded that this website has various usability and accessibility issues that need to be worked on. Although none of the issues we found were considered catastrophic, there are many website issues regarding consistency of terminology and formatting, especially involving menu options, which could lead to confusion for users. Content and information are often displayed in a haphazard way with lengthy text sections and require simplification so that users can comprehend the content easily. The organization and hierarchy of the website is unclear, and we believe that further efforts to organize content in a more user-friendly way, perhaps by detailed task analysis or card sorting, would be beneficial. Although some effort has been made to make this website accessible, including the use of 'alt' tags, a 'skip to main content' link and closed captioning for videos; there is more work that needs to be done to make this site fully accessible, especially to those using screen readers. This website provides a valuable service to drivers and passengers in Virginia and should be improved to make E-ZPass tasks easier to accomplish for all users.