Guidance for Developing Accessible Resources for MIPN

The purpose of this document is to help ensure that MIPN resources are accessible to a broad audience. MIPN has developed this document for its own internal use to improve the accessibility of our website, social media content, publications, slideshow presentations, webinars, conferences and other events. The sources we have referenced in developing this guide include the Government Service Agency (GSA), the U.S. Access Board, the Americans with Disabilities Act (ADA), and the Architectural Barriers Act (ABA). More information and links to these sources can be found in the Appendix, along with a step-by-step guide to PDF remediation.

Section 1 - General Guidelines

1.1 - Visual Accessibility

1.1a Accessible Colors

- Color blindness, or color vision deficiency, affects 8% of men and 0.5% of women. There are different types of color blindness[1] (red-green, blue, or no color)
- An important aspect of color for both low vision and colorblind users is sufficient contrast between the foreground text and the background. Never use color as the only method of meaning or emphasis.
- Make sure to bold text (emails) or use text or symbols, in addition to color, in images and tables to ensure your information and meaning is clear to all.
- Use a color palette that is accessible to the audience you are trying to reach. MIPN has set up a colorblind palette in Canva. The National Center for Ecological Analysis and Synthesis (NCEAS) Science Communication Resource Corner has created a pdf of colorblind safe color schemes[2].

1.1b Accessible Text

- Choosing a font[3]
  - In general, choose sans-serif fonts, or fonts without serifs, which are the small lines or flourishes attached to letters. In the example below the "T" on the left is sans-serif. Adobe has a nice explanation of the difference between serif and sans serif[4].

- - - Some examples of sans-serif fonts available in Microsoft Word are Arial, Calibri, Verdana, and Century Gothic
    - Canva[5] has a list of sans-serif fonts
    - Additional examples include Clearview, Helvetica, Futura, Aptos, and Lato
- Text must contrast with the background
    - Standard size text must have a contrast ratio of 4.5:1
    - Large text must have a contrast ratio of 3:1
        - Large text means 14 pt. bold or 18 pt. regular weight or larger
    - To test color contrast, the GSA recommends a downloadable tool[6] from a company called TPGi.

1.1c Alternative text – also see Section 2.2a

The Social Security Administration (SSA) created a guide for Alternative Text for Images[7]. Alternate (Alt) text may not always be needed; it depends on the type of image. Guidance from the SSA addresses three types of images:
1. Informational
    a. Provide essential information that is not mentioned in the adjacent text
        i. Alt-text is always needed
        ii. Do not repeat caption when creating alt text
2. Redundant
    a. Contain information that is repeated/duplicated in adjacent text or added as a caption associated with the image
    b. Alt text is optional, but MIPN opts to add alt text and captions because they each support the text in different ways
3. Decorative
    a. Do not contribute to the adjacent text or overall message of the document; they are solely background/decorative images
    b. Alt text is not needed

Creating Alt Text
- AI can be a helpful tool to generate suggestions for alt text, but AI generated text should not be automatically adopted as the final version.
- Keep alt text short, focused, and avoid repeating information in the text body or in the caption.
- When deciding what to write for alt text, think about the purpose of the image, not what the image looks like.
- Don't say "image of…" in the alt text description
- Do not include hyperlinks in image alt text. Alt text can be read by a screen reader, but a link cannot be acted upon.

Section 1.2 - Inclusive language

A good resource on inclusive language is the American Psychological Association's (APA) [Brief Guide to Bias-Free and Inclusive Language](#)[8]. More in-depth guidance can be found on the [APA website](#)[9] and from the [National Center on Disability and Journalism](#)[10].

- To avoid bias regarding age, disability, gender, race/ethnicity, sexual orientation, or socioeconomic status, make efforts to describe people at the appropriate level of specificity and focus on relevant characteristics.
- Call people what they call themselves
- Use gender neutral terms including "they" for a generic person and use gender neutral occupational terms such as member of congress, firefighter, or chairperson
- Be Inclusive of all pronouns
- Don't define people by their disability, appearance, identity, etc.
- Be conscious of cultural backgrounds
    - Be mindful of terms like foreign or invaders when talking about invasive species
    - Use images with inclusive clothing
- Be conscious of audience literacy. For information intended for a broad public audience, readability should not exceed the 7th to 8th grade level (according to the [Environmental Protection Agency](#)[11]). The federal standard for critical information (such as medication instructions) is a 4th-6th grade level. The Flesch-Kincaid Readability Test is incorporated into Microsoft Word.

Section 2 –Guidance for Documents and Publications

This section provides guidance for outreach publications and other documents generated for public consumption. The goal is to create documents that are accessible to and usable by individuals with disabilities, either directly or by supporting the use of assistive technology.

2.1 Word Documents

Using consistent, accessible styles, image captions and alt text is key to formatting a Word document that is accessible and sets you up to have an accessible pdf.

2.1a Microsoft Office Styles

Using styles in Word structures the document in a way that ensures formatting consistency throughout the document. This structure provides an easier way for all users to navigate the document, as well as makes it accessible to assistive technology to read in a logical order. It also makes document organization more apparent to screen readers by more clearly identifying headings, the start of new paragraphs, etc.

Styles can be accessed at the top toolbar from the Home tab. The dropdown provides a list of available styles to use and can be selected prior to typing content, or selected after by highlighting the text to change. Opening the navigation pane allows you to view what content within the document is using styles.
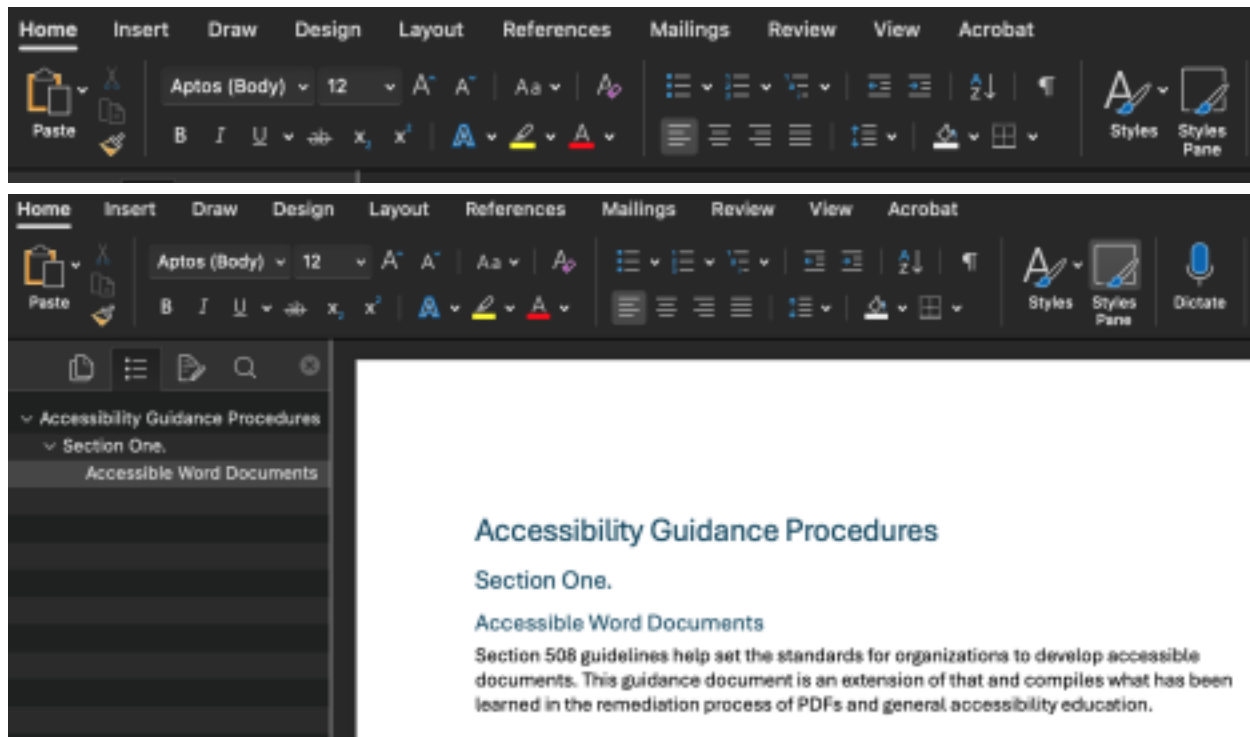
2.1b Accessible Formatting

- See sections 1a.1 and 1a.2 for guidance of selecting accessible fonts, colors, and contrast.
- If the document contains informational or reference images see section 1a.3 for guidance on adding alt text.
  - Captions and alt text should be limited to 120-150 characters or fewer per Maine's Public Universities[12], Ohio State University[13], University Press of Colorado[14], GSA[15]. Some screen readers cut off text after 125 characters.

2.1c Hyperlinks

- Hyperlinks must describe their destination, function, or purpose either in the text surrounding the link or by using a hyperlink
- Hyperlinks should be descriptive and should not include the full web address -
  Inaccessible hyperlink example: "https://docs.google.com/document/a1b2c3" -
  Accessible hyperlink example: "Accessibility Procedures Guidance Document"

2.1d Exporting

Export the document in .docx to preserve accessibility functions for use in other programs. The document should also have a descriptive file name. Using styles helps maintain structure and accessibility features when converting docs to pdfs.

2.2 PDF Files

PDFs are used for multiple reasons, such as to create a more professional document, to ease distribution, and to condense file size. For the educational and outreach purposes of MIPN, PDFs often take on the look of a one-page fact sheet, flier, or brochure. Other formats may also be written reports full of only text or a combination of text and images. Often, we create documents and fliers in other programs and then convert them into PDFs, which can inadvertently create more work involved to remediate a pdf later to ensure it is accessible.

Before converting a source document into a PDF, it should be accessible (follow general guidelines in section 1.1). If the PDF is not accessible post-conversion, the following items may be used as a checklist to improve accessibility post-conversion. Detailed steps for complete pdf remediation are detailed in the Appendix B.

### 2.2a Alt text for document images, figures, and logos

For users accessing PDFs digitally, some documents may have images or figures. Follow the general guidelines in Section 1.1 and use best judgment to determine the type of image in the document.
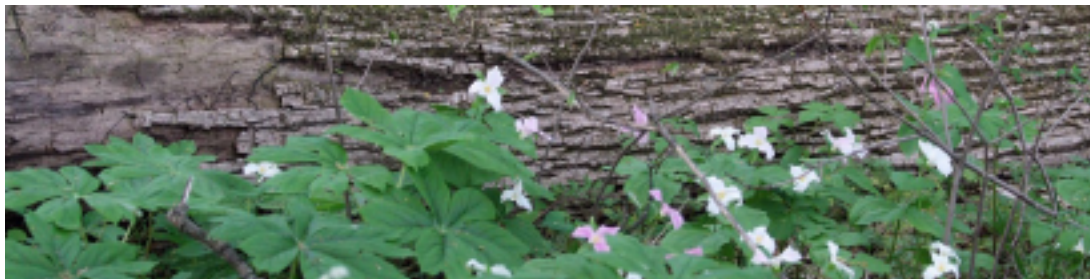
Alternative text for this image might say: "A patch of plants with vibrant green leaves and pink and white flowers. The plants are growing next to a downed-tree."

2.2b Descriptive captions

Captions are designed to "describe the purpose or function" of the image or figure. (GSA, Accessible Electronic Documents Community of Practice (AED COP). Be sure to include captions when you have an image that was specifically called out in the text. When there is a figure (i.e., a graph or other chart), a caption should be included to provide the reader context and describe the purpose of it.
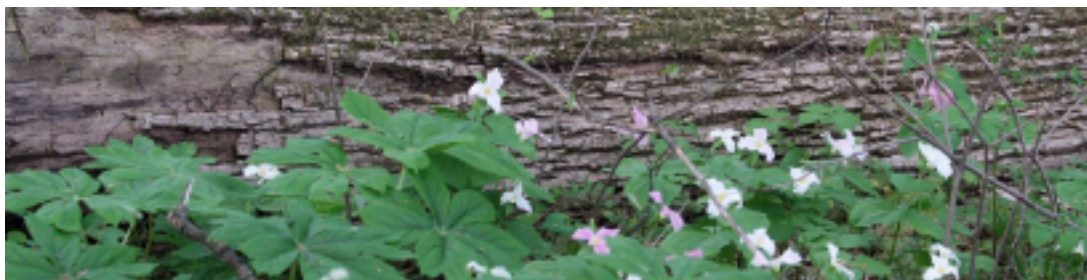
A caption for this image might say: "White and nodding trilliums growing in a forest".

2.2c Page orientation

Occasionally, documents such as brochures are converted to PDFs and available to users to download and print at home. Sometimes, the orientation of the page is not correct to account for folding the paper once it has been printed. A digital document such as a PDF should have the correct page orientation so it is visually correct and any assistive technology can "read" the page in the intended order.

Page orientation can be edited from the sidebar by clicking on the "Page Thumbnails" icon. Once the sidebar opens with the thumbnails, select the page with incorrect orientation and use the rotate arrows to adjust until it is correct.

2.2d PDF Tags

An element to PDF documents is the tags layer. The Tags layer "displays the Tags Structure Tree which establishes the logical structure of the document, as well as the logical reading order for assistive technology" (AED COP guidelines). There are a number of tags that can be implemented in a document, but some of the most common ones are listed below.

A. Artifact
B. Caption
C. Document
D. Figure
E. Heading (levels 1-6)
F. Link
G. List and list items
H. Paragraph
I. Part
J. Quote
K. Reference
L. Section

The structure of the tag tree depends on the content. A standard letter document might only use a few tags because of its simplicity. A detailed brochure with many supplemental graphics and images may require a more complex use of tags. Tags must be organized in a logical reading order.

When creating new documents (including sources other than PDF), it is recommended you

utilize features of authoring tools to create an accessible document that can be converted and easily edited by Adobe (or similar program). For example, using the "Styles" feature in Microsoft Word to set formatting for the document can allow Adobe to automatically identify components of the document and tag them (see section 2.1a). Using the "Heading" in Word should allow Adobe to pick up that data and display the same thing in the tag layer of the PDF. The auto tagging feature of Adobe programs is not perfect, so creators should verify that all tags in the tags layer are appropriate and in a logical order.

Additional information:
      a. Tags don't need to be nested over and over within each other. Simple tagging makes it easier for the assistive technology to do its job.
      b. Empty tags from artifacts can be deleted (see section 2.2h)

2.2e Visual/Logical Order of the Document

For documents to be accessible, the order of elements on the page must be organized in a visual/logical manner. The logical reading order determines the order in which assistive technology can access the content, so the elements must be ordered in a way that make sense to read. The order of the tags in the tags tree determines the proper logical reading order for the document.

The logical and visual order of the elements within the document can be changed using the Content and Order panel, in collaboration with the Tags panel, from the sidebar in Adobe Acrobat. In the panels, elements can be moved by clicking and dragging (up or down) to reorder. From the reading order panel, check the box next to "Show page content groups" and "page content order" to view contents in a numbered order.

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Reading Order

Draw a rectangle around the content then click one of the buttons below:

Text/Paragraph	Figure
Form Field	Figure/Caption
Heading 1	Heading 4	Table
Heading 2	Heading 5	Cell
Heading 3	Heading 6	Formula
Reference	Note	Background/Artifact

Table Editor

☑ Show page content groups ■
 ◉ Page content order
 ○ Structure types
☐ Show table cells ■
☐ Display like elements in a single block
☐ Show tables and figures ■

Clear Page Structure…   Show Order Panel

Help   Close

2.2f Descriptive file name

The document's file name should identify the document or its purpose. For example, a file name titled "Brochure" is not accessible because that is not sufficient information to determine the purpose of the document or identify it. A better example of a document file name would be "Invasive Plants of the Midwest Brochure_2018".

File names for PDFs can be changed by clicking "File" ⇒ "Save As" or by changing the name of the document where it is saved locally. Document titles should also be descriptive and can be changed in the Properties panel. In Adobe Acrobat, click "File" ⇒ "Properties" ⇒ "Description" tab to edit the document title.

2.2g Document has a language set

The document properties should be set to the primary language the document is written in. In Adobe Acrobat, click "File" ⇒ "Properties" ⇒ "Advanced" tab. The document's language settings are listed under the "Reading Options" section. Ensure that the language of the document matches what is selected from the dropdown, or change the language if needed.

2.2h Decorative elements are shown as "artifact"

Decorative elements can be things such as background images, shapes, symbols, etc., that don't contribute to the information presented in the document. Decorative elements should be tagged as "artifacts" so that assistive technology does not read or describe it. Identifying decorative elements as artifacts will remove them from the tags tree and leave an empty tag in its place (the empty tag can then be deleted to reduce clutter).

For example, the page below is part of a guidance document for land managers to restore natural areas. There are many decorative elements on this page:
  A. Colored rectangles behind the page title, footer, and below the header
  B. Three colored squares behind the paragraphs near the bottom of the page and the three symbols in each (microscope, bird, and DNA strand)
  C. Small leaf symbol below the title
  D. Three leaves in the background of the section on choosing seeds/stock

Preventing Secondary Invasions: NATIVE PLANT SOURCES
for natural areas

False blue indigo in pots, Audubon Society of Western Pennsylvania

"Acts of creation are ordinarily reserved for gods and poets, but humbler folk may circumvent this restriction if they know how. To plant a pine, for example, one need be neither god nor poet; one need only own a good shovel."
– Aldo Leopold (from A Sand County Almanac)

This flyer is intended to help landowners find sources of native plant material to re-establish native plant communities in their woodlands or natural areas, particularly after invasive plant removal, to prevent re-invasion.

Choose vendors wisely. Always look for a reputable native plant nursery closest to your physical location. Watch out for big box stores and online retailers that don't specialize in native plants – they may offer stock from outside your region or worse – sell known invasive species. A reputable vendor will provide appropriate native plants for your natural area AND the information needed to succeed. Vendors dealing exclusively with native plants, particularly those that routinely supply material for large restoration projects, are more apt to carry a wide variety of properly labeled native stock. Never buy live plants from an unverified source that may have been dug up from a natural area. When revegetating a large area, it will be important to find a vendor that offers bulk pricing. If buying online is your only viable option, look for the closest reputable native plant nursery that is willing to ship. Ask other nearby landowners for recommendations!

Many state agencies and conservation organizations maintain lists of native plant nurseries and vendors. To help centralize these resources for the Midwest, USFS funded a regional directory that can be accessed here: www.mipn.org/cwma-resources/site-revegetation/ County extension offices and native plant societies may have additional sources.

Choose seeds/stock wisely.

Insist on quality control/contamination testing. Invasive plant seeds can be tiny and can be spread to new places as a contaminant in seed mixes.[3] When buying native plant seeds, ask vendors how they test for contaminants. Also, beware of generic mixes sold across a broad geographic area, which may contain species not native to your location.

Seeds, plugs, or both? When planning a revegetation effort, you will need to choose whether to start with seeds or live plants (plugs). There are pros and cons to both. Live plants usually have a higher survival rate and can stabilize eroding soil more quickly. However, they cost a lot more and take more work to install. You can combine approaches by seeding species that establish readily and inter-planting plugs of trickier species.

Give preference to local ecotype plant stock. Wild growing plants adapt to their environment over time and develop a unique genetic profile known as a local ecotype.[10] If you can buy local ecotype plants, they will likely thrive where you are and will provide optimal benefits to locally co-adapted pollinators and wildlife. Local ecotype planting also helps preserve genetic diversity among native species. The Eastern Seed Zone map is a useful tool.[11]

Where is this seed from? How was it tested for contaminants?
A pure live seed rating is a useful indicator that a seed mix has been quality-tested.

Which plants on my species list are most likely to germinate in a field setting?
Prioritize plugs for tricky plants and tricky sites.

Where do you obtain propagation stock?
Buy as local as possible! If locally adapted material is not available, look for plants grown south of your location.

If a vendor cannot or will not answer these questions, or sells known invasive species, consider purchasing elsewhere.

IMPORTANCE OF REVEGETATION | SITE-APPROPRIATE SPECIES | NATIVE PLANT SOURCES | INSTALLATION | EXPECTATIONS & MAINTENANCE

If Adobe Acrobat does not auto-tag the elements, tags for decorative content can be added manually. Upon creation or remediation of the document, the user should verify that all decorative elements have appropriately been marked as "artifact". Decorative elements that are images do not need to contain alternate text.

Section 3 – Guidance for Presentations, Social Media, and Websites

This section provides guidance for presentations, both in-person and online, social media content, websites, and conferences. The goal is information sharing that is accessible to and usable by individuals with disabilities, either directly or by supporting the use of assistive technology.

3.1 Slideshow Presentations

- Use accessible font, a colorblind friendly palette, and accessible contrast in slide design (see section 1.1)
- Use a minimum of 22 pt. font for text body
- While the common guidance for slides is that less text is better, keep in mind that including some explanatory text on a slide can help people that are hard of hearing and/or multilingual follow along with the presentation in another way and not solely rely on hearing the speaker
- Choose a slide layout provided by the software so a screen reader understands the proper content order. [Additional guidance is here](1).
- Each slide should have a title
- Arrange slide content in the order you plan to present
  - This can be done by using the "Select Pane" tab. The pane will show every object on the slide. Highlighting an object in the pane will also highlight it in the slide. The reading order for the elements in the page is bottom to top. To reorder an item, simply click and drag. PowerPoint for Windows also has up/down arrow buttons that can be used to reorder items.
- Use simple or minimal transitions/animations and avoid flashing content
- If slides will be made available for downloading:
  - Save file as a PDF
  - Include page numbers
  - Add alt text and captions to images and figures (see sections 1.1c, 2.2a, and 2.2b)
- For in-person presentations, consider providing printable handouts to accompany the presentation.

3.2 Videos/Webinars

- Follow the guidance in section 3.1 for formatting webinar slideshows

- [Captions for Recorded Content](16)

  - Use sans serif, size 18 pt. font, with white text on black translucent background ○ Synchronize captions to speech
  - Display only 1-2 lines of captioning on the screen at one time
  - Limit the number of characters being used at a time. 45 characters is the maximum recommended by GSA.
  - Use correct grammar and punctuation
  - Add captions for sounds that are not spoken (e.g., sound effects, background noises)
  - Identify the speakers as dialogue progresses. The name of the speaker should precede the text that follows until the next person starts speaking; continue this throughout the entire video/webinar.
    - This may not be possible with real-time captions that are auto-generated by the streaming program
- [Transcripts](16)

- - Follow guidelines from captioning to determine what should be transcribed Make sure the transcript is in an accessible format (see section 1.1)
    - The transcript should be posted to the same location as the video or recording
    - Identify the speakers within the dialogue
  - Use streaming services, such as Zoom, that offer real-time captioning and subtitle options
  - Make recordings available to the audience after the webinar ends. This allows viewers to rewatch at other speeds and to review information that was unclear or missed during the live webinar

3.3 Social Media

- Design visually accessible content (see section 1.1)
- Use inclusive language (see section 1.2)
- Avoid flashing content
- Use hashtags and use capital letters for multiple words (e.g., #InvasiveSpecies, not #invasivespecies)
- Add hashtags to categorize your content, making it discoverable to a wider audience beyond your followers who are actively searching for topics related to those hashtags

3.4 Websites

- Key points and page highlights should be easy to find on the webpage
- Use accessible font, a colorblind friendly palette, and accessible contrast (see section 1.1)
- The University of Georgia used WAVE[17] and Colorblindly to help ensure visual accessibility of the new (2025) MIPN website
- Include captions and alt text for figures and images (see sections 1.1c, 2.2a, and 2.2b)
- Make hyperlink text descriptive[1]
- Verify that webpages are formatted for desktops as well as mobile devices
- Pages should be organized according to headings to help screen reader users and those with cognitive disabilities. All pages should at least have a <h1> level heading giving the title of the page.
- Provide a generous size for clickable areas, generally no smaller than 44px by 44px.
- Provide multiple ways to reach any page on a site to allow users to choose a method that is easiest for them. Per Yale University[18], users with low vision may find using search easier than navigating through a large menu. Users with cognitive impairments may prefer a table of contents or site map over clicking through many pages. Common ways of supporting navigation include:
- links to related pages
  - table of contents
  - site maps
  - search function
  - linking to all other pages from the home page

Conferences and Similar In-person Events

Information in this section is based on MIPN's experiences hosting the Upper Midwest Invasive Species Conference and from insights from presentations provided by Dr. Shikha Singh on April 9, 2024 (JLW CISMA and MIPN board member). Try to anticipate needs and have resources ready to reduce the chance that people will feel that their needs are a burden.

- General accessibility considerations for in person events
    - Ensure adequate handicap parking
    - Provide public transportation access
    - Post signage with large print (a good rule of thumb is 1" of letter height for every 10' of viewing distance)
    - Be familiar with the nearest medical care facility
    - Build in enough time for those who need frequent bathroom breaks or who may be dealing with chronic pain issues. Remember service animals need breaks too.
    - Provide opportunities for feedback from attendees regarding accessibility
- Considerations for indoor venues
    - Wide doors for wheelchairs and strollers (per the ADA, the minimum clear width for a wheelchair is 32")
    - Facility access points with curb lip access
    - Hallway space that allows for wide turns
    - Adjustable lighting
    - Electrical outlet access for laptops and screen readers
    - Bathrooms
        - Gender neutral options
        - Larger spaces for caretakers or self-maneuvering
        - Family bathrooms
        - Sharps containers
    - Microphones for large spaces
    - Space for respite from the noise and business of the event (ear plugs and fidgets can also help with overstimulation)
    - Lactation room
- Considerations for outdoor gatherings
    - Provide details on the duration of the any physical activity and how strenuous activities are expected to be
    - Choose sites with seating, such as benches, or consider bringing some chairs for those who may not be suited to standing for extended periods.
    - Provide water or ask attendees to bring water
- Be sure to communicate accessibility options to attendees

Other considerations

Implement based on audience needs and as resources allow.

- Large print options
    - Use zoom features within a software program or via assistive technology to make text larger and easier to read
    - Print resources (brochures, factsheets, etc.) with large-print for individuals

with limited vision. According to the [Library of Congress](#)[19], large print is generally considered 16 – 18pt. font
- Braille versions of printed materials
- ASL interpreter
  - In-person events or webinars without real-time captioning can be made more accessible to deaf and hard-of-hearing individuals by providing an interpreter
- Multilingual versions
  - Understand the demographics of the target audience and develop content with multiple languages that best support them
  - Multilingual versions can also be shared outside of the target audience through other partner programs and groups

APPENDIX A

Information on the Primary Sources for this Guidance Document

1. [U.S. General Services Administration (GSA) Section 508](#)
   a. On January 18, 2017, the [U.S. Access Board](#) published a [final rule](#) updating accessibility requirements for information and communication technology (ICT) covered by [Section 508 of the Rehabilitation Act](#) and Section 255 of the Communications Act. The U.S. General Services Administration (GSA) Office of Government-wide Policy (OGP) is tasked under this law to provide technical assistance to help Federal agencies comply with these requirements, and ensure that covered ICT is accessible to, and usable by, individuals with disabilities.
   b. [Accessible Electronic Documents Community of Practice](#) (AED COP) – this resource provides guidance on creating accessible Portable Document Format (PDF) documents that conform to the [Revised 508 Standards](#)
2. [U.S. Access Board](#)
   a. The Access Board is an independent federal agency that promotes equality for people with disabilities through leadership in accessible design and the development of accessibility guidelines and standards.
   b. The Access Board develops and maintains design criteria for the built environment, transit vehicles, public right-of-way, information and communication technology, and medical diagnostic equipment under the Americans with Disabilities Act of 1990 (ADA) and other laws. It also provides technical
   assistance and training on these requirements and on accessible design, and

   continues to enforce accessibility standards that apply to federally funded facilities under the Architectural Barriers Act of 1968 (ABA)
   c. [Americans with Disabilities Act](#)

   i. ADA is a law that protects people with disabilities in many areas of public life.

  d. Architectural Barriers Act of 1968 (ABA)

   i. Standards issued under the Architectural Barriers Act (ABA) apply to facilities designed, built, altered, or leased with federal funds. Passed in 1968, the ABA is one of the first laws to address access to the built Environment.

APPENDIX B

PDF Remediation Step-by-Step Guide

All Sources

1. WebAIM – PowerPoint Accessibility
2. The National Center for Ecological Analysis and Synthesis (NCEAS) Science Communication Resource Corner - colorblind safe color schemes.
3. GSA – Understanding Accessible Fonts and Typography
4. Adobe – Picking the right font: Serif vs. sans serif
5. Canva – 60 sans serif fonts
6. TPGi Color Contrast Analyzer
7. Social Security Administration Guide: Alternative Text for Images
8. American Psychological Association's Brief Guide to Bias-Free and Inclusive Language
9. American Psychological Association Inclusive Language Guide
10. National Center on Disability and Journalism – Disability Language Style Guide 11. Environmental Protection Agency - Readability for Developing and Pretesting Concepts, Messages, Materials, and Activities
12. Maine's Public Universities – Alternative Text Accessibility Guide
13. The Ohio State University – Alternative Text Guide
14. University Press of Colorado Alt Text Guidelines
15. U.S. General Services Administration Visual Style Guide
16. U.S. General Services Administration - Create Accessible Captions and Transcripts 17. Web Accessibility Evaluation Tool (WAVE)
18. Yale University – Usability & Web Accessibility
19. Library of Congress – Large Print Materials