

Holdouts

Holdouts are used to collect the CG objects' shadow and reflection that match very closely to the shadow and reflection in the live action plate. You can create a holdout (even without all the RenderMan parameters applied) by choosing the Holdout shelf button with your desired holdout objects selected and your ROP node. We will add the appropriate RenderMan Holdout Attribute and set it to "on" as well as setup the correct displays and filters to generate a shadow result for compositing.

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To make an object as a holdout, simply check **Holdout** in the geometry's **RenderMan | Trace** Tab or use the **Shelf Button**.

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Your fully shaded objects will now catch shadows and render environmental effects like indirect diffuse light and reflections. This allows you to integrate CG objects into a filmed or live action plate by catching the shadows and effects of the CG object onto holdout geometry made to look like the filmed environment.

You will need to setup the correct outputs and displays after choosing your holdout objects.

- occluded, unoccluded, shadow AOVs should be added to display, these require the corresponding LPE. Below are three *color* LPE preceded by their name.

```
shadow
occluded_lpe:holdouts;C[DS]+[LO]
unoccluded_lpe:holdouts;unoccluded;C[DS]+[LO]
```

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- [PxrShadowDisplayFilter](#) vop must be created and added to ROP as display filter (in Advanced Tab)

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- The AOV parameters on the display filter should reference the AOV names created above

To preview this effect while interactively rendering, you could make use of an additional display filter after the shadow display filter: [PxrImageDisplayFilter](#)