Streaming and Recording for Your Congregation

A Living Document

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Introduction:

Mission Statement:

    This document aims to provide the resources necessary to empower small- and medium-sized congregations to confidently create an online streaming program and prerecorded digital presence.

    At the time of the creation of this document, many church congregations are discovering a need to move traditional Sunday services online due to a worldwide pandemic. Community is as important now as it has ever been, but we find ourselves unable to gather in-person. Luckily, there are now many tools that can be used to virtually close this physical gap and adapt traditional, well-practiced services to an online platform.

    The goal of this document is not to provide an exhaustive guide on streaming and recording, rather it should provide a jumping off point for congregations nervous about creating a digital presence.

    This guide will discuss two practical tools that can be used to bring your church service to the congregation remotely: streaming and recording.

    This document is meant to be a living document, to be freely updated by those who wish to expand this resource with their own experience and expertise. To that end, please try and follow the same formatting and structure. Credit all outside references and sources. For expediency's sake, portions of this document are quotes from other articles and online resources and are appropriately credited. Individuals with more knowledge on a particular subject are encouraged to rewrite these sections with their own experiences.

Streaming:

Streaming generally utilizes a social media platform to distribute a live video recording from one user's account to many, but may also use video conferencing or video-call services to join a group of users into a single call.

Social media streaming – Facebook, YouTube - has the advantage of utilizing a service most individuals in the congregation already use and understand, but is limiting in that only the streaming host is able to interact with the stream and create content; viewers can only interact with text comments. An added advantage to social media streaming is that the host is given the option to save the stream after the fact and have that video permanently hosted on the church's social media page, allowing those who were unable to view it live to be able to view it at a later date.

Video conferencing services have the advantage of allowing many users to see and interact with each other in close to real-time. There will more of a learning curve for individuals unfamiliar with this platform and those hesitant to be viewed by others in the stream. An advantage to video conferencing is that it will allow congregations that rely on many individuals to execute the service to coordinate and add their voice without being in the same location as the video host; it will also allow for a more traditional announcement and prayer request scenario.

Choosing a Platform:

Facebook Live and YouTube Live are the two most common social media live streaming platforms. Both are widely understood and accepted and the same audio-video setup can be used for both. Zoom is by far the most widely used video conferencing service and is free with some limitations.

"**Facebook.** Facebook is an easy choice because most churches have invested time and resources into their Facebook pages. If you use Facebook, you'll be able to reach some of your existing followers via a notification that your church is "going live." The negatives of Facebook Live are also worth considering. Another consideration is that, although Facebook Live videos are accessible to non-Facebook users, the interface and ease of access is limited. If you wanted, for example, to embed your weekly video on your website for those who couldn't watch live, Facebook Live videos are not easy to work with. Despite these setbacks, Facebook Live may make sense for your church depending on your existing presence on Facebook and how you want to handle the videos after they're complete. The most helpful thing you can do is to a trial run with the privacy setting on "private." This will allow you to test the interface before going public for the first time.

"**YouTube.** Most small- to medium-sized churches tend not to invest much time or energy into YouTube. For that reason, I suspect many churches doing live video for the first time will select a different option. Despite the challenge of setting up a new YouTube channel for your church (linked to a Google account in YouTube), there are some excellent reasons to consider. Like Facebook, subscribers receive notifications when your channel goes live, YouTube plays well with websites, embedding nicely after the video is finished, and you can also share the video link on Facebook. A missional consideration for

YouTube is that their platform is the primary place where millennials and Gen-Z go for content consumption. YouTube provides much easier on-ramps for non-churched people to discover your livestream.

"Zoom. Depending on what kind of live format you want to pursue, Zoom is a reliable method for smaller and more intimate gatherings. For example, some of the house churches in China have used Zoom to enable pastors to continue teaching small groups while they cannot meet in their main facilities. A number of churches also use Zoom to facilitate Bible studies, staff meetings, and sermon discussions throughout the week. Zoom is free if your meetings are less than 100 people and shorter than 40 minutes. If you go larger or longer, you'll need to pay. Other alternatives such as Skype and Google Hangouts Meet are viable options, but issues with reliability have pushed many organizations toward Zoom.

[Phil Thompson – "How to Livestream Your Church Service: A Practical Guide" thegospelcoalition.org – March 26, 2020]

From a technical perspective – getting your audio and video onto the platform – all of the above services are essentially the same and the setup will be discussed in the next chapter. In order to jump the initial hurdle of "going live" for the first time on any of these platforms, here is a quick rundown of each with screenshots. Note that this walkthrough was done on Apple's OSX operating system, but Windows users will find that the same will apply.

Facebook Live on a Personal Computer:
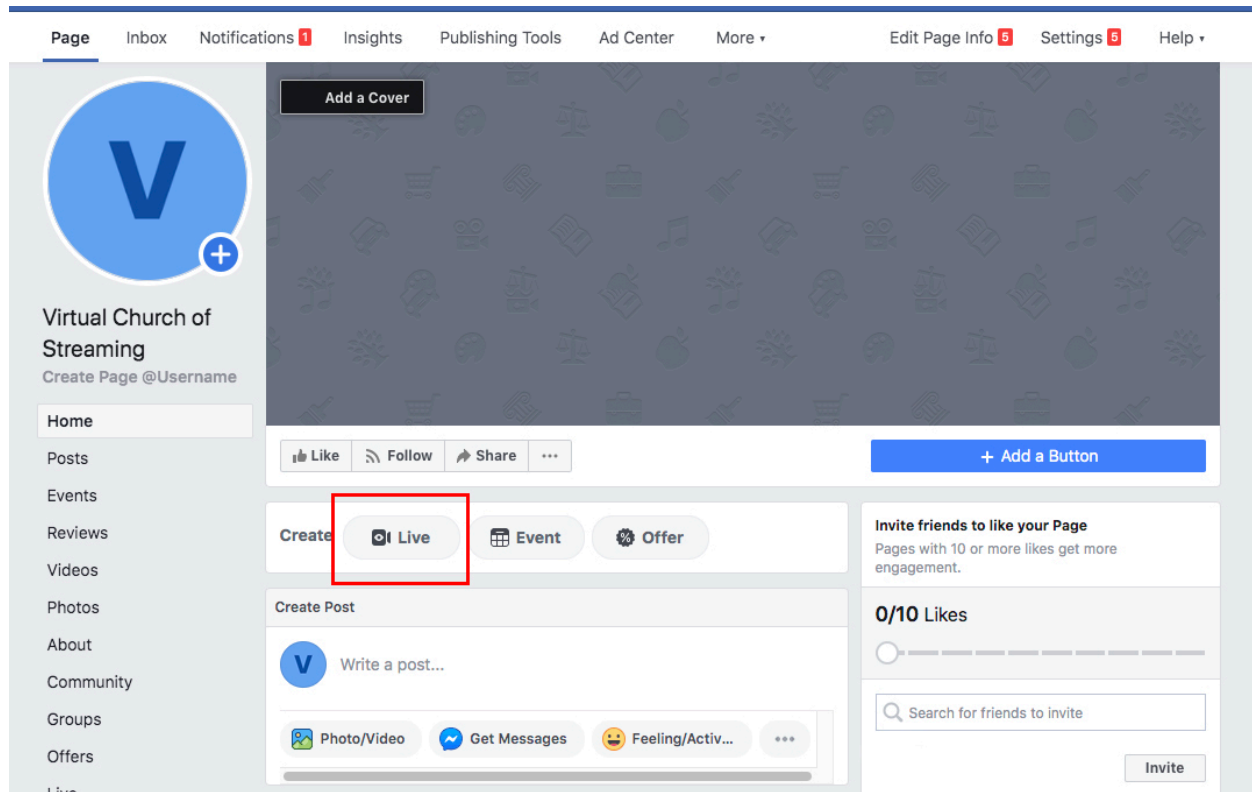
On the Church page, click on "Live" and you will be presented with the following:
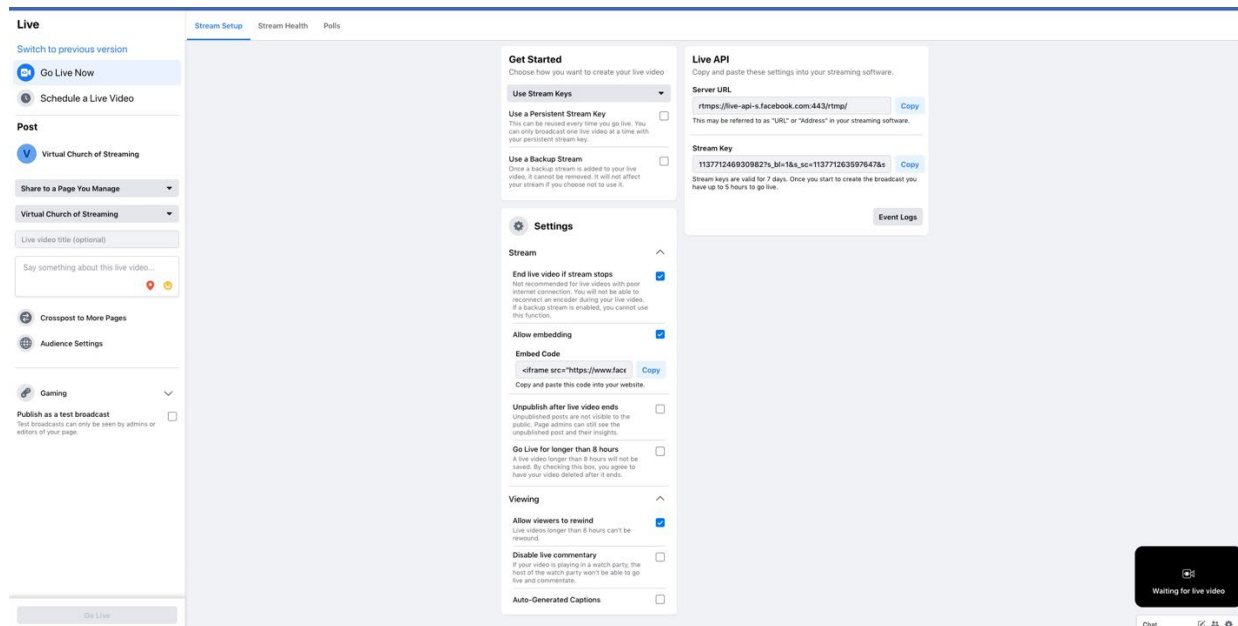
Live

Switch to previous version

Go Live Now (1)

Schedule a Live Video

Post

(V) Virtual Church of Streaming

Share to a Page You Manage ▼

Virtual Church of Streaming ▼

Live video title (optional)

Say something about this live video...

📍 😊

(2)

Crosspost to More Pages

Audience Settings

Gaming ⌄

Publish as a test broadcast ☐
Test broadcasts can only be seen by admins or
editors of your page. (3)

Go Live (4)

Stream Setup   Stream Health   Polls

(1) **Go Live Now** – An option betweeng going live, and scheduling a live stream sometime in the future.

(2) **Post** – Since this window is the same for both personal Facebook accounts and page accounts, this section gives the streamer the option to change where the stream originates from – personal vs. page accounts. If you have selected "Go Live" from the church's page, it should default to the church page. Give the video a title and a description.

(3) **Publish as a test broadcast** – Select this box in order to test the streaming tools without allowing your followers to view the stream, essentially making it private. This is a good way to practice your service and technology.

(4) **Go Live** – This will turn blue when the setup has been completed and you are ready to go.
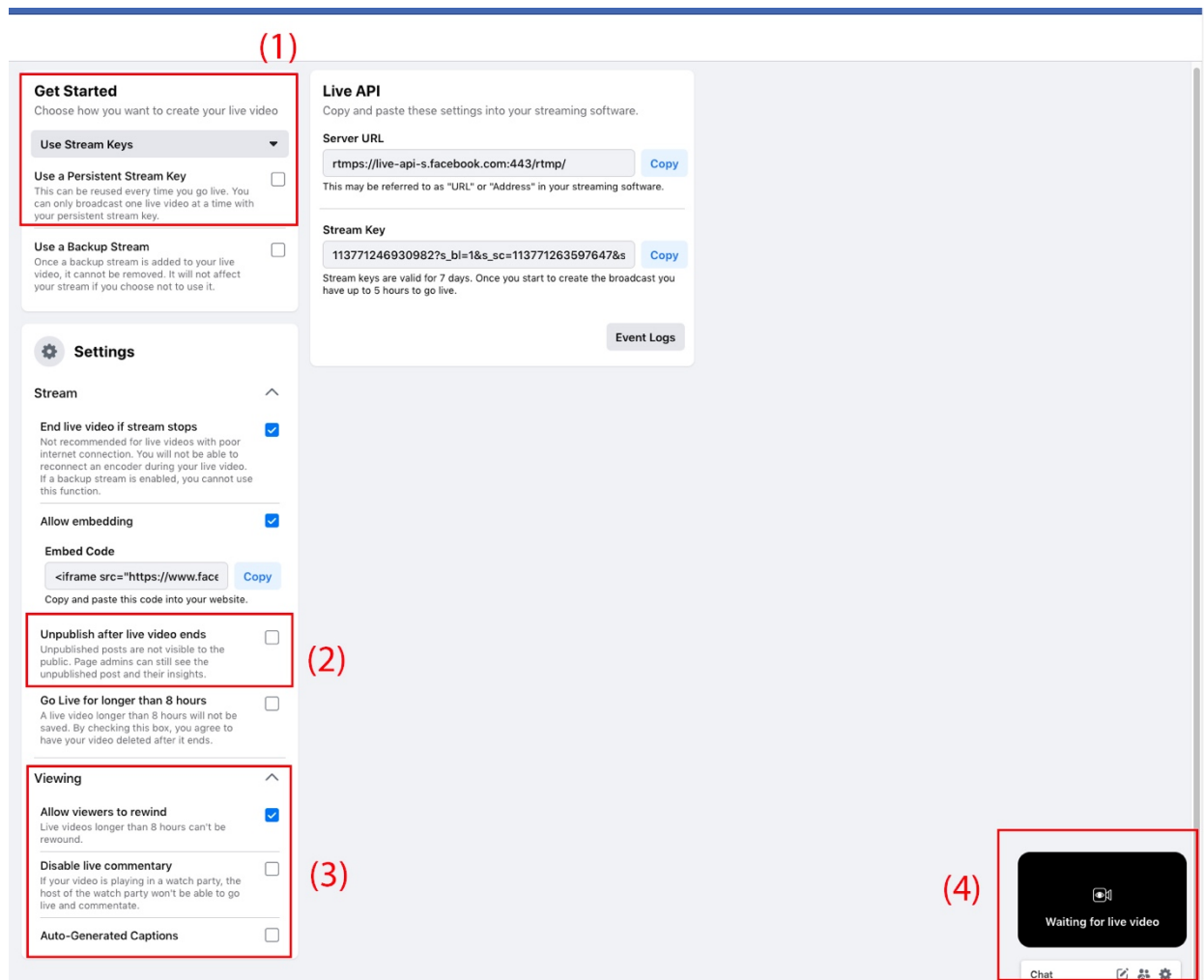
(1) **Get Started** – This section allows you to choose your video source. If you are streaming from either the built-in camera in a laptop or an external USB camera plugged into a laptop, you will select the drop down arrow and click "Camera." *If you are using broadcasting software like OBS (Open Broadcaster Software) or a mulit-channel camera setup, a stream key will be generated by the software and you will input that into the Server URL to the right.*

(2) **Unpublish after live video ends** – This checkbox will hide the video from your followers after the live stream has ended.

(3) **Viewing** – Options to allow or disallow follower actions during the stream.
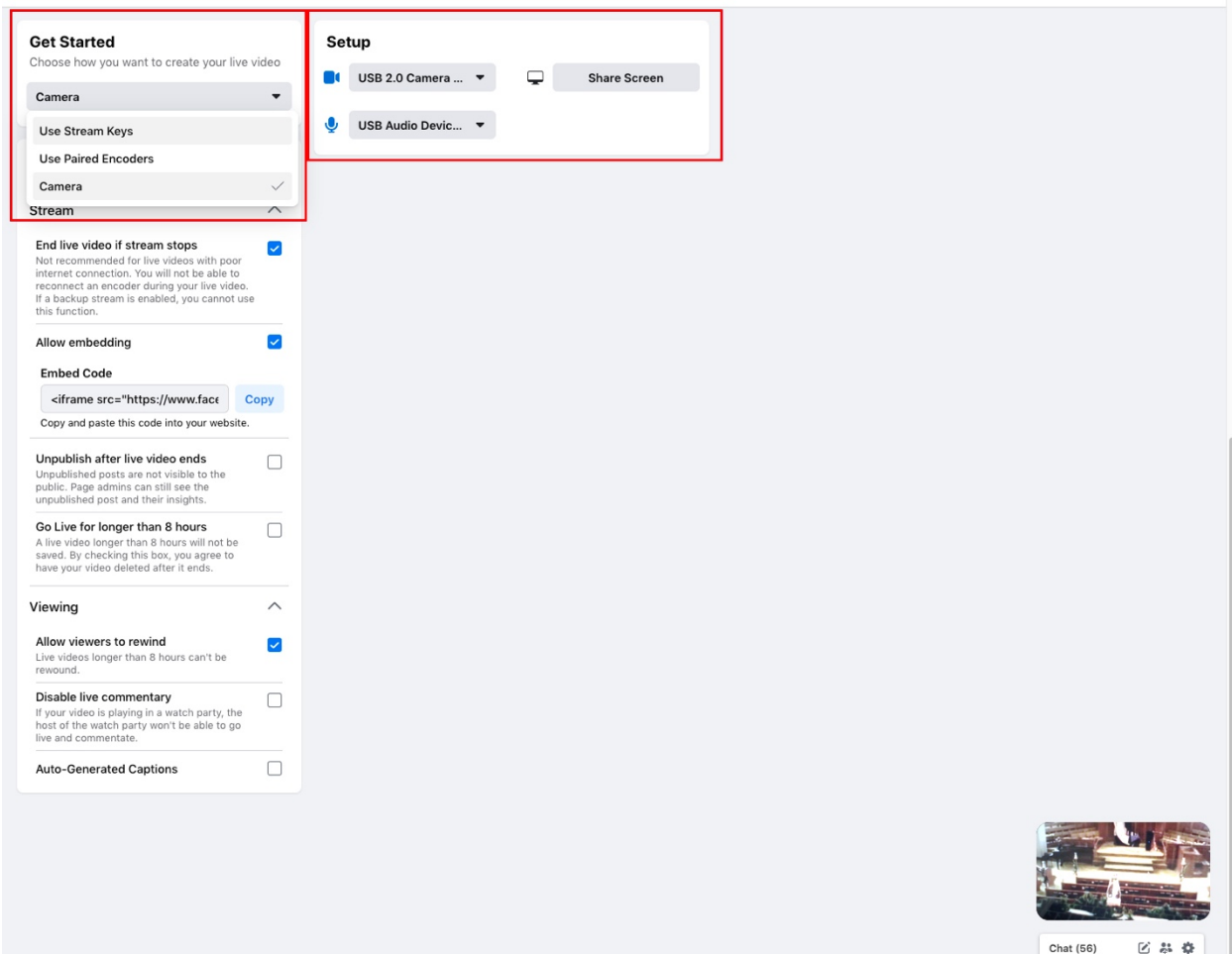
Notice that when you selected camera, the "Setup" options to the right appeard. This is where you will select your internal or USB camera and the internal or external microphone. Each device will be named differently, so experiment to determine which device is which. The "Share Screen" button allows you to select either an entire computer screen, or application window from your computer and stream that instead of the live video. This would be useful for sharing images, bulletins, hymn sheet music, call and response, or other media. Be careful with streaming potentially copywritten material.

The bottom left window shows what the camera is currently seeing and clicking on it or scrolling up will show a larger view of the stream and will always show what your followers see:
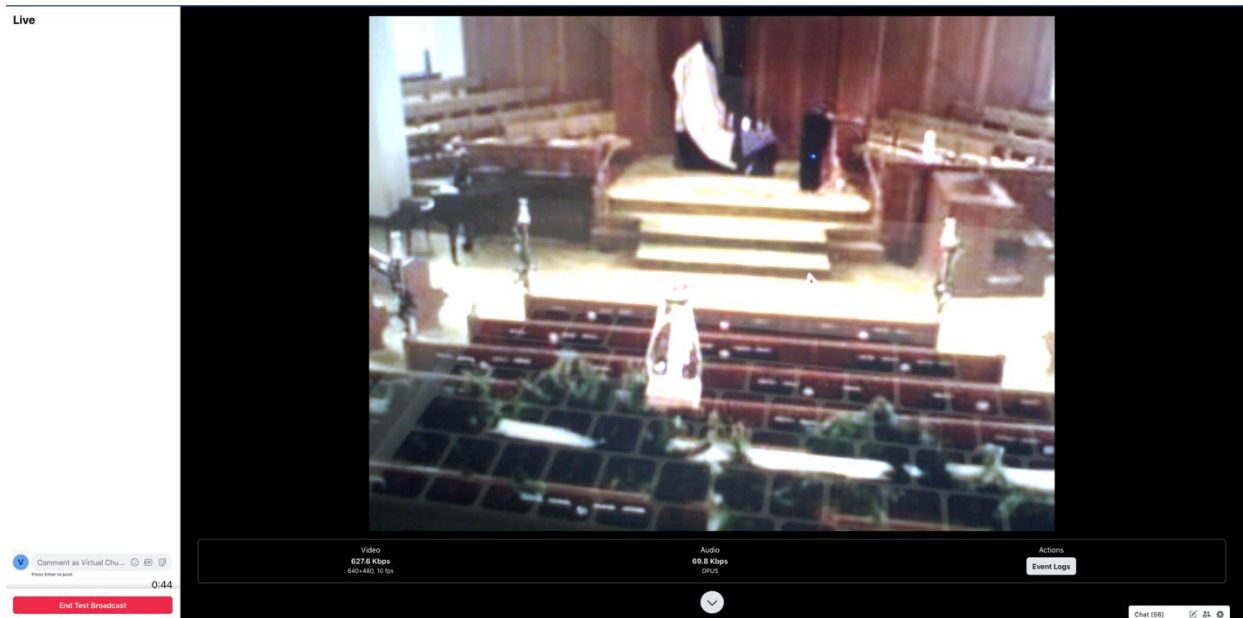
When you are live you will be able to see follower comments on the left side of the live view. You may also comment, paste external links, and emoji as the church in the comment box.

The "Go Live" button will turn red and display "End Broadcast" instead.

You may freely switch from any window or application on your computer during the stream without fear of followers seeing what is happening "behind the scenes." This will allow you to cue up the next portion of your broadcast. Rehearse this just as you would your normal Sunday service.

At the end of the broadcast you will be given the option to post or delete the video.

Facebook Live on a Smart Phone:
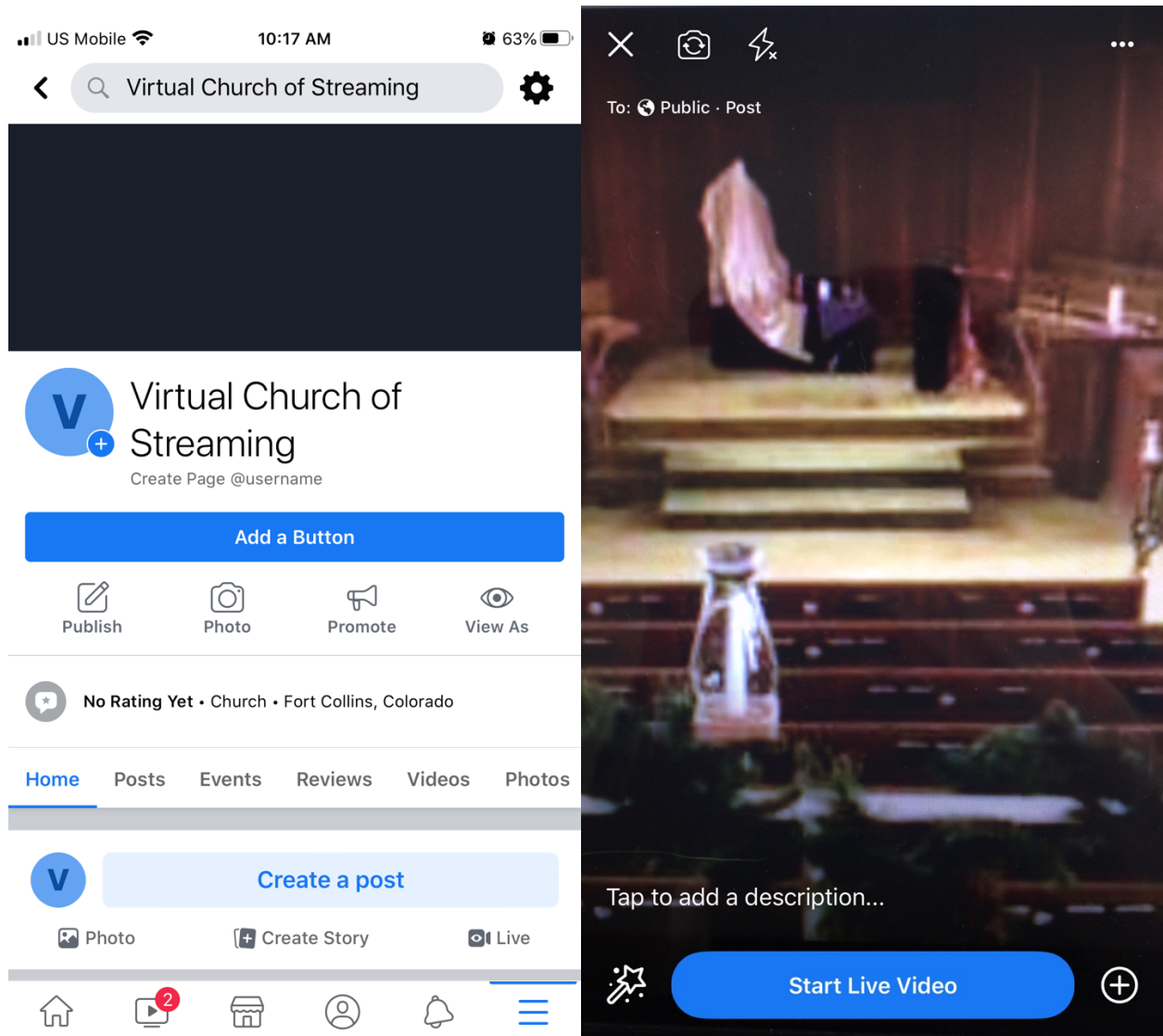
On your church's mobile page, you will see the "Live" option under "Create a Post." Doing so will immediately take you to the Facebook live stream after asking for permissions to access your camera and microphone. You must allow both in order to stream. Within the mobile app there is no option to test or make the stream private. While an individual user may restrict their live stream to only friends or family, a page's stream is always made public and anyone can view it.

There is also no ability to include other video sources or applications in the stream, though you are given the ability to switch between the front and rear camera on your phone. You may also choose to add a description to the stream before going live. Comments will appear overlaid on the screen, and you may also use the comment box to add comments, or emoji.

Instead of having the option to manually switch between audio sources, the smartphone application will automatically select the internal microphone of the smartphone unless it detects that an external microphone is plugged in. The advantages of an external microphone will be discussed in a later chapter.
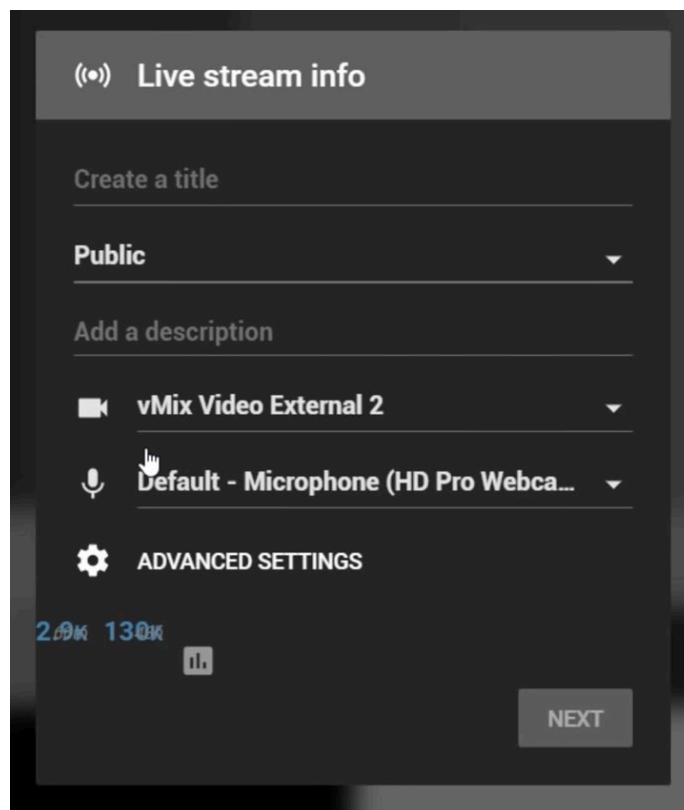
YouTube Live:

From the main page on YouTube, click on your user icon on the top right, and in the dropdown menu, select "YouTube Studio."
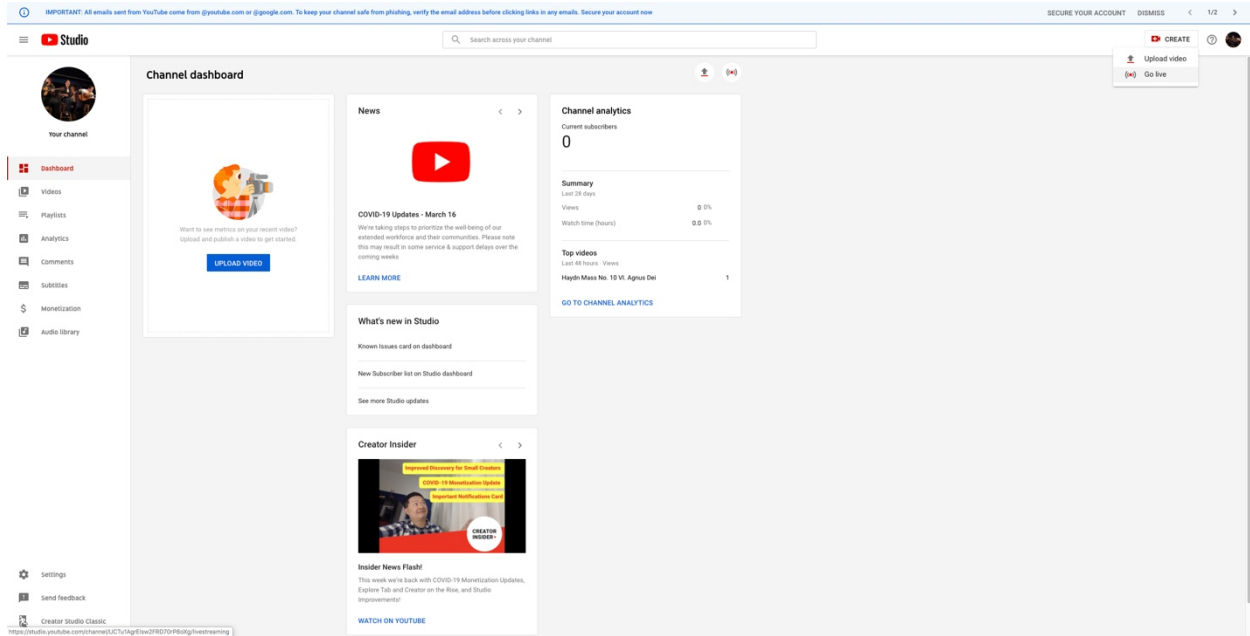
To go live, select "Create" in the top right, and select "Go Live." Note that you may have to wait up for 24-hours for your channel to receive approval to livestream.

Once you are set up to livestream through YouTube and click "Go Live" you will be presented with the option to title the stream, make it public – or private for testing purposes – and select your audio and video sources. It will default to your internal microphone and camera, but you may select external sources just as you would with Facebook Live. Hitting "NEXT" will prompt you to select a thumbnail image which will be the image users see when the video is displayed online.

Create a new event

Cancel | Go live now

Basic info | Advanced settings | Monetization

Title

Private

0 / 100

Today | Now | Add end time

Only you can view | Share

United States (GMT -07:00) Pacific Edit

Type

Description

○ Quick (using Google Hangouts On Air) ?
○ Custom (more encoding options) ?

0 / 5000

Tags (e.g., albert einstein, flying pig, mashup)

YouTube Live also has the option to schedule an event and input all of the information beforehand.

Once you are live on YouTube it functionsd much the same way as Facebook in that you may open other windows or applications without fear of it affecting your live stream. You can also share your screen or windows with the live stream in order to display images, bulletins, sheet music, and call and response text. Ending the stream will save it to your channel's video library where users may watch it in the futre and you may share the video on other platforms.

Zoom Video Conferencing:

Zoom (https://zoom.us/) offers both a free and subscription service. The free service limits the number of participants to less than 100 and also allows only a 40 minute conference.

Below are instructions that can be shared with those who are unfamiliar with Zoom. You will need to provide current and accurate information in the places indicated with [insert...].

1. Use this link to join from a computer, or if you have the Zoom app on your phone: [insert link]
2. To join by smartphone, click this number [insert phone number]
3. If you are calling from a non-smart phone, dial this number and enter meeting ID [insert phone number] Meeting ID: [insert]

Tips and hacks:

If you experience difficulties with the microphone or speakers, once you have the chat window open, find the Zoom "preferences" menu tab and then select the speaker or headphones you want to use. If you continue to have trouble, just phone in--this nearly always works.

In the upper right corner you can toggle between "gallery" view (where you can see everyone) and "speaker" view (where the person currently speaking is the only one you see).

Buttons to mute video and audio are in the lower left corner

Using headphones sometimes improves sound quality; if you are meeting in a group, just use your device's speakers.

And now for some words on Zoom etiquette

You may be muted when you enter the chat room; please keep yourself muted when you are not speaking to reduce background noise. This includes those who

call in. If you don't know where the mute button is on your phone, look for it now! With a large group, this will help us all have a much better experience.

It is very common on Zoom to step on each other's sentences because of sound delays. Please release yourself from shame if you do this--just stop talking and let the other person keep going! If you apologize, you step on them again, and then it's even more disruptive!

If you can't hear someone, cup a hand to an ear to signal to them.

Information in this section was provide by Alison Casella Brookins, Pastor at Chicago Community Mennonite Church.

Streaming Setup:

There are many ways to get set up for live streaming and video conferencing and each church body will have to choose which will work best for its situation.

Level 1 is shooting live video via mobile phone. The strength here is in its portability and cost. It's essentially free (you could add the cost of a $20 phone mount and a $30 microphone to improve quality), and it provides a great, informal experience that lends itself well to live video platforms, providing a personal and "behind the scenes" experience for followers that can be lost as production quality escalates.

Lapel microphone for smart phones: https://amzn.to/2WWAwcb

extension cord 79"

lapel mic 59"

stereo adapter 4 to 3 pin
for PC/laptop/camera/
audio recorder

extra wind muff

Level 1 (A) involves using your audio system and incorporating that into the video stream. The advantage of this is that you should be able to utilize the same audio system you use for your normal Sunday services. Traditionally, all microphones used during the service are sent to some sort of mixing board or mixer, which then takes all of the audio and directs it to a set of speakers or audio monitors in the sanctuary. If, instead of just sending that audio to the speakers, you intercept the audio and also send it to your smart phone or laptop you will be able to use a system you already understand to capture high-quality audio and add it to the video stream. This can be accomplished a number of ways, and any technically-

inclined member of the congregation should be able find a way to do this with your system. However, here is a way that should work on most systems:

In a traditional audio mixer, there should be a number of "outputs" where the audio mix can be sent. The main outputs are usually sent to a set of external amplifiers and then to a set of audio speakers. There should be a number of other outputs as well including "AUX" and RCA connections, however, we are interested in the headphone output which usually carries the same signal as the main outputs but will allow you to adjust the volume independently. Usually, this is a ¼" jack similar to the jack used for guitars or electronic instruments, however, it will output a left and right stereo signal. That is ok. Simply plug a normal ¼" tip-sleeve cable into the jack and the audio will be made into a left-only mono signal. The end of the ¼" cable that you just plugged in can then be run to where you have your smartphone or laptop laced in the sanctuary.

For smartphones, use an adapter to change the ¼" jack into an 1/8" (headphone-sized) jack and plug that into the microphone side of a y-splitter. In most smart phone headphone jacks there is actually a third connection for a microphone and using a y-splitter you are able to insert any signal straight into the microphone input. Most phones will automatically recognize and switch the audio source for video and streaming to the jack when a microphone-enabled cable is plugged in.

For modern Apple laptops, the headphone jack actually serves the same purpose as a smart phone in this case and will recognize a microphone-enabled cable when it is plugged in. Use the same y-splitter cable to send signal directly to the microphone input.

For Windows computers there are usually two jacks of similar size: microphone and headphone. Simply plug the adapted 1/8" cable into the microphone input and you should be up and running.

For most personal computers there will be an internal setting that allows you to attenuate the volume of the incoming signal. Alternatively, use the headphone volume on your mixer to attenuate the level sent to the device. Make sure to not

send so much signal that you distort the input into the device. This will sound nasty and can be fixed by turning down the volume at one of the previous stages.

Everything you will need for Level 1 (A):

Female ¼" to Male 1/8" TS adapter: https://amzn.to/2xqszRK

Female to Male Headphone / Microphone Y Splitter: https://amzn.to/2UjsMPC

Level 2 is shooting video via a dedicated live camera. The dominant player in this space is the Mevo camera. For somewhere in the $500 to $1,000 range, the Mevo provides a great solution for live video. Production quality on the Mevo is significantly higher than the mobile phone, retains some of the informality of the platform, and provides a cheap fixed-point live video solution.

Level 3 is a hybrid solution that gives you more control than Mevo but doesn't require a substantial media budget. One of the best examples here is Boxcast. For $100 per month, you get the hardware and software necessary for streaming your service on the web. You'll also need to invest in cameras capable of HD capture (in the $500–1,000 range per camera) as well as a high-quality microphone and amplification (perhaps what your church already uses will work). Other computer-based software solutions (such as Restream or OBS) can achieve some of the results of Boxcast with a little experimentation and technical know-how.

Deciding between these approaches involves three factors:

Budget: Level 1 will cost between $0 and $50. Level 2 is between $500 and $1,000. Level 3 is a $1,200 per year investment with initial costs around $1,000.

Crew: Talk with your deacons, pastors, or A/V team to determine what they're comfortable with or use most often. At the same time, be cautious about committing to obscure or complex hardware, software, or streaming methods that won't work unless a single member of the team is able run them.

Vision: Although your church may be making a temporary compromise with livestreaming, wise planning for how you invest during this season can reap dividends for your ministry down the road. So, make sure that whatever purchases you make or methods you try will serve you well in the long run. Think about future uses of your technology,

should you decide to stop livestreaming your services. This might include midweek update videos, pre-recorded announcements, baptism or other testimonies, special non-Sunday teaching series, Q&A videos, or non-English teaching videos. Perhaps consider doing a special daily series of videos for Holy Week or during Advent.

[Phil Thompson – "How to Livestream Your Church Service: A Practical Guide" thegospelcoalition.org – March 26, 2020]

Best Streaming Practices:

Some concessions may have to be made in order to adapt your service to a streaming-friendly format. This might include shortening the service, choosing to forgo congregational singing in lieu of listening to prerecorded music together, or streaming from a different location instead of the sanctuary of your church. Each church body should decide together how to approach streaming to include the most members and make viewers as comfortable participating – or not – as possible. Here are a few things to think about:

Should we attempt to stream an entire service, or just the preaching/teaching?

If you're doing more than singing music written before the 1920s, you are likely performing copyrighted content. There are complex ways of handling this, but for simplicity's sake and legal reasons, I would recommend omitting the musical portion of your worship service from the live stream. If there are announcements you'd like to give or specific issues you want to address, just keep in mind that you are potentially reaching a worldwide audience. You also want to ensure that your camera is placed in a way that does not capture minors, victims of abuse, and so on, for their safety and for your own legal purposes.

Should we stream monologue preaching or attempt something different?

The best use of a live video is not a camera in the back of the room gathering content, but video where the speaker engages with the live comments either during the video or afterward, via comments or in person. Churches attempting to live stream for a congregation that is entirely remote may feel more comfortable retaining the traditional preaching model. But it seems worthwhile to consider encouraging viewers to comment with questions or feedback that can

be answered following the sermon. Someone running the camera can be monitoring comments on a separate device and preparing them for the post-sermon discussion time.

Alternatively, some churches may opt to more strategically use live streaming in a dialogical or hybrid format, breaking up teaching with designated Q&A slots ("Be sure to comment, and I'll discuss your questions in 10 minutes") or engaging in ongoing audience interaction throughout the video ("Thanks for your question, _____, let's answer that . . ."). Zoom or other more direct video mediums may lend themselves to a more dialogical environment if you don't mind limiting the audience.

How should we place the camera, interact with the camera, or set the stage?

Live camera placement always looks best when the angle is eye-level with the speaker. In an ideal live-only scenario, the speaker is speaking directly to the camera, making eye contact with the video viewers. Angles from below the speaker tend to be unflattering. Simple lighting in the form of lamps, a ring light, or a basic lighting kit can go a long way toward enhancing your video, depending on how you engage with the camera.

Should we go live or upload a pre-recorded sermon (or something else)?

This decision will rest on what your church and pastors and volunteers are confident with. There are pros to each approach:

- **Pre-recording:** You can refine the end product; it will have a higher production value; you can easily include slides or announcements; you can schedule it and send a link in advance.

- **Live Streaming:** You can interact with the audience and allow them to interact with you; the setting is more intimate; the notifications reach more of your followers.

If you pre-record, you can capture video using the camera app on your mobile device, PhotoBooth on a Mac, or the webcam app on your PC. You may want to edit the video (using a free PC app, or iMovie, which is free on Macs) before uploading. You'll want to consider how to boost lighting, add Scripture references, and clip out errors or unhelpful content. Schedule the video for a particular time on Sunday on as many media as possible (one of the final steps after uploading to Facebook and YouTube is a step that allows you to precisely schedule your video's release). Make sure the description and cover image look nice. Scheduled videos in YouTube are assigned an inactive permalink that you can share with your congregation in advance.

Should I go to the church building and preach from the pulpit, do it in a smaller room, or do it from home?

It seems like there are advantages and disadvantages to each of these:

The pulpit conveys a sense of "church as usual." It may be helpful for your members to feel a sense of normalcy during this time. At the same time, everyone watching is watching fully aware that what is happening is entirely abnormal. It's also hard to provide interaction with viewers from the pulpit, and interaction is one of the primary functions of live streaming (if you go that route).

A studio of some sort allows you to provide a higher-quality presentation of the Word. This can be helpful for a congregation who is hungry to hear the Word presented and applied by their pastor, but the high-quality nature of such an environment often pushes churches to try too hard or overcomplicate the process.

A home environment allows you to communicate "I'm in this with you," in a pastoral manner. This can be helpful to members feeling lonely and isolated, but if the lighting and audio are terrible, your sermon may not be effective.

Will video servers have enough bandwidth to cover Sunday broadcasts?

If you're using Facebook and YouTube, you're unlikely to experience much risk. If you're uploading and scheduling pre-recorded video, you can always do your upload before Sunday to ensure that their servers aren't struggling to process video on a Sunday morning. If you've selected a more church-centric streaming or hosting service, you may find that they struggle to keep up with demand. As mentioned before, Zoom has been struggling to keep up with demand, especially for churches attempting to engage more than 100 participants who are all using their webcams to call-in. Perhaps turning off the inbound video streams of participants will help lighten the load on these massive Zoom calls.

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Recording:

If you choose to prerecord your message, you may be doing so in hopes of delivering a more polished final product. To that end, it helps to have some practical knowledge of the audio-recording process. This chapter will discuss the basics of how to record to any device you have in your possession and implement those recordings in a number of different ways.

Microphone Basics:

Generally, a microphone is a microphone and the way you use that microphone for your live services will be the same as you would for recording. However, here are a few practical things to keep in mind.

SM58   SM57

Dynamic Microphones:

These microphones have a small dynamic range and need to be placed in close proximity to the audio source.

These microphones are traditionally used for voice, percussion, and placement in front of amplifiers.

Condenser Microphones

ndenser Microphones:

e microphones have a large dynamic range and l at capturing sources from a greater distance.

itionally these microphones are used for ensembles capturing audio sources that are spaced further t.

d correctly when recording, these microphones will e the recordings sound more "professional."

No microphone should be plugged directly into a smart phone or computer unless specified as such.

Voice

Even the most advanced singers and performers often forget the correct placement for a microphone. Correct vocal placement is two finger widths away from the mouth.

Group Vocals

Use a pair or single condenser microphone placed an equal distance from the group. Note, however, condenser microphones are more prone to feedback, thus they should be kept well away from any speakers.

Acoustic guitar

Acoustic guitar is one of the harder instruments to mic because you need to be aware of the performer and how microphones can interfere with their movement. Because of this, it is advised for the performer to use an acoustic/electric guitar so that they can plug directly into the sound system. Not only does this allow for us to have more control over the sound, but feedback also becomes less of an issue. If an acoustic guitar does need to be mic'd it is best to place a dynamic microphone aimed at the very bottom of the neck about six inches away from the guitar. This is a good position because it emphasizes picking, thus giving a clean attack, while also reducing finger noise. When recording without using the microphone for sound reinforcement a condenser microphone might be a more professional sounding choice.
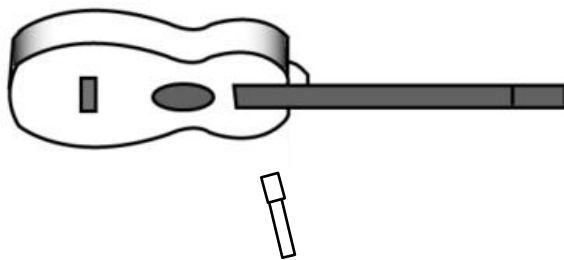
Piano

Either a dynamic or condenser microphone can be placed safely within the cover of a grand piano, or inside the upper portion of an upright piano. If you find that you hear too much plunk-y hammer noise, move the microphone further away from the hammers, on the underside of a grand piano, or on the back side of an upright piano.

Guitar and Bass amps

Place a dynamic microphone pointed at the amp and one or two inches away from the main speaker. Use a flashlight through the front grille cloth to find the center of the speaker.

Choosing Software:

In general, recording software all accomplishes the same goal: capturing audio and displaying it in such a way that it is easier for a human to understand and manipulate. Professional pieces of software include Pro Tools, Logic, and Cubase. These pieces of software are prohibitively expensive unless a member of the congregation is involved in the audio industry and already uses this software. Luckily there are a number of free pieces of software with great, but limited, functionality. Audacity for both Windows and Apple computers, and Garage Band for Apple devices.

Audacity is generally considered the most widely used piece of free audio recording and editing software, and the following tutorials will this software, though much of the terminology and use will translate to other software.

Practical Recording Theory:

The general question you need to answer is "how do I get this in to there?" This being analog audio, and there being the device you are recording to. There are many ways to do this, the simplest being to use the internal microphone in your device which takes care of everything for you. However, this may not be the highest quality microphone, or you may not be able to place the device in a location appropriate for the microphone.

You can place your device in the middle of the sanctuary and stream the message from the podium as you usually would, however you may find that the audio is unintelligible and some may ask why it sounds echo-y. Alternatively you could place the device on the podium to capture better audio, but your congregation may then not be able to see the full service.

Using the method discussed in the "Streaming Setup" section is a quick and dirty way to capture audio as you would in a traditional service and have that audio be sent to your device using its built-in microphone input. (There are more professional methods, but these involve purchasing a separate unit called an interface.)

So, place your microphones as you would during a normal service. Have the individual in charge of A/V run the mixer as they normally would, but instead of the mixer sending audio only to the speakers in the sanctuary, audio will also be sent out of the headphone jack to your device where it will then be picked up by a recording software.
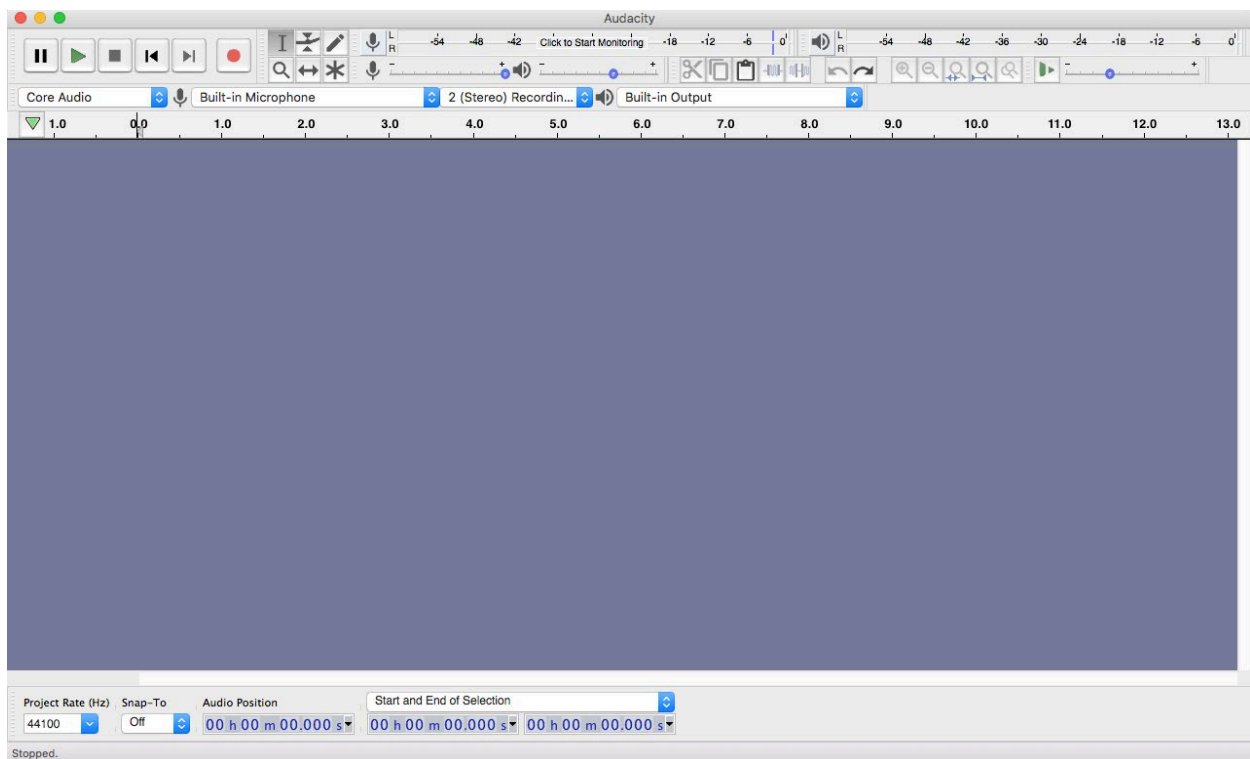
Recording with Audacity:

This will be a very brief and succinct overview on how to record audio into your computer using Audacity. Read the full interactive manual online here:

https://manual.audacityteam.org/

[[Firstly, download and install Audacity onto your computer. Audacity is open source and free, thus the Audacity website will direct you to another website to download the installer. This is completely normal and nothing to be weary of.
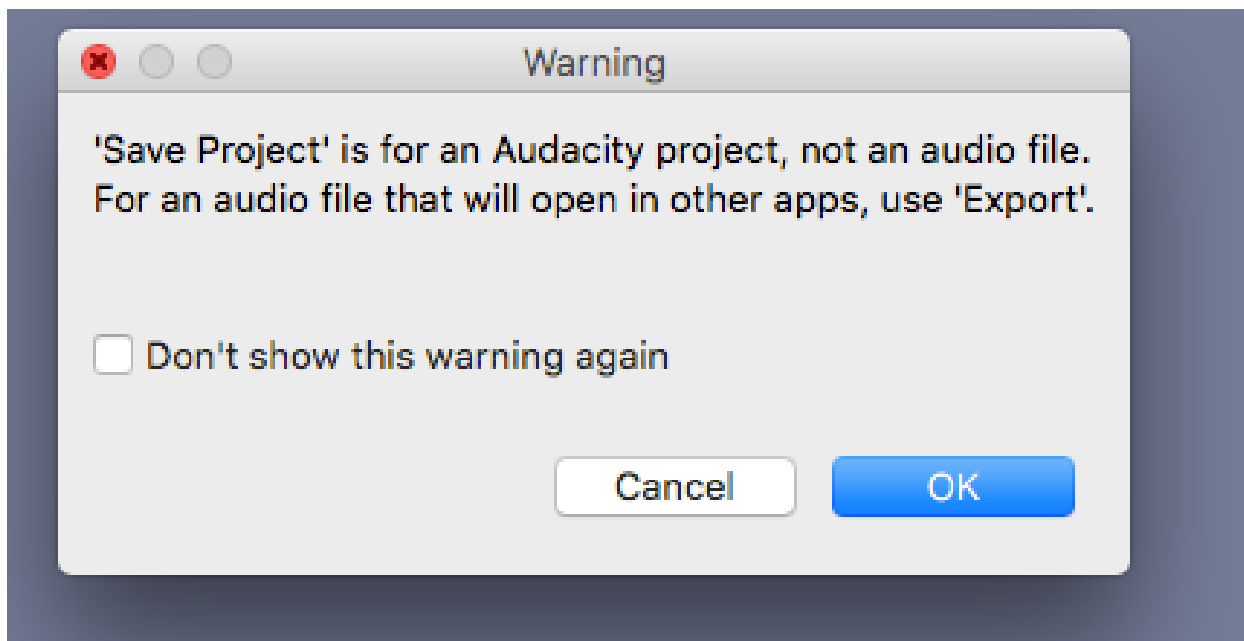
After installing and opening the software you will be greeted with a window similar to this:

Firstly, save your newly created project:
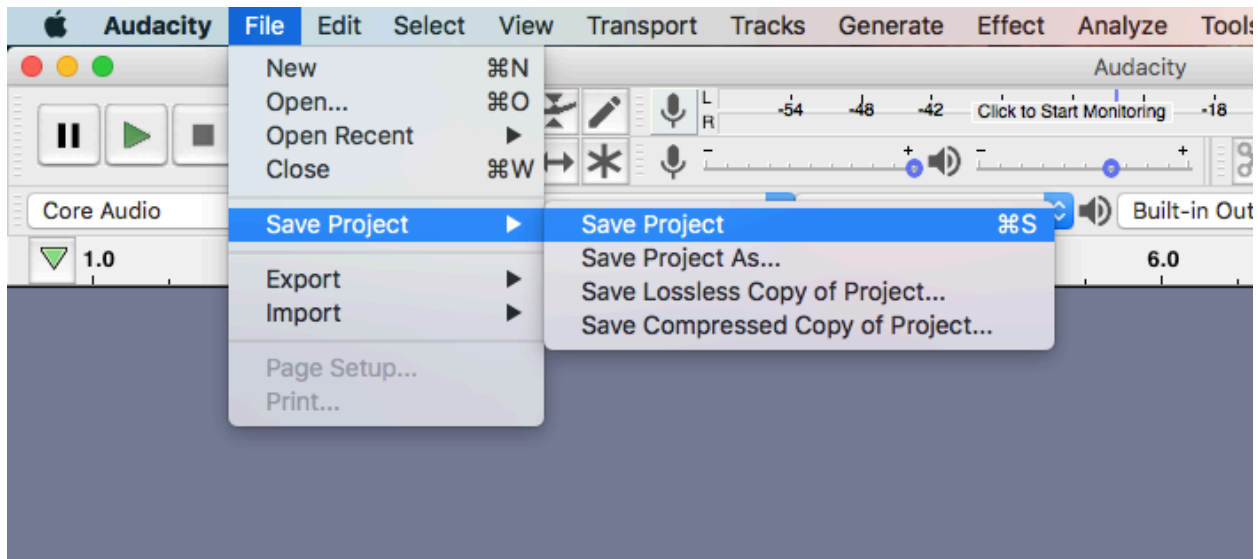
Audacity will let you know that your "project" file is not actually an audio file and you will not be able to hear your recording outside of the software. Hit, "OK."

From the main menu, select "Tracks" "Add New" and click on "Mono Track" to add a new mono track to your project. We are using a mono track since both the internal microphone or signal from the mixer are are mono signals.
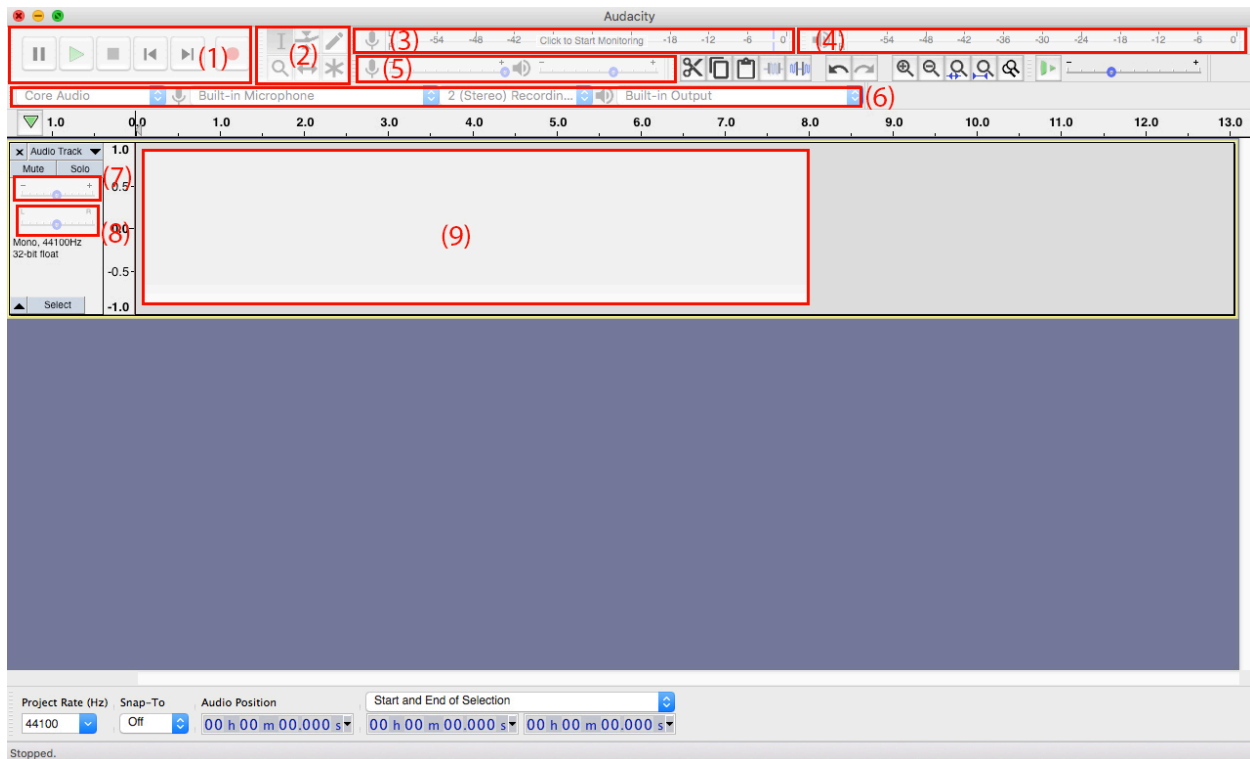

(1)   **Transport** – This is the section of the application where you will access the transport controls that allow you to play, stop, and record audio. Hitting the red record button will automatically start recording in the selected track wherever the cursor line is in that track or at the end of the previously recorded section.

(2)   **Tools** – In this section you will find the tools necessary to interact with the recorded audio clips: Selection tool, envelope tool, draw tool, zoom tool, time-shift tool, and multi-tool that is context dependent. Mostly you will leave the selection tool selected.

(3)   **Recording level** – Pay attention to this portion of the application when recording in order to monitor the level (volume) of the incoming signal.

Try to keep this in the upper end of the green. It can turn red briefly without distorting too much.

(4) **Playback level** – Pay attention to this portion of the of the application when playing back multiple recorded tracks at once. Remember that audio is additive, so even if the first thing you recorded did not run this meter into the red, the more tracks you add, the louder your overall level will get. If you hit red your audio may distort.

(5) **Recording and Playback level adjust** – Use this portion of the application to adjust the over incoming level of the microphone signal as well as the overall level of your audio. Note that all of your individual audio tracks that you have recorded feed into this overall volume, so even if you have this turned down, you can still have problems with distortion if the overall tracks feeding the output adjust begin to overload. It is best to turn down the levels of each track individually first. This will be covered more in the chapter on mixing.

(6) **Input and Output select** – Use this portion of the application to change the source for recording and the destination of the playback audio. Audacity should select the internal microphone and speakers of your device by default meaning that you should be set up when the application first starts. However, you may have to change devices by selecting the dropdown arrow to choose your device. Windows may display many more devices than an Apple computer, if this is the case you may have to try to record each source in order to determine which is which.

(7) **Track Volume** – This controls the volume of the corresponding audio track. This effects the volume of that track that feeds the main output volume.

(8) **Track Panning** – This controls the position of that track in a stereo space. Even though your input is mono, your output device is stereo. Thus, you can move the output of your track from left to right.

(9) **Audio Track** – This is the main display for your recorded audio. You have two domains that you will work in: time on the left to right axis, and amplitude on the vertical axis.

Click anywhere in your new mono audio track to select it and hit the red "record" button at the top to start recording in that track. Note that if you have audio coming to the input – either from the mixer, or from the internal microphone – the level display on the input will change to show you how loud the incoming signal is.
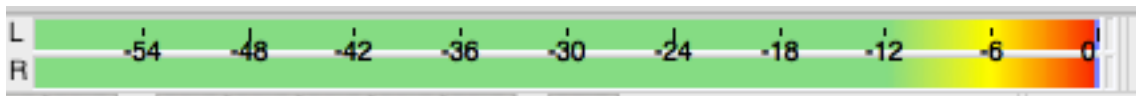
Too much red is bad and will probably not sound professional because it will be causing distortions and unwanted noisy artifacts.
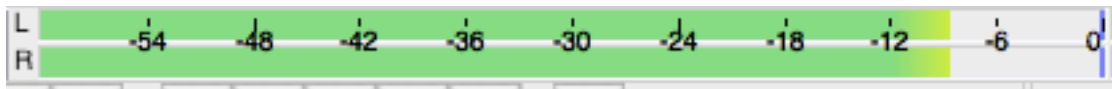

Try to keep the overall loudest part of your signal in the upper-green and yellow.
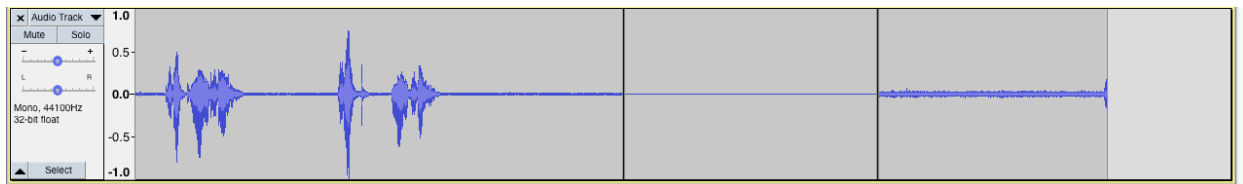
If set up properly you should see some blue audio in your track. Now, let's talk about proper recording techniques. Notice how the overall level is not only determined by the level you set the incoming signal to, but also how close you are to the microphone. Professional recording is done by keeping the microphone a set and consistent distance away from the audio source. Once that consistent distance is found, only then is the incoming level adjusted in the software.

The incoming level adjust also sets the amount of background noise in the recording. Too low, and the end listener will have to turn up the volume, also turning up the level of noise. Too loud and you run the risk of distorting the input

and adding unwanted artifacts to your recording. Just right and when there is little to no signal you should only see a thin blue line like the first part of the image below.
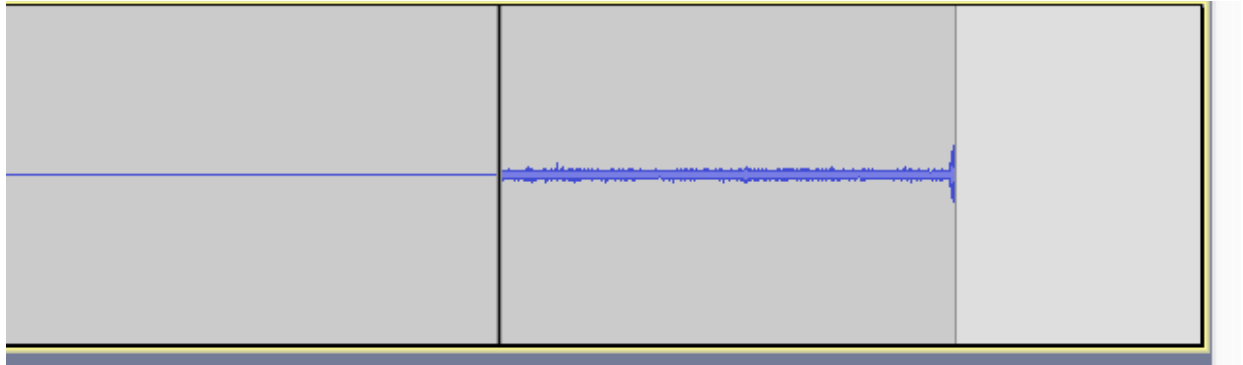

After the black line, the input level was turned up and, although there was no input to the microphone, the inherent noise level of the room and computer is picked up as noise.

This is all to say that it will take some practice to find the exact recording level for your purposes.
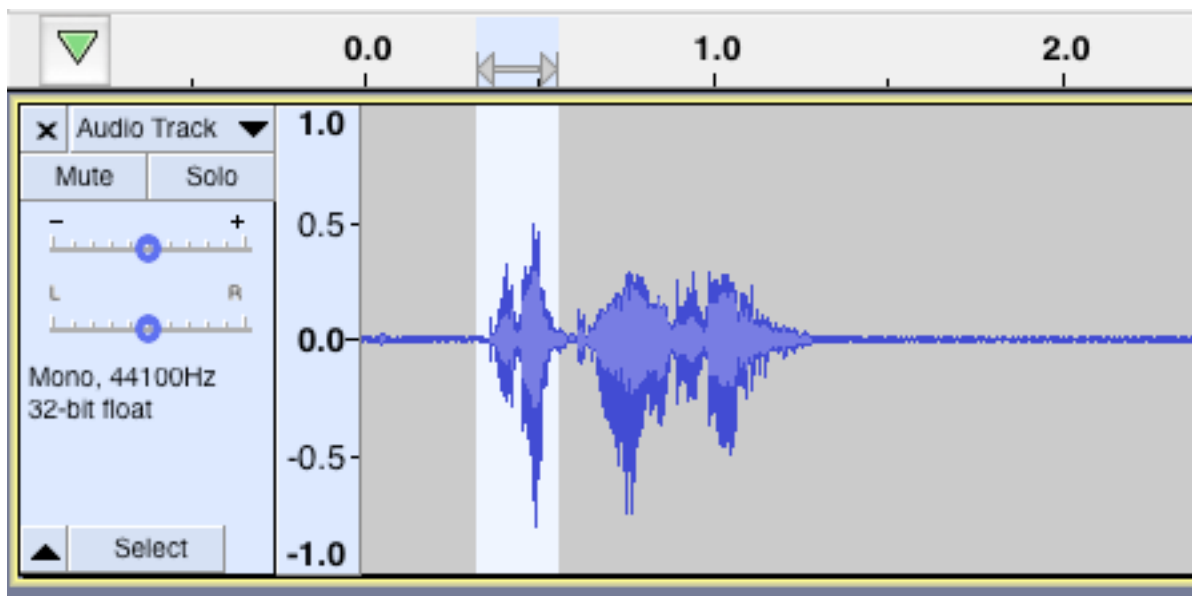

The image above represents a speaker saying "check one two" into the internal microphone of a computer. The noise is audible, but does not make the voice unintelligible.

Zooming in on the beginning section of the audio with the zoom tool begins to reveal the actual waveforms of the spoken words:
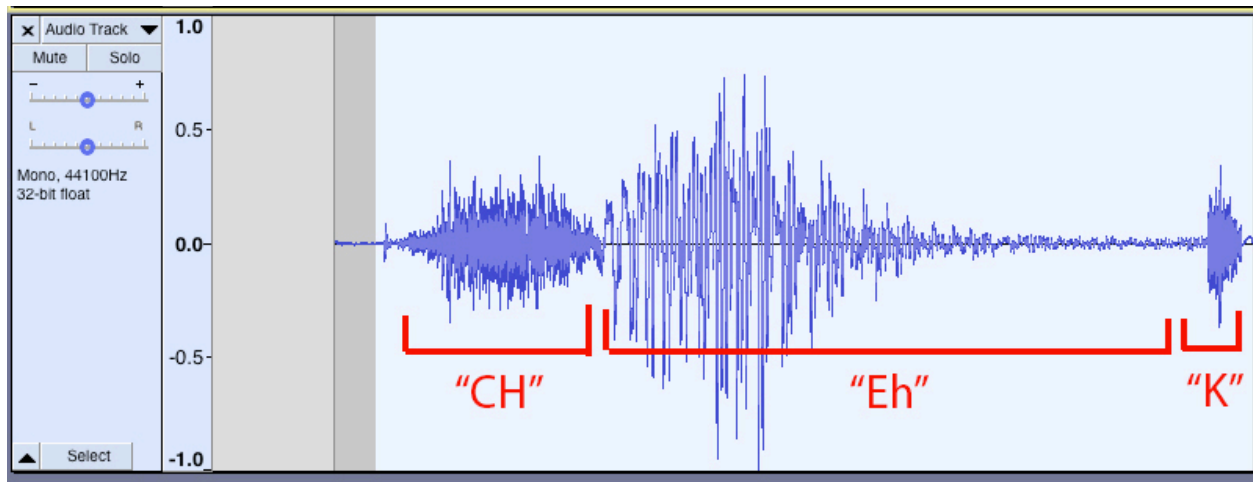

The beginning portion of all waveforms is called the "transient" and it can be used to find the start of different words and phrases. This will be useful later if you need to edit different sections of audio together.

Congratulations, you've successfully recorded audio! Now, how do you listen to this recording outside of the Audacity project, or send this audio to someone else? From the main menu, select "File" "Export" and click on "Export as MP3".
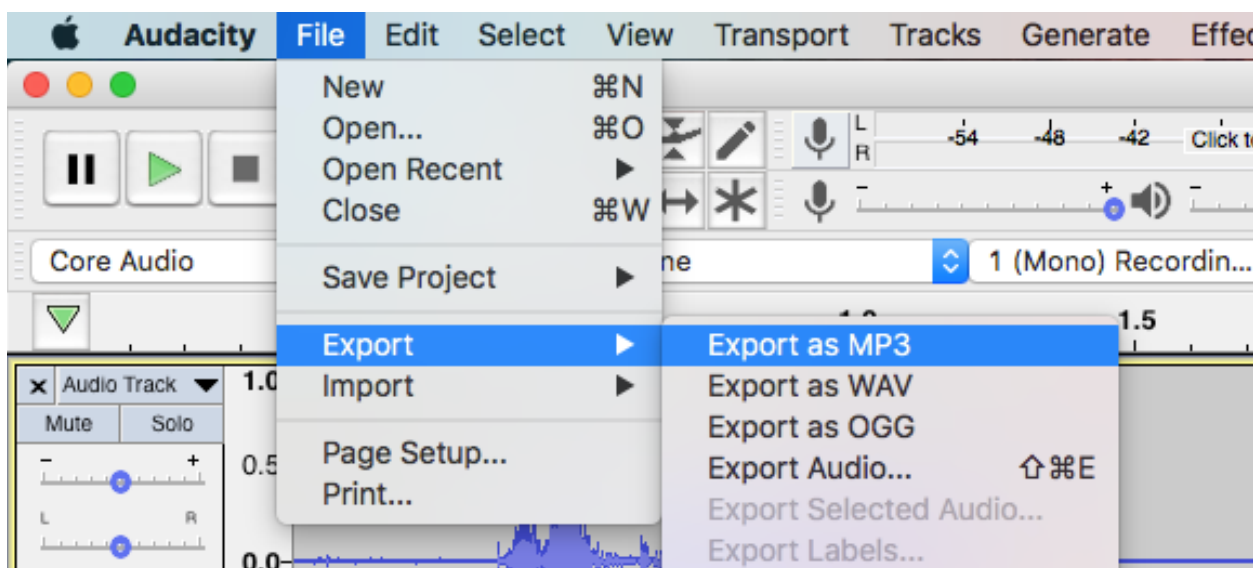
This will prompt you name the audio file and select a destination:
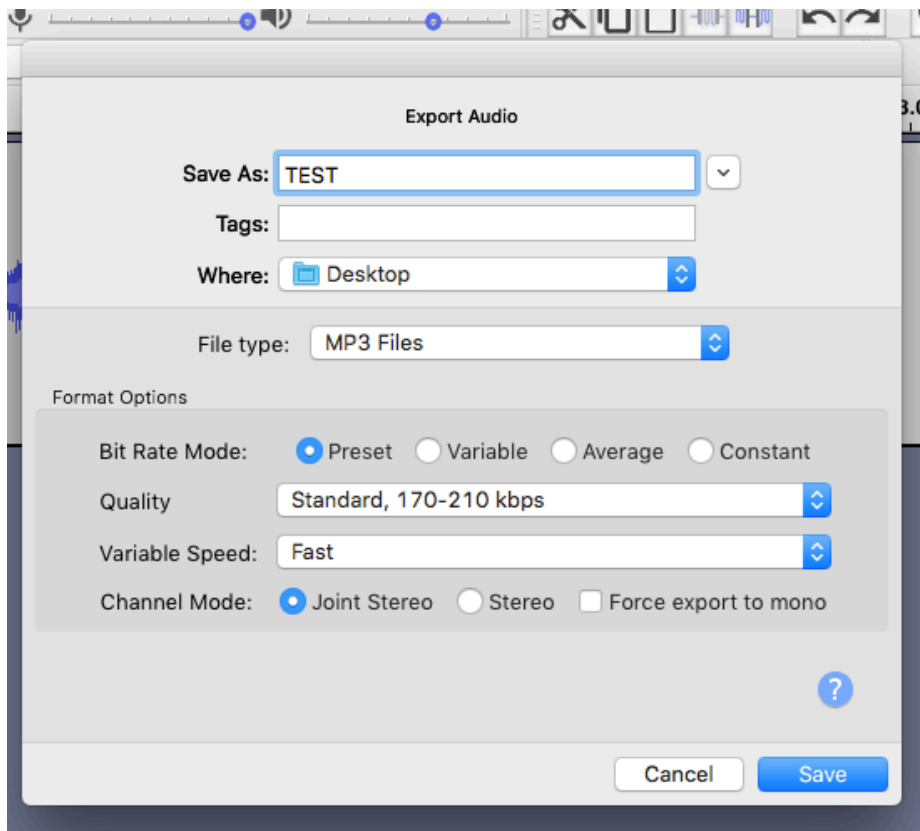
     For your application, leaving these settings as default will be more than acceptable. This export procedure will combine all of your audio tracks into a single stereo audio file the same length as the longest recorded portion of audio. If you have recorded an entire two-hour long service, expect this export procedure to take some time.

Now, listen back to your audio file that you created in whatever program you use to listen to music or other recorded media. Does it sound distorted and loud, or, more than likely, it will be quiet compared to everything else in your music library. That is ok. There are some quick things to go over to fix these issues, and a lifetime of learning in order to make your recording sound "professional". That, however, is not the goal.

Practical Mixing Theory for Recorded Audio:

The goal is to create something that the vast majority of your congregation will be able to listen to and comprehend without losing the heart of the message.

The previous guide should be more than enough for most situations. You should be able to record the audio from your sanctuary's mixer into a single mono audio file that should be a decently accurate representation of what would normally be heard in the sanctuary by the congregation. The previous guide does assume that there is an A/V individual that normally runs the mixer and will be doing the same for the audio being sent to the recording device.

If, however, you wanted to have individuals record their portions to the service and add them together after the fact, or if you wanted to create a virtual choir by adding prerecorded voices into a single file, there will have to be some editing and mixing done within audacity.

Editing is the process of moving audio in the time domain. If, for example, you recorded each section of the service separately – stopping the recording between each section or stopping the recording to go back and fix something – you will end up with a few different audio files. You will want to do each section on a new track by following the new track creation as outlined in the previous section. Use the "Move" tool to move each section of audio to its appropriate place in the timeline:

When this project is exported, it will combine all of the audio files into one new audio file. Note that any audio that is overlapping between the sections will also be combined.

Mixing is the process of adjusting the amplitude or volume of each track so that they "fit" within the context of the overall audio.

If you find that the message of your recording if much quieter than a recorded song, either use the track volume to turn down the song, or use the track volume on the message track to turn up the message so that you can seamlessly transition between the two in the final audio file.

Another use case for recording when congregations are not able to meet physically would be to create a "virtual choir" made up of recordings submitted by individual members of the congregation. The key to this process would be to provide the same backing track (piano, string quartet, prerecorded audio from YouTube) to each individual for them to play/sing along to.

Firstly, create a new audio track and record the backing audio into Audacity. Make sure that there is an intro to the song or some way for others to find the tempo and pitch. When you are happy with the backing track, export it and email it to the congregation. Instruct each participant to open the audio file on their computer, listen to it with headphones on and sing into a recording app on their smartphone. In theory this would be easier than having each participant download and learn how to use Audacity. Having the participants wear headphones is important because it will keep the sound of the piano out of their own recordings. If you are having problems with echo-y recordings, have the participants record themselves in smaller rooms such as their bedroom, office, or closet.

The recordings can then be sent from each participant back to you to add into your original Audacity file you made with the backing track.

Open the original file and drag-and-drop the file from the location on your computer where you downloaded the participant's files.

When files are dropped in Audacity they will automatically populate new tracks. Ideally, since everyone recorded with the same backing track, you should be able see and line up the first word of each track by using the "Move" tool.
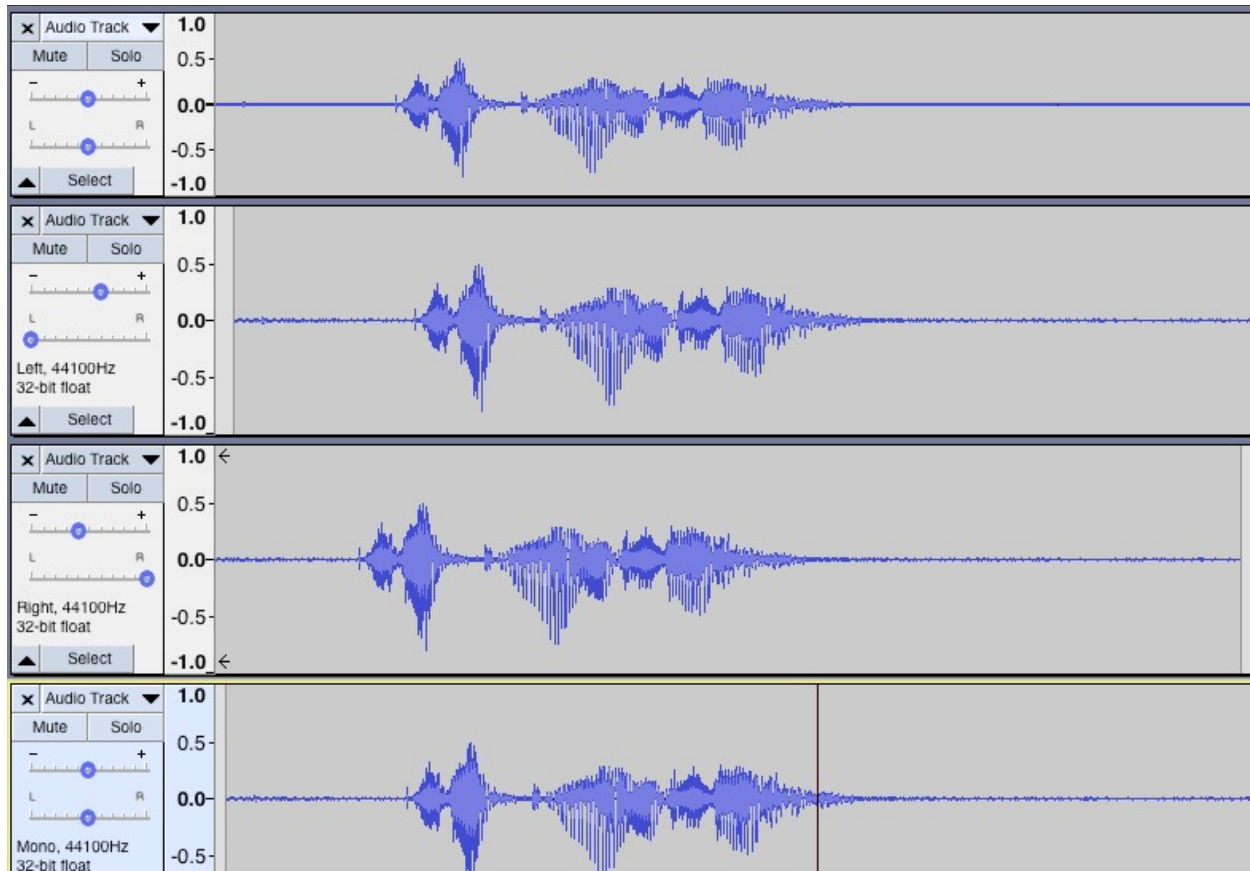
Notice how even though each of these "Check one two…" tracks were recorded individually, since they contain the same words it's easy to see that they will all line up.
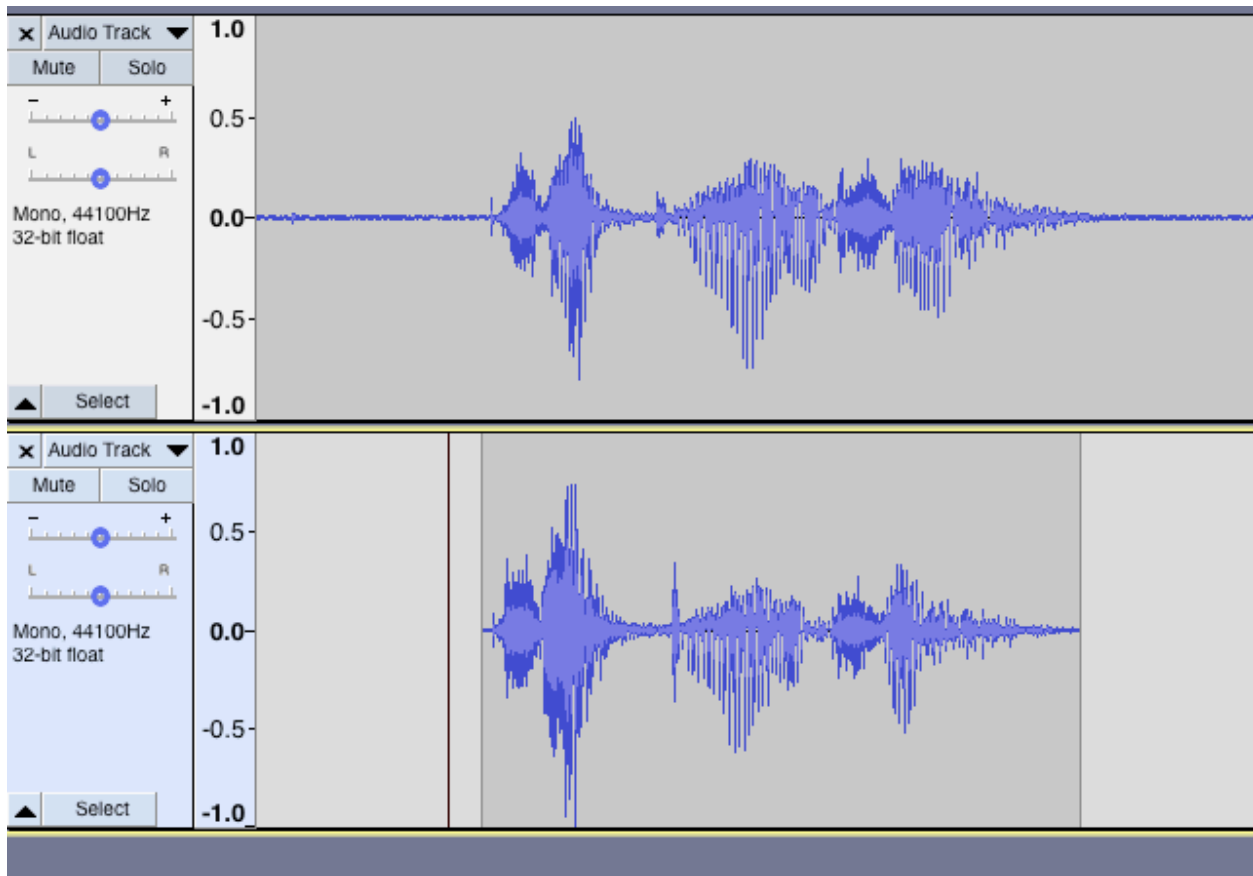
Line up each track with the backing track and the recording should all fit into place. There will be some timing and pitch imperfections, but that is part of the charm of singing in a choir!

You will find that not all of the recordings have the same volume. Use the volume slider on each track to raise or lower the volume until the overall audio sounds normal to you. Try to avoid distorting the output volume of the overall track by turning each individual track up too much! Since we are now dealing with a stereo project, you can also use the Left and Right Pan slider to move each track left or right. This will allow you to create the sense of a "virtual" choir surrounding the listener, but will also make individual voices stick out more. The more voices you have the further left and right you can move the panning slider on any given track.

When you are happy, export your song as an MP3 and send it out to the rest of the congregation to enjoy and sing along with.

Audacity also has a full suite of effects that can be used to make things louder, quieter, echo-y, reverberant, etc. Combined, these effects are used by audio professionals to create more interesting and enjoyable music to listen to, but is beyond the scope of this guide. You are encouraged to play with these effects, but know that those changes are "destructive" and, once applied, can not be unapplied to the track. General practice is to "Save As" the project as a new project so as to not change the originally recorded audio. These effects may also be "previewed" before applying them to a selection of audio in order to get a better idea of what the final product will sound like.[

Further Resources:

https://www.thegospelcoalition.org/article/livestream-church-service-practical-guide/

https://learn.g2.com/how-to-go-live-on-facebook

https://www.businessinsider.com/how-to-go-live-on-youtube

https://manual.audacityteam.org/

https://obsproject.com/

YouTube Live tutorial: https://www.youtube.com/watch?v=LFr_eGyqcFA&t=346s

Facebook Live tutorial: https://www.youtube.com/watch?v=x7CZHtEfXDw

Audacity tutorial: https://www.youtube.com/watch?v=8ClwSNm362E

Notes: