Accessibility Best Practices

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Introduction

As a pillar in diversity, equity, and inclusion, accessibility refers to the design of technology, programs, and services that can be fully used and experienced by all people, including people with disabilities. While there are many definitions of accessibility, this document defines accessibility as **proactively planning for the full experience and utilization by as many people as possible, and especially by people with disabilities.**

According to the Centers for Disease Control and Prevention, 27% of adults in the United States have some kind of disability. Disabilities can be permanent, temporary, or situational, and everyone will experience some form of disability at some point in their lives. Even if we are born able-bodied, we may acquire a disability if we are injured, or live to old age.

Improving accessibility improves experiences for everyone—even those without disabilities. For example: Automatic doors benefit wheelchair users and people with armfuls of meeting supplies. Closed captions benefit the deaf, hard of hearing, and those who may be in a room that is too quiet or too loud for them to listen to audio. And reading Microsoft Teams chat messages aloud benefits those with visual disabilities and those who didn't bring their laptop to the meeting room.

This guide provides Chesapeake Bay Program staff with tips, tricks, and resources for improving the accessibility of our web content, internal and external communications, and meetings and events. **This guide is not meant to replace the rules or standards that your employer may require you to follow; instead, it is meant to help you learn how to incorporate common best practices into your work.**

Each section of this guide covers a different piece of a product that can affect its accessibility, from a webpage or document's overall structure and design to the links, images, videos, tables, and even words that are part of that webpage or document. An additional section provides tips for hosting accessible meetings and events, in both in-person and hybrid environments. A list of additional resources includes links to our sources, as well as a list of tools you can use to evaluate the accessibility of your own Outlook emails, Word documents, Excel spreadsheets, PowerPoint presentations, and PDFs.

Please contact the CBP Accessibility Team with questions, concerns, or suggested improvements to this document. This guide is a living document and will be updated as new recommendations are realized.

Table of Contents

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Webpage and Document Structure

Headings break webpages, documents, and PowerPoint presentations into "chunks" of information, creating a scannable outline that is similar to a table of contents. Users of screen readers and other assistive technologies can skip from heading to heading, making it easier for them to find the information they're looking for.

Benefits of Headings

- Improves scannability.

- Creates a Table of Contents that helps users navigate through a document.

- Creates "anchors" that can be used to build hyperlinks.

Headings of different sizes can be used to establish a multi-level content hierarchy. On ChesapeakeBay.net, for example, the H1 heading applies to an entire page, and functions as the page's title. Lower-level headings—H2, H3, H4, and H5—represent different degrees of "indentation" in our content outline. You can see these multi-level headings in action on the [What's At Risk? Oysters](#) page, which features the following headings:

H1: Oysters
>H2: Overview
>H2: Why are oysters important to the Chesapeake Bay?
>>H3: Cleaning the water
>>H3: Providing food and habitat
>>H3: Historical and economic importance
>H2: What caused the Chesapeake Bay oyster population to decline?
>>H3: Historic over-harvesting
>>H3: Disease
>>H3: Pollution and Habitat loss
>H2: How are oysters being restored?
>>H3: Managing oyster harvest
>>H3: Establishing oyster sanctuaries
>>H3: Overcoming disease
>H2: What you can do

How To: Add Headings

Highlighting certain words and bolding the text or increasing its font size will *not* **create headings that are usable to a screen reader.** Instead, **headings must be tagged correctly.** When multiple heading levels are used, **headings must always be added in the appropriate numerical order** (i.e., never skipping from an H1 to an H3 without including an H2 in between).

On ChesapeakeBay.net

Content editors can add headings to pages on ChesapeakeBay.net by inserting a heading content block from the Content Matrix (Image 1.1) and selecting the appropriate heading level from the dropdown menu (Image 1.2). To add supporting text, insert a paragraph content block below the heading content block. Learn more about webpage headings on WebAIM.
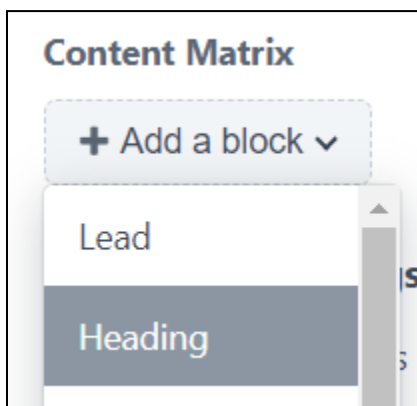

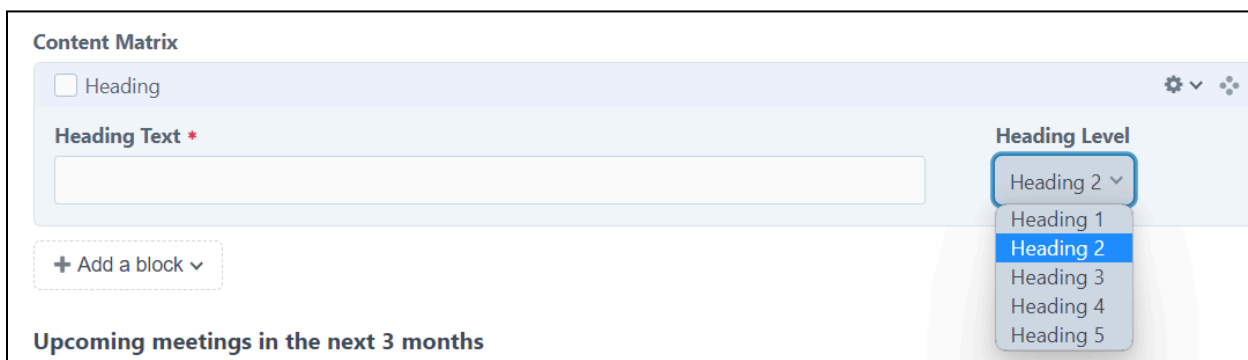*Image 1.1: Select a heading content block from the Content Matrix.*

Image 1.2: Select the appropriate heading level from the dropdown menu.

In Documents

You can add headings to a Google or Word document by changing the style of your text. Both programs offer a "document outline" function that can help you keep track of your document's structure. Learn about document headings from Google Help or Microsoft 365 Support.

In Presentations

Slide titles serve a similar role as headings on a webpage or in a document. For this reason, every slide in a presentation should include a title, and every title should be unique. When displaying a title wouldn't suit your presentation design, you can hide it, ensuring it isn't visible to a sighted user, but is accessible to a screen reader. Learn about adding and hiding slide titles from Microsoft 365 Support.

In Spreadsheets

When multiple worksheets are being used within a single workbook, renaming each worksheet according to the information it contains can make it easier for users to navigate through the file. Learn about renaming worksheets from Google Help or Microsoft 365 Support.

Visual Design

People with different visual abilities see your designs in different ways. Clean and clear visual designs can benefit all users.

How To: Improve Accessibility Through Visual Design

General Best Practices

1. **Provide good contrast** between your text and its background color. For small text, contrast should be greater than or equal to 4.5:1. For large text, contrast should be greater than or equal to 3:1. You can use the [WebAIM Contrast Checker](#) to check these figures. Note: These ratio requirements do not apply to "incidental" text (i.e., text or images of text that are pure decoration or part of a picture that contains significant other visual content) or text that is part of a logo or brand name.

2. **Avoid using color as the sole means of conveying information.** In other words, in addition to color, use icons, text, and other visual elements to communicate ideas, which will ensure the image will retain its meaning even when the colors are removed.

3. **Establish a clear visual hierarchy of information,** arranging items in order of their importance (e.g., with important actions at the top or bottom of the screen). Make sure the visual order follows the intended reading order, and group related items near one another.

4. **Choose a font or typeface that emphasizes clarity and legibility.** Choose a font size and line length that promotes comfortable reading. (A 12- to 16-point font and a line length of 45 to 75 characters will be comfortable for most users.) [Learn about text legibility](#) from Material Design.

5. **On written products, include page numbers** for ease of reference and navigation.

In Presentations

Avoid unnecessary or overly complex animations. Animations (including slide transitions) should be simple, and should only be used if they add value to the presentation.

In Spreadsheets

To make a spreadsheet easier to navigate, consider locking certain columns and/or rows in place, and hiding unused columns or rows. Learn how to [lock rows and columns](#) and [hide or show rows and columns](#) from Microsoft 365 Support.

Hyperlinks

Clear, functioning, and accessible links are one of the most important parts of a webpage. Users of screen readers and other assistive technologies often navigate from link to link in order to skim a webpage for the information they're looking for. Assistive technologies can also be used to obtain a list of the links that appear on a particular page, whether arranged alphabetically or in the order in which they appear.

How To: Create More Accessible Hyperlinks

General Best Practices

1. **Be concise** when choosing the text that is hyperlinked, so users can quickly determine whether the link will direct them to the information they're looking for.

2. **Be descriptive,** so users know where the link will take them.

3. **Use text that makes sense to a user out of context,** i.e., when pulled out of the surrounding paragraph.

4. **Avoid using the same words or phrases** as other, different links appearing on the same page.

5. **Avoid using unintelligible URLs** (i.e., those that contain strings of numbers, letters, ampersands, dashes, and other characters that make little sense to the average user) instead of human-readable text, unless the product is likely to be printed.

6. **Alert users when their paths lead to something other than a webpage** (e.g., a Word, Excel, PowerPoint, or PDF file), so users know what to expect.

7. **Ensure links are visually distinct** from the surrounding text (e.g., underlined and in a contrasting color).

For example:

- Instead of "[Click here](#) to access our calendar," consider: "Visit our [Meetings Calendar](#)."
- "[This page explains what you can do to help protect the Chesapeake Bay](#)," consider: "Learn how to [help protect the Chesapeake Bay](#)."
- Instead of "[Narrative-Analysis RFB 11 22 22.pdf,](#)" consider: "[Riparian Forest Buffers Narrative Analysis (PDF)](#)."

Learn [how to write effective links](#) from PlainLanguage.gov.

On ChesapeakeBay.net

Content editors can add links to pages on ChesapeakeBay.net by highlighting the text that will be linked, clicking on the link button in the editing toolbar, and selecting the appropriate link type (Image 3.1):

- Link to a category, which allows you to select a page from the site's main navigation;
- Link to an entry, which allows you to select lower-level content (e.g., a Group page or blog post);
- Link to an asset, which allows you to select a file that has been uploaded to the site; or
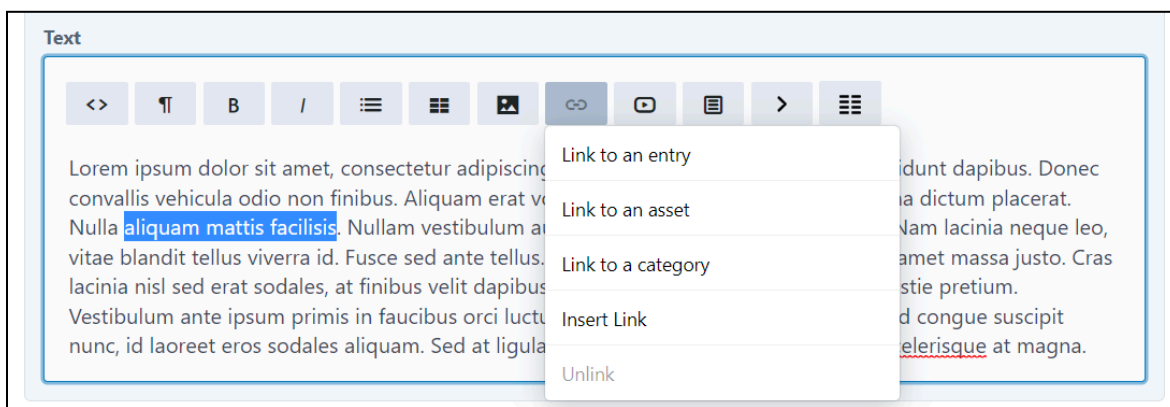- Insert link, which allows you to insert an external URL.

Image 3.1: Highlight the text that will be linked, click on the link button in the editing toolbar, and select the appropriate link type.

In most cases, links on ChesapeakeBay.net should **not** open in a new tab or window. [Learn more about links on WebAIM](#).

In Documents, Presentations, and Spreadsheets

Both Google and Microsoft Office allow users to establish links to webpages, files, email addresses, and even specific locations within a particular document. You can also edit a link's display text (e.g., to replace an unintelligible URL with human-readable text) and a link's font style or color. Learn about working with links from [Google Help](#) or [Microsoft 365 Support](#).

Images, Graphics, and Alt-text

Informational images—or those that convey content, such as featured photographs, charts, maps, and infographics—should be perceptible by all users, including those who are colorblind, low-vision, or have other visual or cognitive disabilities.

How To: Create More Accessible Informational Images

General Best Practices

1. **Avoid using color as the sole means of conveying information.** In addition to color, use text, patterns, and/or shapes to communicate ideas. This will ensure the image will retain its meaning even when the colors are removed.

2. Use an **online color blindness simulator** (such as Colblis or the Colorblindly Chrome extension) to ensure your image will retain its meaning when viewed by users who are colorblind.

3. If applicable, use the WebAIM Contrast Checker to **ensure your image presents text and other components with sufficient contrast.** According to the World Wide Web Consortium, images of text should have a contrast ratio of at least 4.5:1. Images of graphical objects, such as icons or charts, should have a contrast ratio of 3:1. (Online tools such as RedKetchup or the Color Picker Tool Chrome extension can help you identify the color of different aspects of your image.)

4. If applicable, revise the design of your chart to **ensure labels are both legible and descriptive.** For example, replace generic chart and axis labels with meaningful text; improve the legibility of each axis by adjusting their positions, tick marks, and other characteristics; and make sure all text is presented with sufficient contrast in a 12-point or larger sans serif font.

5. **Add appropriate alt-text.** Alt-text, or alternative text, is a textual substitute. Screen readers announce alt-text in place of images, browsers present alt-text if an image fails to load, and search engines consider alt-text when assessing a page. Alt-text should:

   a. **Be succinct.** Alt-text shouldn't be longer than a sentence or two. Oftentimes, a few thoughtfully selected words will suffice.

b. **Clearly represent the content and function of an image,** including what it depicts and what it means within the context of the page. Consider what's important about the image. The setting? The emotions on people's faces? The colors or relative sizes of certain objects?

c. **Not include phrases like "image of…,"** which would be redundant.

Alt-text Formula for Charts and Graphs

[Chart type] of [type of data] shows [reason for including chart]."

Instead of…

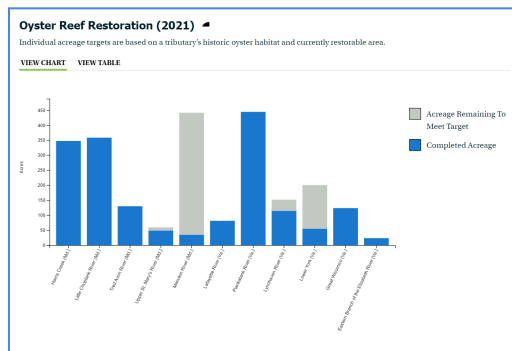❌ A line graph showing adult female blue crab abundance over time.

Consider…

✓ A line graph of adult female blue crab abundance in the Chesapeake Bay shows a downward trend over the last five years, even as the indicator has remained above its minimum sustainable level.

These same guidelines should also inform alt-text for charts and graphs. Designer Amy Cesal offers an alt-text formula: "[Chart type] of [type of data] where [reason for including chart]." Describing a chart as "A line graph showing adult female blue crab abundance over time," for example, would not be a sufficient explanation of the data. Instead, **alt-text for charts and graphs should include the insight you want your user to have:** "A line graph of adult female blue crab abundance in the Chesapeake Bay shows a downward trend over the last five years, even as the indicator has remained above its minimum sustainable level." For example:

The lead image on the Sustainable Fisheries Goal Implementation Team page could be given the following alt-text: **A marine biologist empties a bucket of tagged blue crabs back into a river.**

Oyster Reef Restoration (2021) ◢

Individual acreage targets are based on a tributary's historic oyster habitat and currently restorable area.

VIEW CHART   VIEW TABLE

◻ Acreage Remaining To Meet Target
◼ Completed Acreage

This snapshot of the Oysters indicator could be given the following alt-text: **A bar chart of oyster reef restoration in the Chesapeake Bay shows that seven of the 11 tributaries selected for restoration have been restored.**

Note: There are two cases in which alt-text can be left blank, or "null:"

- **For images that are paired with a sufficiently descriptive caption,** in which case the alt-text would be redundant of the surrounding text.
- **For images that are considered decorative,** because they do not present important information or serve a particular function. To determine whether an image is decorative, ask yourself, "If this image were deleted, would important content be lost?" If the answer is "No," alt-text can be left blank.

Learn more about effective alt-text from Harvard University, Sunrise Accessibility and Disability Resources, or Microsoft 365 Support.

6. If applicable, **include a more detailed text alternative than can be captured by alt-text alone.** For example, include a bulleted list of a map's geographic points. Or include a data table that conveys the information illustrated in your chart, graph, or map. If the source data for your chart, graph, or map is more complex than the point you are presenting, you can also include a link to the source data in the surrounding text.

On ChesapeakeBay.net

Content editors can add images to pages on ChesapeakeBay.net by inserting an image content block from the Content Matrix. The image content block contains optional fields for alt-text and captions (Image 4.1). Learn more about accessible webpage images on WebAIM.

Image 4.1: The image content block contains fields for alt-text and captions.

In Documents, Presentations, and Spreadsheets

Both Google and Microsoft Office allow users to insert images and graphics, and add alt-text to those objects. Learn about adding alt-text and, where appropriate, marking visual objects as decorative from Google Help or Microsoft 365 Support.

Videos

Like [informational images](#), **videos should be perceptible by all users,** including those who are colorblind, low-vision, or have other visual or cognitive disabilities, as well as those who can't access audio, whether it's because of a hearing limitation, an auditory processing disorder, a partial understanding of the language being spoken, or the conditions of their surrounding environment (which may be too quiet or too loud to listen to audio).

How To: Create More Accessible Videos

General Best Practices

1. **Use legible on-screen text and graphics.** This includes providing good contrast between your text and its background color, avoiding using color as the sole means of conveying information, choosing a font or typeface that emphasizes clarity and legibility, and other [best practices of visual design](#).

2. **Avoid flashing or flickering content,** especially at a rate of more than three flashes per second.

3. **Make sure your video is high-resolution and your audio is clear.**

4. Where possible, **show speakers** to support lipreading.

5. **Provide synchronized closed captioning.** Video captions should appear at approximately the same time as the corresponding audio, accurately represent spoken words and other sounds (e.g., laughter), and be readily available to those who need them. Kansas State University has published a useful [How To: Create your own captions using YouTube's caption editor](#). [Learn more about captions on WebAIM](#).

6. **Provide a clear and well-organized transcript** that includes descriptions of important visual content. Transcripts help users who can neither hear the audio nor see the video, and make multimedia content searchable by both users and search engines. [Learn more about transcripts on WebAIM](#).

7. **Provide an audio description of any content that is only portrayed visually,** such as text that is shown on the screen but not read aloud. Audio descriptions can be integrated into a video's primary audio track or provided through a separate audio track. A separate audio description track is not necessary if the video's primary audio

track already includes descriptions of visual content. [Learn more about audio descriptions on WebAIM](#).

8. **Avoid placing anything important in the bottom right corner of the video** to allow for the possibility of adding a sign language interpreter overlay.

9. **Upload your video to an accessible media player,** or one that supports accessibility features (such as captions, audio descriptions, and keyboard navigability) and has controls that are properly labeled for users of screen readers and other assistive technologies. Learn more about [accessible media players](#).

On ChesapeakeBay.net

Content editors can add videos to pages on ChesapeakeBay.net by inserting a video content block from the Content Matrix. The video content block contains fields for "text tracks," or closed captions (Image 5.1). Caption files should be uploaded in WebVTT (.vtt) format. Content editors can also use the embed content block to embed a video directly from YouTube or Vimeo.

Image 5.1: The video content block contains fields for "text tracks," or closed captions.

Data Tables

Accessible data tables must allow non-sighted users to make clear associations between the information that is presented in the grid and the corresponding row or column headers. When the appropriate markup is in place, users of screen readers and other assistive technologies can navigate through data tables one cell at a time, hearing the column and row headers spoken to them.

How To: Create More Accessible Data Tables

General Best Practices

Tables should always include at least one set of headers, i.e., labels for columns and/or rows. Tables may also include a caption, or brief descriptive text placed before or after the grid that describes the table's contents.

For example:

Caption: Adult Female Blue Crab Abundance

Column Heading: Year	*Column Heading:* Population
2020	141 million
2021	158 million
2022	97 million

While merged cells are common, some screen readers still do not support them, and are unable to associate the content in a merged cell with its data header. For this reason, it is important to **avoid merging cells whenever possible.**

It is also important to **avoid blank cells, columns, or rows,** which can lead users of screen readers to believe there is nothing more in the table. If you can't avoid a blank cell, column, or row, enter text that explains that it is blank (e.g., "N/A" or "intentionally blank").

On ChesapeakeBay.net

Content editors can add tables to pages on ChesapeakeBay.net by inserting a text content block from the Content Matrix and clicking the table button in the editing toolbar (Image 6.1). Once the table has been inserted into the text field, click the table button again to add column headers. Learn more about accessible tables on WebAIM.
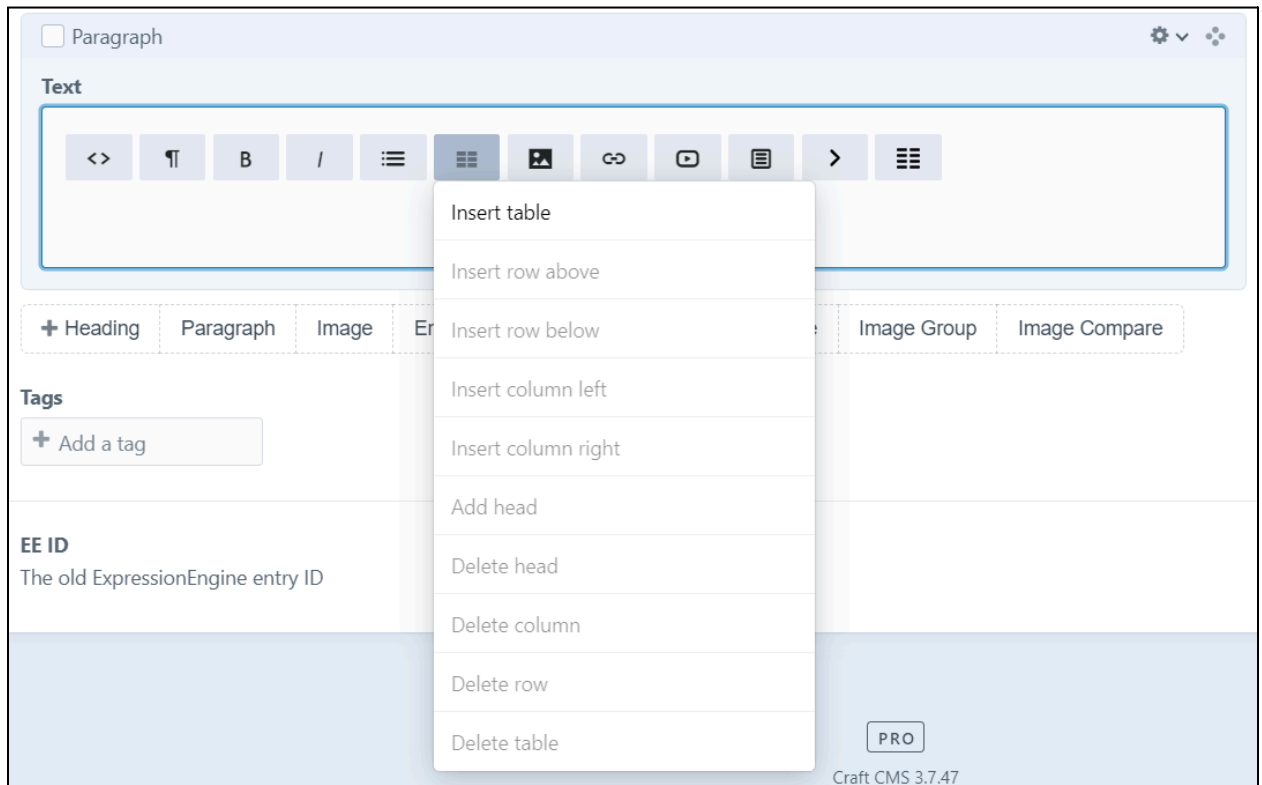
Image 6.1: Insert a text content block from the Content Matrix and click the table button in the editing toolbar.

In Documents and Spreadsheets

Both Google and Microsoft Office allow users to use tables to present data and organize information. While Microsoft advises against using tables in PowerPoint, Google Help and Microsoft 365 Support have developed guidance for creating accessible tables in Google Docs, Microsoft Word, and Microsoft Excel.

Inclusive Language

According to the Linguistic Society of America, inclusive language "acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities." Using inclusive language means actively and intentionally creating communications with impact on a diverse audience in mind, including working to mitigate potential unconscious biases.

The Chesapeake Bay Program's Communications Style Guide (PDF) includes a section on inclusive language. It provides general tips, specific terms to use or avoid, and additional resources.

Meetings and Events

When event organizers, presenters, and participants work together to make meetings more accessible, all attendees benefit. In addition to the tips below, the Web Accessibility Initiative has published a checklist for [Making Remote, In-person, or Hybrid Events Accessible](#). Harvard University has also published useful guidelines for [Hosting Accessible Hybrid Meetings](#).

Accessibility at the CBP Office

The Chesapeake Bay Program Office features three privacy rooms. While the rooms are not entirely private—with doors that feature transparent glass windows—they are located in a low-traffic area. The rooms are available on a first-come, first-served basis.

How To: Host More Accessible Virtual Events

Before the Event

1. **Select someone to address accessibility concerns before and during the event.** Ideally, this point of contact will be able to direct their full attention to accessibility concerns, without having to focus on other aspects of the event (e.g., hosting or presenting). Include this individual's contact information on the event's agenda.

2. If presentations or other meeting materials need to meet certain accessibility requirements, **communicate those requirements in advance,** giving presenters enough time to prepare.

3. **Incorporate breaks into the agenda,** where appropriate (e.g., for events that are longer than an hour).

4. **Distribute supporting materials prior to the event,** and ensure all those who have a speaking role understand the expectations of that role (e.g., whether video will be required).

5. **Make accessibility options clear to attendees,** and ask participants to report any additional needs in advance. For example:

   > Automatic closed captions will be available for this event. What else can we do to make this meeting more accessible for you? Please contact (Name) at (email address) with any accessibility questions or concerns.

or

> The EPA is committed to providing universal access to our events. Please contact (Name) at (email address) or (phone number) to request accommodations, such as an ASL interpreter. Closed captioning will be provided. Advance notice (at least one week) is necessary to arrange for some accessibility needs.

6. **Ask presenters to test their audiovisual equipment and other technology** to ensure clear and functioning audio, video, and live captioning.

7. **Assign roles.** Designate separate people to take notes, monitor the chat, and run technology.

During the Event

1. **Enable live captioning.** Note: In many cases, live captions must be enabled by the user rather than the host. Different video conferencing platforms—including [Google Meets](), [Microsoft Teams](), [WebEx](), and [Zoom]()—offer different instructions for doing so.

2. **List the accessibility options available to attendees and explain how to use them.** Remind participants to: Remain muted when not speaking; identify themselves when they start speaking; and limit their use of the chat (which can't be seen by call-in users). If applicable, post the link to supporting materials.

3. **When messages are posted to the chat, read them aloud.**

4. **Encourage presenters to verbally describe any images on their slides, and to zoom in on small images or text.**

5. **Encourage attendees to include their name, affiliation, and/or pronouns in their display names.**

6. **Observe scheduled breaks.**

7. **Don't hold events or conduct work during breaks.**

After the Event

1. **Share notes or minutes with attendees.**

2. **Make a note of any accessibility issues** that should inform the planning of future events.

3. **Consider collecting feedback,** especially for large events.

How To: Host More Accessible In-person or Hybrid Events

When the option is available, consider hosting a hybrid event in order to be as inclusive as possible. Hybrid events should follow the above guidelines for virtual events, as well as the below guidelines for in-person events.

Before the Event

1. **Visit the event space to gather information about its overall accessibility.** For example: Is the venue wheelchair accessible? Are its bathrooms wheelchair accessible? Is there a gender neutral bathroom? A family bathroom? A lactating room? Are there chairs for all attendees? Are there chairs of different sizes? Is there space that can serve as a quiet area? Is the space fragrance-free? Are there COVID guidelines or precautions in place, such as masking, proof of vaccination requirements, and/or encouragement of guests to stay home if they are feeling sick or exhibiting symptoms? Is there a refrigerator for guests to store allergen-free foods?

2. **Incorporate breaks into the agenda,** where appropriate (e.g., for events that are longer than an hour).

3. **Communicate the venue's location and accessibility options to attendees.** Ask participants to report any additional needs in advance.

4. **Test audiovisual equipment and other technology** to ensure clear and functioning audio and video.

COVID Safety

As we return to in-person events, it is important to follow best practices for reducing the spread of COVID-19 and other airborne diseases. For example:

- Follow federal guidelines for reducing the spread of COVID in the workplace. Follow venue, state, or local guidelines, if these are more

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> stringent.
>
> - Increase the number of group activities that are held outside.
>
> - Encourage guests to stay home if they are feeling sick or exhibiting signs of COVID.
>
> [Learn more about COVID prevention from the CDC](#).

During the Event

1. **Be mindful of both in-person and virtual attendees,** engaging both segments of your audience in presentations, discussions, and decision-making.

2. **Encourage in-person attendees to use their own laptops to join the virtual meeting room,** so they can access the chat and use reactions.

3. **Remind in-person attendees to minimize side conversations** that may interfere with the audio being transmitted to virtual participants.

4. **Observe scheduled breaks.**

5. **Don't hold events or conduct work during breaks.**

After the Event

1. **Share notes or minutes with attendees.**

2. **Make a note of any accessibility issues** that should inform the planning of future events.

3. **Consider collecting feedback,** especially for large events.

Resources

General Support

- [WebAIM: Web Accessibility in Mind](#)
- [Accessibility for Teams](#) (U.S. General Services Administration)
- [Make Your Content Accessible to Everyone](#) (Microsoft 365 Support)
- [Section508.gov](#) (U.S. General Services Administration)
- [Conscious Style Guide: Conscious Language and Design](#)

Accessible Documents

- [Creating Accessible Google Documents](#) (Michigan Tech)
- [Creating Accessible Word Documents](#) (AbilityNet)
- [Creating Accessible Word Documents](#) (WebAIM)

Accessible Presentations

- [Make Your PowerPoint Presentations Accessible to People with Disabilities](#) (Microsoft 365 Support)
- [PowerPoint Accessibility](#) (WebAIM)
- [Creating Accessible PowerPoint Presentations: Quick Guide](#) (CDC Information Dissemination Staff)

Accessible Spreadsheets

- [Make Your Excel Documents Accessible to People with Disabilities](#) (Microsoft 365 Support)
- [Microsoft Excel: Optimizing Spreadsheet Accessibility](#) (WebAIM)

Evaluation Techniques and Tools

Both Microsoft Office and Adobe Acrobat offer Accessibility Checkers, which you can use to evaluate the accessibility of your Outlook emails, Word documents, Excel spreadsheets, PowerPoint presentations, and PDFs. Both checkers provide users with a list of errors, warnings, and how-to-fix recommendations.

- [Web Accessibility Evaluation Guide](#) (WebAIM)
- [Improve Accessibility with the Accessibility Checker](#) (Microsoft 365 Support)
- [Check Accessibility of PDFs](#) (Adobe Acrobat User Guide)