

COMMONWEALTH OF PENNSYLVANIA
**DEPARTMENTS OF HUMAN SERVICES,
 INSURANCE, AND AGING**

INFORMATION TECHNOLOGY GUIDELINE

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Domain: Application	Category: DHS Web Development
Date Issued: 09/19/2000	Issued By Direction Of: 
Date Revised: 04/29/2016	Cliff Van Scyoc, Dir of Division of Technical Engineering

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Introduction

The Americans with Disabilities Act (ADA) is intended to provide equal access for those with disabilities. Compliance is a primary concern for ALL program offices in the Department of Human Services (DHS) and agencies within the Commonwealth of Pennsylvania. It is the goal of DHS to ensure that Information Technology Policy (ITP) Accessibility Policy (ITP-ACC001) is enforced when providing information through the Internet.

Purpose

The purpose of this document is to provide an overview of ADA compliance of Internet applications at DHS, provide an understanding for developers of the major areas of difficulty for those with disabilities, to identify some best practices, and to provide a checklist for developers to consider when developing applications. Developers should be cognizant of the fact that a variety of testing will occur to make certain that applications are compliant with the Americans with Disabilities Act Section 508. This includes all manner of applicable delivery for an application including desktops, mobile, laptops, tablets, etc. Applications and postings to the internet which do not meet a reasonable threshold may not be implemented in a timely manner.

Guideline

While there are many types of disabilities, DHS focuses on four categories

Category	Accessibility Feature
Visual Impairment	<ul style="list-style-type: none">• Screen Reader• Adjustable Font Size• Screen Magnifier• Adjustable Brightness/Contrast Control• Backlit Display• Voice Recognition
Hearing Impairment	<ul style="list-style-type: none">• Vibrating Alerts/Visual Notifications• Captioning• Adjustable Volume Control• Mono Audio
Physical Impairment	<ul style="list-style-type: none">• Voice Recognition• Adjustable Speed of Pressing Buttons

Cognitive Impairment	<ul style="list-style-type: none"> • Intuitive User Interface • Read Aloud with Highlighting • Auto-text for Input Fields • Adjustable time for Completion of Operations
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Visual presentation guidelines have been developed for HTML:

- W3C – *World Wide Web Consortium Techniques for Web Content Accessibility*.
- <http://www.w3.org/TR/WCAG10-TECHS/>
- <http://www.w3.org/TR/WCAG20/>

The World Wide Web Consortium (W3C) establishes three priorities for design:

- Priority 1 – MUST satisfy
- Priority 2 – SHOULD satisfy
- Priority 3 – MAY Address

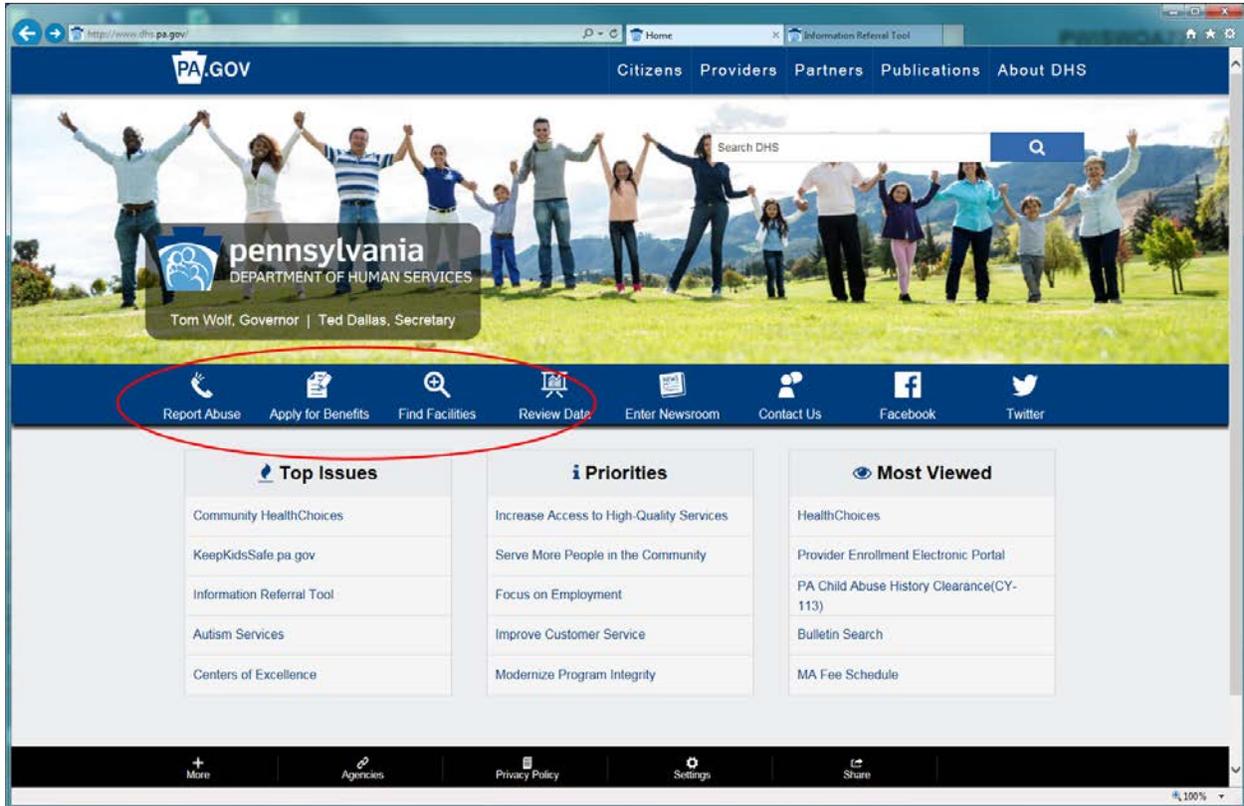
These priorities mainly enforce good HTML coding adherence.

Top 8 Concerns from Persons with Disabilities

This section identifies some common areas that create barriers for use by persons with different types of disabilities. Developers should avoid the pitfalls and adopt the appropriate coding techniques when developing applications.

1. Text alternatives for non-text elements not provided

- a. Affected Group: Persons with Visual Impairment
- b. Meaningful and concise text alternatives should always be provided for non-text elements such as buttons, form fields, selection bars and images, etc.



For example, how would you communicate the meaning of the buttons on this screen to a person with visual impairment who is using a screen reader. The best way is to provide a concise text alternative such as “My DHS home.”

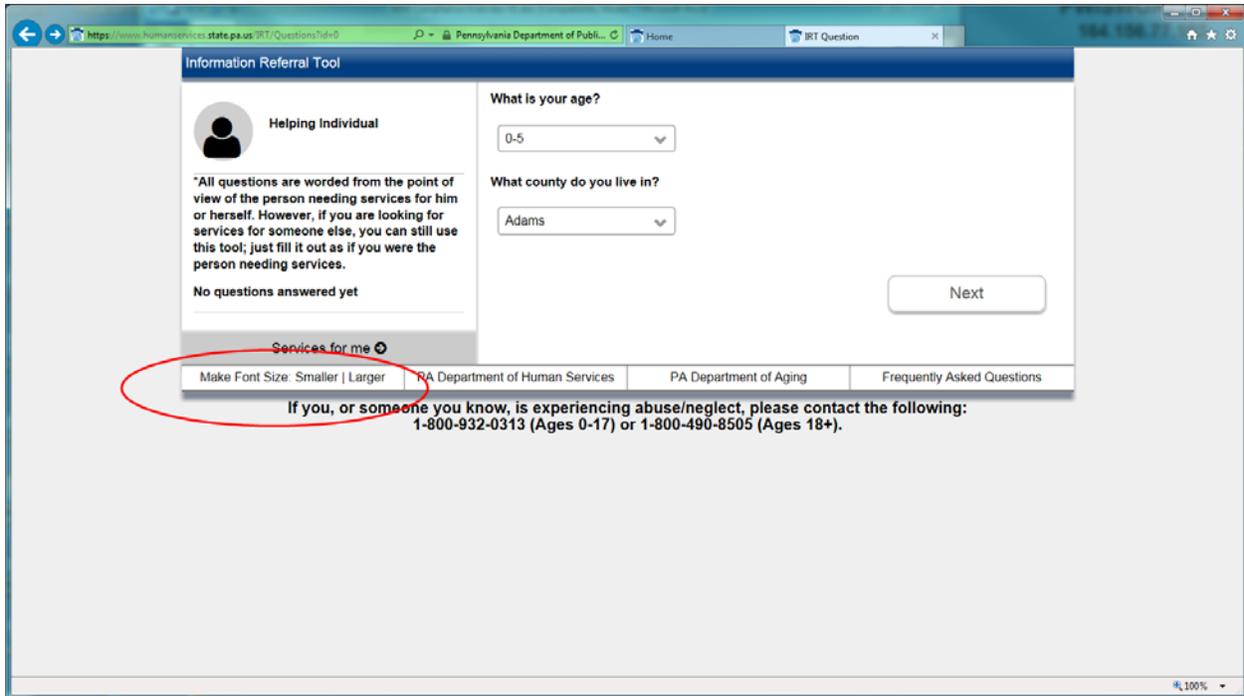
2. Does not function properly when using with screen readers

- a. Affected Group: Persons with Visual Impairment
- b. Each button and navigation menu should function properly with and without screen readers. Sufficient testing should be performed to ensure the application functions properly when using screen readers.



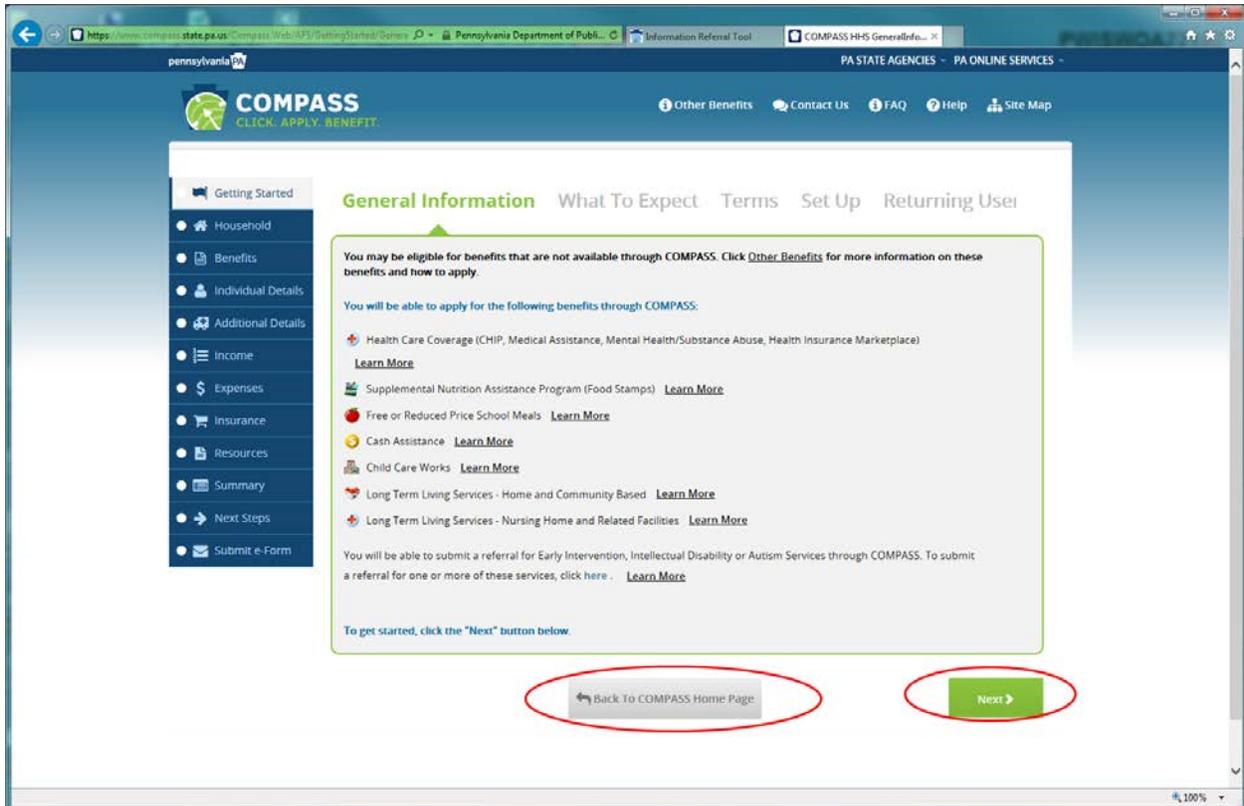
3. Font size is too small and text resize function not provided

- a. Affected Group: All Disability Groups
- b. Not all users are using a large screen device. Scalable font size provided in a mobile application not only facilitates persons with disabilities to use the mobile application, but also helps elderly users and people using small screen devices. It is always a good practice to provide functions in mobile applications allowing users to enlarge the font size.



4. Poor navigation

- a. Affected Group: All Disability Groups
- b. Poor navigation makes an application difficult to use for persons with or without disabilities. Provision of easy navigation method which is consistent across multiple screen pages of a mobile application helps all people, including persons with disabilities, control and navigates the mobile application easily.



5. Options for notification not provided

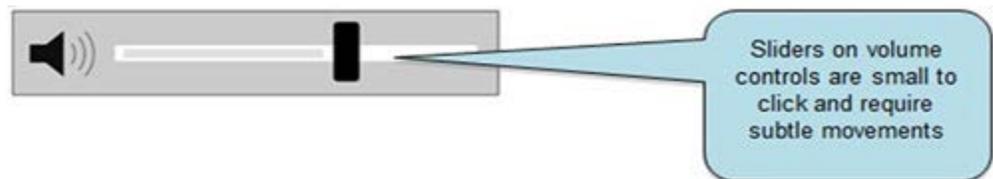
- a. Affected Group: Persons with Hearing Impairment
- b. Ensure to provide notification settings with more than one option, such as “Vibrate” option and “Sound” option in mobile applications. Some mobile applications only notify users by ringtone or sound. For persons with hearing difficulties, they cannot be alerted by this notification mode.

6. Instruction only available in audio format

- a. Affected Group: Persons with Hearing Impairment
- b. Provide instructions in more than one format such as text format. Some applications only provide instructions in audio format. Persons with hearing difficulties *cannot* receive the instructions at all.

7. Gesture for control and sliding bar are difficult to use

- a. Affected Group: Persons with Physical Impairment
- b. Design simple gesture for controlling a mobile application is recommended. For example, the gestures on the left require a rotate gesture with two fingers. It is difficult for persons with upper limb/hand mobility problem to perform. It is a good practice to implement a simple gesture which can be performed by one finger.
- c. In addition, design larger control for sliding so that it is easier to control. Typical sliders are difficult to use because the portion that needs to be controlled is too small and must be moved in subtle increments in order to adjust values.



- d. A better approach is to use separate buttons for increasing and decreasing values as these can be tapped and made compatible with screen readers.

8. Tablet version not provided.

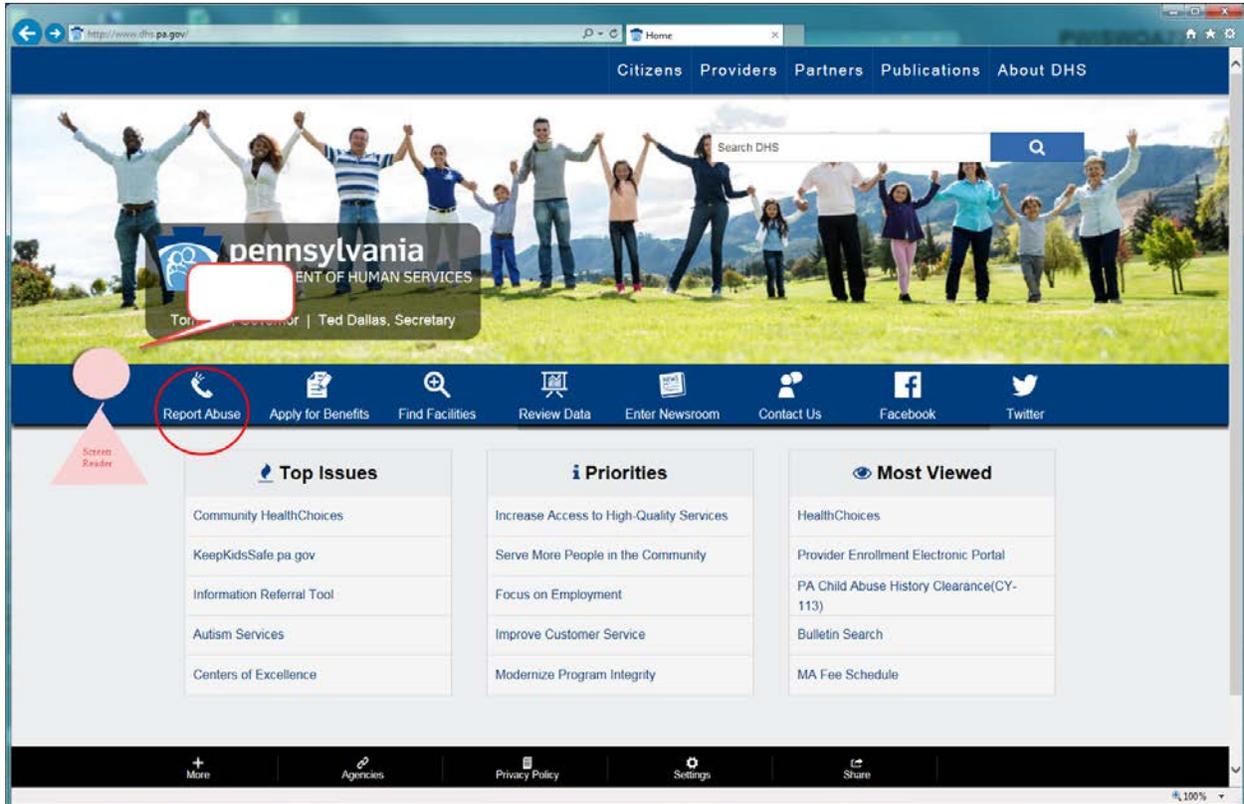
- a. Affected Group: Persons with Physical Impairment
- b. It is a good practice to provide also a tablet version that enable users to use the mobile application on a tablet device with larger screen size for easier operation and control.

W3C 2.0 Guidelines for Best Practices:

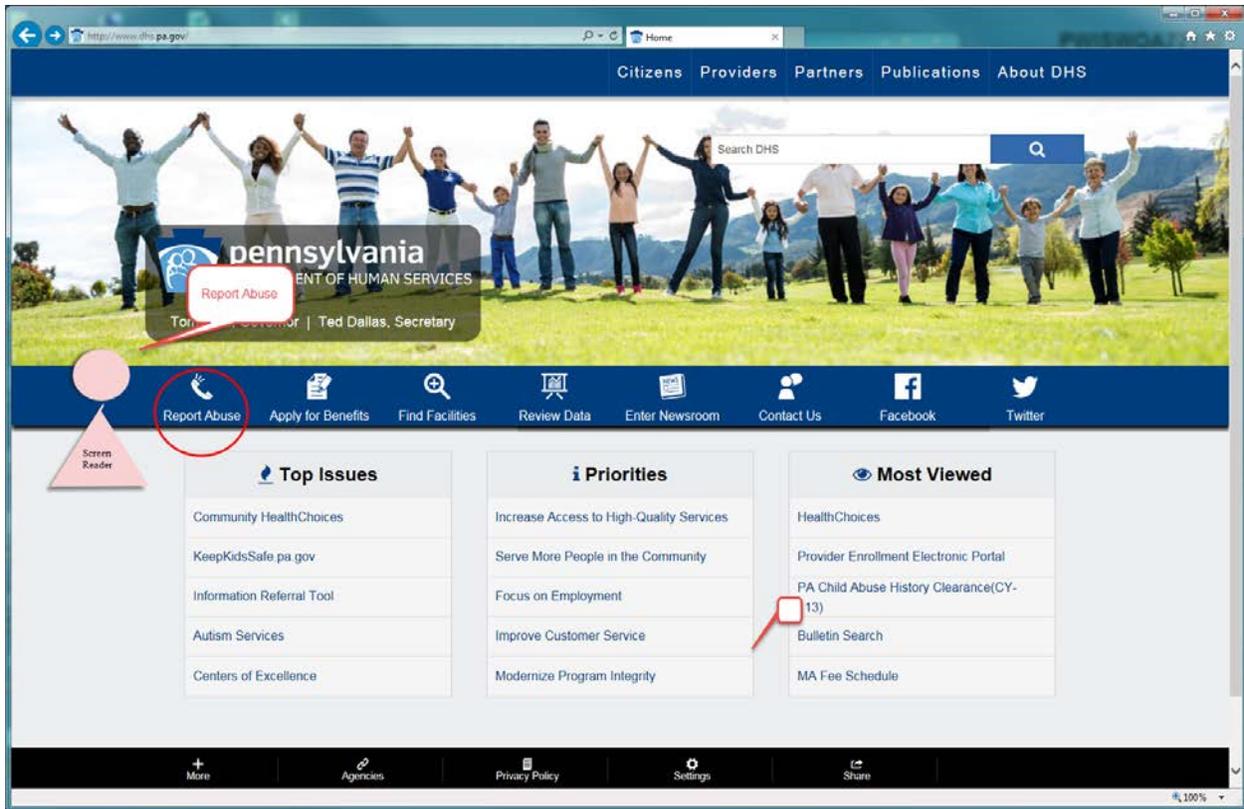
1. Perceivable

Information and user interface components must be presented to users in the ways that they can perceive.

- a. Provide text alternatives for non-text content



Screen readers are unable to read images without meaningful text description.



The text description enables screen readers to let the user know what activity is represented.

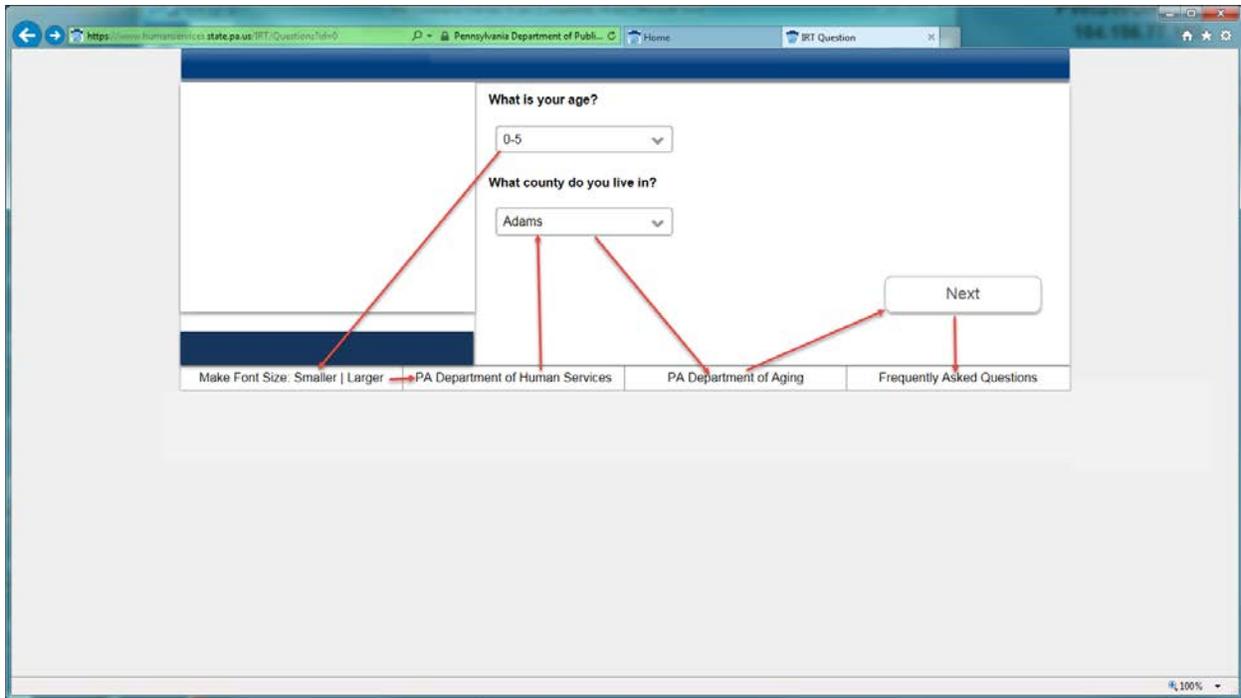
b. Avoid images of text



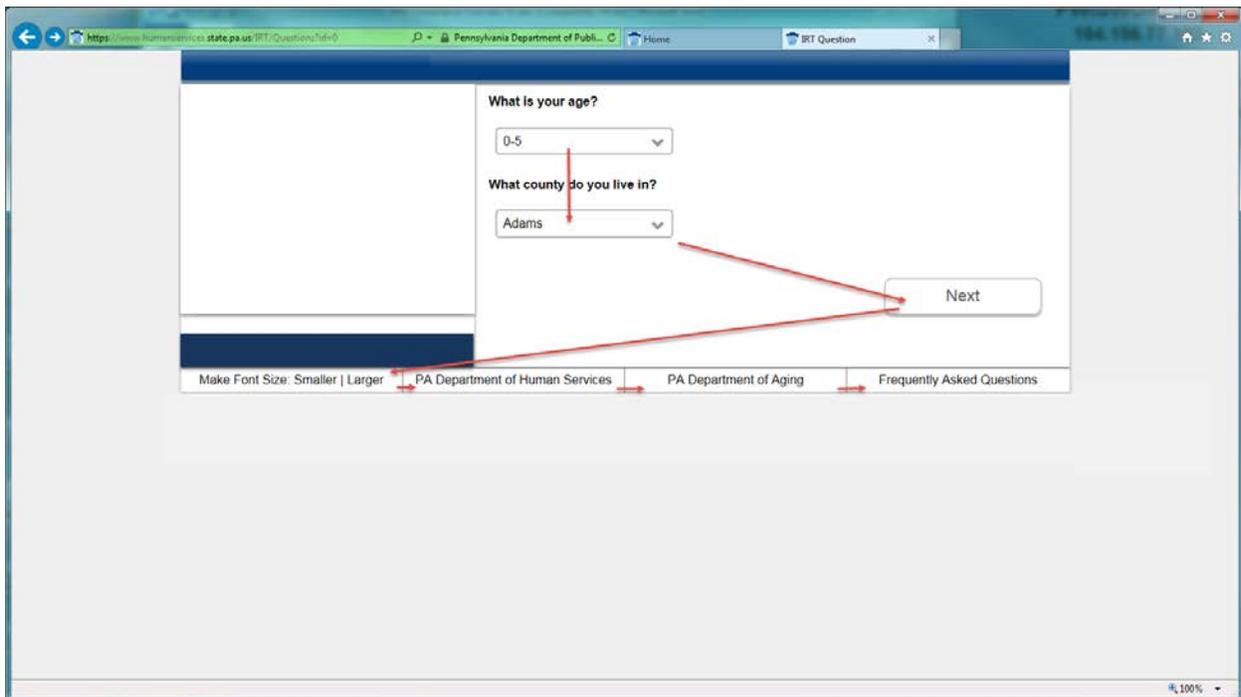
The graphic above cannot be read by a screen reader.

c. Provide text resize function without loss of content or functionality

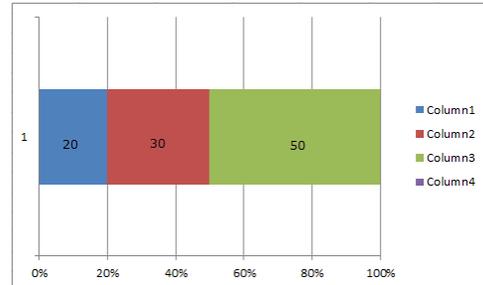
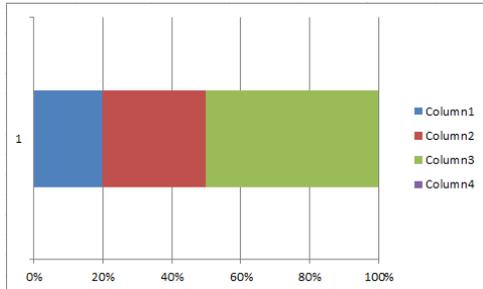
d. Provide meaningful sequences



In the example above, the screen has been coded in such a way that the screen readers will read the headings and content in confusing order. Below the screen page has a reading order for screen readers from top to bottom, left to right.



- e. Do not solely rely on sensory characteristics for instruction
- f. Avoid colors as the only way to convey information
- g. Provide sufficient color contrast



Those with visual impairments may not be able to differentiate the difference in the bar diagram on the left. Color contrast checkers are available online that can assist developers in performing color contrast tests. Providing an additional manner of conveying information is also helpful.

- h. Provide alternative means for notification



An example is how Outlook from Microsoft allows user to select notifications for new mail visually with an icon and/or aurally with a sound.

- i. Provide descriptions/captions for prerecorded videos

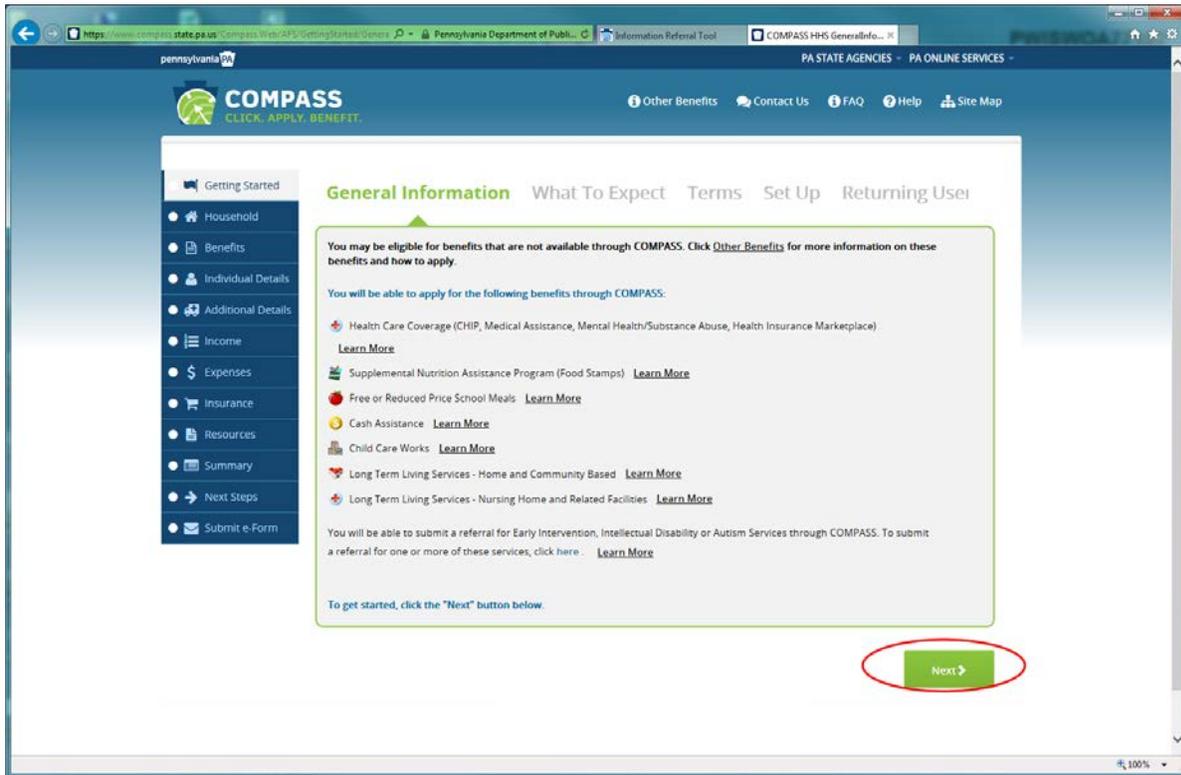


An additional description that explains the action in the video should be provided so that persons with visual impairment can understand the video contents by using screen readers.

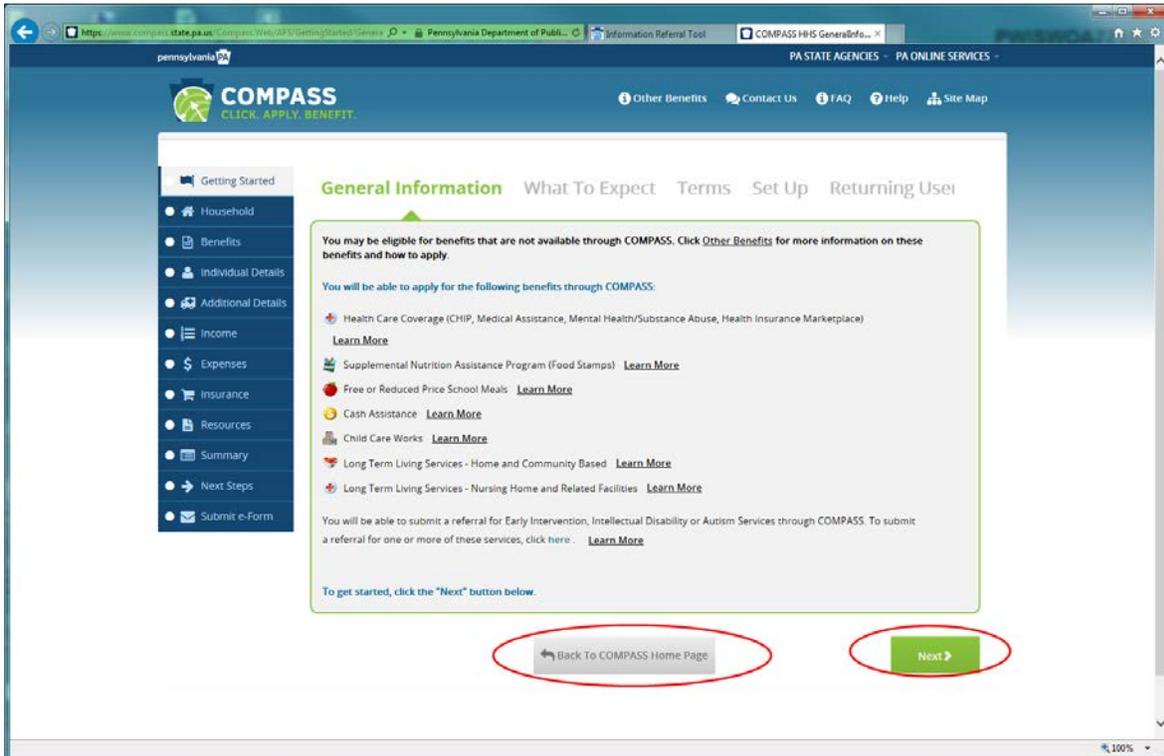
- j. Provide alternatives for audio-only information
- k. Provide user-initiated audio control

2. Operable

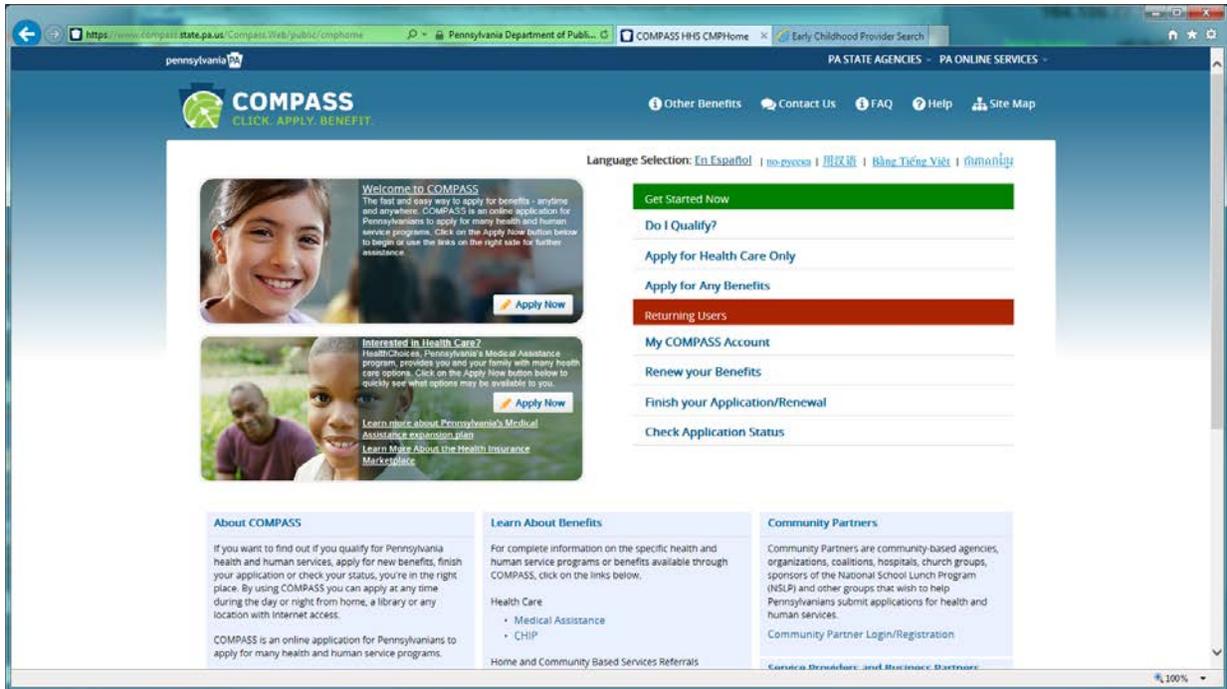
a. Provide navigation controls



In the above example, navigation buttons are not provided to go back to the previous screen.



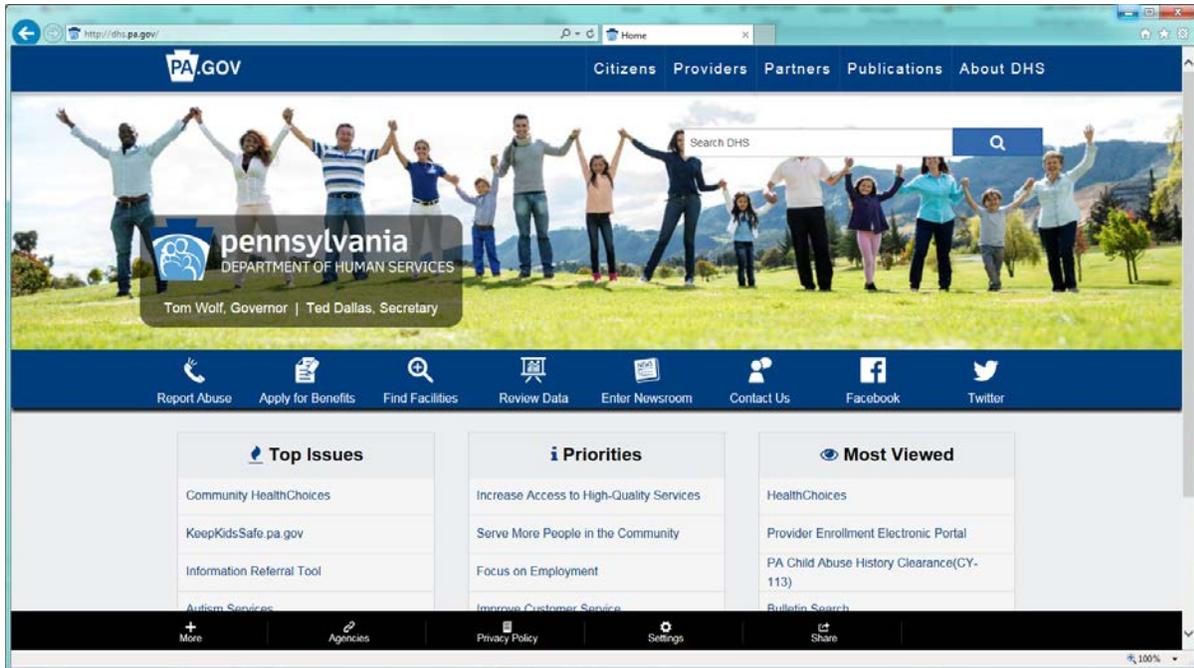
- b. Provide multiple ways to access a page
- c. Use clear and simple header and content



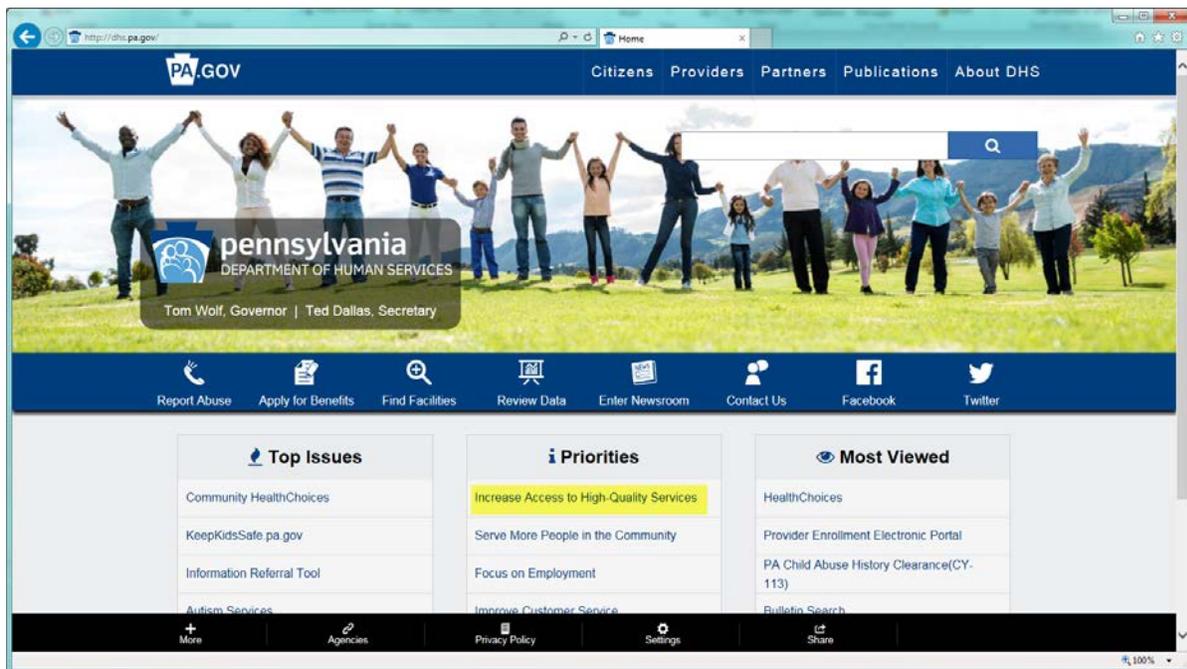
Compare the content in the screens above and below. Simple clear content allows someone with a screen reader to easily locate information.



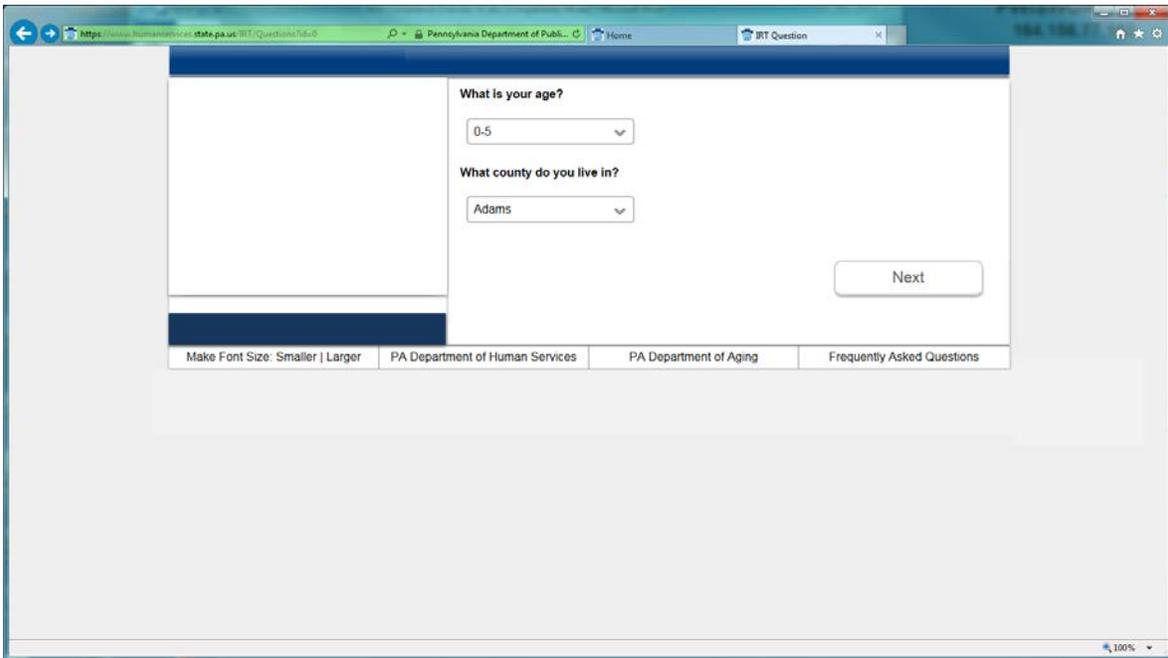
- d. Provide clear and informative links
- e. Provide visible focus



The screen on the right provides a visible focus. It is unclear where the cursor is located on the left screen.



- f. Provide a cancel/close button for pop-ups
- g. Minimize user input



Drop Down lists are good practice because they minimize user input and avoid unnecessary input error.

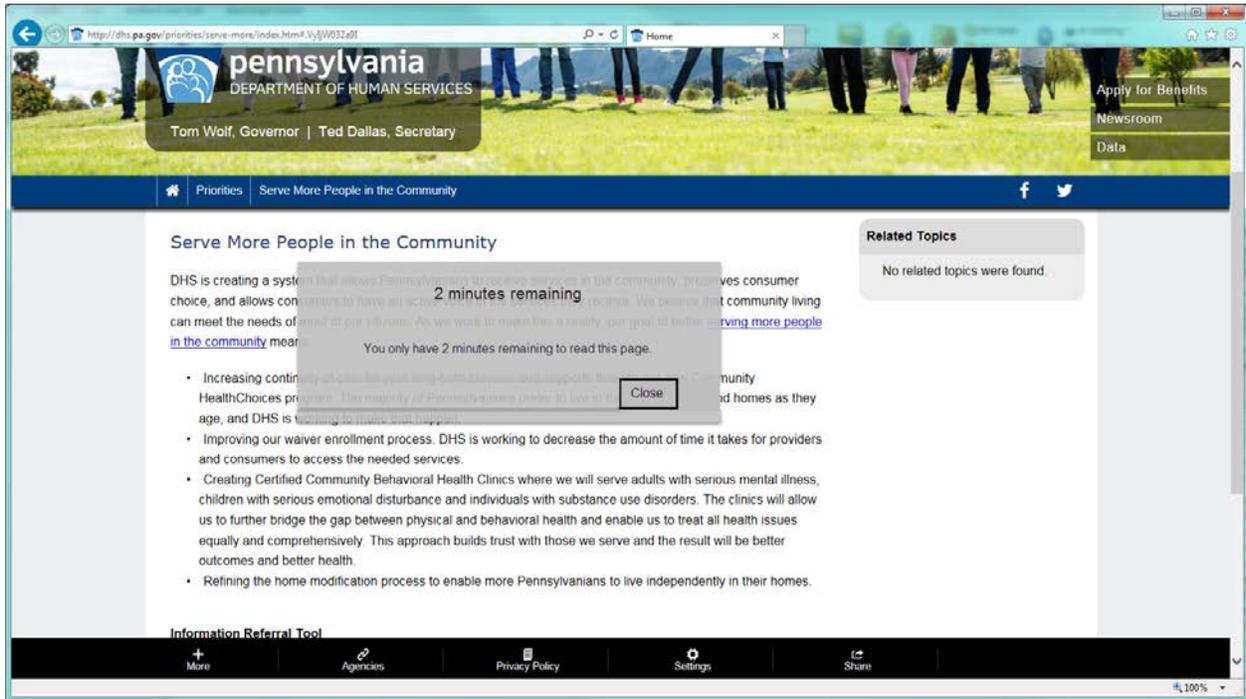
- h. Make all clickable objects large enough to be tapped



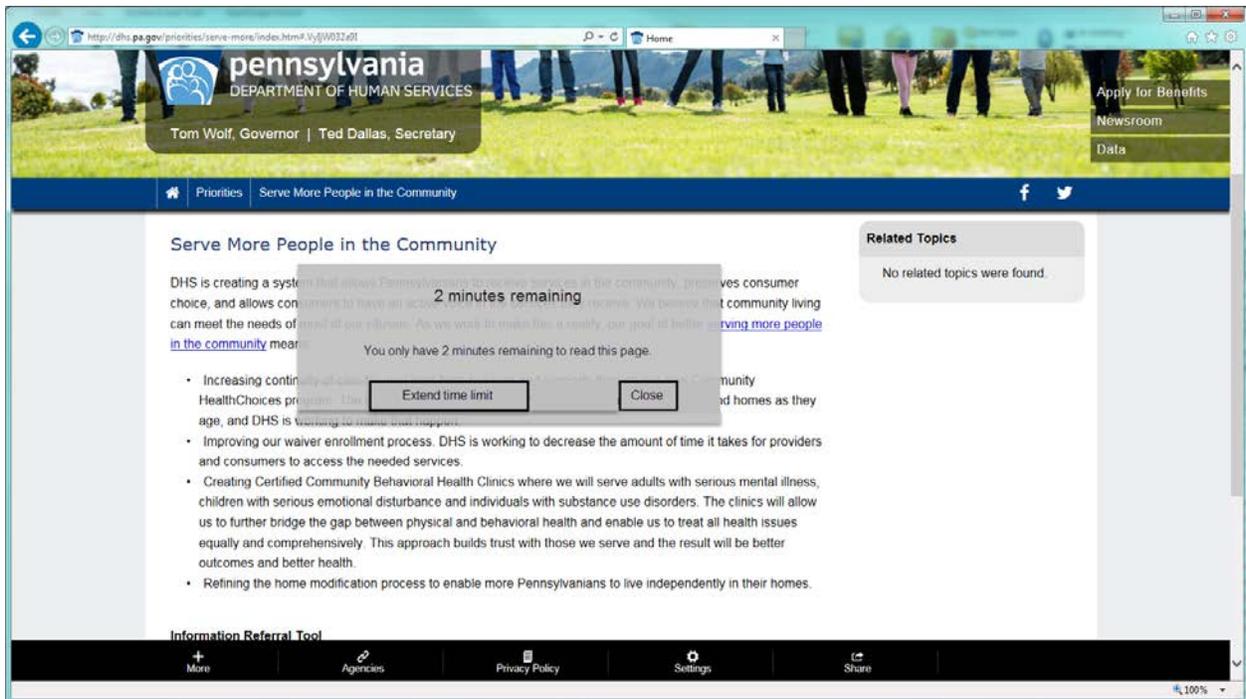
This may not be large enough to be tapped by those with mobility issues on certain devices.

- i. Provide simple gestures

j. Provide adjustable timing control



A better approach is to allow the user to extend the time such as the example below.



- k. Provide lists with user-initiated auto-updating
- l. Provide 3 flashes or below threshold

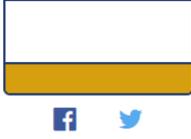


In the example above, the New Image may be flashing too fast and bright for those with seizure disorders. It is better to replace the flashing content with static content or with content flashing at a rate of less than three times per second.



3. Understandable

a. Provide consistent and simple user interface structure



Frequently Asked Questions: (Click on a question for more information)

What is child abuse?

Are you a mandated reporter?

When must a mandated reporter make a report?

Must I report suspected abuse if I learn of the abuse from someone other than the child who was allegedly abused?

How does a mandated reporter make a report if they suspect child abuse?

Mandated reporters must make an immediate and direct report of suspected child abuse to ChildLine either electronically at www.compass.state.pa.us/cwis or by calling 1-800-932-0313.

Do I need to notify anyone within my institution, school, facility or agency after I make a report?

What if a mandated reporter fails to follow the law?

Can you report suspected abuse if you are not a mandated reporter?

Am I protected from civil and criminal liability if I make a report of suspected child abuse?

If I make a report is my identity protected?

The screen above has questions in bold and when the user clicks on the question, the response drops down. The screen below has statements in bold but no action is imbedded with the text. Choose one style within a site or application.

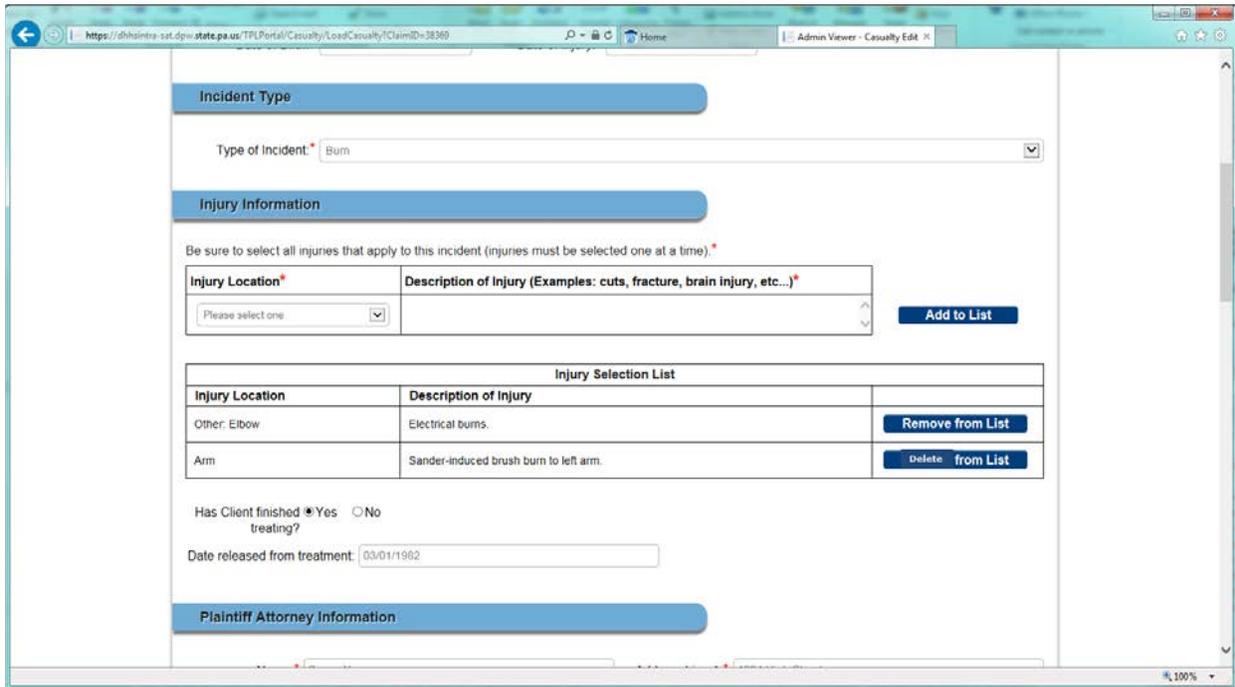
registration certificate and three hours of training every five years thereafter:

- **Current operators of child-serving institutions, facilities or agencies that DHS licenses, approved or registers;**
- **Current employees having direct contact with children in child-serving institutions, facilities or agencies that DHS licenses, approved or registers;**
- **Current caregivers and employees in family day care homes; and**
- **Current foster parents.**

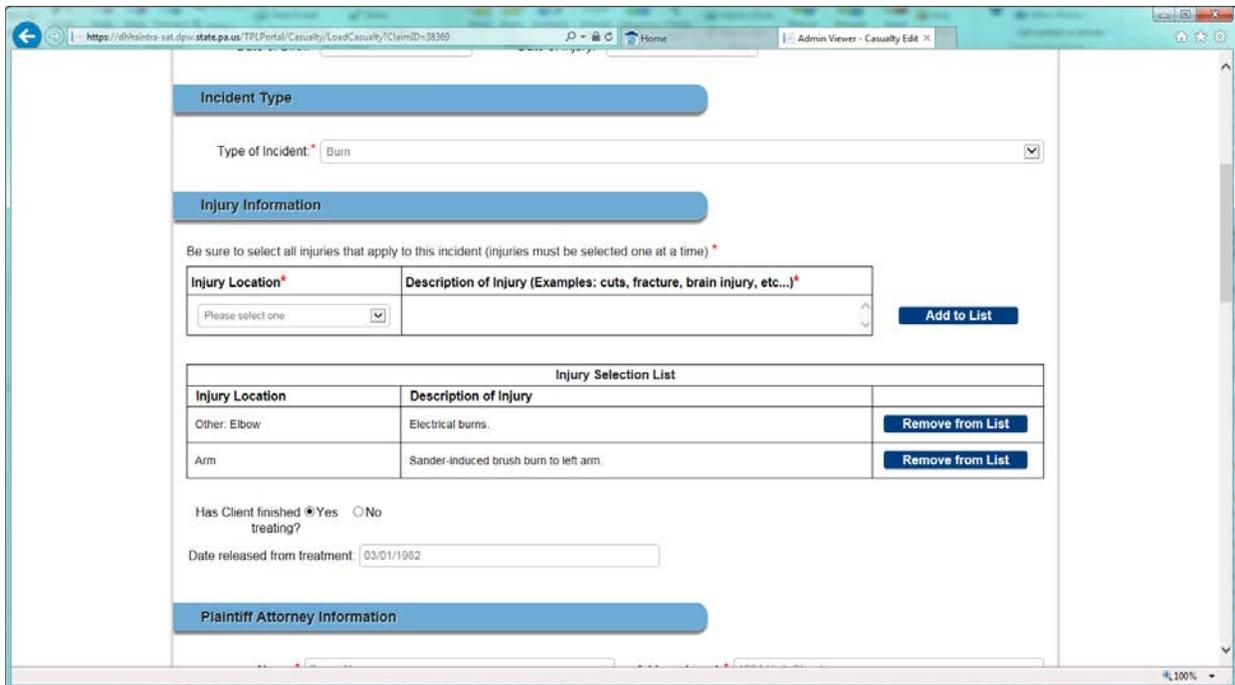
A person may be exempted from the requirements if **all** of the following apply:

- The person submits acceptable documentation that they have already completed training;
- The training was required by the Public School Code or Public Welfare Code or this chapter and the training was approved by the Department either in whole or in conjunction with the Department of Education; and
- The amount of training received equals or exceeds the amount required.

- b. Avoid sudden change of context
- c. Provide consistent identification



The screen above is confusing to users as to whether the two buttons act the same. The screen below leaves no doubt that they perform the same function.



- d. Provide error identification

City :

State :

Zip :

Phone :

Fax :

Email :

Comments :

Please contact me as soon as possible

There were errors on the form, please make sure all fields are fill out correctly.

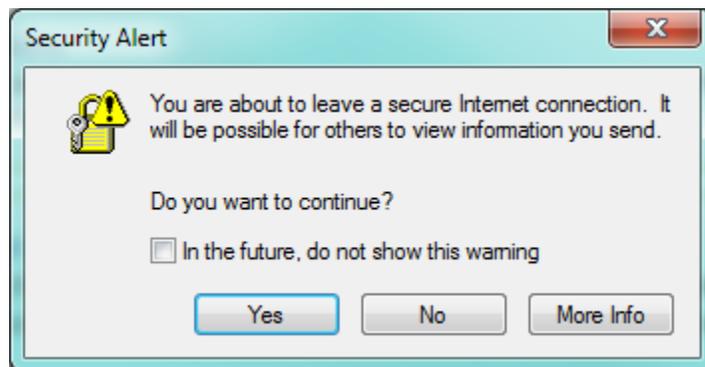
The form above does not indicate which fields are in error. A more specific error such as “City is missing. Please enter City” is more appropriate.

- e. Provide labels or instructions when content requires user input

The screenshot shows a web form titled 'DolQualify' with a 'Household Information' tab. The form asks for details about the head of household. It includes a 'Hide' button and a 'Remove this' button. The main form area contains three required fields: 'Name (Required)', 'Age (Required)', and 'Sex (Required)'. The 'Sex' field has radio buttons for 'Male' and 'Female'. Below these fields is a green box with the instruction: 'If there is anyone else in the household, please click the 'Add Another Person' button.' and a '+ ADD ANOTHER PERSON' button. At the bottom, there is a question: 'About how much is the total value of all the resources owned by the people in the household?' with a 'Help' button. A text input field below this question contains the format mask 'Format: XXXXXXXX.XX', which is circled in red.

The screen above includes a format mask for the value of resources thereby providing instruction to users.

- f. Provide means for error prevention



4. Other

- a. Provide an accessibility statement with a contact point.

Testing Strategy for Developers

1. Accessibility Inspection Tools

DHS currently uses Cryptzone Compliance Sheriff as our approved inspection tool. It is suggested that testing with Compliance Sheriff occur as early as possible in the development cycle in order to minimize the effects of any needed changes. However, testing must occur in SAT prior to the ARB IV in order to certify accessibility compliance.

This tool does not test all aspects of the code relying on the techniques mentioned below to assist in testing.

2. Visual Review

Visual review includes tests such as color contrast checking and visual checking items flagged in the Compliance Sheriff Scan Report.

3. Manual Testing with Screen Reader

An easy way to experience how persons with visual impairment uses an application is to simply navigate and operate the application using a screen reader. This testin also ensures compatibility of the application with the screen reader.

The standard for screen reader software within the Commonwealth of Pa is JAWS, however, the DHS also uses Windows Eyes.

4. Continual Improvement

Accessibility technology, testing tools and technical features are evolving constantly. Verification tests for accessibility conformance is required for continual improvement whenever there is a new release of you application

Best Practice Checklist

1. Review Checklist

Review each of the best practices below. Any that do not apply to the application in question can be marked N/A. Any that are not relevant to a particular method are marked Skip. The Checklist is located at the end of this document.

2. Evaluate using Compliance Sheriff

Have the screens evaluated for accessibility issues using Compliance Sheriff. The request for this is located under the BIS Business and Technical Standards Application Domain page. Once the scan report has been received, needed changes can be made.

3. Perform Visual Review

Do a visual review of all items that are not marked N/A or Skip in the visual review column. As they are reviewed, check them off on the checklist below.

4. Test using Screen Readers

Test using the appropriate screen reader. The screen reader is located in room 212 closest to the manager's office.

Other Resources

- [Commonwealth of Pa. Web Site Standards \(ITB-APP005\)](#)
- [Commonwealth of PA Accessibility Policy \(ITP-ACC001\)](#)
- Browser compatibility links:
 - <http://rachelappel.com/>
 - <http://www.richinstyle.com/>
- W3C Web Content Accessibility Guidelines (WCAG) 1.0; <http://www.w3.org/TR/WCAG10-TECHS/> May 5, 1999.
- W3C Web Content Accessibility Guidelines (WCAG) 2.0; <http://www.w3.org/TR/WCAG20/>, December 11, 2008.

Resources used in creating this guideline:

- Mobile Application Accessibility Handbook; Office of the Government Chief Information Officer, The Government of the Hong Kong Special Administrative Region, version 1.1.
- W3C Web Content Accessibility Guidelines (WCAG) 2.0; <http://www.w3.org/TR/WCAG20/>, December 11, 2008.

Best Practice Checklist

Best Practice	N/A	Visual Review	Screen Readers
1 Perceivable			
<i>Text related</i>			
1.1 Provide text alternatives for non-text content	<input type="checkbox"/>	Skip	<input type="checkbox"/>
1.2 Avoid images of text	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 Provide text resize function without loss of content or functionality	<input type="checkbox"/>	<input type="checkbox"/>	Skip
1.4 Provide meaningful sequence	<input type="checkbox"/>	Skip	<input type="checkbox"/>
<i>Sensory</i>			
1.5 Do not solely rely on sensory characteristics for instructions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.6 Avoid solely reply on colours to convey information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.7 Provide sufficient colour contrast	<input type="checkbox"/>	<input type="checkbox"/>	Skip
1.8 Provide alternative means for notification	<input type="checkbox"/>	<input type="checkbox"/>	Skip
<i>Multi-media related</i>			
1.9 Provide description for prerecorded video	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.10 Provide captions for videos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.11 Provide sign language for prerecorded videos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.12 Provide alternatives for audio-only information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.13 Provide user-initiated audio control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Best Practice	N/A	Visual Review	Screen Readers
2 Operable			
<i>Navigation related</i>			
2.1 Provide navigation controls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2 Provide multiple ways	<input type="checkbox"/>	<input type="checkbox"/>	Skip
2.3 Use clear and simple header and content	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.4 Provide clear and informative link	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.5 Provide focus visible	<input type="checkbox"/>	<input type="checkbox"/>	Skip
<i>Control related</i>			
2.6 Provide a cancel/close button for popovers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.7 Minimize user input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.8 Make all clickable objects large enough to be tapped	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.9 Provide simple gesture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.10 Provide adjustable timing control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.11 Lists with user-initiated auto-updating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.12 Provide three flashes or below threshold	<input type="checkbox"/>	<input type="checkbox"/>	Skip
3 Understandable			
<i>User interface related</i>			
3.1 Provide consistent and simple user interface structure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2 Avoid sudden change of context	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3 Provide consistent identification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>Input related</i>			
3.4 Provide error identification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.5 Provide labels or instructions when content requires user input	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.6 Provide error suggestion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.7 Provide means for error prevention (legal, financial, data)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Other Best Practice			
4.1 Provide an accessibility statement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Refresh Schedule

All standards and referenced documentation identified in this guideline will be subject to review and possible revision annually or upon request by the DHS Information Technology Standards Team.

Standard Revision Log

Change Date	Version	Change Description	Author and Organization
09/19/2000	1.0	Initial Creation	Deloitte Consulting
12/05/2002	1.1	Edited Style	Beverly Shultz
07/23/2010	1.2	Reviewed, updated and edited style	Laura Fry, DPW/BIS
10/15/2013	1.2	Reviewed, no changes	Glenn Goshorn, DPW/BIS
9/11/2014	1.3	Review and updated	Laura Fry, DPW/BIS
02/12/2016	1.4	Review and updated	Lori Steele, DHS/BIS
4/29/2016	1.5	Review and updated	Lori Steele, DHS/BIS