

# Feature Choices & How Do I

## ? Unknown Attachment

When rendering you often have a goal in mind of what you need to achieve. But getting to that final image means you need to know what features to use and how to combine them.

This is a lot like a chemistry experiment and over time you will become more fluent in the terms and techniques used in rendering. This document is by all means not exhaustive. It's designed to give you hints and locations of feature choices and explanations. It can also serve as a handy place to search for solutions to problems you might have.

Something more specific? Try our [forums](#) for users.

Something seems broken? Take a look at the [support page](#).

## How can I get started, I know a little bit already about lighting and rendering.

Try our [Best Practices](#) page using the [Cookies and Milk](#) example or our [Robot Training](#) scenes to refresh your memory and maybe get inspired. You'll find even more specific examples on the community site.

## How do I make something look like glass?

Shading happens using materials provided with RenderMan. For most things, [PxrSurface](#) will get you where you need to go, but look at the [materials](#) we ship to help. You can make anything from wood, plastic, glass, skin, car paint, fur, and more this way.

## How do I get render passes for compositing?

We usually refer to render passes as Arbitrary Output Variables or [AOVs](#) and as a subset there are Light Path Expressions or [LPEs](#). AOVs may include data passes like z-depth, normals, and more used for compositing adjustments and tricks like reprojection. LPEs are illumination outputs designed to allow compositing applications to alter the final look of things like their color, exposure, or reflectivity after they have been rendered.

## How do I get realistic camera effects?

We use a [PxrCamera](#) projection to render realistic effects from a virtual camera. These can be anything from depth of field effects to distortion from imperfect lenses. In bridge products we map their own controls to our projection plugin, just use what's builtin or under the RenderMan options.

## Can I get caustics from RenderMan?

Caustics are the refocused light patterns when light reflects or refracts through objects. They can be realistic and beautiful and easy to make in RenderMan. Eyes and gemstones may be bland without these effects. Select the [PxrVCM](#) integrator to render these effects and turn on "Trace Light Paths" on your selected lights to get these light patterns.

## My lighting is dull, why?

Real light sources are quite powerful in real life, even small ones. While renders might converge more quickly with even or low lighting, contrast and lights with realistic power will make your images pop and come alive. Be sure and use high dynamic range (HDR) images in the [PxrDomeLight](#) to achieve great exteriors automatically. Be sure the pixel values in the image are a realistic range to deep and crisp shadows from things like the Sun or spotlights. PNG, JPEG, and other 8-bit formats don't have this range and you will end up with muddy results.

## Can I get an occlusion pass?

Occlusion is an old-school technique used to fake global illumination (light bounces) by darkening ambient light. This isn't necessary anymore since a true light transport simulation includes these effects by default. But in some cases you might want to add details to an image where they don't exist naturally. Use the [PxrOcclusion](#) integrator to render this pass.

## I need to render clouds and smoke, how?

Use the [PxrVolume](#) material on your simulation. We accept OpenVDB data from many sources, like Houdini. You can also use this on a volume primitive to render homogeneous environment fog. Just be aware your density values may need to be quite tiny for wispy fog.

## Can I give my hair or fur some variation?

You sure can, make use of the [PxrHairColor](#) pattern connected to a [PxrMarschnerHair](#) material. Be sure you're using something that we support their primvars/indexing to create variation. We list the supported types on the hair color page at the bottom.

## Why does my water simulation not motion blur?

When you make a simulation where the vertex count changes over time, we need velocity information to be included to render motion blur. You can typically export this from the package where it was simulated, see their documentation.

## Can I change my light decay or falloff?

Not directly, but we make use of light filters here at the studio for this task. Experiment with them, we tend to use the [ramp light filter](#) and [IntMult](#) filter for this task.

## What do I use to create variation for things like leaves, robots, storm troopers, etc?

We have a few options for that, try some of these based on your needs or workflow: [PxrMultiTexture](#), [PxrRoundCube](#), [PxrVary](#)

## My textures are blurry or mushy, can I solve that?

Try and stick to the Box filter on your [texture nodes](#). Or you can bias the mipmap levels toward something with more resolution using our controls (explained on the same page).

## How do I cut out part of my object for something like leaves?

We make use of the "presence" parameter on materials to decide where to "cut out" objects. Gray values will be semi-present or ghost-like transparency. Such an effect makes no sense for volumetric objects like glass and will fail to render presence. Use this for leaves, labels, paper cutouts, etc.

## Why don't my textures render?

We only render .tx or .tex texture files. In Maya we auto-convert these for you. For other packages, be sure and publish the textures using the [txmake](#) tool we ship with RenderMan. We do this for performance reasons, we can cache, reuse, rearrange pixels and more to make your images fast, memory efficient, and crisp.

## Where can I find tutorials?

Try our [community site](#)! Be sure and look for tutorials that apply to the version you're using.

## Can I hide a reflection in a specific place or object?

Certainly, [trace sets](#) are useful for that and more. Control shadows, reflections, even subsurface interactions with these controls.

## How do I add dust or labels to something?

You should use the [PxrLayerSurface](#) when you know you're going to have a layered effect. Take a look at the main page with links to tutorials.

## My displacement seems wrong, how can I fix that?

We cover this for [Mudbox](#) and [Zbrush](#) exports. Also take a look at [layering displacements](#) (best used with vector displacement). Got holes showing up? Try using watertight dicing option on your object shape and check your UVs for bad layout or flipped edges. Polygons with hard edges/normals might also come apart, subdivide these.

## How do I use the Denoise feature?

Take a look at the workflow page for [Denoise](#). The pages linked under it explain more about the tool and options in bridge products.