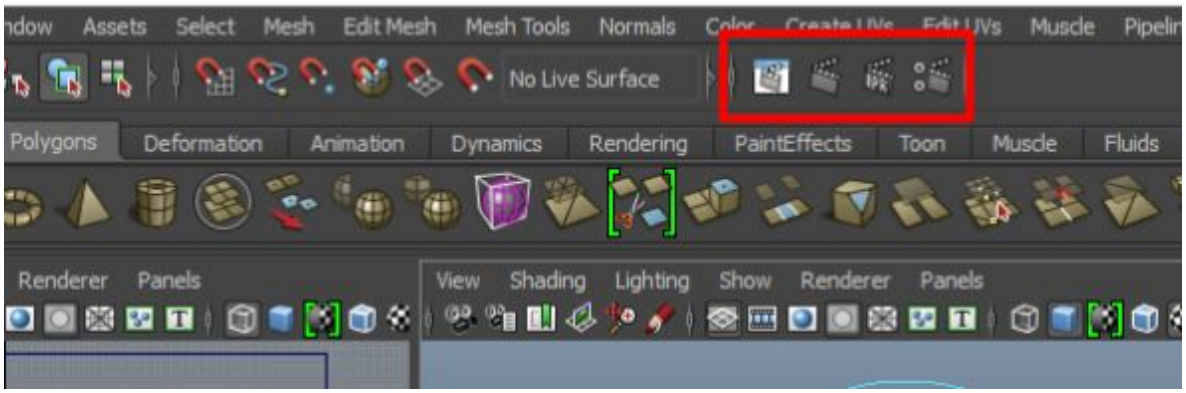
Maya 2015 Rendering

Interface

You can access the rendering features of Maya by going to the rendering section of the toolbar.



There 4 buttons take you to different areas…

- 1st button opens the rendering window.

  If you had a scene rendered already or enabled IPR (explained below), you'd see it here.

- 2nd button renders the current scene.

  This implicitly opens the rendering window and begins rendering the scene with whatever render settings were last saved.

- 3rd button starts the “interactive photorealistic renderer”.

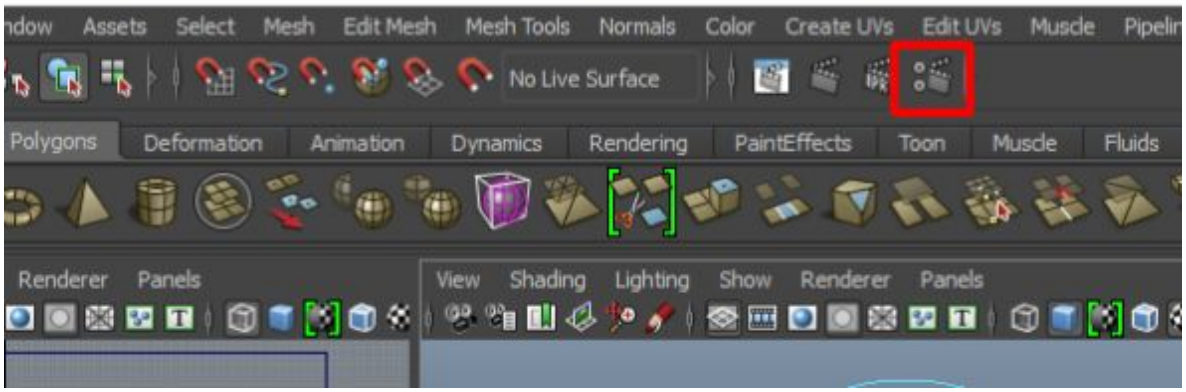
  This implicitly opens the rendering window and begins rendering the scene with whatever render settings were last saved. As you adjust your perspective camera / stuff in the scene, it’ll restart the render with the new changes applied.

- 4th button takes you to the render settings.

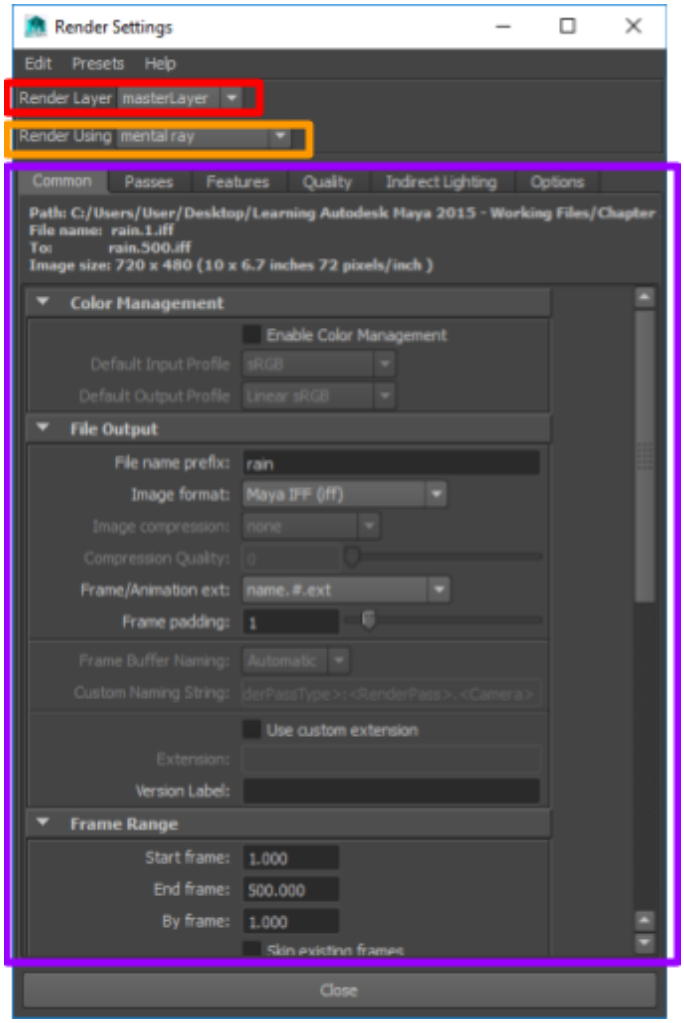
  This allows you to pick a renderer and tune the various settings it provides.

Settings

You can get to the render settings by selection the render settings button in the toolbar. Render settings allow you to select a renderer to use and tune that renderer.



When you open the render settings menu, you’ll see the following options…



Render layer

"You can use Maya's render layers to separate the objects, lighting, and textures of a scene for easy compositing in other programs such as photoshop or aftereffects."

https://www.youtube.com/watch?v=xmRQY4N-J0E

I don't know enough about this to discuss it more, but it looks like by default there's a "masterLayer" that renders everything. If you want, you can get to the render layers section by going to the layer editor in the Channel Box / Layer Editor tab and selecting the Render tab.

Render using

This is the renderer that'll be used to output your image. The default renderer in maya 2015 is mentalray, which is a software renderer (non-GPU accelerated).

You can also use Maya Hardware 2.0, which is the same renderer provided by the the Viewport 2.0 renderer.

I don't know what the other renderers do.

Options

This area contains the options for the renderer you've chosen. All renderers have a Common tab which contains basic options: where to output, pixel aspect ratio, which camera to use, etc…

Every tab after that is unique to the renderer chosen.

Note that if you've chosen the Maya Hardware 2.0 renderer, the settings you choose here won't affect your viewports. They'll only be used for the renders you explicitly do.

Maya Hardware 2.0 Options

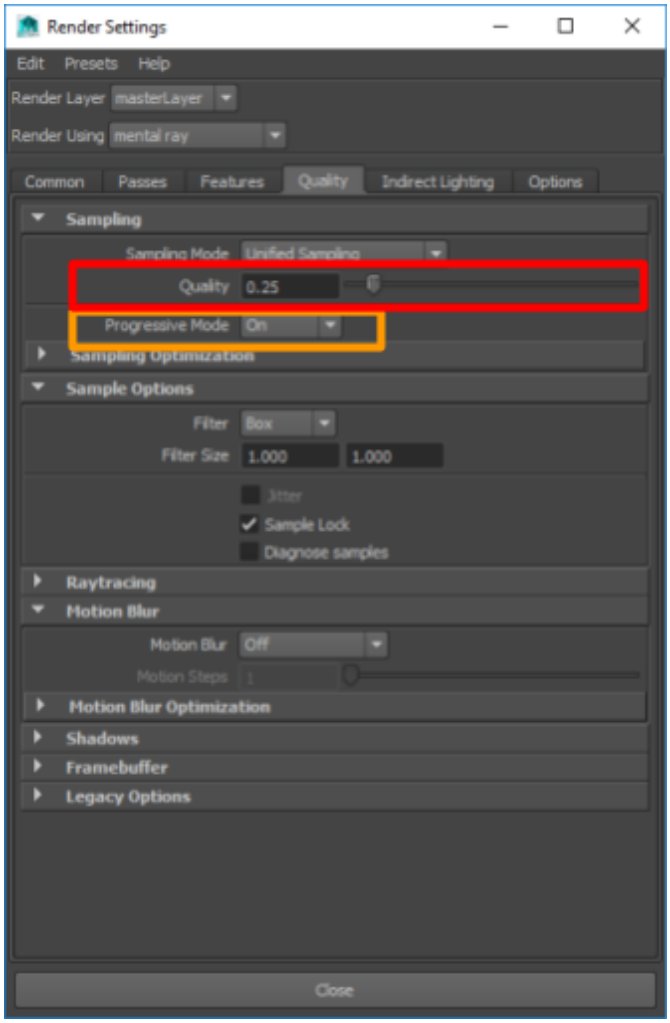
I don't know enough about this to specifically talk about it. But, you might have to go into the settings and turn on things like screen-space ambient occulusion, anti-aliasing, etc.. to get a half-decent looking render.

mental ray Options

> **NOTE**: On Windows 10 w/ Maya2015, mentalray has lots of problems. Batch rendering doesn't seem to work at all. Single renders sometimes cause access violation exceptions -- doesn't get fixed until Maya is restarted.

Image Quality

You can control quality by going to the quality tab. There are 2 options that you should look at here...



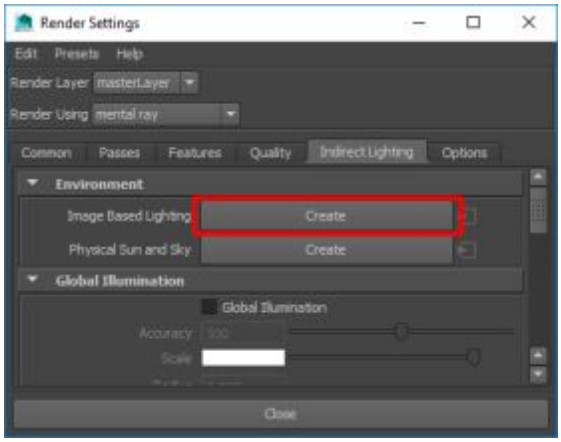
Quality Overall image quality. The lower the quality, the more grainy the render will look (but the faster it'll complete).

Progressive Mode Means the same thing as progressive mode for images. Back in 56k modem days, when you downloaded an image off the internet it would first show in super blocky detail and would get higher and higher quality as more of the image was downloaded.

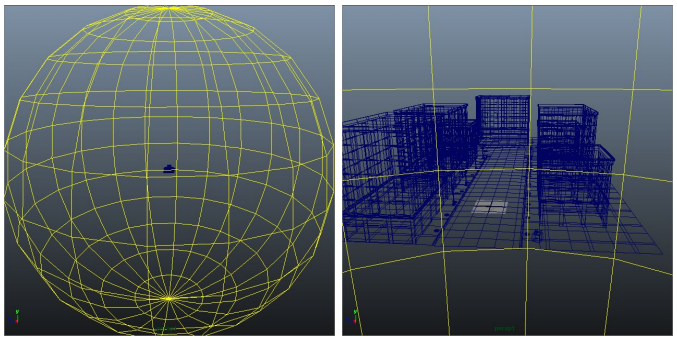
This is similar. Turning this on, you'll get a crappy render at first but as time goes on you'll get a better / more refined render. You can use this to quality spot problems with a render and stop it before it can finish (renders can take a super long time to finish).

Image Based Lighting

One cool feature of mentalray is that it can take an HDR image and use it as a light-source for your scene. To do this, make sure you have mentalray selected as your renderer, go to the indirect lighting tab, and choose to create an image based lighting (IBL) node …

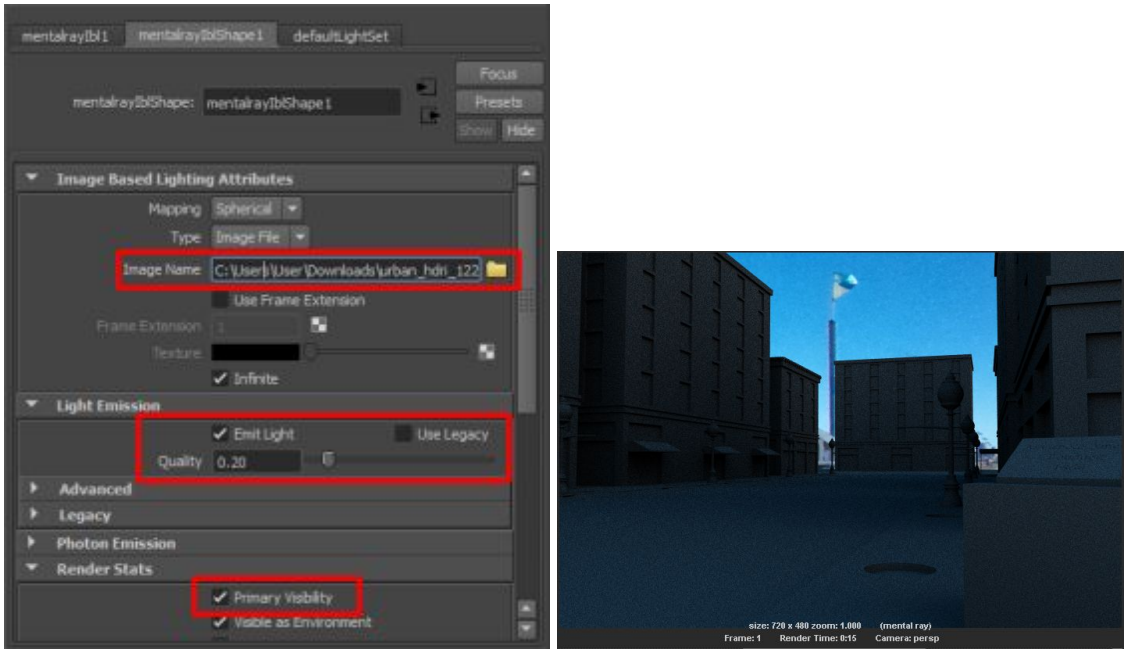


The IBL node is a giant sphere in your scene that encompasses all other objects.



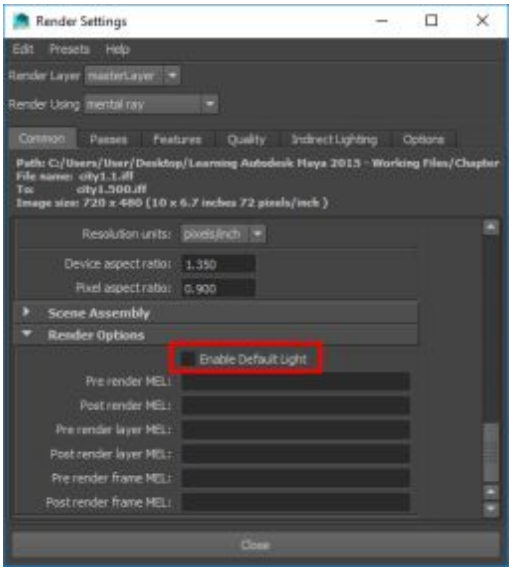
You can select this node and assign an HDR image to it via the Image Name field. Mentalray will scatter light onto the other objects of your scene based on the HDR image you choose (this happens on render only, it isn't shown in the viewports).

Once you select your image, make sure you choose to Emit Light (adjust the quality as desired -- more quality = longer renders). If you don't want the actual image showing up in your render (you only want the light, not the image), turn off Primary Visibility.



NOTE: Note that IBL nodes aren't considered as a standard Maya lighting node. When Maya renders, if it doesn't find any standard Maya lighting nodes in the scene, it'll add in a default light. Having this default light active along with the IBL node's light will screw up the lighting in your scene.

You can turn off the default light in the common tab of the render settings.

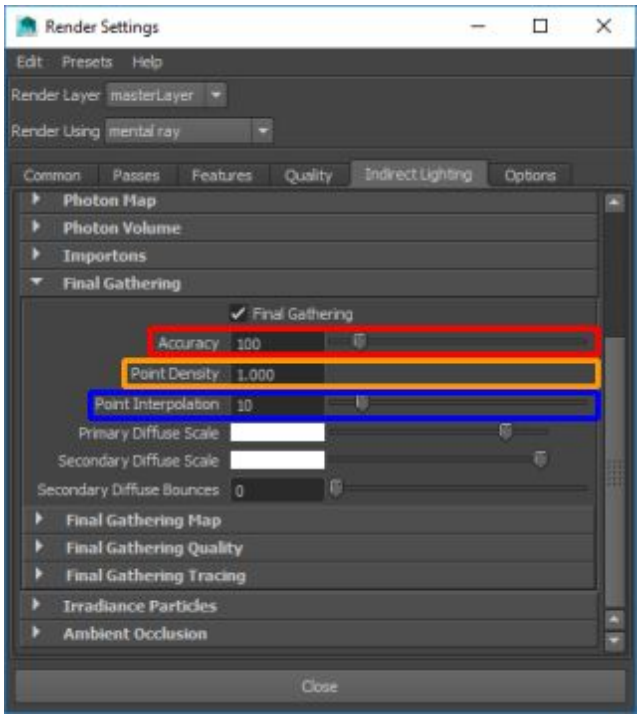


Final Gather

Final gather is the raytrace-esque feature in mentalray. Here's the text explaining it from an article online…

Final Gather can be found in just about all of the most common render engines and is an essential step in creating realistic renders that closely mimic how light interacts with objects in the real-world. With that in mind, let's go over Final Gather, how it works and where it can be implemented into your next render. What is Final Gather? In the real world a lot of the light that you see is the direct result of indirect illumination (e.g., light that isn't coming directly from a source like a light bulb). This is the light that bounces off other surfaces to illuminate your surroundings. When creating realistic renders whether it be for an interior or visualization, indirect illumination is something you will want to consider using within your scene. Final Gather is a prominent feature in most rendering engines, including the render engine mental ray which is the main rendering engine for Maya, 3ds Max and Softimage.

To fiddle with the final gather settings, make sure you have mentalray selected as your renderer and go to the indirect lighting tab.



Accuracy The higher this is, the more ‘accurate’ the ray tracing will be?

“Number of rays per final gather point cast into the hemisphere, to estimate incident global illumination. Higher values raise the accuracy of the result, which is expensive”

Point Density Increases the “amounts of points” to be computed. More points = more points of light. The more amount of points we have, the more they can

get into individual nooks-and-crannies in the geometry of our scene.

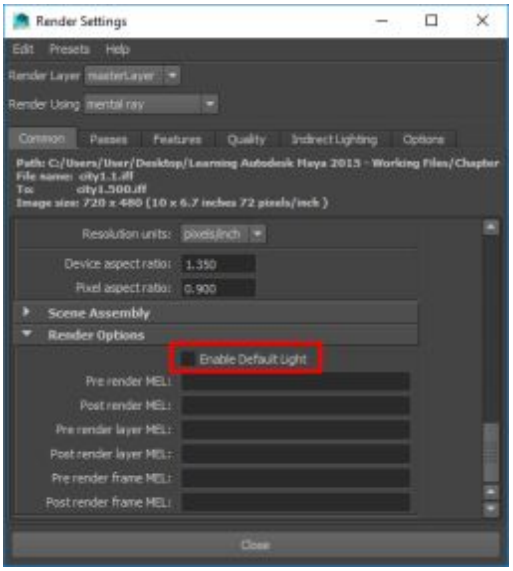
“Controls the number of final gather points to be computed, performing the full and expensive final gather tracing.”

Point Interpolation Blends between the amount of rays in the scene.

“The number of final gather points to be considered for interpolation at a shading sample during rendering. Higher values smooth the final fathering result at little cost.”

NOTE: You probably need some type of light source for this to work. You can use an image based lighting node or set the camera background color for light. But, neither of these is an actual light source according to Maya. When Maya renders, if it doesn’t find any standard Maya lighting nodes in the scene, it’ll add in a default light. Having this default light active will screw up the lighting in your scene.

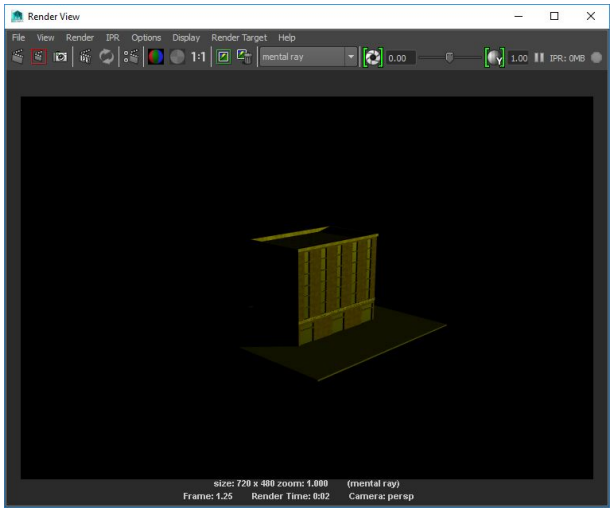
You can turn off the default light in the common tab of the render settings.



Rendering

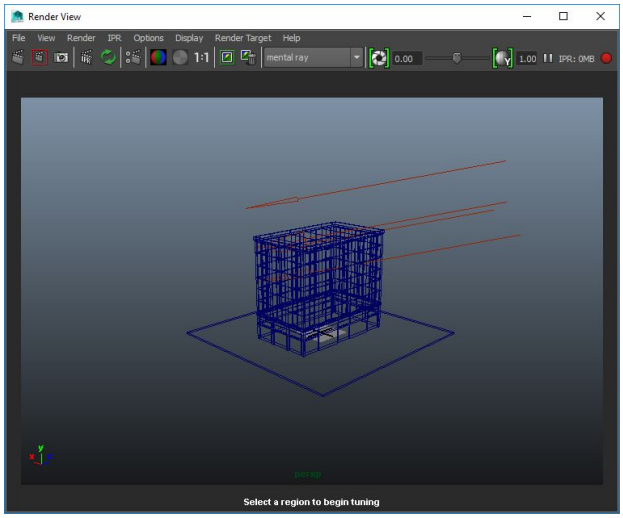
You can render your scene using either the normal render button (first button) or the interactive photorealistic renderer button.

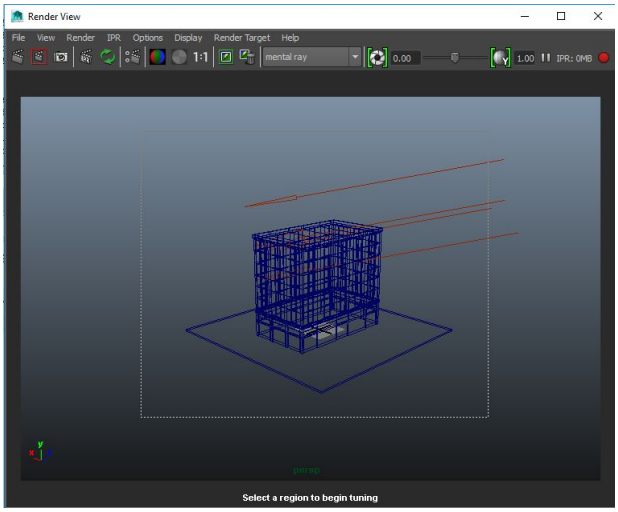
If you choose the first button (normal render), the render will begin immediately with whatever render settings you had set previously.



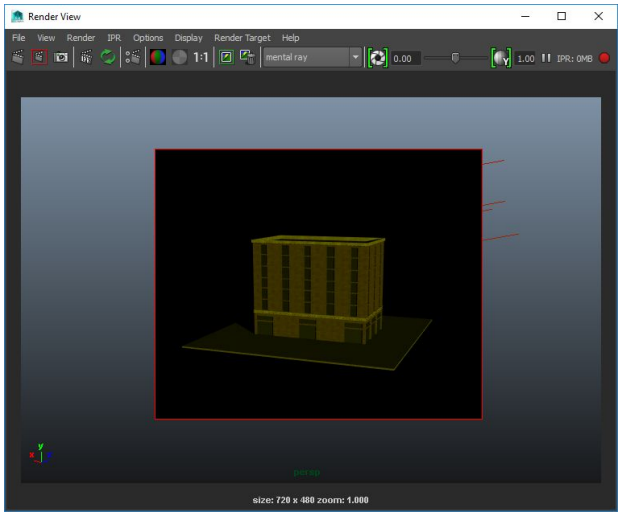
If you choose the second render button (IPR render), the render window will pop up with a wireframe.

You'll have to choose the region most important to by click-and-dragging across the area.





Once you do that, that region will start re-rendering as soon as something in the scene changes.

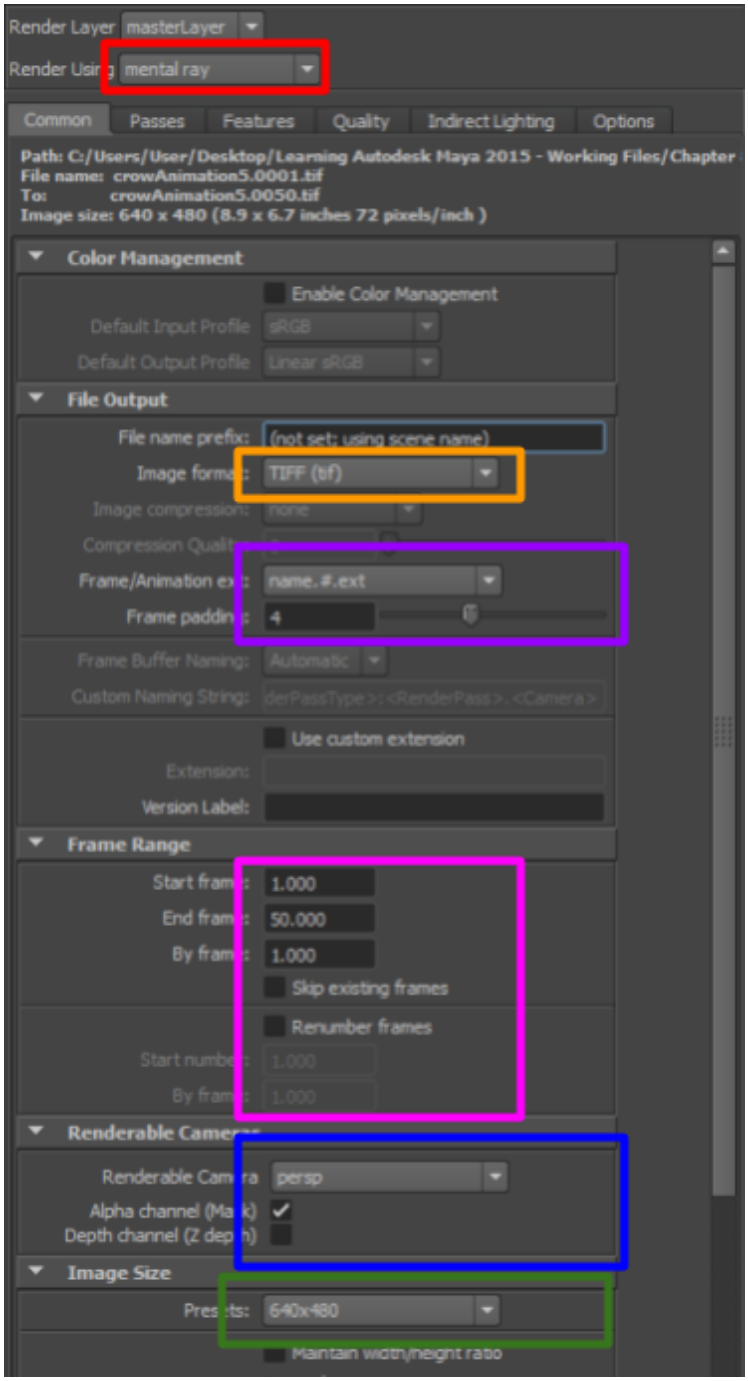


NOTE: You can kill the render at any time by hitting Esc.

HINT: It's a good idea to turn on progressive mode in the render settings. You can quickly spot problems in long running renders and cancel them.

Batch Rendering

Batch rendering is when you want to render multiple frames (when you have an animation). Here are the typical options you would set in the render settings for a batch render.



Render using You typically want to use the production render rather than the Maya Software/Hardware renderers. The Maya renderers are what are used for Maya's viewports.

Image format It sounds like the industry format is TIFF.

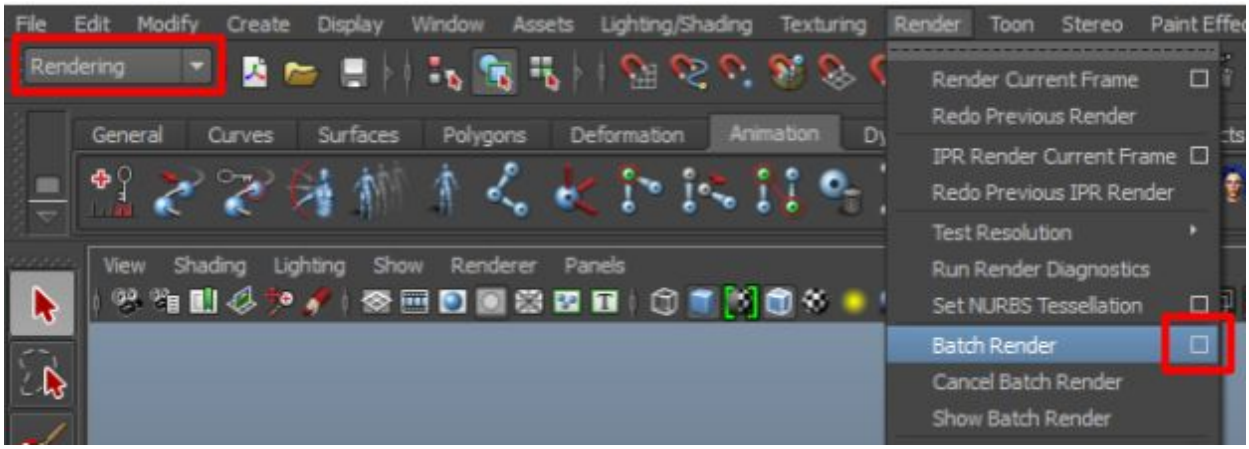
Naming convention It sounds like the industry convention is name.#.ext, where # is the frame number and padded up to four 0s.

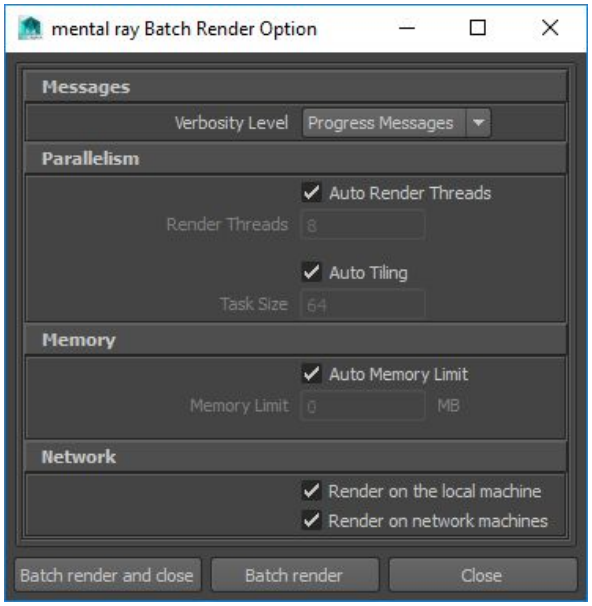
Frame Range You would typically set this to span your entire animation range. If you already have some frames rendered out, you can skip existing frames. If you want to render after already rendered frames, you can choose to renumber frames.

Renderable Camera Choose the camera you want to render with and make sure alpha channel is selected.

Image Size Lots of presets to choose from for image size, including typical print and movie formats.

Once you've setup your render via the render settings, you can switch to the rendering menuset and choose Render -> Batch Render (click the little box on the right to open the options).

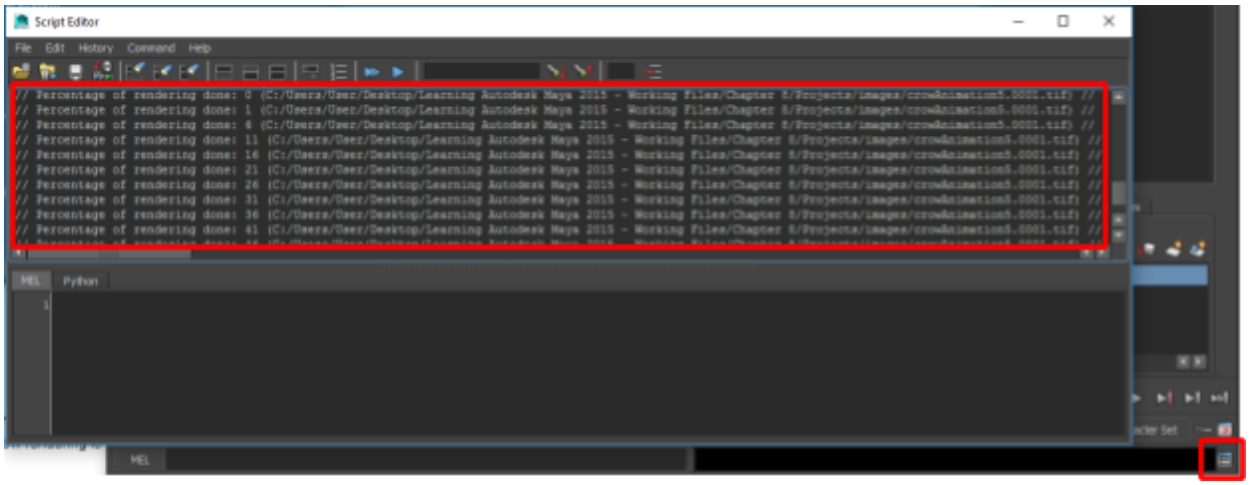




When you're ready, start your render. It'll happen in the background. If you have Verbosity Level set to Progress Messages, you can check out the MEL script output to find out how rendering is going.

> **NOTE**: You can kill the render at any time by going to Render -> Cancel Batch Render (make sure you're in the rendering menuset).

Images should get written to the images subdirectory of the current project directory.



> **NOTE**: On Windows 10 w/ Maya2015, mentalray has lots of problems. Batch rendering doesn't seem to work at all.

Once rendering is complete, you can view the batch render using Maya's fcheck software. Open up fcheck (it should be in the start menu where Maya is located) and go to File -> Open Animation and choose any tiff from the render.