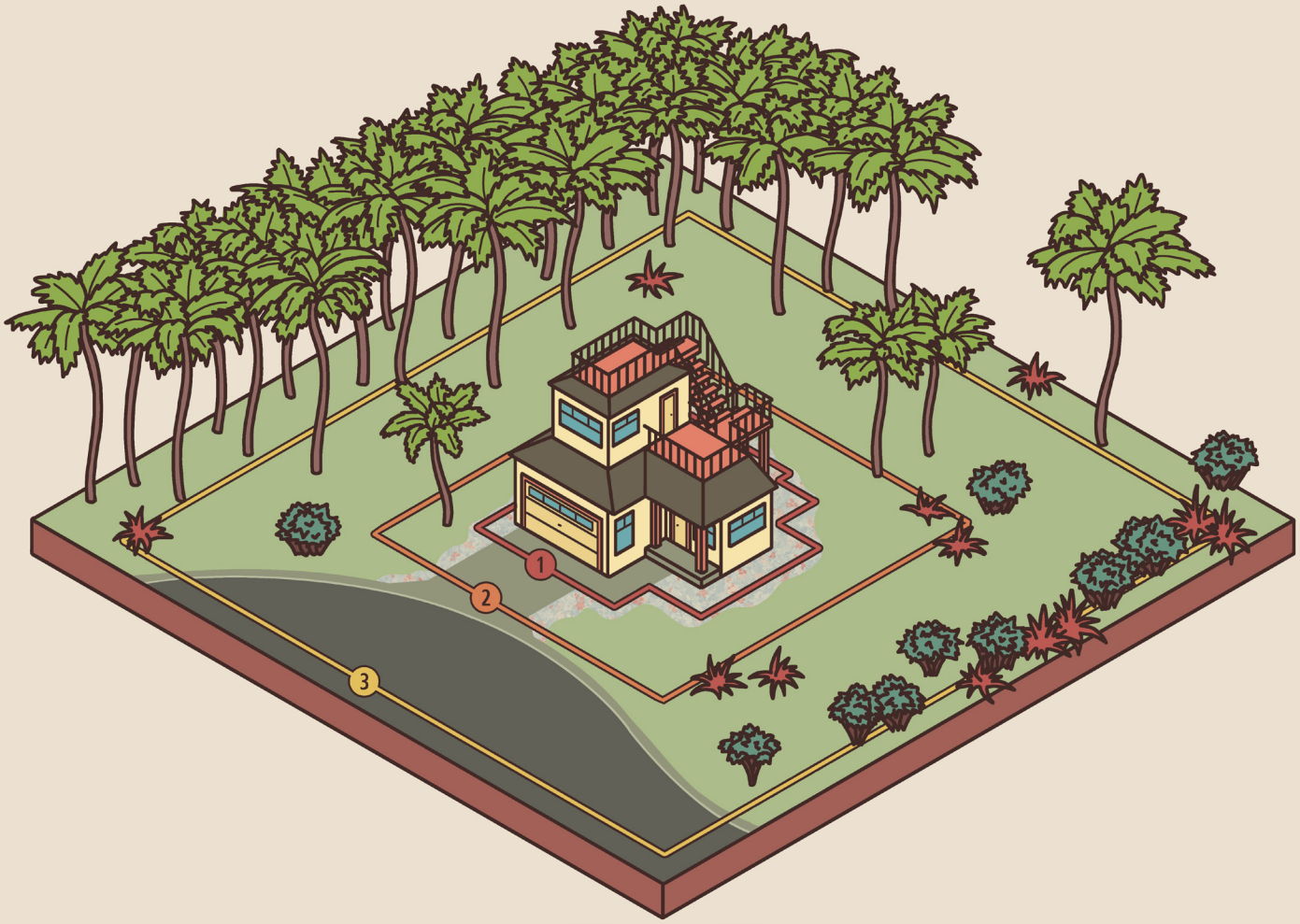
Improving Wildland Fire Mitigation, Prevention, and Education Visual Communication Standards

A discussion and analysis of how to create effective risk communication imagery without a design background, and why it matters.



Katy L. Wood | October 2025

About the author:

Katy L. Wood has worked as a professional artist, designer, and marketer for thirteen years, working for clients around the world on a wide range of projects as well as working on her own projects which frequently involve disaster education and emergency management related topics. She has worked for the Forest Service for two years as a wildland fire dispatcher and prevention education team member.

Cover illustration and figures in the guide:

The cover illustration and all figures in this document were created by Katy L. Wood.

The Generative AI image example was created with Adobe Firefly.

Contents

Introduction

Wildland fire mitigation, prevention, and education all suffer from a problem that has plagued them from the very start: they attempt to do serious and important outreach without providing the full range of resources to do so in an effective and professional manner. A well-rounded outreach campaign needs to involve both in-person interactions and tangible assets to be effective (*Mitigation Pocket Guide*, 2024). Those tangible assets, things such as brochures, websites, table displays, booklets, social media posts, newsletters, and more, tend to be where things fall apart from a resource perspective. You can find plenty of resources about how to conduct site visits and home assessments, how to talk to people about fire danger, how to host an event with the public, but rarely will you find wildland fire oriented resources related to the creation of tangible assets, more specifically the visual and design aspects of those assets. This leads to the creation of assets that lack a professional quality and frequently fail to accomplish their goals due to that lack of quality, or the use of assets that are ill-fitted for their task but are used nonetheless because they are all that is available. The problem is easy enough to overcome, but a dedicated effort to do so is required. The aim of this guide is to show why better visual standards and training are needed in the world of wildland fire outreach, and to provide easy to understand methods for people who do not have a design background but still need to create visual assets as part of their outreach efforts.

Art and design are not some mystical, innate skill that you have to be born with. They can be learned and trained on just like anything else. Learning to create a good layout is no different than learning how to use a chainsaw or how to conduct a home assessment for mitigation purposes or how to effectively have tough conversations with reluctant homeowners. In a world as fast paced as wildland fire, having internal personnel trained in basic design skills can provide the ability to create assets on the fly, assets that actually match specific needs and do not look like they were thrown together at the last minute. This guide is not meant to be a definitive tool on how to be an artist or designer, merely a jumping off point that covers enough of the basics to help someone without a design background know where to start, and how to avoid basic mistakes. If we want to create effective outreach going forward, we have to move on from this culture of treating design like something that cannot be learned or taught and instead embrace it as just another facet of the overall job of outreach.

If you're more interested in how to do it than the whys, feel free to skip to the Basic Design Principles to Follow section.

How We Got Here

The lack of even basic design training in wildland fire outreach is not a new problem. As far back as the creation of Smokey Bear in the 1940s, there was concern about "a lack of artistic expertise on the part of government employees…" with one of the founders of The Advertising Council startled to find that a government employed "artist" didn't even know the most basic aspects of making a good layout, the man stating it was impossible to make type larger, something that was very simple to do even with the design tools available at the time (Lawter, 1994). With the success of Smokey Bear and other war related efforts, The Advertising Council solidified and formalized the practice of outsourcing government based artistic projects to outside design firms (Lawter, 1994). Why hire an artist internally when you can just pay for one elsewhere? But that is a practice that was developed in a much different world than we now live in. A world without the level of connectivity we now have, and a world with significantly less wildfires. It was a practice developed in a slower world. But despite the world speeding up, despite destructive wildfires increasing in number and scope year after year, we still treat the art and design of our outreach elements as an afterthought to be handed off to someone else.

To this day wildland fire related outreach resources created and distributed by the Federal Government frequently feature basic design errors that make them less effective or downright unusable, such as the National Wildfire Coordinating Group's Fire Prevention Education Library, which has the large majority of its assets available only as PowerPoint files (*NWCG FPET Digital Library*, 2025), something totally unheard of when working with professional designers. PowerPoint is not a design program and cannot create assets that are easily usable by other designers should any of that work need modified in the future, nor can it easily provide the range of files that may be needed to have these designs properly distributed either via the web or in a printed format. It is like trying to cut down a tree with a dull saw; it will probably get the job done eventually, but the result is going to be messy and inefficient. Yet it has somehow become the standard for this official government resource library, a decision I am *sure* not a single professional designer was involved in.

But what else are people meant to do? The process of using outside designers is now frequently too slow—and involves too much red tape—to be effective for the breakneck speed at which the wildland fire world moves, and they are not given the proper tools and training to create things themselves, so what is left but to do their best and create something that is hopefully better than nothing?

What even is design?

For the sake of clarity before we get any farther, I will define the four basic types of static (non-video) visual assets that can be used in educational outreach:

1. **Photography:** Photography involves using unmodified, journalistic imagery that has no manipulations to the original image beyond basic aspects including but not limited to the brightness, contrast, saturation, or crop of an image.
2. **Photo Manipulations:** Photo Manipulations involve taking photographs and heavily editing or changing them into something else. These modifications go beyond basic adjustments such as brightness and contrast of the image, or saturation levels, or how the image is cropped, and instead involve distinct, large scale changes such as changing the time of day, removing or adding figures or structures, combining multiple images, or heavy use of filters to change the overall style of the image.
3. **Graphic Design:** Graphic Design is the creation of imagery—using digital or physical tools—that is meant to communicate a specific message, frequently including a mix of text elements and other graphics. Examples include billboards, brochures, product packaging, and signage.
4. **Illustration:** Illustration is the creation of imagery—using digital or physical tools—to tell a story or a more involved message. Examples include book covers, comics, picture books, and murals.

There is frequently overlap between these types of visuals, especially between graphic design and illustration, but each has different uses depending upon the goals of your projects, which we will dig into in the When to Use What Kinds of Visual Assets section of this guide.

Photography

Photo Manipulations

Graphic Design

Illustration

Figure 1: A chart of the types of visual assets.

Why does it matter?

Everything around us has some level of design involved. Something as simple as a Word document with just text has elements of design that should be accounted for. Why? Because even people without a background in design can spot a bad design, much the same way you call tell food is bad without being a chef. Though they may not be able to articulate why it is bad, they will react to it differently and may choose not to interact with it at all. In this instance, bad merely means it is not suited to the task it is trying to accomplish. This can mean things such as the design being poorly laid out, the design being aimed at the wrong audience, or that it just is not the right type of design for the task at hand. Decades of research and testing have gone into knowing how people interact with information, how the human eye moves around the page, how attention is drawn and controlled, what types of design are best suited to what purposes, and what things work in design and what things do not. Unfortunately, almost none of this research has been wildfire specific, and very little has been general disaster specific, leaving us to draw conclusions from other fields and anecdotal evidence.

Even the limited studies that do exist in relation to visuals in disaster messaging have flaws that make them difficult to draw conclusions from. They rarely involve actual artists or designers in the process, missing out on key elements that people with that experience could bring to their studies, or just treading over ground that designers have already covered extensively. A 2021 study on tornado related graphics, for example, concluded things such as text in all capitals draws people's attention, using too many colors can confuse people, and that people tend to be drawn to imagery like maps first (Sutton & Fischer, 2021), all incredibly basic design principals that even someone who has worked as a designer for only a year could tell you, but designers were not involved in the study.

When we look at studies done specifically by people well-versed in visual communications in general, we have the opposite problem in many ways: the studies account for visuals but not disasters, instead of disasters but not visuals. It is, however, generally easier to bridge the gaps left behind. They may not have knowledge of wildfires or disasters in mind when doing their studies, but there are plenty of studies that look at visual communication for other difficult topics such as domestic violence, smoking, difficult medical decisions, and general fear-based messaging. These things can be correlated to wildfire outreach much easier than studies on wildfire outreach can be correlated to design. A 2024 study in the *Journal of Advertising Research* looked at when photographs or photos manipulated to have an illustrated feel are more effective in public service ads, specifically ads related to domestic

violence, and found that big-picture, abstract concepts are generally better represented by illustrative imagery, while detail oriented, specific concepts are better represented by photographs (To, 2024). However, this reverses when people are psychologically close to the issue being discussed (To, 2024). For example, when the study compared how men and women reacted to photographic versus illustrative domestic violence imagery, the men had equal reactions to both, whereas women interacted more with the illustrative imagery, with an almost 50% increase in interaction levels (To, 2024). The conclusion of the study was that:

> *"…for public service advertisements that are directly relevant to the viewers' identity, the illustration form of visual medium is more likely to enhance empathic response and prosocial behavior. This is because illustrations are designed with greater abstraction and thus are processed more slowly and allow consumers to distance themselves from the social issue. By contrast, more concrete photographic visual media, which can be processed more easily, are more likely to be avoided by the viewers and thus reduce empathic response and prosocial behavior*." (To, 2024).

It's not hard to see how this would correlate to wildland fire outreach, an issue that can be both big-picture and at the same time be very relevant to specific groups of people in ways that may make them pull back from interacting with outreach materials out of fear.

Perhaps the best place to pull from when looking for design research that can be correlated to wildland fire is, in my opinion, medical illustration and design research. This area is one of the most developed, if not *the* most developed, disciplines in terms of creating graphic assets to explain and educate about complex scientific topics that may be uncomfortable.

There are entire journals dedicated just to medical visual communication topics, providing a plethora of knowledge to adapt to wildfire related topics. After all, using illustrated visuals to make a lumpy mass of red tissue understandable for someone getting heart surgery is not all that different than using illustrated visuals to make a lumpy mass of green plants understandable to someone trying to figure out how to mitigate around their home. Both involve breaking a complex topic down to different levels depending on the knowledge of the end user and scaling up or down the complexity of your educational resources to match.

A 2025 literature review in the *Journal of Visual Communication in Medicine* specifically looked at what types of medical illustrations best improved understanding of scientific content, examining a wide variety of other studies from around the world (Guerra, 2025), and found several things that, I believe, translate well to wildland fire outreach communications as well:

- When images are used in communication materials—as compared to just text—it encouraged adherence to treatments or healthy behavioral changes, increased the chance of messages being noticed and/or read, improved understanding, improved agreement and trust, increased satisfaction with messaging, and reduced time to find the right information within written text (Guerra, 2025).
- Multiple studies have shown that images created to match the time and culture where they were meant to be used increased understanding, interest, and comprehension (Guerra, 2025).
- Illustrated visuals are especially helpful to people who do not already have a base understanding of the content being covered (Guerra, 2025).
- Just illustrations or just text can result in high misunderstanding, but that misunderstanding drops significantly when illustrations and text are paired together (Guerra, 2025).
- Multiple studies have shown that finding a balance between detail and simplicity in illustrated elements based on your audience is key, specifically that simplicity is better for laypeople and complexity is better for experts, and that the difference between the two is a spectrum, not a hard division (Guerra, 2025).
- People with low knowledge of the topic and people from more vulnerable populations benefit the most from the use of visual information paired with written or oral messaging (Guerra, 2025).

While there has been little to no research done on visual communications in wildland fire, there has been some done on general communications, especially risk and crisis communications. Multiple studies in that realm have reflected a point that has already been discussed in this guide: the more relevant a piece of communication is to the person being communicated to, the more effective that communication will be (Steelman & McCaffrey, 2013). A generic defensible space diagram is not going to represent more than a very slim selection of property types. It isn't going to feel relevant or local to many people who look at it. If we think of a defensible space diagram like a basic set of instructions for what to do to protect your home, then giving someone a diagram that doesn't look at least somewhat like their home would be the equivalent of handing them instructions for how to build a birdhouse and telling them they actually need to build a shelf. Could they get it done? Maybe. But you have just made the process more difficult for them and thus less likely to get done.

By having design skills on your team, you can overcome many of these issues in a more timely and efficient manner. You can make graphics that are locally relevant, you can avoid making mistakes that a designer would easily notice, you can make designs that actually accomplish what you want and overcome barriers such as fear, and you can cut down on the time outsourcing the project would add. Having design skills on your team also means you can put your own knowledge of wildfires into your design work, rather than trying to communicate it to an outside designer who may not have a similar background. It saves time and effort and creates better results.

Conclusion

For wildland fire outreach efforts to be effective, whether they be for mitigation, prevention, education, or other aspects of living with wildland fires, we have to be able to conduct ourselves professionally not just in how we act but what we have to show for what we do. Creating professional visual assets is a part of the job of wildland fire outreach that has been ignored for far too long. With the pace of needing to develop these assets ever-increasing, it is time we stop relying entirely on outsourcing and poorly cobbled together assets created by people just doing their best with what they have, and instead start focusing on including design training the same way we include any other type of training.

The rest of this guide is broken into two sections: one on how to get started with art and design, and one on basic design principles to follow, so that hopefully you and your team can more effectively create your own designs for wildfire outreach going forward.

Getting Started with Art & Design

Glossary of Art & Design Terms

Alt-Text: Alt-Text, aka Alternative Text, is an accessibility tool to help people with visual difficulties understand images on a screen by providing text descriptions that can be parsed by screen readers. Most websites now provide a way to add alt-text to images when posting the image. It may be useful to keep a word document with alt-text for all of your outreach imagery so that you can easily copy/paste it every time an image is posted, rather than re-writing it every time. There are ways to build the alt-text into images themselves through various file management tools, but unfortunately some websites do not preserve built in alt-text when the images are posted, so this method cannot be fully relied on.

Aspect Ratio: An aspect ratio is how the width and height of an image relate to one another, which can be especially crucial for creating images for sharing on the web. For example, a square has an aspect ration of 1:1, and an image that is twice as wide as it is tall has a ratio of 2:1.

Bleed: Bleed is a term used in relation to designs that will be printed out. It is a portion of an image that is designed to be cut off after printing without removing anything important from the design. Having a bleed included on an image means the final printed version will have color that goes right up to the edges without leaving any white space. See the Basic Design Principles to Follow section for a diagram that shows how bleed works. The standard bleed is 0.125” on each side.

Brand Standards: Brand standards are an organized set of design elements used to make a brand recognizable across multiple designs. It usually includes a standard list of colors, a standard list of fonts, information on how to properly display any logos, and other relevant information on how to do design work that matches that brand. Brand standards are crucial for creating a cohesive feel across all your design work so people know that it goes together and all comes from the same place.

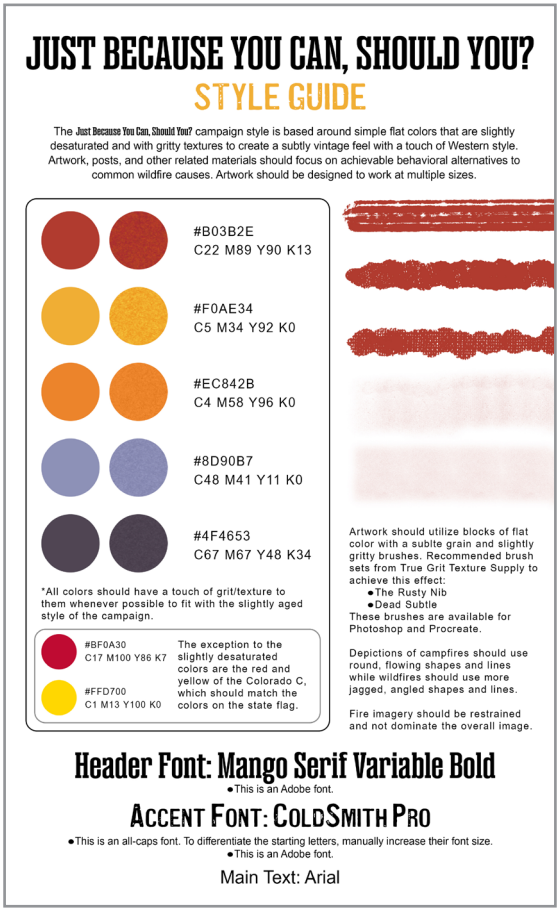


Figure 2: An example of brand standards.

Colors: Understanding color is a crucial aspect of creating a good design. Below are some basic color terms.

Color Space: There are a variety of ways colors are displayed on screens and used by printers. Without getting into the weeds, just know that the two main ones are CMYK (Cyan, Magenta, Yellow, and Black) and RGB (Red, Green, Blue). Screens display RGB, printers use CMYK. Converting between the two can in some instances cause colors to look muddy when printed, so it is best to work in CMYK. However, RGB will generally print fine as well, with the color differences minor unless you are working with very saturated colors.

Contrast: The difference between two or more colors (or other elements) that allows them to stand out from one another. Having proper contrast is important both for making designs understandable and for accessibility.

Cool Colors: Cool colors are purple, blue, and green. They are colors that make you think of cold things.

Gradient: A transition between two or more colors.

Palette: A palette is a selection of colors used in a piece of visual media. Too many colors can result in designs that are hard to understand, so most pallets are limited to 5-7 colors, or even less. Plenty of color palette examples can be found online to help you pick colors that go well together.

Pantone (PMS): The Pantone Matching System is a standardized way of organizing colors. Generally, it is important if you are trying to perfectly match already established branding. For example, the standard Forest Service brown for use on signage is PMS7596 (Eubanks, 2016).

Saturation: how intense and vivid a color is. The higher the saturation is, the more vivid it will appear.

Warm Colors: Warm colors are red, orange, and yellow. They are colors that make you think of warm things.

Composition: In visual art, composition is the way elements are laid out to create different areas of focus. Composition is an art in and of itself, but at its core it is about how a viewer moves through an image or design.

File Types: File Types are another area where it is very easy to get deep into the weeds, so we will keep it simple here. The type of file you create/need will determine what programs that file can be used in, and what functionality that file has. File types are indicated by the ".xxxx" at the end of a file's name, such as *Defensible Space Diagram.jpg*.

.AI: AI is the main file type used by Adobe Illustrator. It results in vector images that can be opened and re-edited as many times as needed, because the data to do so is preserved. AI files can only be opened in a limited number of programs, and some programs that can open them cannot fully re-edit them if those programs are not meant for working with vectors.

.JPEG/.JPG: These are a simple file type that can be opened in any image program and they generally have a smaller file size. However, once an image is saved to this file type, it can no longer easily be edited as the data needed to do so is not preserved in the saving process. They are best suited for sharing imagery online because their smaller file size prevents webpages from being slowed down.

.PDF: PDF is a highly flexible file type that can provide limited editing capabilities for some documents, but is primarily used when preparing designs for printing, sharing multi-page documents, and making interactive documents for things like signable contracts or fillable forms.

.PNG: PNGs are similar to JPEGs in that they generally have a smaller file size and they cannot be easily edited once saved. A major advantage over JPEGs, though, is that they can have transparent elements. So if you were trying to save a round logo and you saved it as a JPEG, the areas around the logo would be white when you used the image elsewhere, but if you saved it as a transparent PNG those same areas would be clear, and show anything behind them.

.PSD: PSDs are the main file type used by Adobe Photoshop. They result in images that have a much larger file size and can be opened and re-edited as many times as needed because the data to do so is preserved. PSDs can only be opened in a limited number of programs.

Others: There is a wide selection of other file types out there, such as .SVG and .EPS for vector graphics, or other program specific file types like .Procreate.

Font Types: Sans Serif is a font term that refers to fonts that do not have the little extra marks on the end of letter strokes, like the main font of this document, Calibri. Serif is a font term that refers to fonts that do have extra marks on the ends of letter strokes, like Cambria or Baskerville Old Face. Other types of fonts include script fonts like *Alkaline* and handwritten style fonts like Ink Free, among others. There are also specialty fonts like WAUSAU or CHEESE that have more of a stylized appearance. Pairing different font types together can help create contrast in a design and draw attention.

Hierarchy: The way elements of a design are arranged to show what is important, draw attention to different areas of a design, and lead the viewer's attention around a design.

Image Resolution: Resolution is another complex topic, and one that has a lot of misinformation around it. To keep it simple, just know that images with higher resolution are better for printing and higher resolution images are generally bigger. But when it comes to sharing imagery digitally, if an image is *too* big it can slow down the website where it is being shown. One key term to understand is **"**Dots Per Inch" which is how many dots of ink are laid down when a design is printed. The more dots there are, the higher quality the image is. The standard for printing is 300dpi. If you make an image with a small dpi, you cannot scale it up to a higher dpi

without losing quality because you are trying to add information that is not there. But you *can* scale a 300dpi image down because you are just condensing information. 300dpi, however, will frequently result in a very large file that may bog down a website when shared digitally. Additionally, it is considered best practice not to share full-resolution files online so as to prevent people from having access to a printable version of your design without permission. But do not worry! Even lower resolution images will still look great on the web, just don't go below 72dpi.

Image Types: There are two ways images are displayed on screens: rasters and vectors. Rasters are an image made up of pixels. Raster images can be scaled down, but when scaled up they will lose quality. Think of pixels like tiles on a floor, with a limited number of tiles because that is all you bought. You can make your design smaller by getting rid of tiles, but you cannot make it bigger without things getting messy because your number of tiles is limited by what you started with. Vectors, meanwhile, are an image made using mathematical equations. Because of this, they can be displayed at any size without losing quality by just rerunning the equations for the new dimensions. Think of it like having a tile factory to create as many new tiles as you want at any time.

Kerning: Kerning is the space between two letters or characters in a piece of text, and the process of adjusting that space. Adjusting kerning can help with readability.

Layers: Layers are used in digital art and design programs to isolate different pieces of a design project from one another so that they can be worked on separately. Think of them like sheets of glass all placed on top of one another to create the final design, with different elements on each sheet.

Leading: The amount of space between two lines of text. This can help with readability.

Margin: This is the space between the main portions of a design and the edge of the design. Margins are a crucial aspect of ensuring that important elements are not too close to the edge which helps with readability and preventing anything getting cut off. What size they need to be will vary based on the size of your overall design. Larger designs need larger margins.

Opacity: How transparent an element of a design is. If an element has 100% opacity, it will not show anything behind it. The lower the opacity becomes, the more it will show the elements behind it.

Orphans & Widows: Orphans and Widows are when singular words in a section of text end up on their own line. Adjusting your text using kerning or by adjusting the wording to remove these results in a cleaner, easier to read design.

I am a paragraph of info about the "home ignition zone" which is a term used to describe the area around a home that should be managed in a manner that helps reduce the risk of a wildfire spreading to a home.

I am a paragraph of info about the "home ignition zone" which is a term used to describe the area around a home that should be managed in a manner that helps reduce the risk of a wildfire spreading to a home or other structure.

Figure 3: A example of an orphan word and a possible correction.

Stock Imagery: A stock image is an image created by someone else that you acquire the legal right to use in your own design. You can acquire the right to use that image by paying for it, or by using images that are clearly provided for free use. Stock images can include photographs, illustrations, design elements, templates, and more.

Tangent: A tangent is when two or more elements of a design touch, or come very close to touching, without overlapping. These can "catch" a person's eye, drawing them away from other areas you want them to actually focus on.

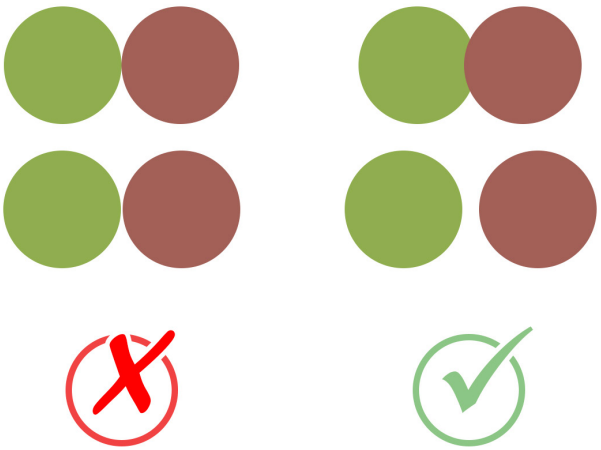


Figure 4: Examples of tangents and potential fixes.

Thumbnail Sketch: A thumbnail sketch is a simple, small line drawing done at the beginning of a project to help plan it out. Most projects will involve doing multiple thumbnail sketches to explore different ideas.

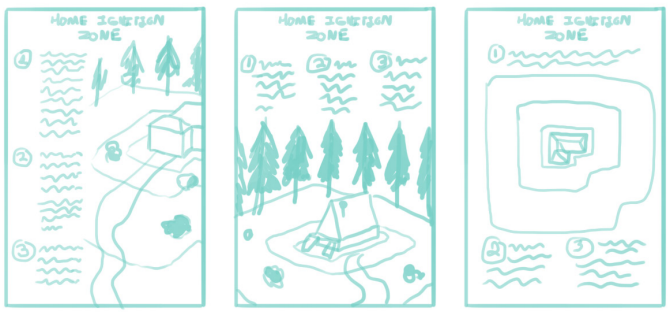


Figure 5: Three examples of thumbnail sketches.

Typography: The layout of text in a design.

White Space: White Space can be any color and is just used to refer to "empty" areas of a design that prevent a design from being overcrowded.

When to Use What Kinds of Visual Assets

While there are use cases for each type of visual asset when it comes to wildfire related outreach, I believe there is a strong argument for illustration and graphic design being preferable over photography in most instances. As the 2024 study on photographs versus illustrations in public service advertisements showed, big-picture concepts and personally relevant difficult/uncomfortable concepts both benefit from non-photographic imagery (To, 2024). Wildland fire outreach frequently falls into these categories, sometimes both at the same time. A neighborhood wide mitigation project is big-picture and somewhat abstract as the consequences of doing it versus not doing it may seem distant and nebulously likely, but it is also personally relevant to the individual homeowners and may be uncomfortable and hard to talk about. The same can be said of a prevention campaign about dragging chains, or an educational campaign about how fires move through a forest. Illustrations can overcome these fear/disgust responses to difficult/uncomfortable topics, something backed up in other studies such as one on dental imagery wherein the participants specifically called out the use of photography as evoking disgust, preferring the illustrated imagery (Berry et al., 2022).

Illustration and graphic design also offer a level of flexibility and rapid availability that photography does not. You cannot just walk out the door and go take some photos of a roadside wildfire start, not without committing arson anyway. But a skilled artist can draw a simple illustration of a roadside fire start in an hour or two, then format that into a brochure in another few hours. Photographs of defensible space may have limited relevance due to property differences, but an illustration can be made more generic and thus more widely applicable. Plants may all look mostly the same in a photograph, but in an illustration you can accentuate their differences to increase understanding when discussing how to complete a mitigation project.

That is not to say there is no use for photography in wildland fire outreach, there most certainly is! But it is likely best used in very specific, explicit contexts where that level of detail would be beneficial and not harmful. Instances such as showing how a specific home that survived a fire did so because of its mitigation efforts, or specific before and after shots of a mitigation project that highlight how the area is still beautiful and functional. Perhaps a good way to define the line, though there will always be exceptions, is that illustrations and graphic design are good for the before, for the planning stages, and photographs are good for the after.

Art & Design Program Options

There are a wide variety of art and design programs available today that range from applications that must be installed directly on a computer, applications for iPads and other computer tablets, and applications that require no installation at all and can be used over the internet. Below is a selection of some of the most popular options. No matter what program you use, I encourage you to take the time to experiment and play with it before jumping into any finalized projects so that you don't end up frustrated by trying to learn something brand new and having to meet a deadline at the same time. Many of these programs may seem overwhelming at first, with so many buttons or features that you do not know where to start, but with a little exploring you will find that you do not need many of those features and you will be able to focus on learning and using the ones that are most helpful to you.

All of these programs offer a plethora of free resources to learn how to use them, usually hosted on their own websites. YouTube is another great source of free tutorials.

Adobe Suite: The Adobe Suite is the industry standard for art and design work and has a huge range of programs focused on different types of work. It is, however, expensive and subscription based so it may not be the right choice for everyone. With that said, the subscriptions are somewhat flexible and you do not need to subscribe to the entire suite of tools if you only need one or two. Many of the Adobe programs have overlapping functionality as well, meaning that while you could use more than one, you may not always have to. Using a free trial period can help you determine which programs work best for you and your goals.

Illustrator: Adobe Illustrator is a vector-based desktop program oriented towards graphic design projects. Despite its name, it is not always the best choice for more illustrative

projects, as the tools are somewhat ridged in terms of their ability to create more organic shapes and textures.

InDesign: Adobe InDesign is a desktop program designed for creating layouts for things like brochures, books, and magazines. It is not used for creating the base assets used in these layouts, merely for assembling assets created elsewhere into a finalized form. For example, you may write the text of your brochure in Word and create the illustrations in Photoshop, then import it all into InDesign to lay everything out together.

Photoshop: Adobe Photoshop is a raster-based desktop program with an immense amount of flexibility in what it can be used for. It is a popular choice for everything from illustration work to photo editing to some graphic design and layout options.

Photoshop Express: Photoshop Express is a newer offering from Adobe, and it provides a quick, simple to use editor that can be accessed online or through the mobile app. It massively slims down the options available to just core functionality and comes with a huge collection of pre-built assets that you can use. It is primarily free, but some functions and assets do require payment.

Canva: Canva is a popular online graphic design software, with a base plan that is free to use. It comes with a huge selection of pre-built templates and assets, and easy drag-and-drop functionality. It can be a great place to start if you are brand new to graphic design. Some functions and assets do, however, require payment.

Gimp: Gimp is a free raster-based desktop software that is very similar to Photoshop in the tools and functionality it offers. The layout can be somewhat cluttered but it is still a great choice.

PhotoPea: PhotoPea was created as a free, online version of the full Photoshop program and is not associated with Adobe. It has all the functionality of Photoshop, without having to pay a subscription fee or install anything. This makes it an especially great choice for people who may not have the ability to install Photoshop on their work computers but still need the full functionality of Photoshop.

Procreate: Procreate is a program primarily geared towards illustration and is only available on the iPad, but it is an extremely popular option among illustrators for its ease of use, one-time payment, and portability. Procreate files can also be saved as PSDs to allow for finalized editing in more robust programs such as Photoshop.

The Use of Pre-Created Assets Made by Others

Not everything has to be created from scratch. The internet is full of pre-built assets and resources that anyone can use. But you have to be careful how you use these assets, where you get them from, and what you use them for to make sure you do not fall on the wrong side of

copyright laws, which can risk you getting sued. Even things that you may assume are free to use may not be, such as fonts, and you cannot just pull something off of a Google Image Search and use it.

When using assets created by others, it is best to get them from websites that are dedicated to sharing those kinds of assets, and even then you need to be careful to read the license terms to see how you can use those assets, for how long, and any other restrictions that may be involved. When in doubt, find something else to use, or ask someone with more experience. If you do use the assets, be sure to document any payments you make to use them and any licenses you agree to so that you have that information easily accessible should you ever need it.

Some dedicated websites you can use are places like Adobe Stock which includes a huge variety of assets from photos to icons to templates and more, iStockPhoto which includes photos and graphic design imagery, and ShutterStock which includes photos and graphic design imagery. There are also free options like Pexels, which is primarily photo assets, and Unsplash, which features photographic and graphic design assets. Even with these free options, but sure to document where and when you are getting the assets to protect yourself.

The Use of Artificial Intelligence/ Generative AI

In the last several years we have seen a massive increase in the capabilities and usage of generative machine learning algorithms, otherwise known as Generative AI. While this can seem like a good quick and easy way to create assets for outreach, you must be cautious. The copyrightable status of images created with Generative AI is murky and hard to enforce (Law, 2025), and all major Generative AI models were trained on art and writing that they did not have explicit permission to use, resulting in many creators feeling their work was stolen, though this issue is also legally murky (Clarke, 2022). In many instances, Generative AI generates imagery that is nonsensical or straight up wrong, such as with two recent scientific papers that had to be retracted due to using Generative AI created figures that contained unreadable text and incorrect anatomical elements (Guerra, 2025). There is also major concern about the amount of water and energy consumed by Generative AI (O'Donnell & Crownhart, 2025), something that should be of particular concern for those of us working in wildland fire outreach given we are trying to protect the land and the planet. Different agencies may also have different policies on whether or not Generative AI use is acceptable, or in what manner, such as the United States Geological Survey's policies that require disclosure of all AI use, human review of AI generated content, and only using Generative AI that was trained on non-copyrighted material (*Are There Any Restrictions for Using Generative Artificial Intelligence (AI) Outputs Directly in USGS Scientific Information Products?*, 2025).

Generative AI imagery is, as mentioned above, still very flawed. It may look good at first glance, but it is frequently riddled with errors that jump out the longer you look at it. For example, I prompted Adobe Firefly, a popular and supposedly powerful AI image generator,

with this prompt: “A photographic image of a campsite in the woods at night with a campfire that is escaping the ring it is in and starting a wildfire.” This resulted in Figure 6, featured at the bottom of this page.

At first glance the image is not terrible. But as soon as you look closer, you can see flaws everywhere. The tent is wonky, with a random strut on one side and strange curves. The chair has a completely random number of arms that attach to random areas. The logs on the right side are misshapen and illogical. The fire is strangely merged with the Milky Way. Not to mention, the campfire is not actually escaping the fire ring like I prompted the generator to do, and which was the main point of the image. Errors like these can erode confidence in your designs and take away the impact of your messaging.

Between the legal murkiness of using Generative AI at this time, the climate implications, individual departmental and company policies on Generative AI use, and the flawed nature of Generative AI imagery, the apparent ease of use is likely not worth the trade-offs. If you still feel like it may be useful for you, I urge you to do your own research deeper into the issue to be sure you are making the right choice.

Figure 6: An AI generated image for the above prompt.

Basic Design Principles to Follow

If you are just interested in how to get started with design and not really interested in the more in-depth look at the hows and whys presented in the rest of this guide, this is the section for you! It will outline the most basic principles you should follow to get started with designing outreach assets. I do recommend at least reading the Glossary of Art & Design Terms, however, so that you understand what is being discussed in this section.

Creating Your File

When creating your file, you need to know the dimensions of the image, and what your goal with the image is. It is best practice to always design like you might one day print your image, so that you do not have to go back and adjust things to work for print or even start over entirely. To create a print ready image, your file should include 0.125" bleeds (for most projects), margins of an appropriate size for your design, and be 300dpi. When the image is finished, you can save a secondary version that is smaller and more suited for posting to the web, if that is what you need.

If you are unsure what size file you need for your project, Google can help you find what the standards are based on what you are trying to create. Popular printing websites such as VistaPrint also provide free templates that you can use for standard projects like brochures, business cards, or banners.

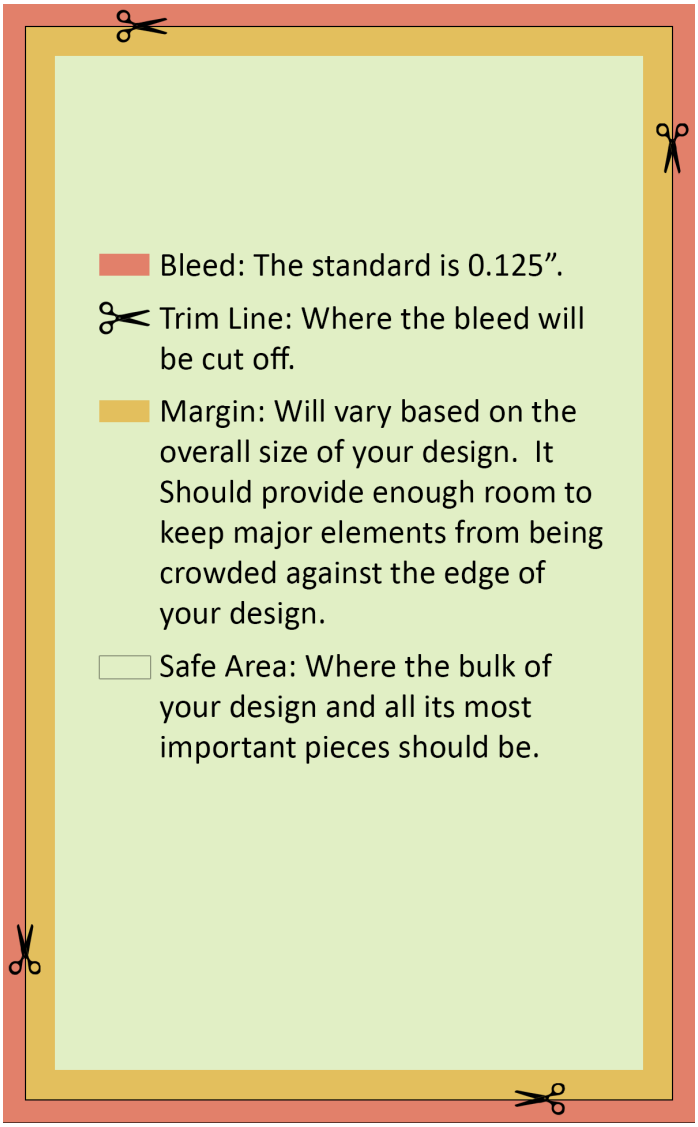


Figure 7: A diagram showing the basics of file setup.

Design Tips

Start with a plan. There are a lot of ways you can get started on a design project. You can start with a thumbnail sketch or two, either digitally or on paper, to get a basic idea of how you want the final product to look, you can gather inspiration by looking at other designs, you can gather resources like pre-built assets and templates, you can pre-choose fonts and colors, you can pre-write all the text, or anything else that helps you plan. Starting with any of these, or multiple of them, can speed up the process of creating the final design by helping you spot issues early in the process.

Avoid overcrowding. Having too much text or overcomplicated design elements will make a design hard to follow and understand. The same is true for having margins that are too small.

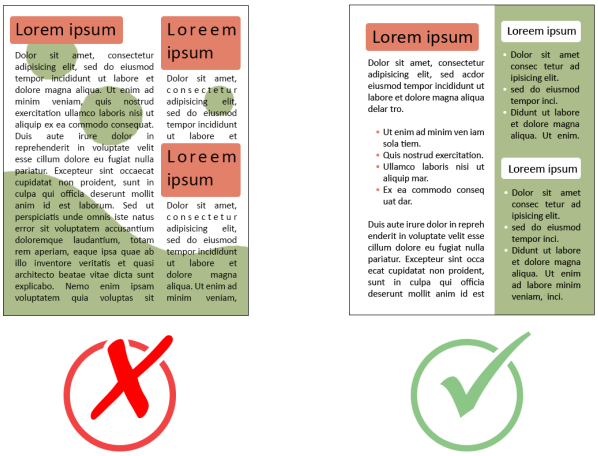


Figure 8: Examples of an overcrowded and uncrowded design.

Be intentional with your use of colors. Colors are a powerful way to control how people interact with your design. Using the same color in all your headings, for example, provides a visual indicator that a new section has started. Additionally, using too many colors can be distracting and result in confusion. Confusion can also result from using colors in unexpected ways. For example, in the aforementioned study on tornado warning graphics, many people expressed confusion that purple was used for the highest level of danger, rather than red, given that we are culturally primed in most western countries to see red as the most serious threat level (Sutton & Fischer, 2021).

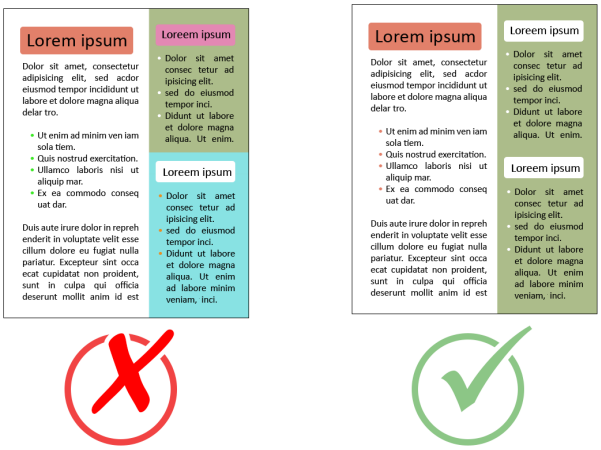


Figure 9: Examples of bad color choices and better ones.

Limit your use of fonts. Too many fonts can clutter up a design, result in confusion for the viewer, and just create an overall less professional feel to your design. General guidance is to stick to three fonts: a font for titles and accents, a font for headers, and a font for body text.

Figure 10: Examples of overuse of fonts and balanced use.

Be consistent with your design elements. When you create different elements of your design, such as different text boxes or different text separators, make sure they are consistent across your entire design. For example, if you use rounded corners in one part of your design, use rounded corners in other similar parts of the design as well.

Figure 11: Layouts without and with consistent elements.

Use contrast to draw attention. This can be contrast in font sizes or types, contrast in colors, or contrast in general style. For example, larger text and imagery will draw attention over smaller elements. A bright color against a dark background will draw attention to that color. Text inside a circle will stand out if the rest of the text is inside rectangles.

Figure 12: Designs without and with contrasting elements.

Understand reading order. People read design the same way that they read plain text: left to right and top to bottom. Even when you use other design elements to draw attention, people will default to reading the information in this standard way, so your information should follow that order.

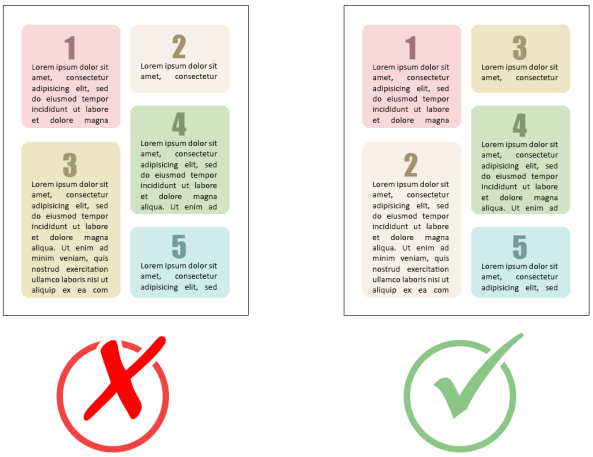


Figure 13: Examples of bad reading order and good.

Make your designs accessible. The world of accessibility is complex and ever evolving, and nothing can be 100% accessible to every single person due to conflicting needs. The Section 508 website goes incredibly in-depth on accessibility standards if you want more information, but one key element is the level of contrast between text and the color around text. If this ratio is too low, the text becomes hard or impossible to read. Adobe offers a free tool to check the contrast levels between the colors you want to use so you can make sure there is enough contrast in your design.

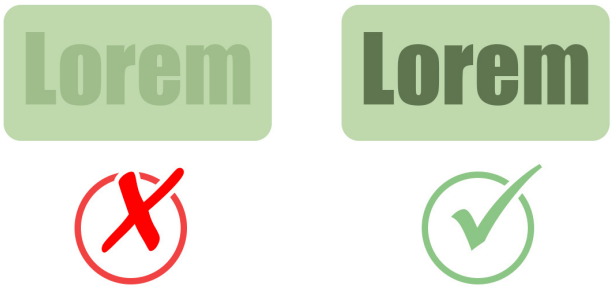


Figure 14: Examples of bad and good contrast.

Watch your alignments. Keeping things well aligned with one another, rather than having elements floating around randomly, helps create a more cohesive design overall. All art programs provide at least one reference grid you can turn on to help keep things aligned.

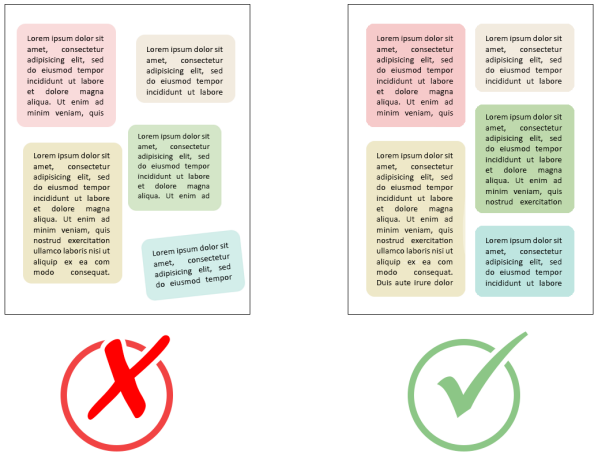


Figure 15: Examples of bad and good alignments.

Stay organized. Name the layers of your design as you go, and give your files descriptive names. That means no untitled layers or generic layer names like “circle,” and no file names like *xoeioiejf.PSD* or *outreach brochure thing.AI*. Try layer names like “Header background box” and “Header text,” and file names like *Multi House Defensible Space Illustration_October 2025_Version 3.PSD*. Back up your files frequently and always keep the original, full-sized, editable versions of the files somewhere where you can easily locate them. This will help you in the future if you need to work on or use anything again, and it will help anyone else who may need to work on the project after you.

Collaborate with others. We have all worked on a project for so long that it just stops making sense until we take a break and come back to it fresh, or until we get advice from another person. The same is true of art and design projects. Outside opinions can help you find things you missed, fix problems you weren’t aware of, and come up with even better ideas.

Look at it from all angles. You would be amazed how often simply flipping a design upside down suddenly reveals that what you thought looked great actually looks like something else entirely. Best case scenario, you will find something fun like your layout resembles a tree when you look at it from a certain angle. Worst case scenario, you will find something explicit or some sort of hate symbol. This is another reason to collaborate with others, especially people familiar with pop culture and internet culture. They will see things in your design that you may not.

Saving Your File

Once your design is complete, it is time to save the final versions so they are set up to work for whatever you need them for! How you save these versions of your file will depend on what your needs for the final design are. If you are saving it for print, you should save a full-sized, 300dpi version of the file into the format your printer needs. If you are saving it for web, you should create a scaled down version at a lower DPI so that it does not bog down whatever websites you upload it on with an unnecessarily large size. And you should always save a full-sized, editable version of your design in case any changes need to be made. An example set of saved files may look something like the following:

- *Multi House Defensible Space Illustration_October 2025_Final Editable File.PSD*, with the file being fully editable and high resolution.
- *Multi House Defensible Space Illustration_October 2025_Print File.PDF*, with the file being high resolution with limited or no editability.
- *Multi House Defensible Space Illustration_October 2025_Social Media File.JPEG*, with the file not being editable and a smaller size and resolution.

Printing Your Design

If your design is going to be printed, work with your chosen printing company to determine how to properly set up and save your file based on what that printing company needs. Many printing companies provide easy to follow guides on their websites to help you get things set up on your own, or you can reach out to their customer service for help.

It is best to always do a single test print, known as a proof copy, before committing to a full print run. This gives you a final chance to catch any issues with the design, and to make sure the print is set up and executed correctly, before committing time and money to a full print run.

Thank You

Thank you for taking the time to read this guide. I hope you found it helpful, and I encourage you to use it as a jumping off point to continue developing your own design skills for your wildfire outreach related projects. Little by little, we can chip away at the current lack of design skills in this industry and come out the other side with better materials for everything we do.

Bibliography

Are there any restrictions for using generative artificial intelligence (AI) outputs directly in USGS scientific information products? [210] | U.S. Geological Survey. (2025). https://www.usgs.gov/office-of-science-quality-and-integrity/fundamental-sciencepractices/faq/210-restrictions-using-generative-ai

Berry, L., Jones, A., & Barber, S. (2022). *Laypeople's interpretation of, and preference for, orthodontic images*. Journal of Orthodontics, 49(3), 296–303. https://doi.org/10.1177/14653125221085983

Clarke, L. (2022, November 12). *When AI can make art – what does it mean for creativity?* The Guardian. https://www.theguardian.com/technology/2022/nov/12/when-ai-can-make-artwhat-does-it-mean-for-creativity-dall-e-midjourney

Eubanks, E. (2016, August). *Standard Colors for Forest Service Developed Recreation Sites. United States Department of Agriculture.* https://static1.squarespace.com/static/5504d100e4b08eb858c4e8fc/t/5de5919dcceb6a637f1 a16a8/1575326125658/Standard+Colors+for+Forest+Service+Developed+Recreation+Sites.pdf

Guerra, D. (2025). *What type of medical illustrations best improve understanding of scientific content? A systematic review.* Journal of Visual Communication in Medicine, 48(2), 21–43. https://doi.org/10.1080/17453054.2025.2504441

Law, C. for A. (2025, March 4). *Recent Developments in AI, Art & Copyright: Copyright Office Report & New Registrations* - Center for Art Law. https://itsartlaw.org/art-law/recent-developments-inai-art-copyright-copyright-office-report-new-registrations/

Lawter, W. C. (1994). *Smokey Bear 20252: A biography* (1st cloth and paper eds). Lindsay Smith Publishers.

Mitigation Pocket Guide. (2024). Coalitions and Collaboratives, INC.

NWCG FPET Digital Library. (2025). NWCG. https://www.nwcg.gov/communication-education-andprevention-committee/fpetdl

O'Donnell, J., & Crownhart, C. (2025, May 20). *We did the math on AI's energy footprint. Here's the story you haven't heard.* MIT Technology Review. https://www.technologyreview.com/2025/05/20/1116327/ai-energy-usage-climate-footprintbig-tech/

Steelman, T. A., & McCaffrey, S. (2013). *Best practices in risk and crisis communication: Implications for natural hazards management.* Natural Hazards, 65(1), 683–705. https://doi.org/10.1007/s11069-012-0386-z

Sutton, J., & Fischer, L. M. (2021). *Understanding Visual Risk Communication Messages: An Analysis of Visual Attention Allocation and Think-Aloud Responses to Tornado Graphics*. Weather, Climate, and Society, 13(1), 173–188. https://doi.org/10.1175/WCAS-D-20-0042.1

To, R. N. (2024). *When Are Photographs or Illustrations More Effective in Public Service Ads?: The Role of Visual Medium in Consumer Response toward Public Service Advertisements.* Journal of Advertising Research, 64(1), 80–102. https://doi.org/10.2501/JAR-2023-029