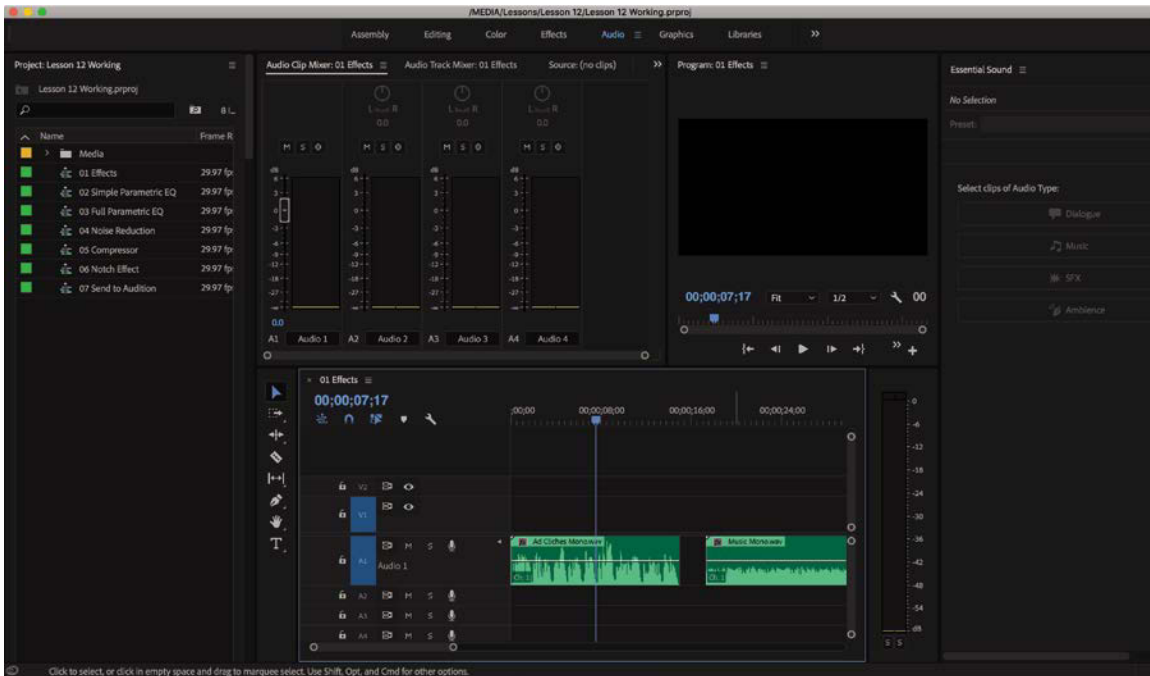


Starting the lesson

You'll find many audio effects in Adobe Premiere Pro CC. These effects can be used to change pitch, create an echo, add reverb, and remove tape hiss. You can set keyframes for effects and adjust their settings over time.

- 1 Open the project Lesson 12.prproj.
- 2 Save the project as Lesson 12 Working.prproj.
- 3 In the Workspaces panel, click Audio. Then open the menu adjacent to the Audio option and choose Reset To Saved Layout.



Sweetening sound with the Essential Sound panel

Ideally, your audio would come in perfectly. Unfortunately, video production is rarely an ideal process. At some point, you'll need to turn to audio effects to fix problems.

● **Note:** Expand your knowledge about audio effects in Premiere Pro by experimenting. These effects are nondestructive, which means they do not change your original audio files. You can add any number of effects to a clip, change settings, and then delete them and start again.

Not all audio hardware plays all audio frequencies evenly. For example, listening to deep bass notes on a laptop is never the same as listening on larger speakers.

It's important to listen to your audio using high-quality headphones or studio monitor speakers to avoid accidentally compensating for a flaw in your playback hardware as you adjust the sound. Professional audio-monitoring hardware is carefully calibrated to ensure that all frequencies play evenly, giving you confidence you'll produce a consistent sound for your listeners.

Premiere Pro offers a variety of helpful effects, including the following, all of which are available in the Effects panel:

- **Parametric Equalizer:** This effect allows you to make subtle and precise adjustments to the audio level at different frequencies.
- **Studio Reverb:** This can increase the “presence” in the recording with reverb. Use it to simulate the sound of a larger room.
- **Delay:** This effect can add a slight (or pronounced) echo to your audio track.
- **Bass:** This effect can amplify the low-end frequencies of a clip. It works well on narration clips, particularly for male voices.
- **Treble:** This effect adjusts the higher-range frequencies in an audio clip.

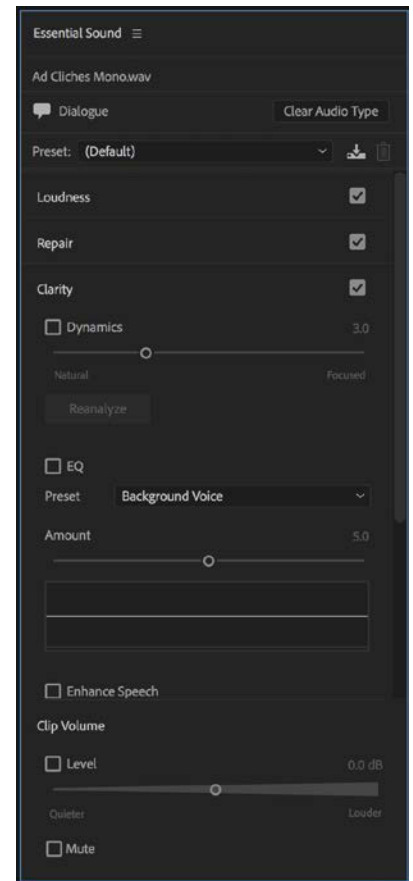
Apply effects by dragging them from the Effects panel onto clips. You'll find their controls in the Effect Controls panel, with several presets to help you get a feel for the ways you can use them.

You can remove effects in the Effect Controls panel by selecting them and pressing Backspace (Windows) or Delete (macOS).

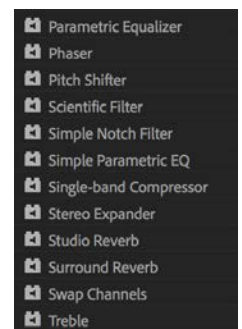
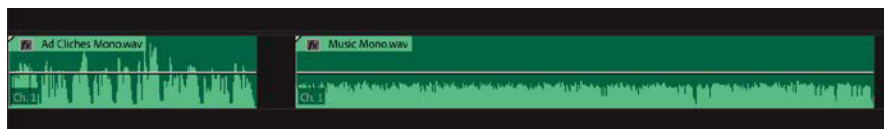
Use the 01 Effects sequence to experiment with these effects. The types of clips in this sequence will make it easy to hear the effects.

This lesson focuses on the Essential Sound panel, which offers a range of easy-to-apply professional adjustments and effects that are based on common workflows for standard media types like dialogue and music.

You are likely to find the Essential Sound panel is your go-to set of options for audio cleanup and improvement.

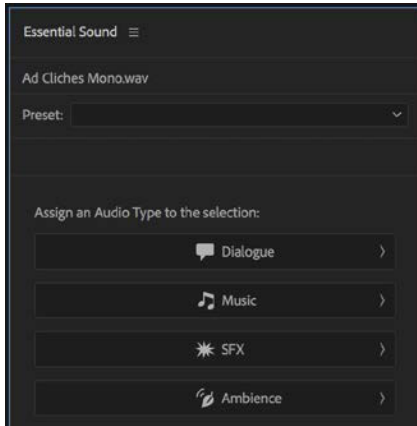


The Essential Sound panel offers several methods to adjust, clean up, and improve your soundtrack.



Adjusting dialogue

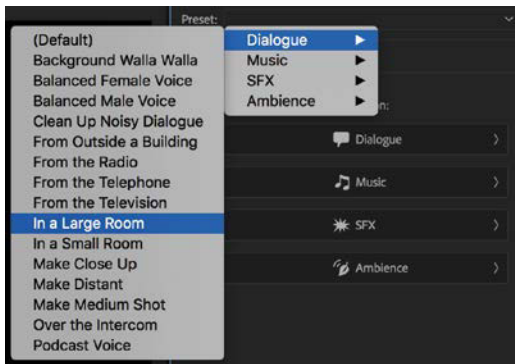
The Essential Sound panel has a comprehensive list of features to help you work with dialogue audio.



To use the Essential Sound panel, select one or more clips in a sequence, and choose the type of media.

Each option displays different tools that are suitable for that type of media. There are more options for dialogue audio than any other—and for good reason! Your dialogue sound is probably the most important, and music, prepared special effects (SFX), and ambient sound files are probably already mixed and ready to use.

In the following exercises, you'll try several of the adjustments available in the Essential Sound panel. All of the options you set can be stored as a preset, accessible at the top of the Essential Sound panel.



You can apply a preset without first assigning the media type. To create a preset, choose the media type, apply some settings, and click the Save Preset button at the top of the Essential Sound panel.

Presets are not fixed—you can easily apply one and make changes to the settings—and even create a new preset based on the adjustments you have made.

If you expect to use some settings often, for a lot of the clips in your project, consider creating a preset. Any time you know you'll do something more than five times, try making a preset.

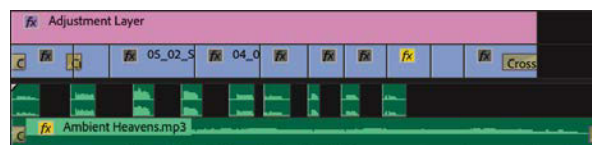
Setting loudness

The Essential Sound panel makes it easy to set the audio level for multiple clips to an appropriate volume for broadcast television.

Let's try this.

- 1 Open the sequence 02 Loudness.

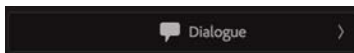
This is the same sequence you worked with previously when learning about normalization.



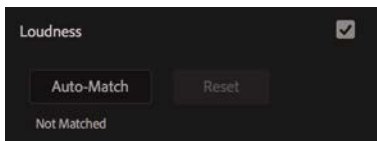
- 2 Increase the height of the Audio 1 track, and zoom in a little so you can see the voice-over clips clearly.



- 3 Play the sequence to hear the different levels for the voice-over clips.
- 4 Select all of the voice-over clips. The easiest way is to lasso across them, being careful not to select any of the other clips in the sequence.
- 5 In the Essential Sound panel, click the Dialogue button. This assigns the Dialogue audio type to these clips.



- 6 Click the title of the Loudness category to display the Loudness options. Clicking a category in this way is a little like clicking a disclosure triangle in the Effect Controls panel—options are displayed or hidden when you click.



- 7 Click Auto-Match.

Each clip is automatically analyzed and adjusted to match a standard level for broadcast television dialogue.

As with normalization, which adjusts clip gain, this adjustment updates the waveforms for the clips.



- 8 Play the sequence to hear the adjustment.

About the Loudness scale

Until now, we have been describing audio level in decibels (dB). You'll find the decibel scale a useful reference all throughout production and post-production.

Peak level (the loudest moment of a clip's audio level) is often used to set limits for broadcast television soundtracks. Each broadcast television station will have its own official limit for audio level.

While peak level is a useful reference, it doesn't account for the overall energy in a soundtrack, and it's common to produce a mix that sets every part of the soundtrack louder than is natural. A whisper, for example, can sound as loud as a shout, as long as the peak level is within prescribed limits.

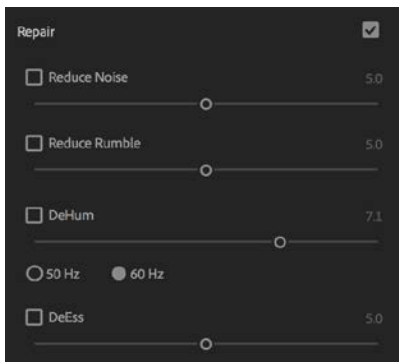
This is why so many commercials sound as loud as they do—the peak level is no louder than any other content but even the very quiet sections of the soundtrack are also often loud.

The newer Loudness scale is intended to resolve this issue. It measures the total energy over time. When a Loudness limit is used, it's OK for content to have loud sections, but overall the total amount of energy in the soundtrack can't rise above the level set. This forces content creators to produce more natural ranges of volume.

If you are producing content for broadcast television, you will almost certainly be delivering your content using the Loudness scale.

Repairing audio

However hard you try to capture clean audio on location, it's likely some of your footage will have unwanted background noise.



The Essential Sound panel has a number of ways to clean up dialogue clips.

- **Reduce Noise:** Reduce the level of unwanted noises in the background, like the sound of an air-conditioning unit, rustling clothes, or clicks.
- **Reduce Rumble:** Reduce low-frequency sound below 80Hz, such as engine noise or some wind noise.
- **DeHum:** Reduce electrical interference hum. In North and South America, this is in the 60Hz range, while in Europe, Asia, and Africa, it's in the 50Hz range. If your microphone cable was lying next to a power cable, you may have this intrusive but easy-to-remove unwanted sound.
- **DeEss:** Reduce harsh, high-frequency “ess”-like sounds common in the sibilance part of voice recordings.

Different clips are likely to benefit from one or more of these cleanup features, and often you will use a combination.

Let's try cleaning up some power hum.

1 Open the sequence 03 Noise Reduction.

2 Play the sequence to listen to the voice-over.

This is a simple sequence, with voice-over accompanying some visuals. There's a loud electrical interference power hum in the audio.

3 Select the voice-over clip.

This clip has already been designated as dialogue, so the dialogue audio options are displayed in the Essential Sound panel.

4 If it's not open already, click the Repair heading in the Essential Sound panel to display the options. Enable DeHum by selecting the check box.

5 Play the sequence to hear the difference.

The impact is significant. The electrical interference hum was loud but at a specific frequency, which makes removing it relatively straightforward.

On the right side of the Essential Sound panel, the amount of adjustment is shown in decibels.

This clip has 60Hz hum, so the default option of 60Hz is suitable. If the default option doesn't work, try switching to 50Hz.

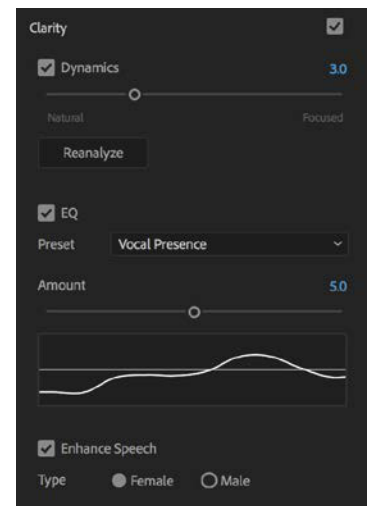
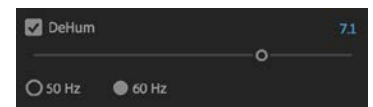
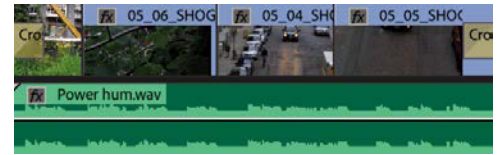
For more challenging audio cleanup, where the repair options in Premiere Pro don't give you a result that is clean enough, try Adobe Audition, which has advanced noise reduction features.

For more information on working with Audition, see the sidebar "Removing background noise with Adobe Audition."

Improving clarity

The Clarity tool in the Dialogue section of the Essential Sound panel gives you three quick and easy ways to improve the quality of speech audio.

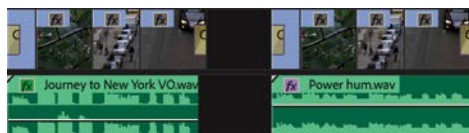
- **Dynamics:** Increases or decreases the dynamic range of the audio—that is, the range of volume in the quietest and loudest parts of the recording.
- **EQ:** Applies different amplitude (volume) adjustments at different frequencies. A list of presets makes selecting useful settings easy.
- **Enhance Speech:** Improves clarity at different frequencies, depending on your selection of a male or female voice.



It's worth experimenting with all three controls, as you'll find dialogue recordings will benefit from different combinations of settings.

Let's try these settings.

- 1 Open the sequence 04 Clarity.



This sequence has the same content as the last, but there are two versions of the voice-over. The first version is cleaner and louder than the second, which is the same as the version you just worked on, with the DeHum effect already applied.

- 2 Listen to the first voice-over clip.
- 3 Select the first voice-over clip, and in the Essential Sound panel, expand the Clarity options.
- 4 Enable Dynamics, and experiment with different levels of adjustment. You can play the sequence while making adjustments in the Essential Sound panel, and the effect will be applied “live.”
- 5 Enable EQ, and experiment with the Preset options.



Vocal Presence EQ preset

When you apply an EQ preset, a diagram illustrating the adjustment appears. This diagram is based on a Parametric EQ effect (see the “Using the Parametric Equalizer effect” section for more on this effect). You can adjust the Amount slider to add more or less of the effect.

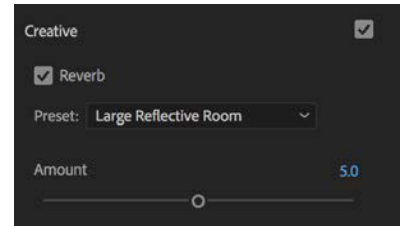
- 6 Play the second voice-over clip.
- 7 Select the second voice-over clip, and in the Essential Sound panel enable the Enhance Speech option in the Clarity section, set to Female.
- 8 Play the second voice-over clip. Try enabling and disabling the Enhance Speech option during playback.

The difference is subtle. In fact, you may need headphones or good-quality studio monitors to clearly detect the improvement. This option clarifies speech to make it more apprehensible, and in some cases this means reducing the power in the lower frequencies.

Making creative adjustments

Below the Clarity section of the Essential Sound panel is the Creative section.

This has just one adjustment, Reverb. The effect can be similar to recording in a large room with lots of reflective surfaces, or it can be more subtle.

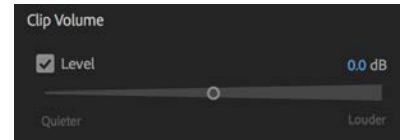


Experiment with this effect on the first voice-over clip in the 04 Clarity sequence.

Just a small amount of reverb can “thicken” a voice to give it more presence.

Adjusting volume

In addition to adjusting the gain for clips in the Project panel, setting the volume level for clips in a sequence, and applying an automated Loudness adjustment, there’s an option to set the clip level at the bottom of the Essential Sound panel.



It’s curious that this additional option exists—especially considering the number of ways you can already adjust the volume of your clips.

But there’s something special about this volume control: No matter how much you change the playback volume of your clips with this control, the level will not override. That is, they won’t become so loud that they distort.

Try this now.

- 1 Open the sequence 05 Level.

This sequence simply contains a reasonably loud version of the voice-over clip you have heard already.

- 2 Play the sequence, and use the Clip Volume Level adjustment to increase and decrease the playback level.

- 3 Try increasing the level to the maximum +15dB.

No matter how much you adjust the audio level, it won’t override. Even if you combine a clip gain increase with a clip volume increase (using the rubber band) and then apply this adjustment, the clip will not override.

This makes the Essential Sound panel the easiest way to adjust audio level without risking distortion.

- 4 Reset the Clip Volume Level adjustment by double-clicking the slider.

● **Note:** Any control in the Essential Sound panel can be reset to its default value by double-clicking it. Knowing this, you don’t need to worry about remembering the default settings.



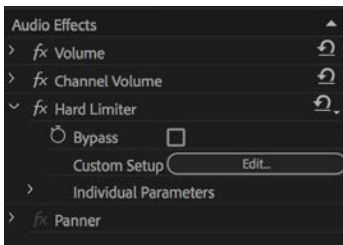
Using additional audio effects

As mentioned at the beginning of this lesson, there are many additional audio effects available in the Effects panel, and a few of them are important enough to be worthy of exploration right away.

In fact, most of the adjustments you have made until now with the Essential Sound panel have actually been the result of regular audio effects that were added to clips automatically as you worked.

In most cases, the Essential Sound panel makes adjustments by applying and then configuring regular audio effects—all of which are available in the Effects panel.

Setting up effects in this way is quicker because all of the Essential Sound panel adjustments work like presets—as soon as you have set things the way you want them in the Essential Sound panel, the effects are set up appropriately in the Effect Controls panel.



Take a look now at the Effect Controls panel, with the last clip you worked on selected.

When you made a Clip Volume Level adjustment in the Essential Sound panel, a Hard Limiter effect was applied to the clip, with settings to match the change you set.

If you click the Edit button in the Effect Controls panel (Hard Limiter > Custom Setup), you'll discover all of the settings for this advanced effect are available in case you'd like to change them.

In most cases, the settings applied by the Essential Sound panel will be correct, but the option to make further subtle changes will always be available.

Let's look at some of the other useful audio effects.

Using the Parametric Equalizer effect

While the Essential Sound panel offers many useful audio adjustments and effects, there are also a significant number of effects available in the Effects panel.

Effects listed in the Effects panel can be applied to clips by dragging them onto a clip, or multiple selected clips in a sequence.

The Parametric Equalizer effect is a good example of a popular effect. It offers a nuanced and intuitive interface for precise audio-level adjustment.

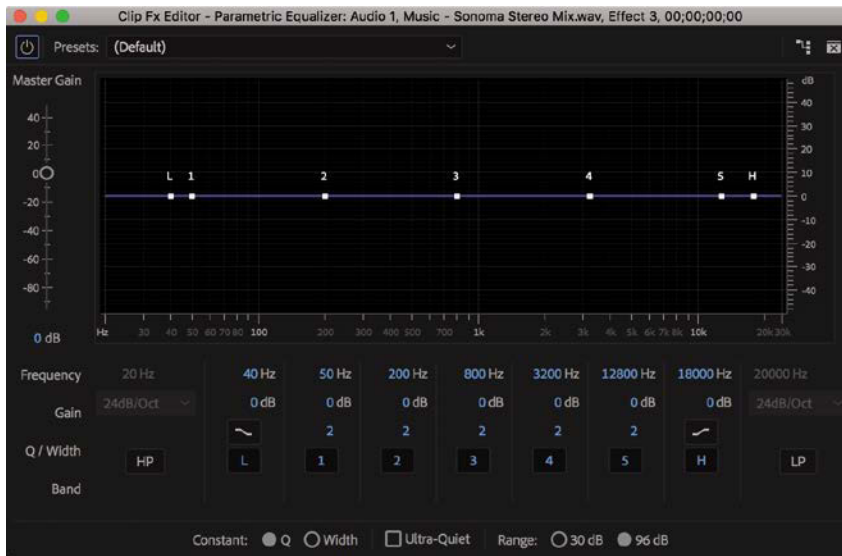
It includes a graphic interface you can use to drag level adjustments that are linked together.

Let's try this effect.

- 1 Open the sequence 06 Full Parametric EQ. This sequence has one musical clip.



- 2 Locate the Parametric Equalizer effect in the Effects panel (try using the Find box at the top of the window), and drag it onto the clip.
- 3 In the Effect Controls panel, click the Edit button to access the Custom Setup controls for the Parametric Equalizer effect.



The bottom edge of the graphic control area indicates frequency, while the vertical edge on the right shows amplitude. The blue line across the middle of the graph represents any adjustments you have made, and you can reshape the line directly. Wherever the blue line is higher or lower in the display, adjustments are made to audio level at those frequencies.

You can drag any of the five control points directly, as well as the Low Pass and High Pass controls at the ends.

On the left is an overall Master Gain level adjustment, which offers a quick fix if the changes you make result in audio that is too loud or too quiet overall.

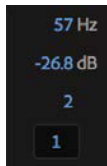
- 4 Play the clip to get familiar with its sound.

- 5 Drag Control Point 1 quite a long way down in the graph to reduce the audio level at low frequencies. Listen to the music again.



What's special about this interface is that changes you make to one area of the blue line impact surrounding frequencies, resulting in a more natural sound.

The control points you drag have a range of influence that is defined by their Q setting.



In the previous example, Control Point 1 has been set to 57Hz (which is very low frequency), with a gain adjustment of -26.8 dB (which is a big gain reduction) and a Q of 2 (which is quite wide).

- 6 Change the Q factor for Control Point 1 from 2 to 7. You can click the 2 and type in a new setting directly.

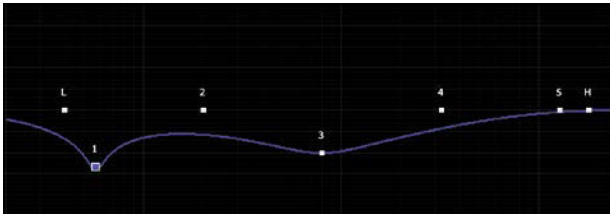


The line has a much sharper curve, so the adjustment you have made now applies to fewer frequencies.

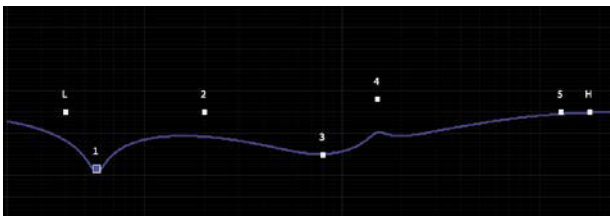
- 7 Play the sequence to hear the changes.

Let's refine the vocals.

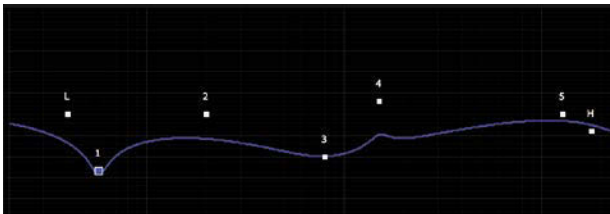
- 8** Drag Control Point 3 down to about **-20dB**, and set the Q factor to 1 for a very broad adjustment.



- 9** Play the sequence to hear the changes—the vocals are much quieter.
- 10** Drag Control Point 4 to around **1500Hz**, with a gain of **+6.0dB**. Adjust the Q factor to 3 for more precise adjustment on the EQ adjustment.



- 11** Play the sequence to hear the changes.
- 12** Drag the High frequency filter (the H control), and set its gain to around **-8.0dB** to make the highest frequencies quieter.



- 13** Use the Master Gain control to adjust the overall level. You may need to see your audio meters to find out whether your mix is right.
- 14** Close the Parametric Equalizer settings.
- 15** Play the sequence to hear the changes.

● **Note:** Listing all the attributes of all the audio effects in Premiere Pro is beyond the scope of this book. To learn more about audio effects, search Premiere Pro Help.

These are dramatic changes intended to illustrate a technique. In general use, you'll usually make subtler adjustments.

► **Tip:** Another way to use the Parametric EQ effect is to target a specific frequency and either boost it or cut it. You can use this effect to cut a particular frequency, like a high-frequency noise or a low hum.

● **Note:** Avoid setting the volume too high (the Peak meter line will turn red, and the peak monitors will light up). This can lead to distortion.

► **Tip:** If your audio meters are not displayed, you can access them by choosing Window > Audio Meters.

Audio adjustments and effects can be modified during playback. You might want to enable looping playback in the Program Monitor rather than clicking repeatedly to play a clip or sequence.

Enable looping playback in the Program Monitor by clicking the Settings menu and choosing Loop.

There are also useful additional buttons available in the Program Monitor button editor:

- **Loop:** Toggles looped playback on and off.
- **Play Video In To Out:** If you have set In and Out marks, the sequence will play just between those mark.

The combination of looped playback and the Play Video In to Out option make it easier to repeat playback of an individual clip, or group of clips in a sequence.

Audio Plug-in Manager

It's easy to install third-party plug-ins. Choose Edit > Preferences > Audio (Windows) or Premiere Pro CC > Preferences > Audio (macOS). Then click the button for the Audio Plug-in Manager.

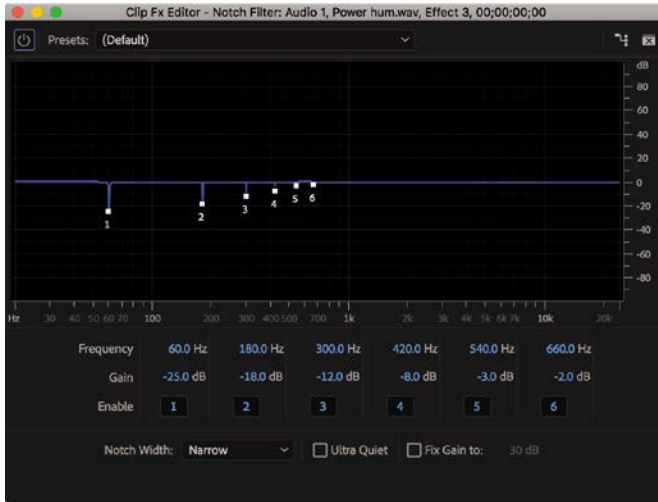
- 1 Click the Add button to add any directories that contain AU or VST plug-ins. AU plug-ins are Mac only.
- 2 If needed, click the Scan For Plug-Ins button to find all available plug-ins.
- 3 Use the Enable All button or the individual enable check boxes to activate a plug-in.
- 4 Click OK to commit your changes.

Using the Notch effect

The Notch effect removes frequencies near a specified value. The effect targets a frequency range and eliminates those sounds. The effect works well for removing power-line hum and other electrical interference. In this clip, you can hear the sounds of fluorescent light bulbs buzzing overhead.

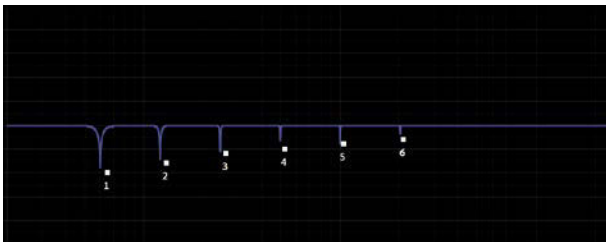
- 1 Open the sequence 07 Notch Filter.
- 2 Play the sequence, and listen for the electrical hum.
- 3 In the Effects panel, locate the Notch Filter effect (not the Simple Notch Filter effect) and apply it to your clip.

- 4 In the Effect Controls panel, click the Edit button for the Notch filter.



The Notch Filter effect looks a lot like the Parametric Equalizer effect and functions in a similar way. However, you will notice there's no Q control, which sets the sharpness of the curve. By default each adjustment is extremely acute, and a Notch Width menu allows you to adjust the curves.

- 5 While playing the sequence, experiment with presets, and listen to the results. The presets usually apply multiple adjustments. This is because signal interference is often found in multiple harmonics.
- 6 Choose 60Hz And Octaves from the Presets menu.



- 7 Listen to the sequence again.

Even though the interference was at precise frequencies, it made it difficult to take in the vocals. Now it's removed, and everything sounds much clearer.

When you used the Essential Sound panel to apply the DeHum option, a similar effect was applied to the clip—the DeHummer.

The Notch Filter effect has slightly more advanced controls, so if you don't get the result you need using the Essential Sound panel, try this instead.

Removing background noise with Adobe Audition

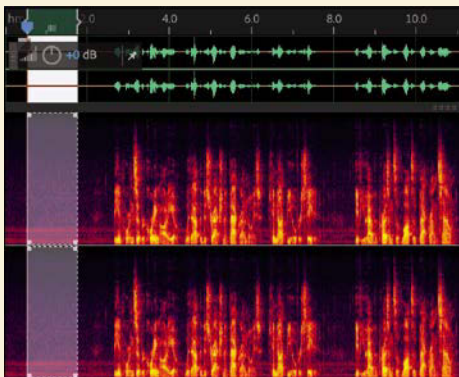
Adobe Audition offers advanced mixing and effects to improve your overall sound. If you have Audition installed, you can try the following:

- 1 In Premiere Pro, open the sequence 08 Send to Audition from the Project panel.
- 2 Right-click the Noisy Audio.aif clip in the Timeline and choose Edit Clip In Adobe Audition. A new copy of the audio clip is created and added to your project.



Audition opens, along with the new clip.

- 3 Switch to Audition.
- 4 The stereo clip should be visible in the Editor panel. Audition shows a large waveform for the clip. To use Audition's advanced noise reduction tools, you need to identify part of the clip that's just the noise so Audition knows what to remove.
- 5 If you don't see Spectral Frequency Display under the waveform, choose View > Show Spectral Frequency Display. Play the clip. The beginning contains a few seconds of just noise, which is perfect for making a selection.
- 6 Using the Time Selection tool (the I-bar tool in the toolbar), drag to highlight the section of noise you just identified.



- 7 With the selection active, choose Effects > Noise Reduction/Restoration > Capture Noise Print. You can also press Shift+P. If a dialog appears informing you that the noise print will be captured, click OK to confirm.

- 8 Choose Edit > Select > Select All to select the entire clip.
- 9 Choose Effects > Noise Reduction/Restoration > Noise Reduction (process). You can also press Shift+Ctrl+P (Windows) or Shift+Command+P (Mac OS). A new panel opens so you can process the noise.



- 10 Select the Output Noise Only check box. This option allows you to hear only the noise you're removing, which helps you make an accurate selection so you don't accidentally remove too much of the audio you want to keep.
- 11 Click the Play button at the bottom of the window, and adjust the Noise Reduction and Reduce By sliders to remove noise from the clip. Try not to pull down much or any of the voice.



- 12 Deselect the Output Noise Only check box and listen to your cleaned-up audio.

Continues on next page.

- 13** Sometimes noise reduction results in distortion in vocals. In the Advanced section, there are a number of controls for refining the noise reduction. Experiment with the following:
- Reduce the Spectral Decay Rate option (this will shorten the delay between reducing noise and allowing it to be heard).
 - Increase Precision Factor (this will take longer to process but improve results).
 - Increase Smoothing (this will soften the adjustment from no noise reduction to full noise reduction based on an automatic selection of specific frequencies).
 - Increase Transition Width, which allows some variation in level without applying full noise reduction.
- 14** When you're happy with the results, click the Apply button to apply the cleanup.
- 15** Choose File > Close, and save your changes.
- 16** Saving in Audition automatically updates the clip in Premiere Pro. Switch back to Premiere Pro, where you can listen to the cleaned-up audio clip.

Using the Loudness Radar effect

If you are producing content for broadcast television, it's likely you will be supplying media files according to strict delivery requirements.

One of those requirements will relate to the maximum volume for the audio—and there is more than one approach to this.

As described earlier, a popular modern way of measuring the audio level for broadcast is called the Loudness scale, and there's a way to measure your sequence audio using this scale.

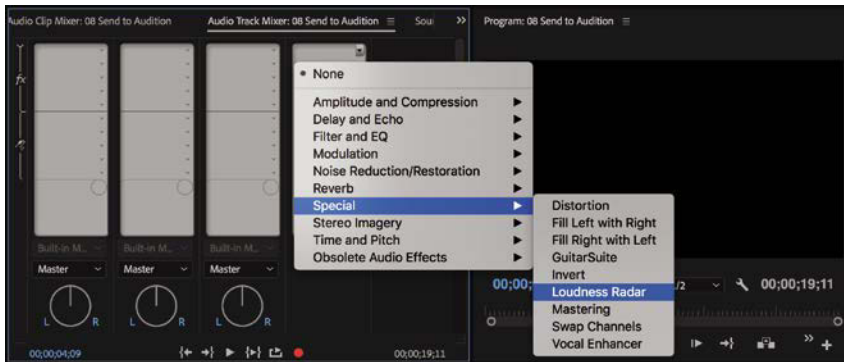
You can measure the loudness for clips, for tracks, or for whole sequences. The precise settings you'll require for your audio should be given to you as part of your delivery specifications.

To measure the loudness for a whole sequence, follow these steps—you can try this with the 08 Send to Audition sequence:

- 1** Switch to the Audio Track Mixer panel (rather than the Audio Clip Mixer). You may need to resize the frame to see all the controls in the Audio Track Mixer.

The Audio Track Mixer allows you to add effects to tracks, rather than clips, and the Master output track is no exception. Unlike the Audio Clip Mixer, the Audio Track Mixer includes the Master track, and this is the part of the interface you want.

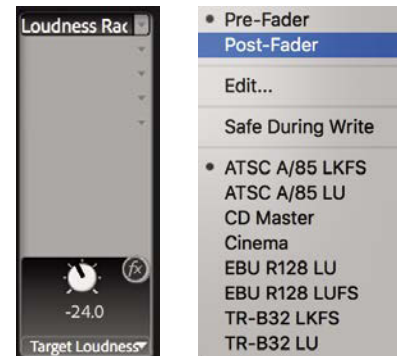
- 2 The controls in the Audio Track Mixer are arranged in columns, one column per track plus the Master track at the right. At the top of the Master control, click the tiny triangle to open the Effect Selection menu and choose Special > Loudness Radar.



- 3 The effect appears at the top of the stack, with controls at the bottom.
- 4 Right-click the Loudness Radar effect in the Audio Track Mixer and choose Post-Fader.

The Fader controls on the Audio Track Mixer adjust the audio level for the track. It's important that the Loudness Radar analyzes the audio level after any Fader adjustments because otherwise adjustments made with the fader are ignored.

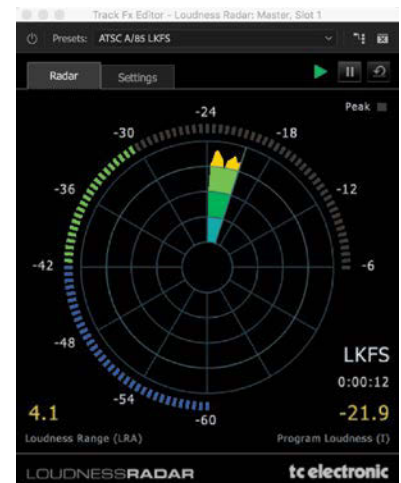
- 5 Double-click the name of the effect at the top of the interface to get access to full controls.
- 6 Press the spacebar to play, or click Play on the Program Monitor. During playback, the Loudness Radar monitors loudness and displays it as a range of values illustrated in blue, green, and yellow (there's also a peak indicator).



The goal is to keep loudness generally within the green band on the Loudness Radar, though what that level will be depends on the standard you are working to, and this will be defined by your broadcast specifications.

The Loudness Radar won't change the audio level. It gives you a precise measure of Loudness that you can use to guide changes you'll make to the mix.

You can change the measurement levels indicated by the various bands in the Loudness Radar by clicking Settings. You can also use a preset, based on widely used standards, by choosing the Presets menu.



For more information about the Loudness Radar, see Premiere Pro Help.