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What are Ghost Lights?

Ghost lights are invisible diffuse mesh lights. They cast light whilst giving no visual feedback to the camera from the mesh itself. This makes ghost lights useful for situations where more light is needed but it would be difficult to add physical lights to the scene without looking jarring or out of place. They are also extremely useful for those running lower end hardware, or need to cut down on render times. Ghost lights can provide more direct light to a scene without glossy reflections, thus causing very little render overhead and illuminating hard to reach places.

What is Two-sided?

By default, ghost lights only emit in the direction that the arrow is pointing in debug mode. If you would like the GL to emit in both directions, you can use the Two sided ON preset. There is also a Two sided OFF preset to undo this action.

What is Kcdm²?

Kilocandela/meter² is a measurement of luminous intensity. The higher the Kcdm², the brighter the light. This is of course relative to your cameras exposure settings.

What is Kelvin?

Kelvin is a measurement of thermodynamic temperature. Kelvin temperature is not quite the same as emission color. Emission temperature ranges from a very warm orange to a very cold blue, with flat white being the center point at 6500K. Kelvin temperature is better for more accurate real world lighting examples, like halogen bulbs or daylight. Emission color is better for replicating more erratic led lights, which can emit any color on the RGB scale. Lower kelvin values are warm, higher kelvin values are cold.

Included Props

Iray Ghost Light Kit 2 includes several lighting props with rigged ghost lights. Since ghost lights are diffuse lights, they do not have any specular feedback, nor any specular effect on your scene. This can make your scene look flat and matte. Using one of the optimized IGLK props in this package will not only provide ghost lighting, but also emit Gloss from a logical light source. Each prop has its own material options that can be manipulated with presets, and the attached ghost light can be affected by the material presets in the "GLK Materials" Folder. (*See instructions below*)

Utility Props

Utility props are an extension of the Ghost Light primitives included in the base Iray Ghost Light kit. They act in a similar way to the original Ghost Lights, with the only difference being their primitive shape.

Mod box: The mod box is a cube with each face separated out to a rigged bone. You can hide whichever face you don't need, and keep the ones you do. You have both the options of regular or inverted. The regular mod box projects outwards, whereas the inverted mod box projects inwards.

Light dome: The light dome is a half sphere that once again comes in both inverted and regular modes.

Light ball: Same as the dome with a full spherical shape.

Ghost Setup Material

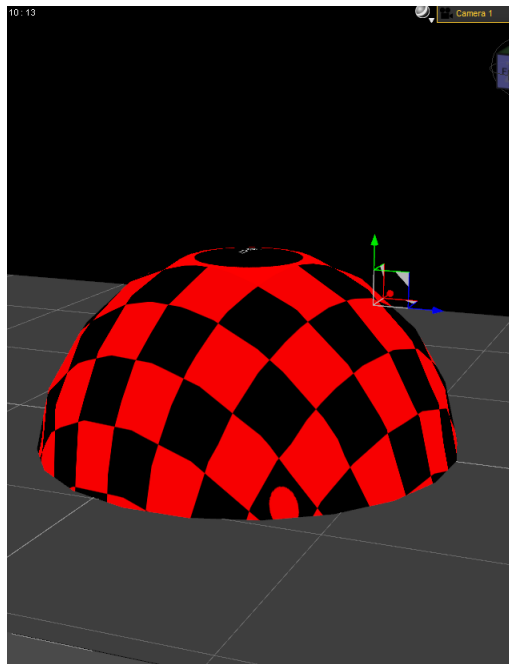
The Ghost Setup material can be found in the GLK Materials folder. This must be applied before any presets can be added to any ghost light, whether rigged or standalone. The ghost setup applies transparency, removes maps and reduces the shader hierarchy to only necessary values. Once applied, you can then use further presets to change both color, temperature and intensity.

GLK Materials

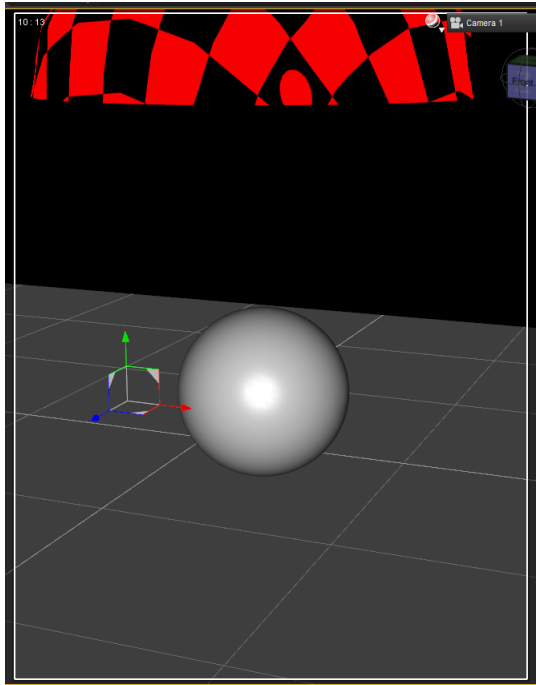
GLK materials drive the main material functionality of both rigged and standalone ghost lights. The material library is split into two sections. Artificial light presets are color options which change the kelvin temperature/emission color of your ghost lights. Intensity presets effect the Kilocandela value and thus the intensity of your lights. Both color and intensity can be manipulated independently of one another.

How to Use the Iray Ghost Light Kit 2

- Load one of the **Utility Props** or modeled light **Props** into your scene. (see *image_01*)
- In this example, the **Light Dome Inverted** from *Utility Props* was added.
 - a. The light will come from the inner section of this dome.
 - b. Choosing the non-inverted version would mean light would be emitted from the outer surface of the dome in the outward direction, and cause a shadow in the scene. (See renders on page 5.)

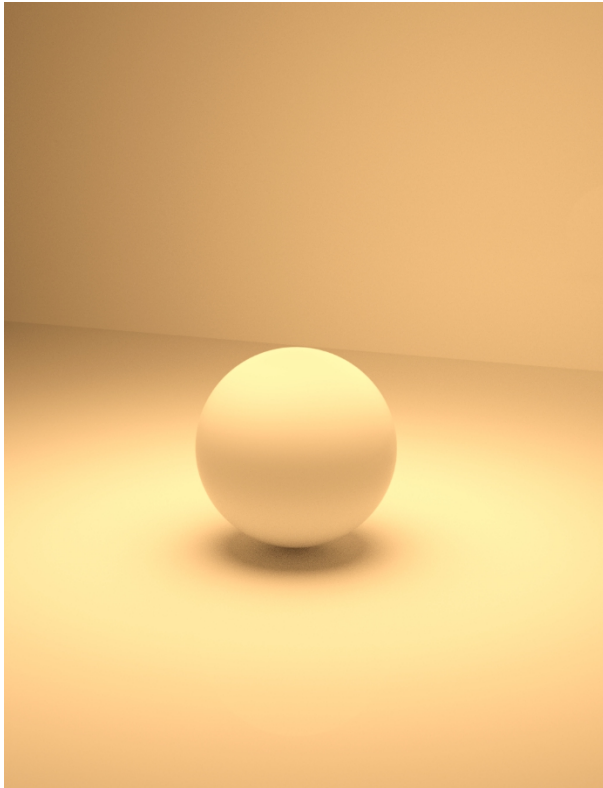
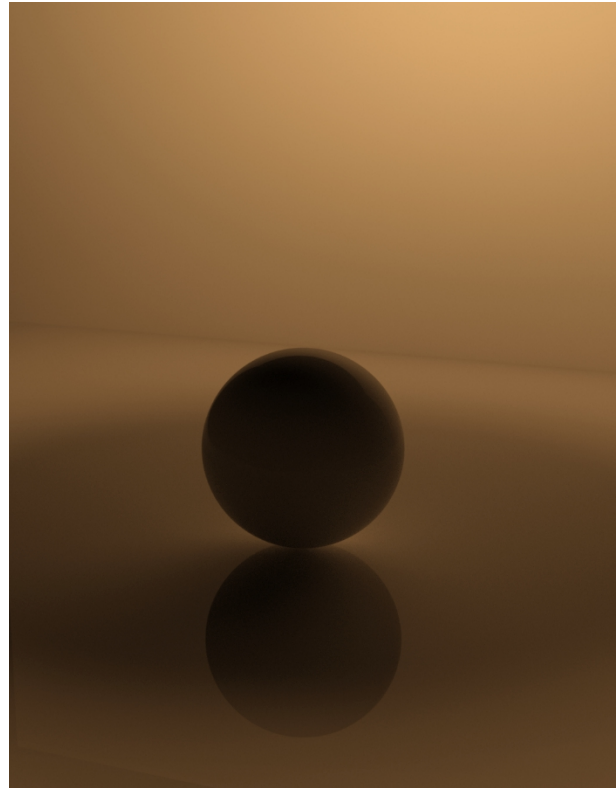


image_01



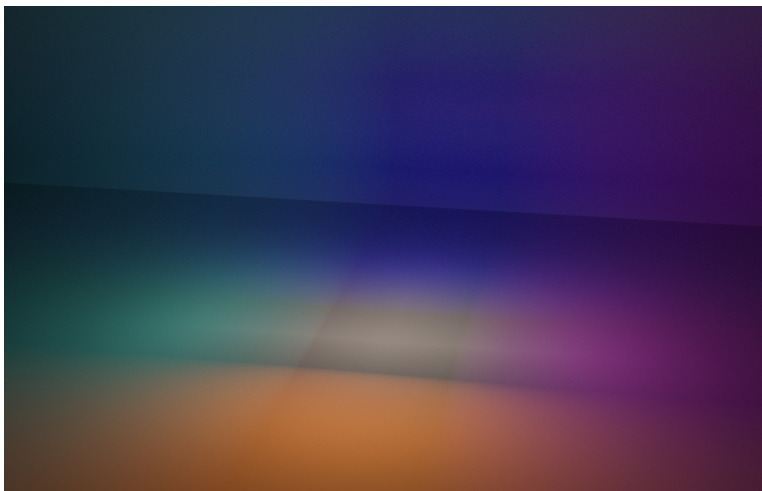
image_02

- Use the translation tools in DS to move the dome to the desired position as shown in *image_02*.
- Look in *GLK Materials* and apply the “**Ghost Setup**” material. The icon says *Apply Before Presets!*.
 - a. Once the Ghost Setup material is applied, the dome will no longer be visible. Thus, the name *Ghost Light*.
 - b. If you need to see the dome again, you can apply the **DebugMat** material, but **be aware, this will replace any surface changes previously made to the dome.** (*i.e. Intensity, Temperature, etc...*)
- Once you apply the Ghost Setup material, you can then use the **Artificial Light Presets** and **Intensity Presets** to adjust the Kelvin colors and brightness, respectively. These changes are only visible on the Surface Pane, so unless you are looking there, you will not “see” a visible change until you render.
- The render below (*image_03*) used the following settings:
 - a. Artificial Light Preset “3000 (K)” for a nice deep orange/yellow temperature.
 - b. Intensity Preset “300K”.
 - c. Environment was set to Scene Only to see the actual Dome lighting without any other influences.
- The render (*image_04*) below shows the exact same scene and settings, but is using the non-inverted version of the dome. Notice the shadow caused by the non-emissive side of the dome. You can use the Two-sided preset to alleviate this, or use this dome when you desire the light to expand out and do not need to worry about what is underneath.

*image_03**image_04*

Using the ModBox

The ModBox is just a bit different. It works the same as the Sphere and Dome props discussed above, as far as the inverted and non-inverted versions, but the ModBox allows you to set each of the six sides surfaces independent of each other. This means you can choose to light or not light from any of the six directions, change colors of each side and create some truly unique lighting.

*image_05*

When making changes to the ModBox, use the materials specifically designed for the ModBox. They are located in the ModBox Intensity and ModBox MAT folders within the Utility Props folder. If you use the main materials the box will not change, just the arrows. If that happens, simply go to the ModBox material folders and apply the correct materials.

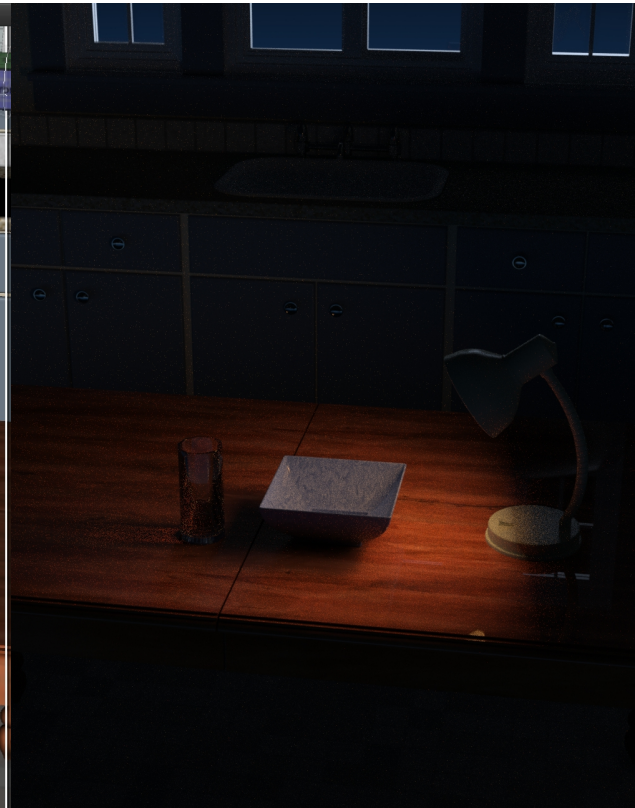
Using the Light Props

Using the Light Props is simply combining the use of regular props and the Ghost Lights already described previously. The Ghost Light plane comes in pre-parented.

- Load the desired prop and position it in your scene with the directional arrow pointing in the desired direction.
- Use the material presets for the Ghost Light pane as described before.
 - a. Select the Ghost Light plane.
 - b. Add the Default material
 - c. Apply the desired Material and Intensity presets



image_06



image_07

Image_07 was rendered using a night sky HDRI and the lamp with the Ghost Plane as the only lighting in the scene. Notice how the light shines on the bowl from the direction set up in "image_06."

Performance Optimization

Both the **Iray Ghost Light Kit** and the **Iray Ghost Light Kit 2** are designed to be as performance enhanced as possible. There are however, several mitigating factors that make up render performance and render load. Outlining all the factors is far beyond the scope of this tutorial, however there are a few key lighting elements to consider when composing your scene.

Direct light vs indirect light: Surfaces that are lit indirectly rely on light bounces from the GI path-tracer to illuminate believably. This is far more taxing than lighting a surface with a direct light source, which is why interiors are especially difficult when it comes to rendering. It's a good idea to light as many surfaces as you can directly in order to avoid costly calculations that could have been avoided. Ghost lights are a great choice for directly lighting surfaces without having physical lights dotted around your scene.

Translucency and SSS: Translucency passes light through a mesh, whereas SSS scatters light through a mesh surface. Both effects are very costly and should be avoided if raw render performance is a priority. Once again though, if these effects are a must, it's better to use direct light wherever possible.

Mesh complexity and light transmittance: If you plan on using mesh lights in your scene, it's useful to remember that each polygon is considered its own unique directional light source. This means that a 1000 poly light bulb has a higher render overhead than a single emissive plane. The props included with IGLEK take this into account, with each emissive surface being as low poly as possible. If you wish to use a light from another creator, it would be useful to check mesh density via wire view to better determine its render cost.

Thank You

Thank you for purchasing **Iray Ghost Light Kit 2**. If you need further support you can message me on the Daz3d forums or email me at: Dazkindredarts@gmail.com