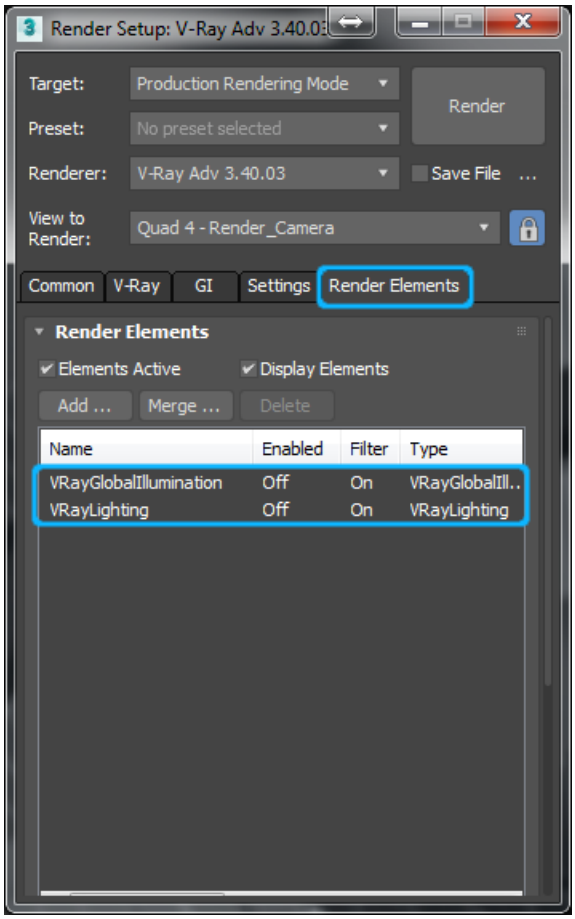
oonix.io

GI FOR EXTERIOR SCENES

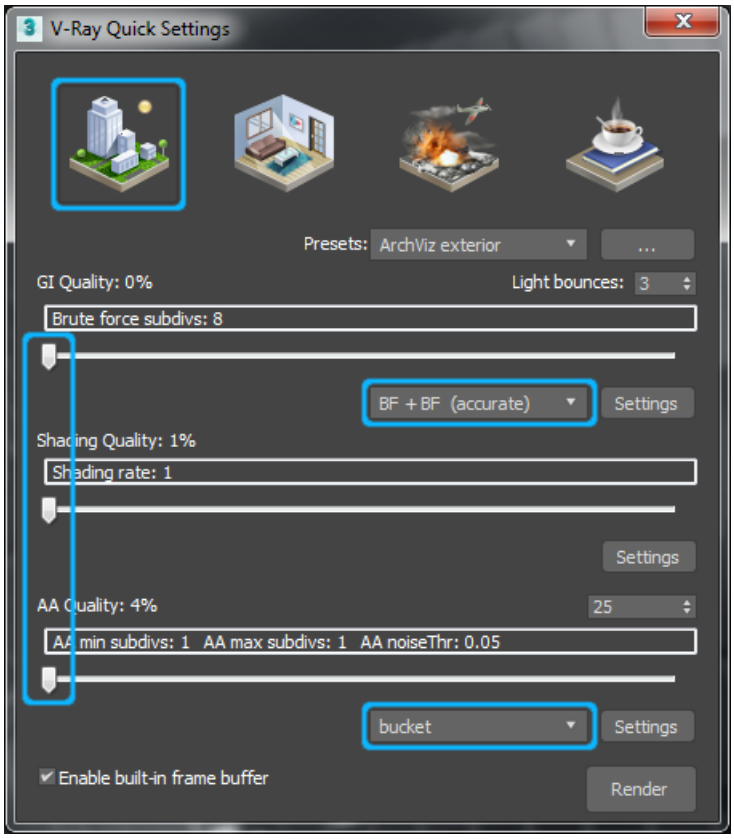
This demonstration covers the different options for setting up the Global Illumination for an exterior scene:

1. In the folder **05 06 07 The_Office** open the scene named **GI_Exterior.max**
2. Open the **Render Setup** and in the **Render Elements** tab note that we have added the **VRayGlobalIllumination** and **VRayLighting** render elements

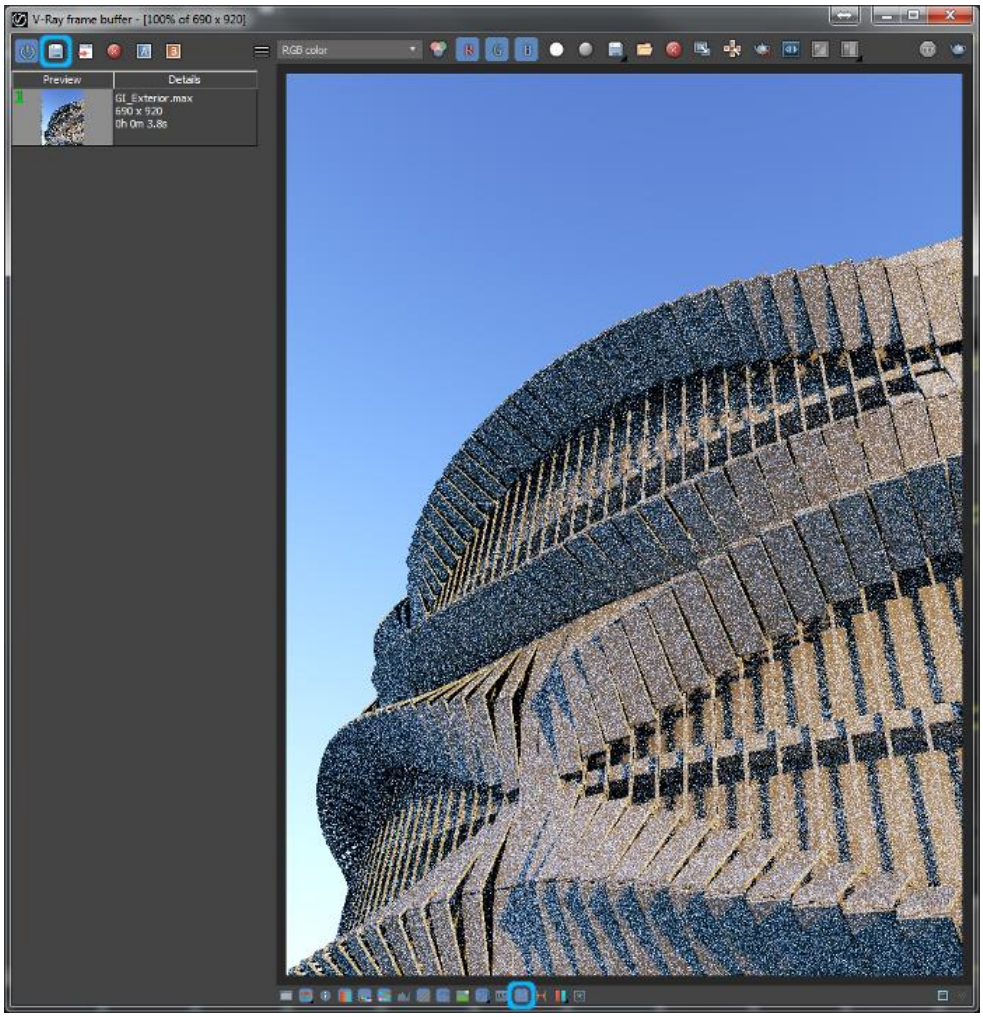


3. Open the **V-Ray Quick Settings**:

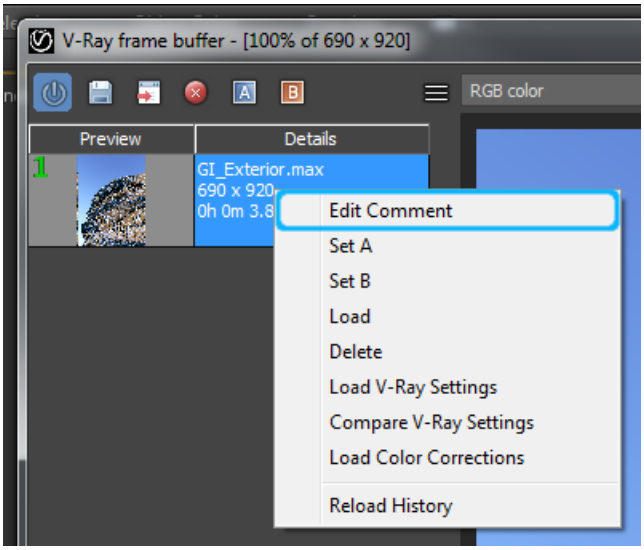
4. Select the **Exterior** preset. Make sure that the GI is set to **BF + BF (accurate)** and the AA engine is set to **bucket**. Make sure all the sliders are to their left most position.



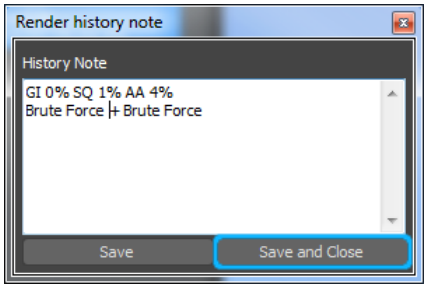
5. Hit **Render** and wait for the render to complete.
6. In the **V-Ray Frame Buffer** open the **VFB history window** and **Save** the image into the history:



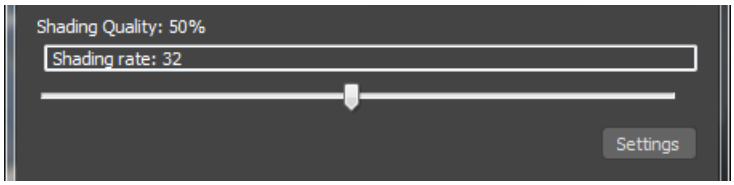
7. Right click on the thumbnail of the image and select **Edit Comment**:

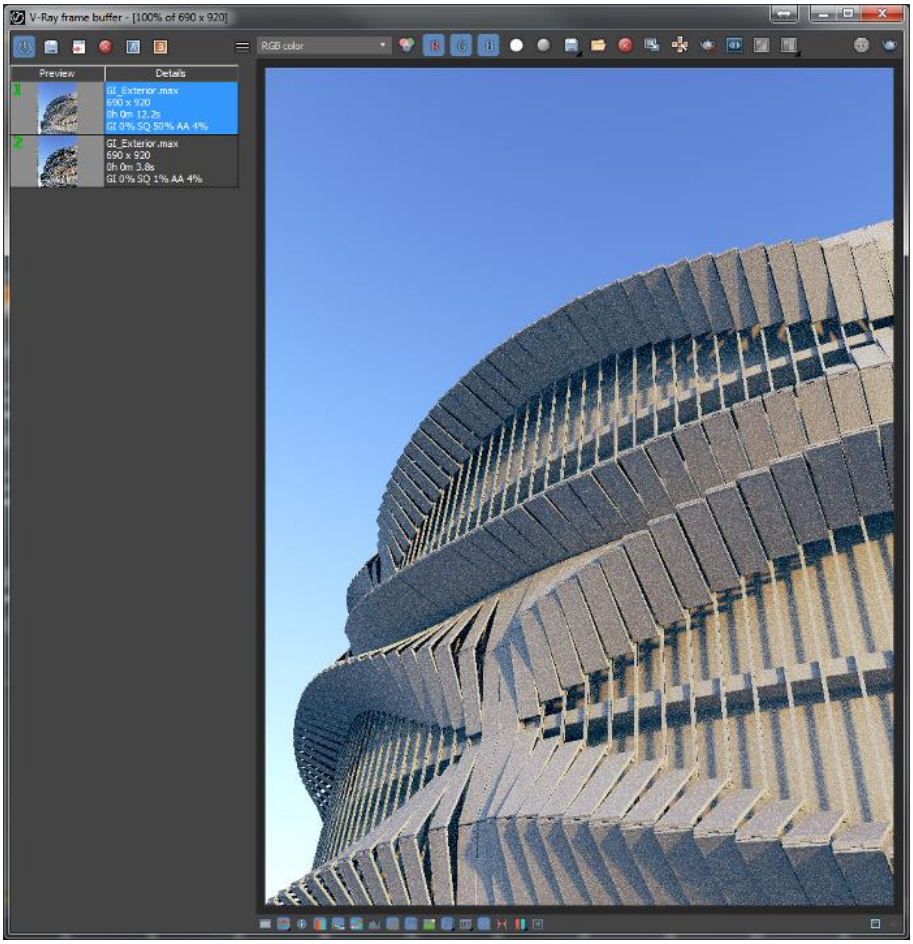


8. Make a note about the settings used to render the image (i.e. GI 0% SQ 1% AA 4% / Brute Force + Brute Force) and click **Save and Close**:

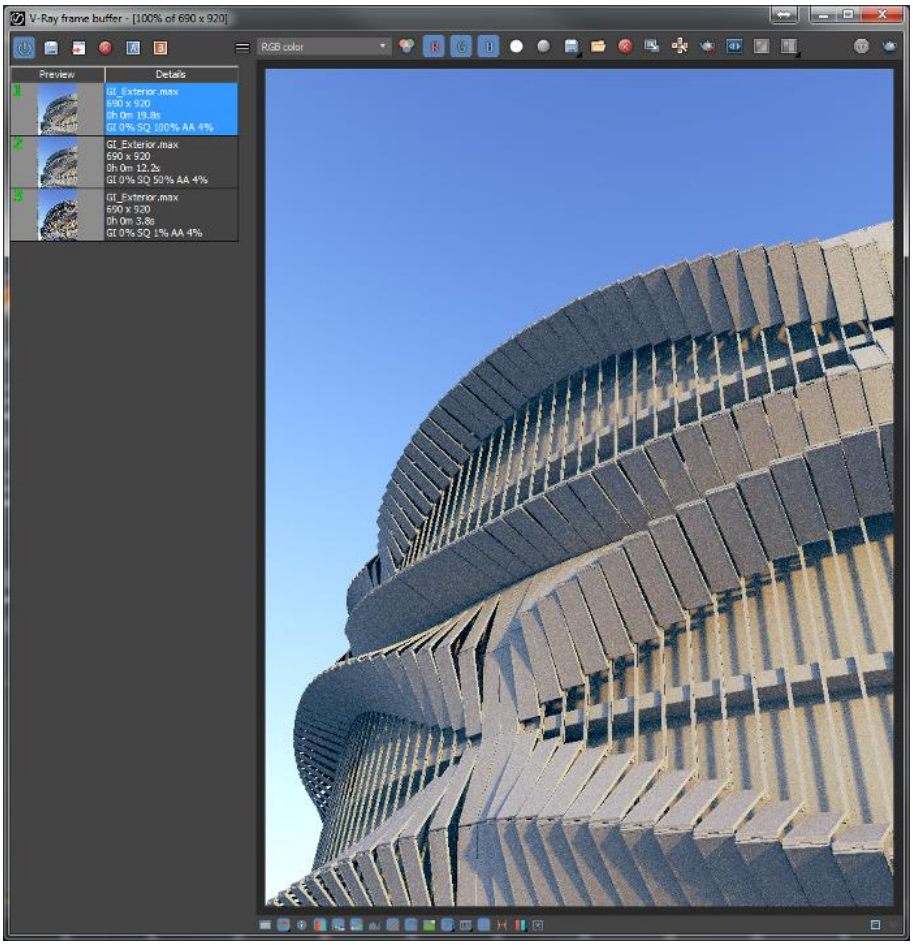


9. Set the **Shading Quality** to 50%, render again, save the image to the **VFB History** and note the settings used:

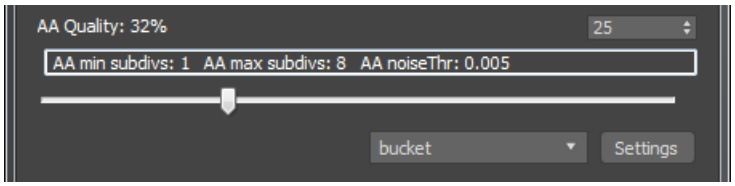


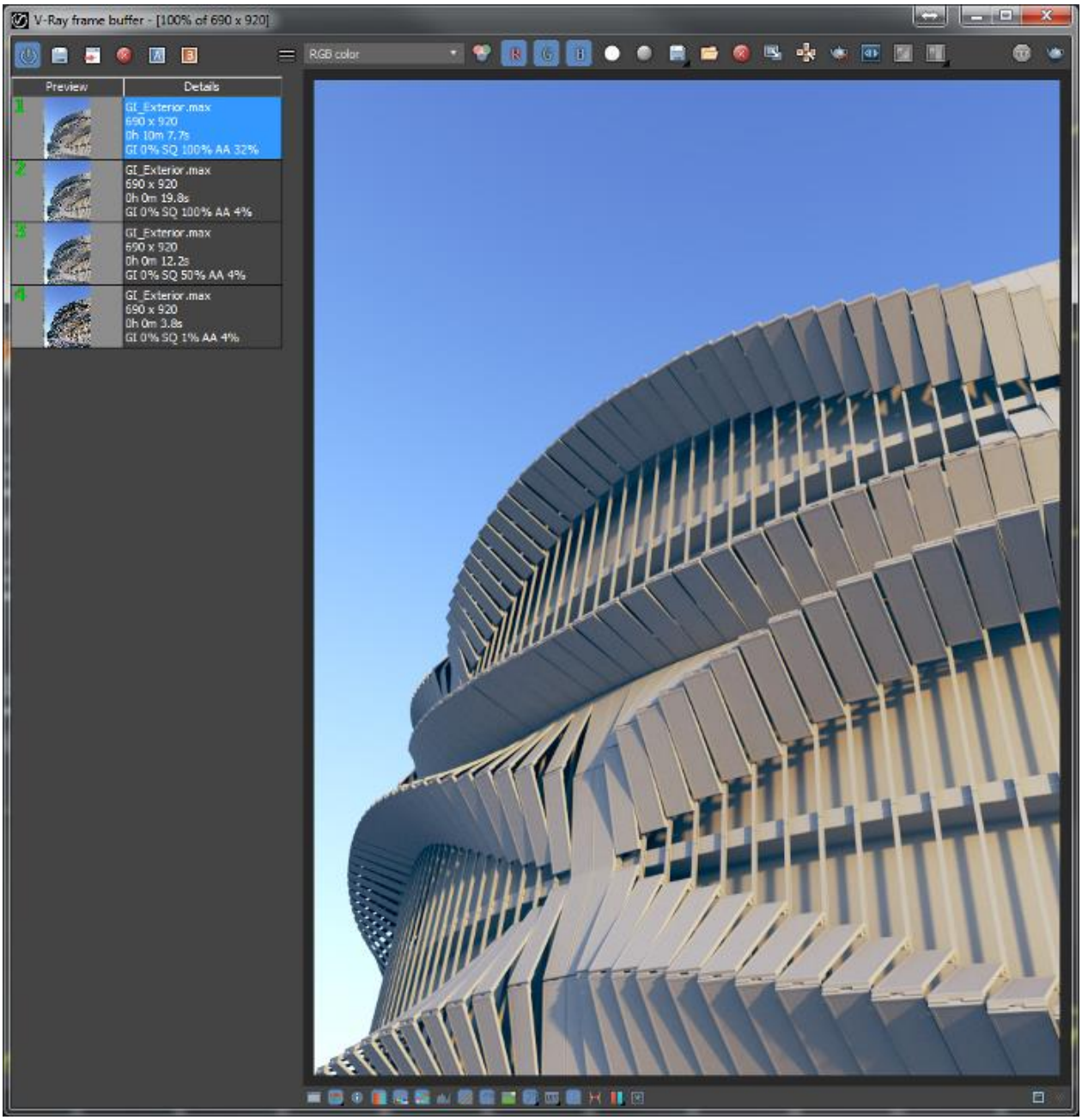


10. Set the **Shading Quality** to 100%, render again, save the image to the **VFB History** and note the settings used.

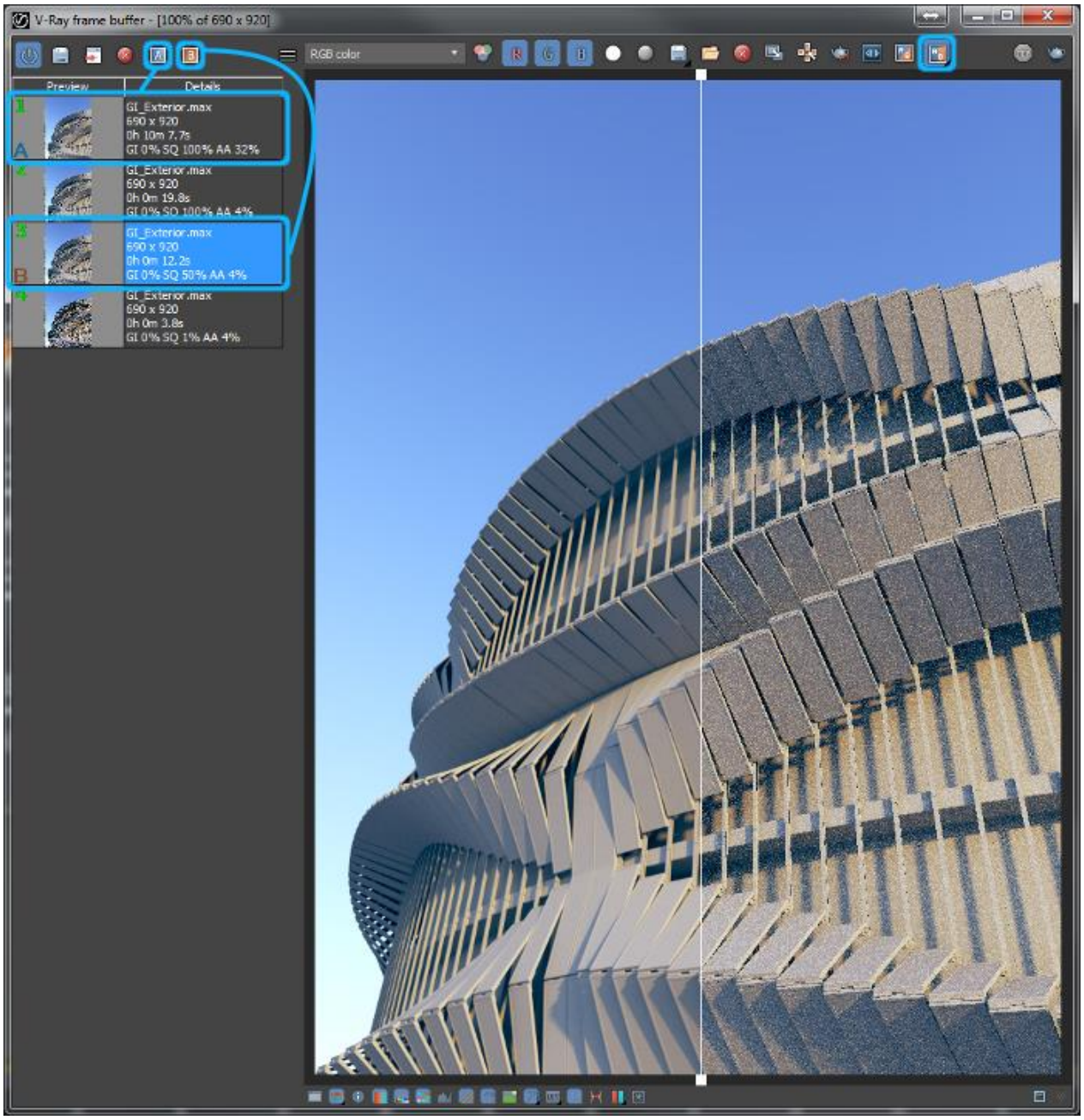


11. Set the **AA Quality** to 32%, render again, save the image to the **VFB History** and note the settings used:

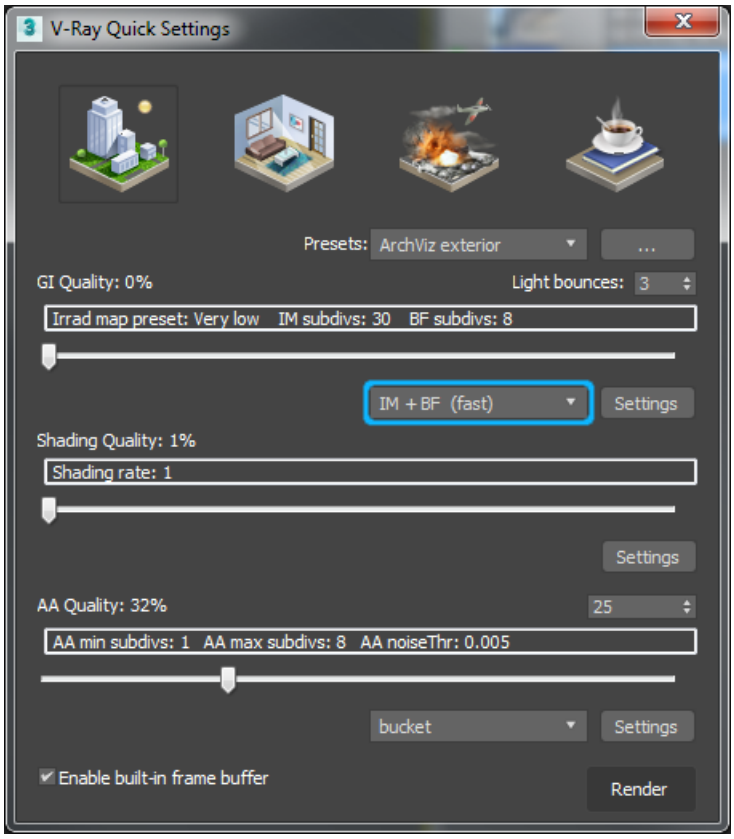




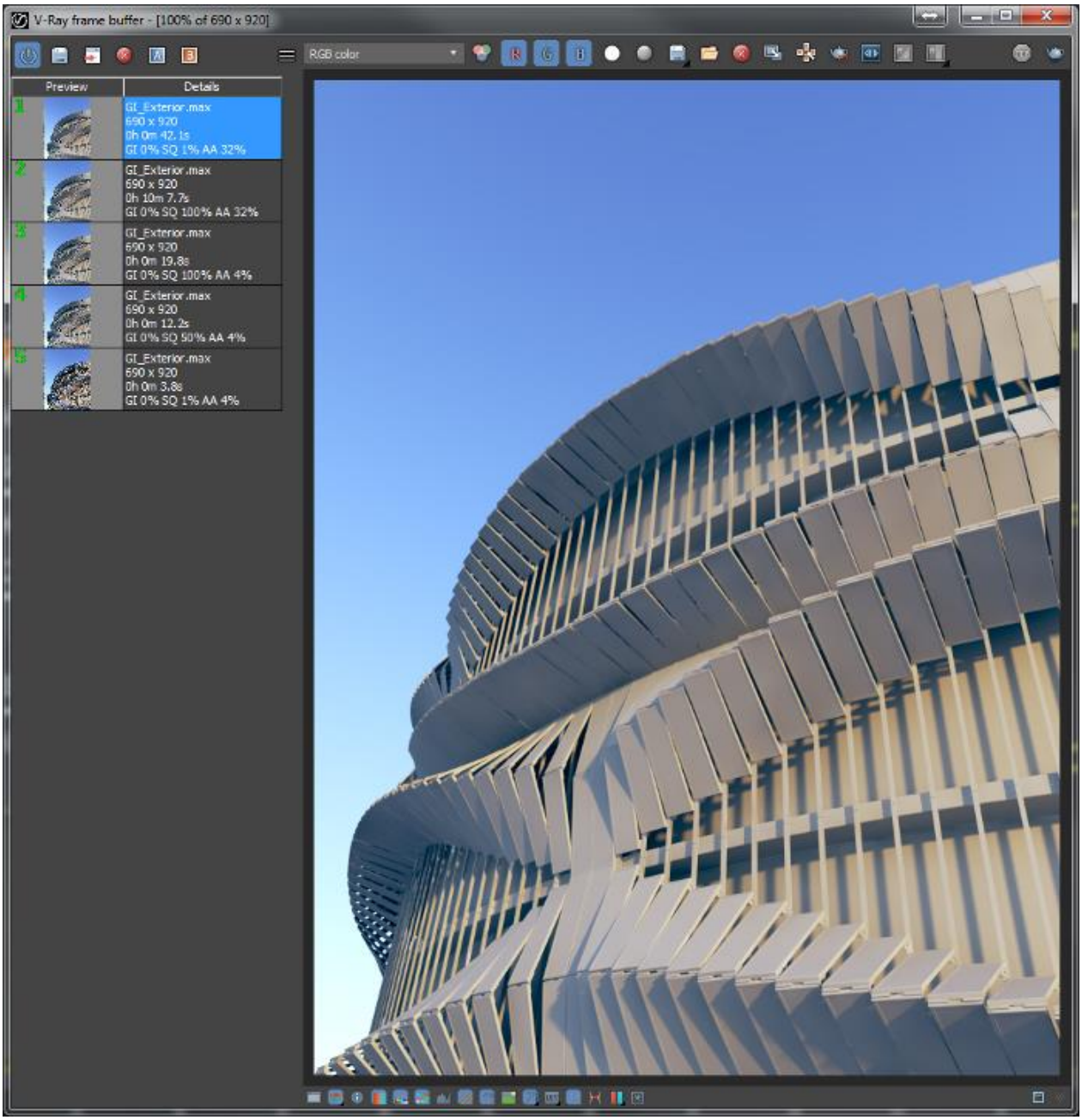
12. This is a production quality global illumination
13. Use the **A/B Comparison** function of the **VFB** to compare the images you rendered.

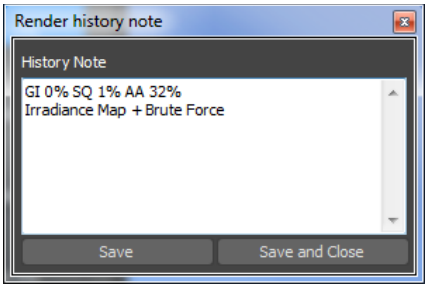


14. In the **Quick Setting** switch the GI drop box to **IM + BF (fast)**, set the Shading Quality to 1% and leave the **AA Quality** to 32% and the **GI Quality** to 0%

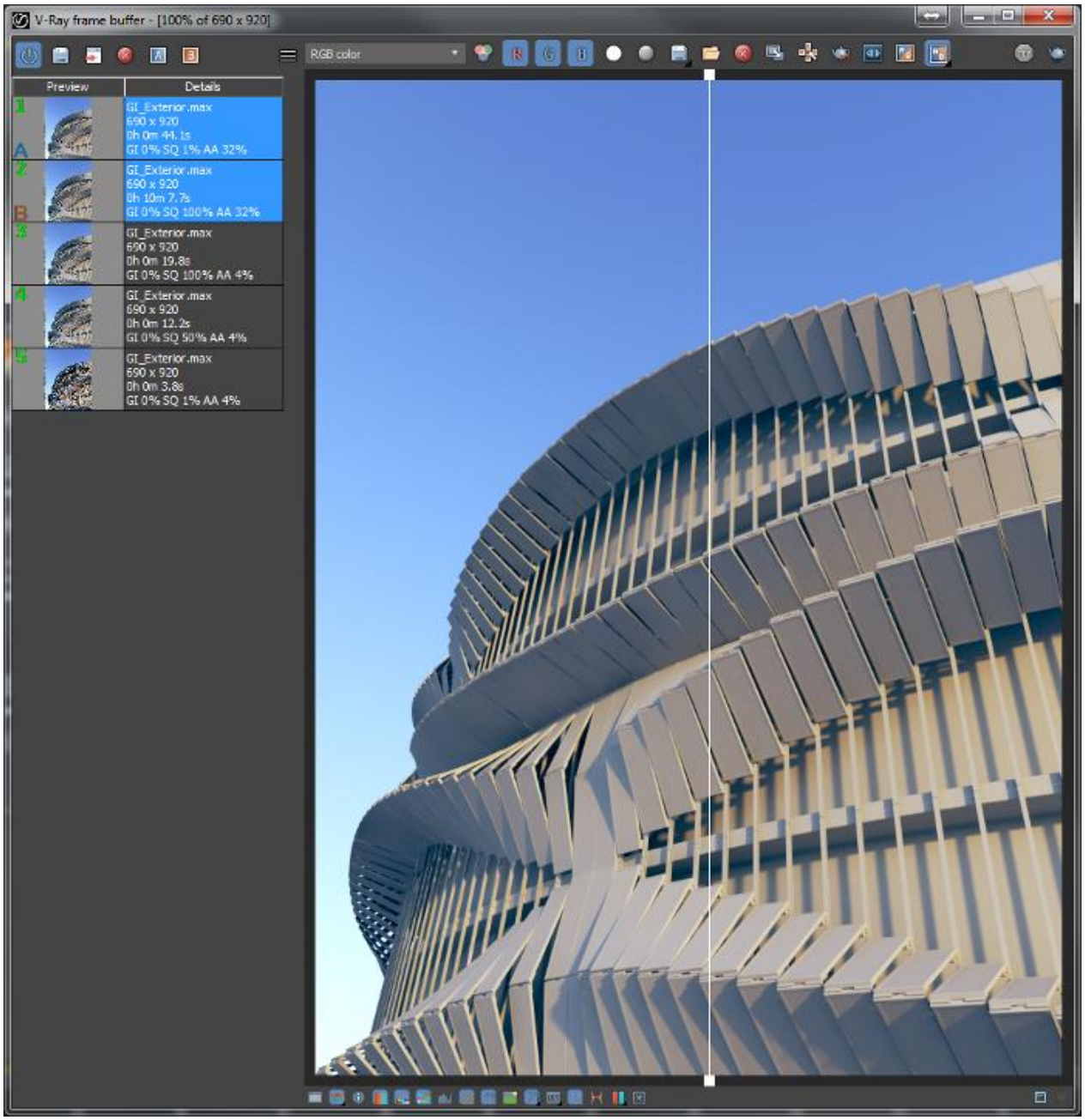


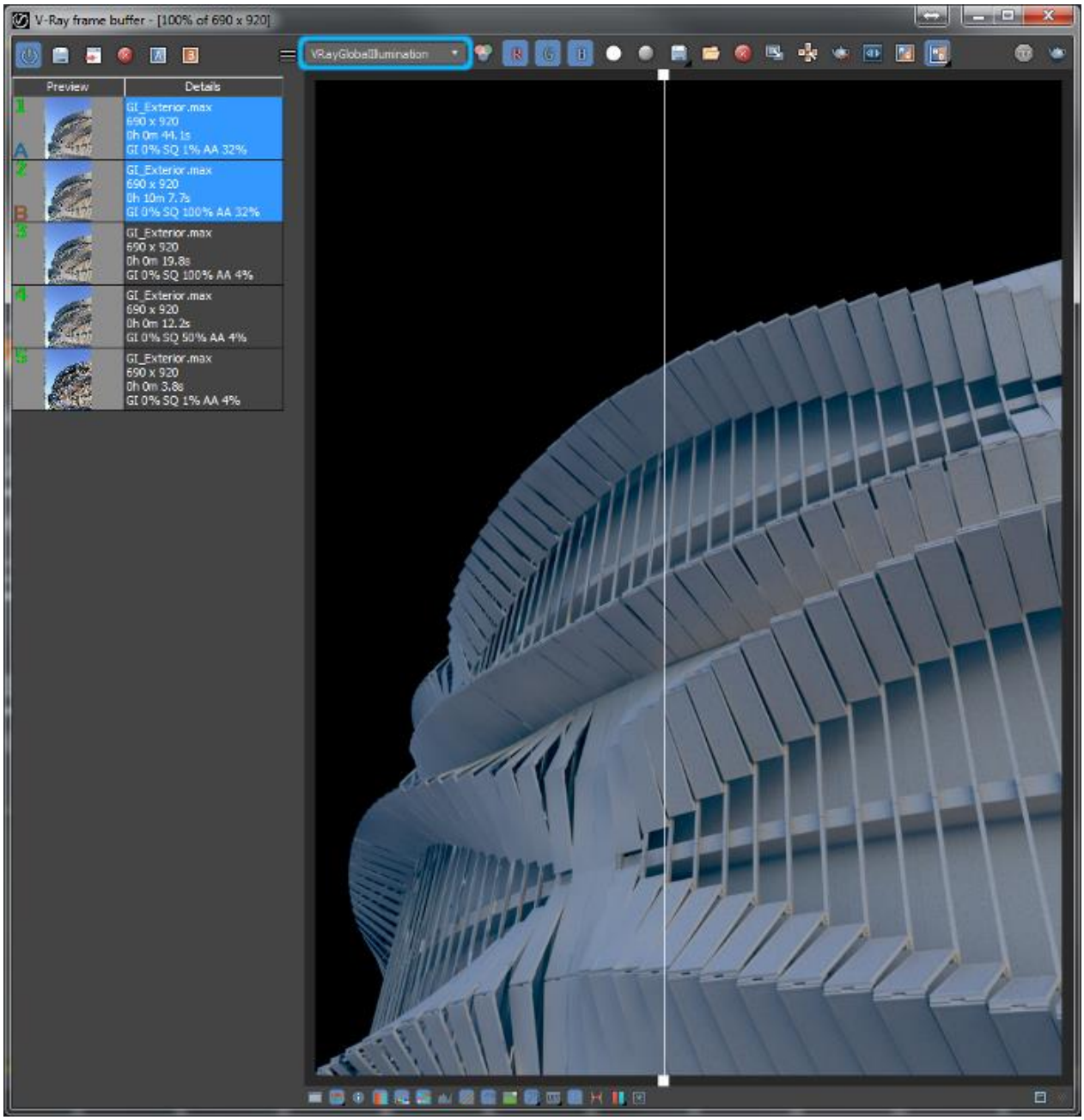
15. Render an image, save it to the VFB History and add a note about the settings:

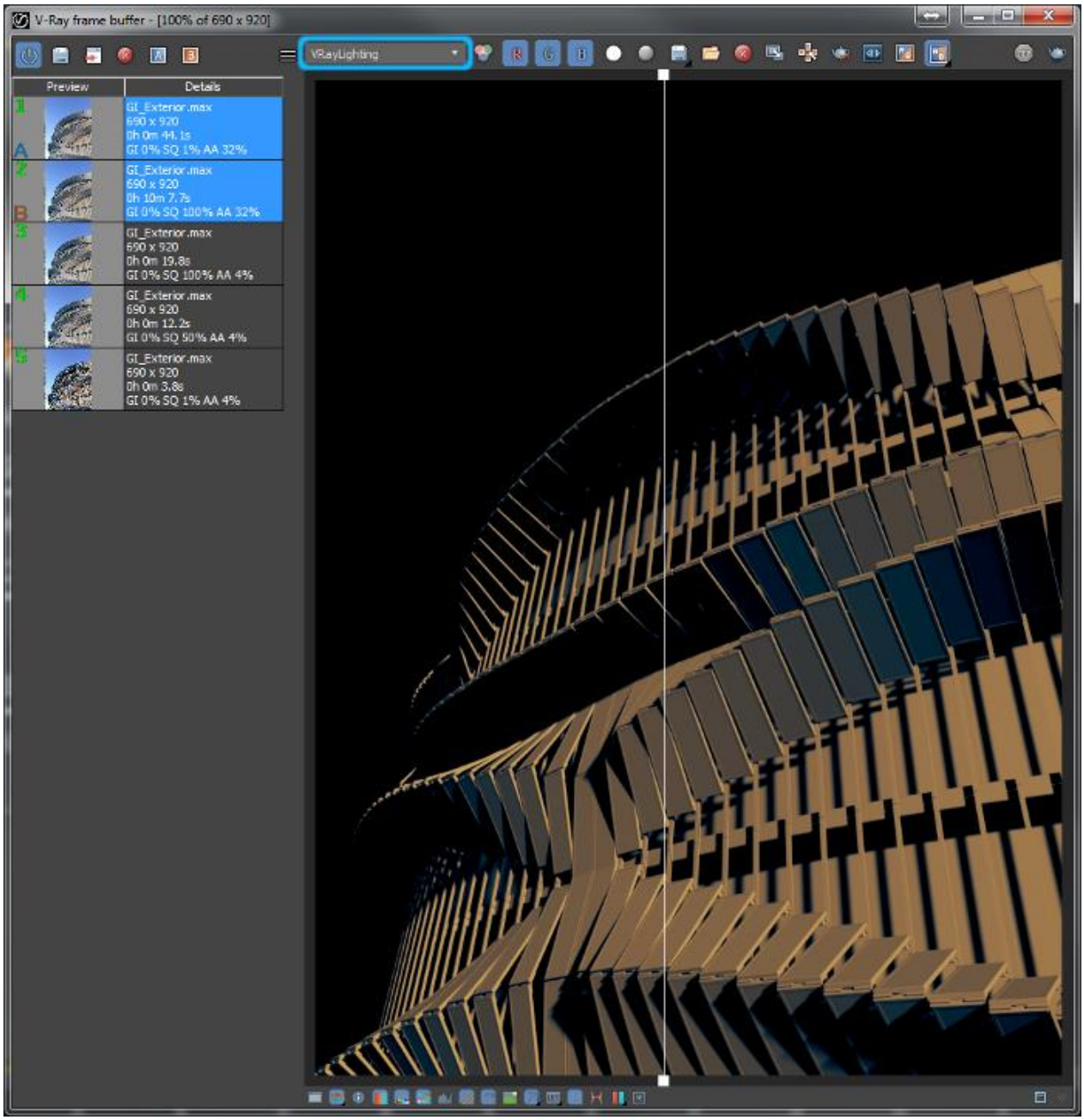

V-Ray frame buffer - [100% of 690 x 920]
RGB color
Preview
Details
1
GI_Exterior.max
690 x 920
0h 0m 42.1s
GI 0% SQ 1% AA 32%
2
GI_Exterior.max
690 x 920
0h 10m 7.7s
GI 0% SQ 100% AA 32%
3
GI_Exterior.max
690 x 920
0h 0m 19.8s
GI 0% SQ 100% AA 4%
4
GI_Exterior.max
690 x 920
0h 0m 12.2s
GI 0% SQ 50% AA 4%
5
GI_Exterior.max
690 x 920
0h 0m 3.8s
GI 0% SQ 1% AA 4%


Render history note
History Note
GI 0% SQ 1% AA 32%
Irradiance Map + Brute Force
Save
Save and Close

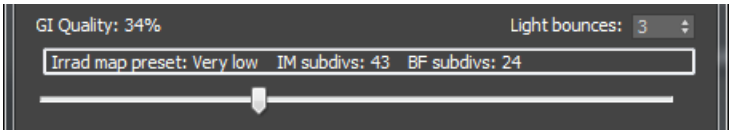
16. Use the **A/B Comparison** function of the **VFB** to compare the last two images you rendered. Compare the **VRayGlobalIllumination** and **VRayLighting** render elements of both images to better see where the difference is coming from:



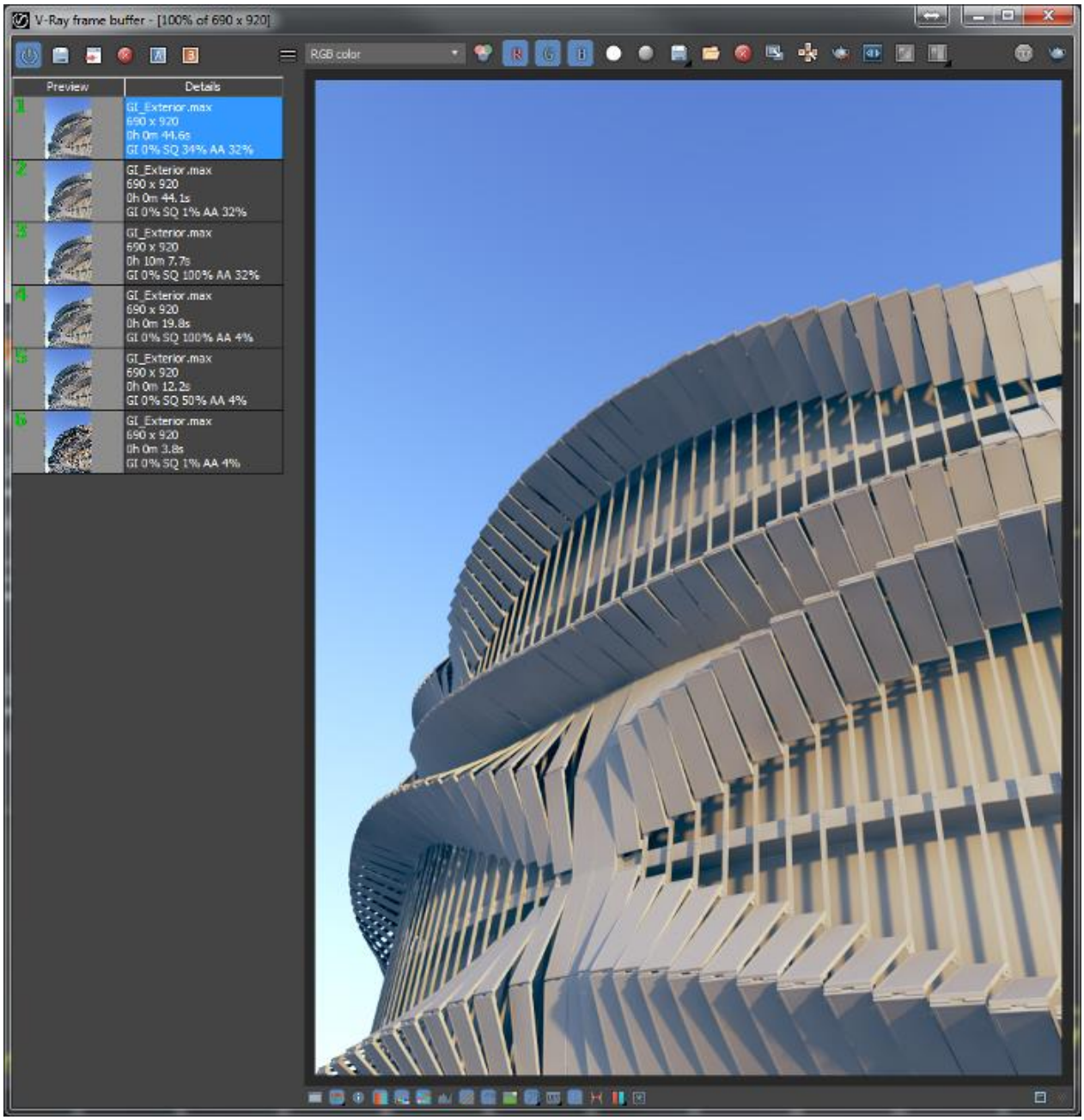

V-Ray frame buffer - [100% of 690 x 920]
VRayGlobalIllumination
Preview
Details
1
A
GI_Exterior.max
690 x 920
0h 0m 44.1s
GI 0% SQ 1% AA 32%
2
B
GI_Exterior.max
690 x 920
0h 10m 7.7s
GI 0% SQ 100% AA 32%
3
GI_Exterior.max
690 x 920
0h 0m 19.8s
GI 0% SQ 100% AA 4%
4
GI_Exterior.max
690 x 920
0h 0m 12.2s
GI 0% SQ 50% AA 4%
5
GI_Exterior.max
690 x 920
0h 0m 3.8s
GI 0% SQ 1% AA 4%



17. Set the **GI Quality** to 34%

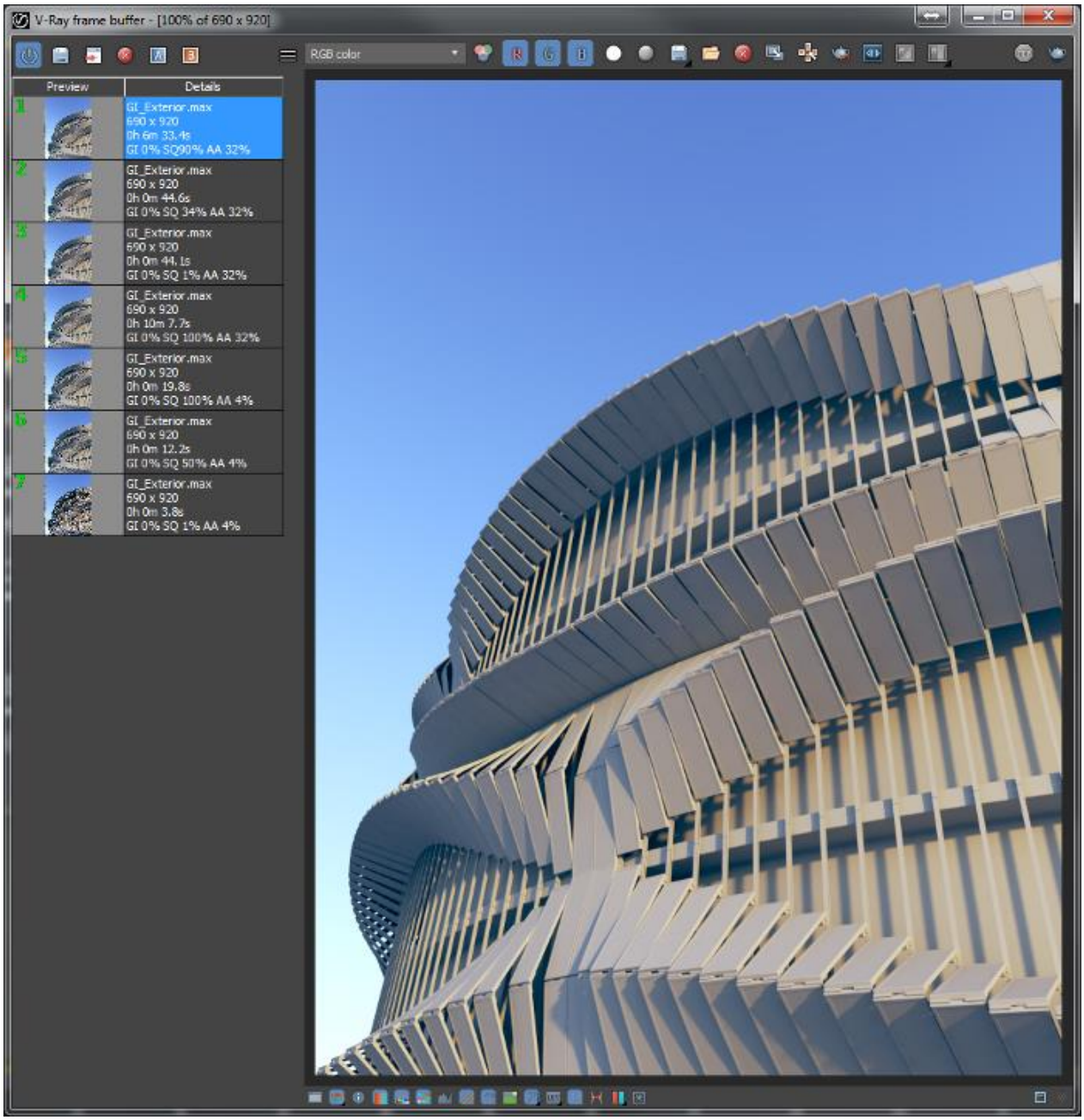


18. Render an image and save it to the **VFB History** with a note about the render settings.

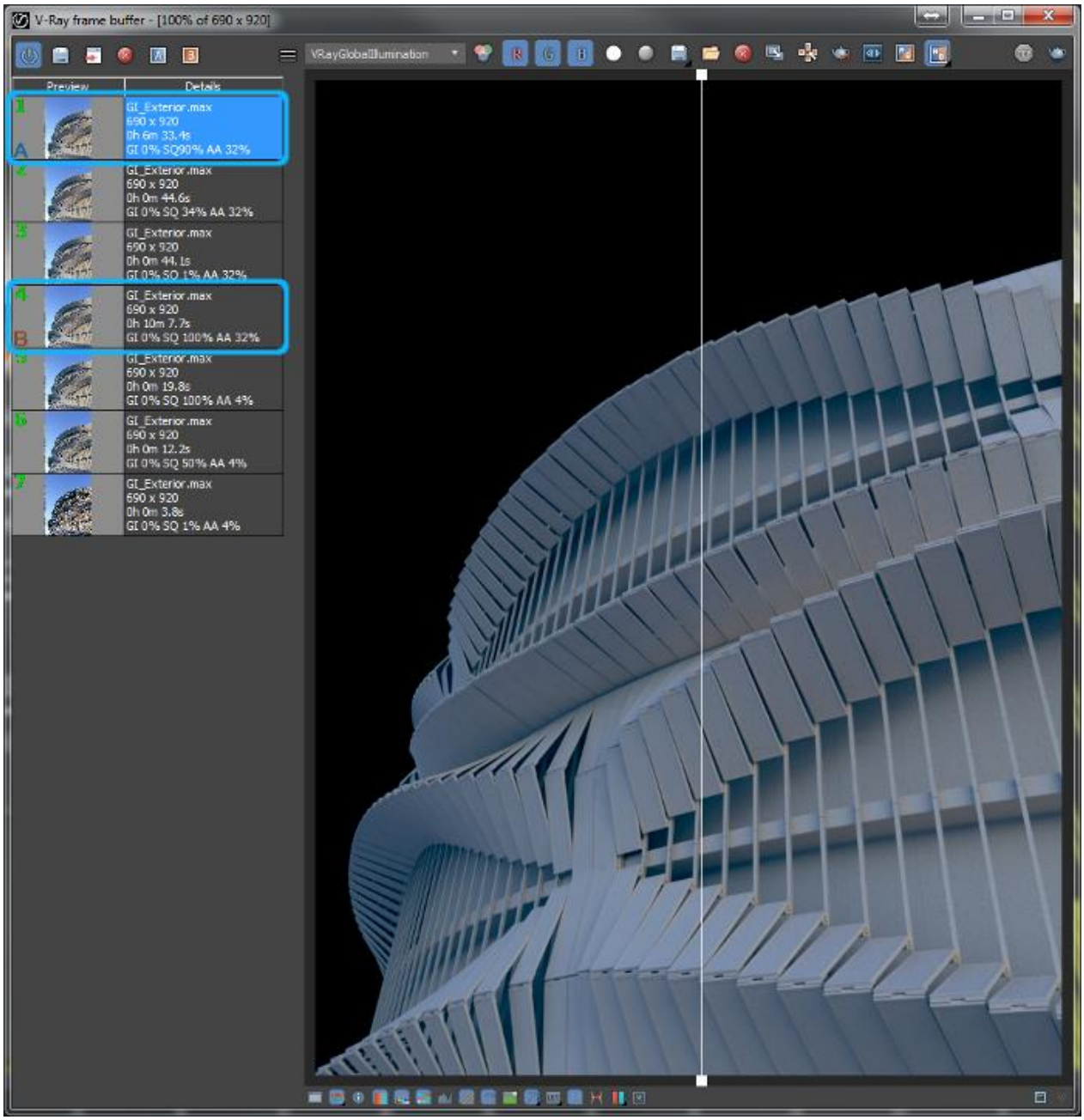


19. Compare the last two images you rendered. To better see the difference, look at the **VRayGlobalIllumination** and **VRayLighting** render elements.
20. Set the **GI Quality** to 90%

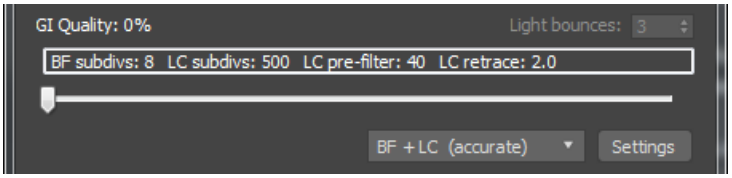
21. Render an image and save it to the **VFB History** with a note about the render settings.



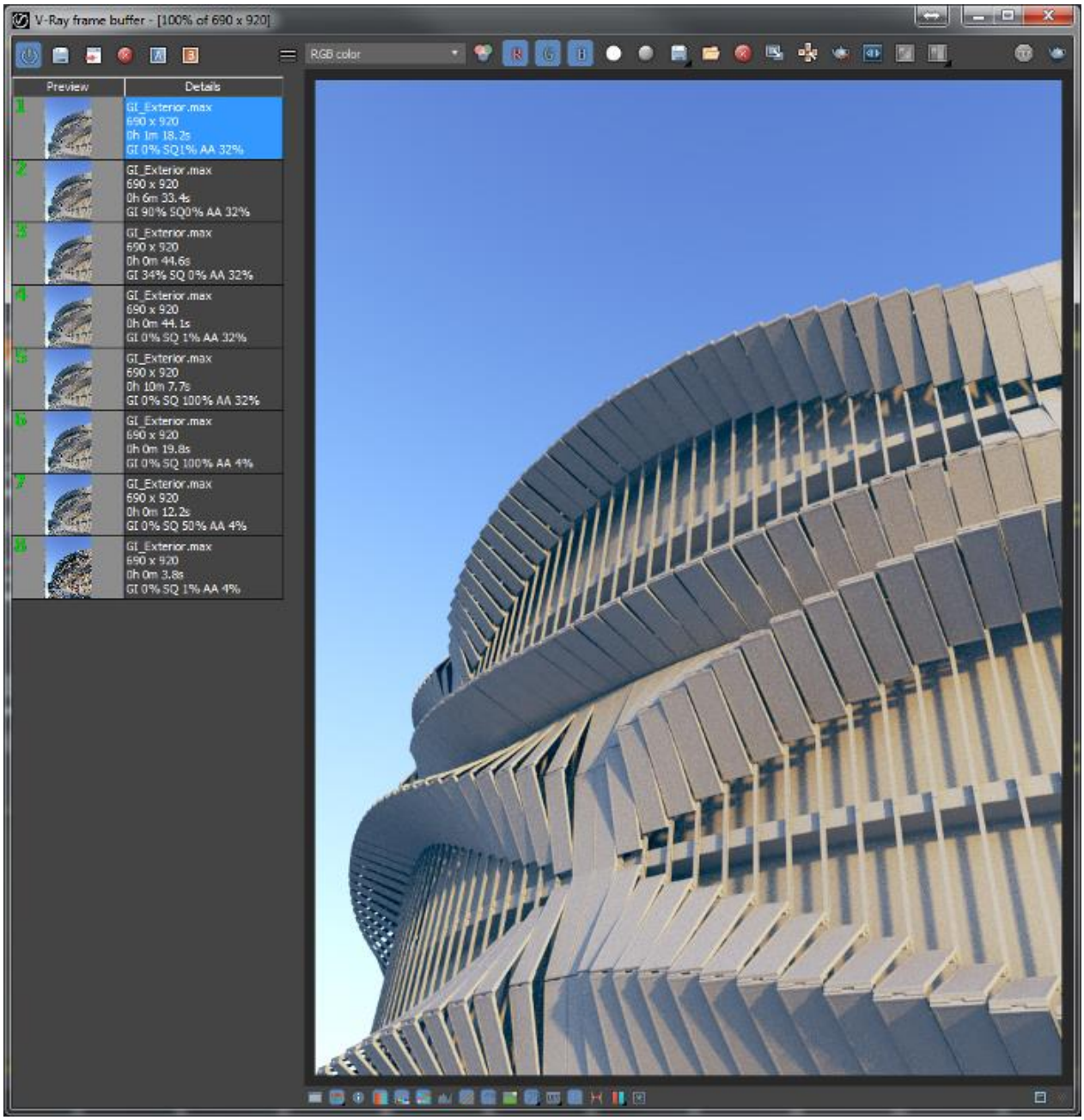
22. This is a production quality global illumination
23. Compare this image with the one rendered in step 11 and note the difference in render time and quality. Look at the **VRayGlobalIllumination** render element. Note that using **Irradiance Map** as a **Primary Engine** created a smoother GI and rendered a bit faster. On the other hand, using **Brute Force** as a primary engine created a sharper, more accurate result.

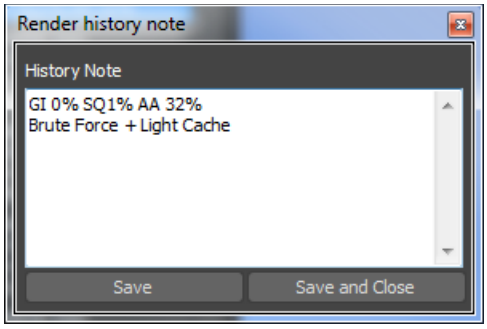


24. Switch the Global Illumination drop box to **BF + LC (accurate)** and set the **GI Quality** to 0%

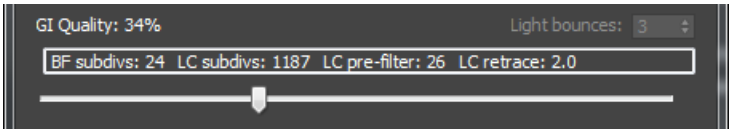


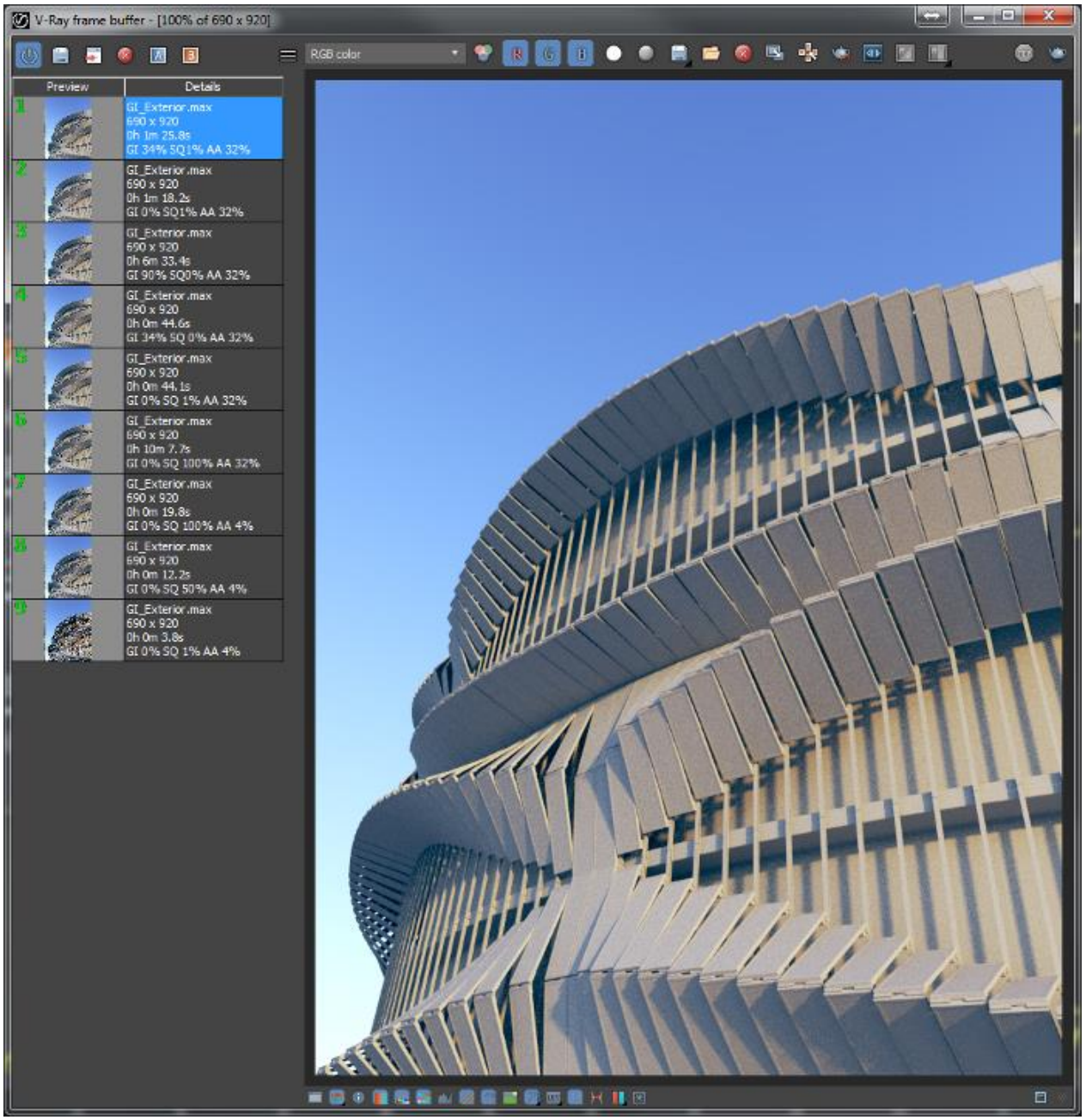
25. Render an image and save it to the **VFB History** with a note about the settings used


V-Ray frame buffer - [100% of 690 x 920]
RGB color
Preview
Details
1
GI_Exterior.max
690 x 920
0h 1m 18.2s
GI 0% SQ1% AA 32%
2
GI_Exterior.max
690 x 920
0h 6m 33.4s
GI 90% SQ0% AA 32%
3
GI_Exterior.max
690 x 920
0h 0m 44.6s
GI 34% SQ 0% AA 32%
4
GI_Exterior.max
690 x 920
0h 0m 44.1s
GI 0% SQ 1% AA 32%
5
GI_Exterior.max
690 x 920
0h 10m 7.7s
GI 0% SQ 100% AA 32%
6
GI_Exterior.max
690 x 920
0h 0m 19.8s
GI 0% SQ 100% AA 4%
7
GI_Exterior.max
690 x 920
0h 0m 12.2s
GI 0% SQ 50% AA 4%
8
GI_Exterior.max
690 x 920
0h 0m 3.8s
GI 0% SQ 1% AA 4%

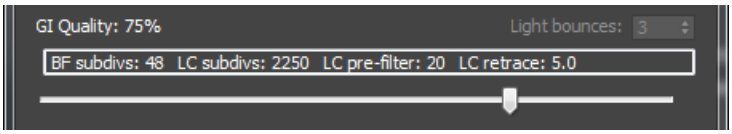

Render history note
History Note
GI 0% SQ1% AA 32%
Brute Force + Light Cache
Save
Save and Close

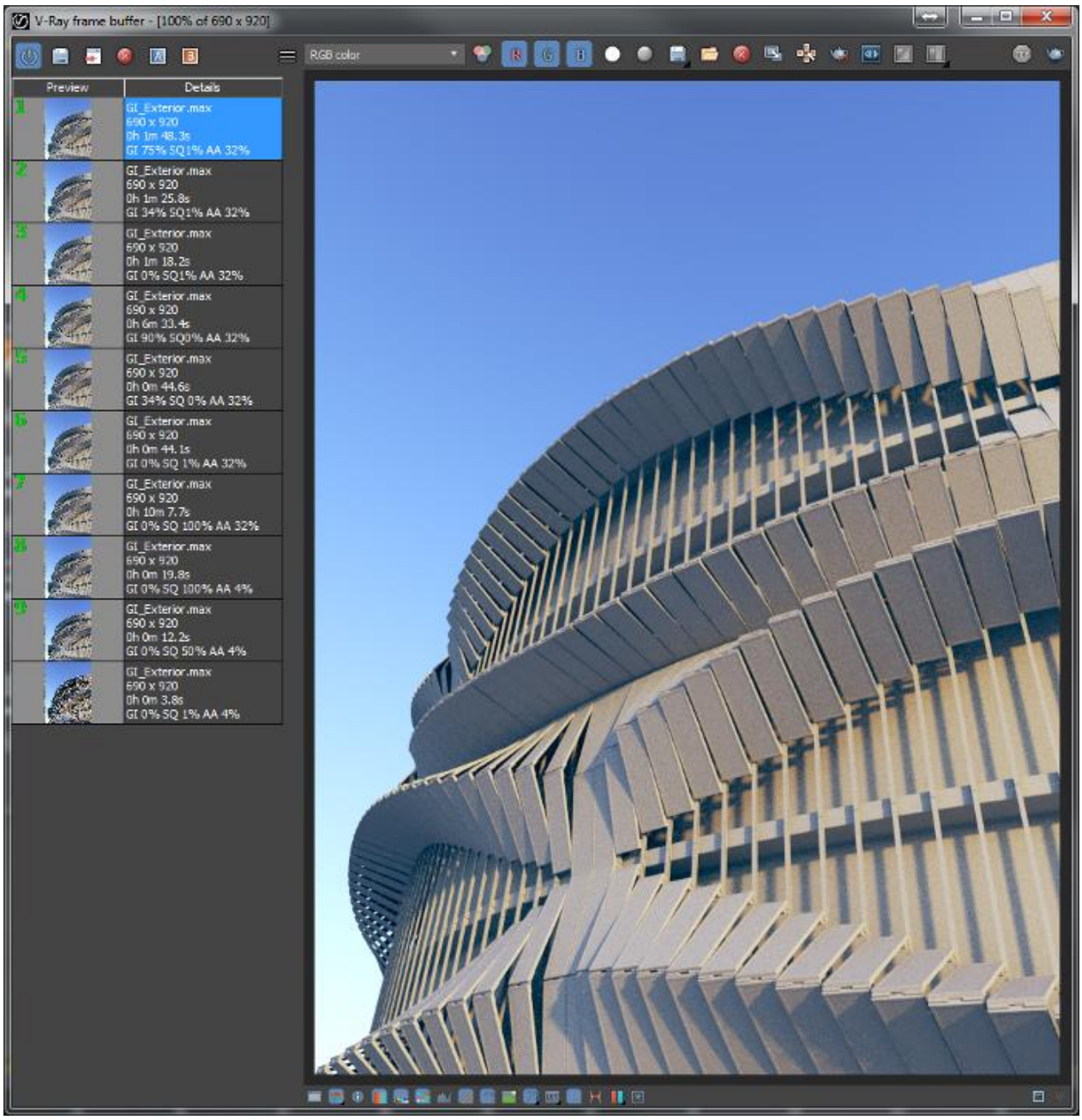
26. Set the **GI Quality** to 34%. Render and save the image to the **VFB History**



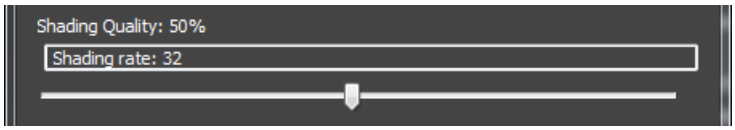


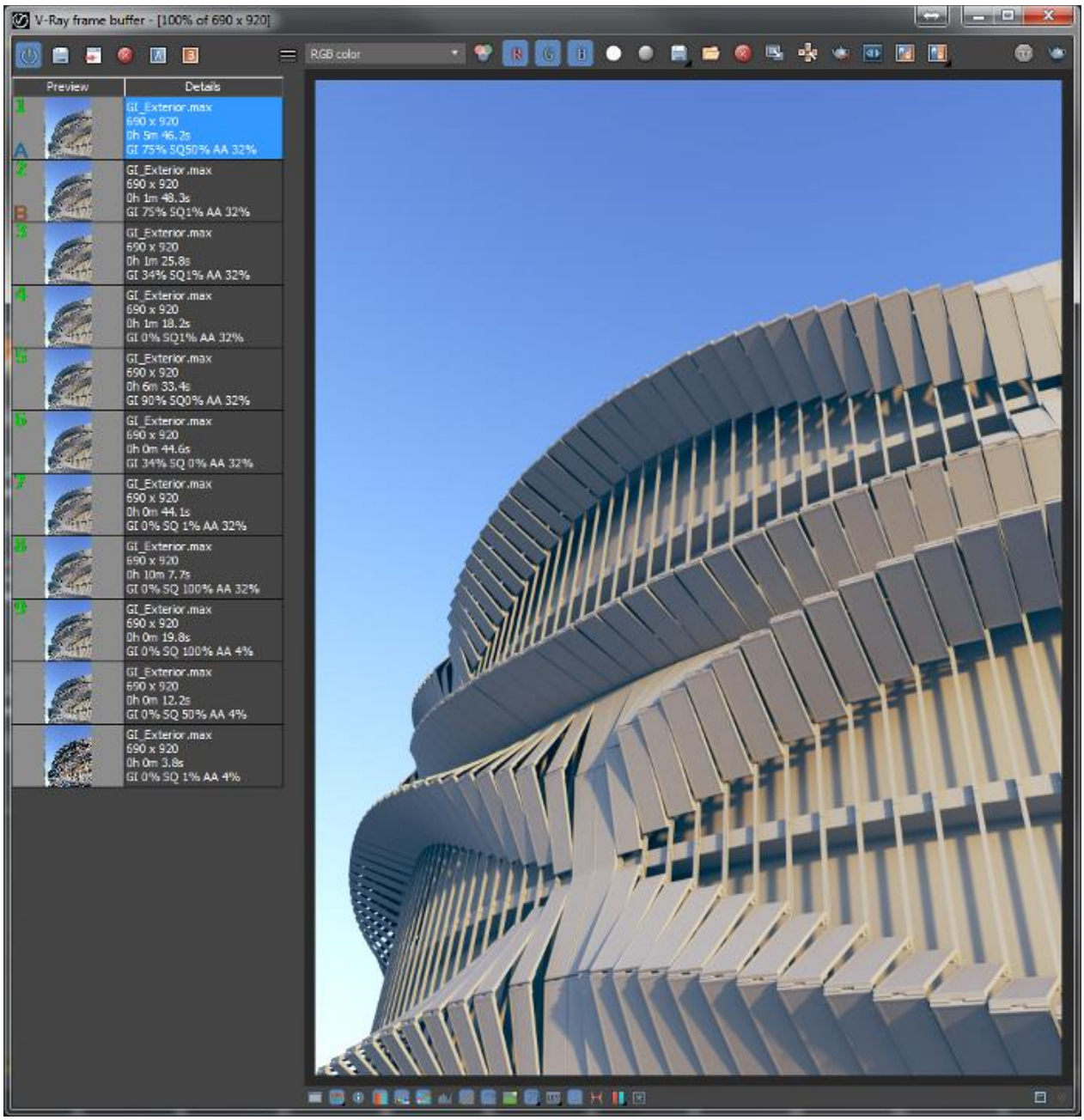
27. Compare the last two images you rendered and note the difference in the **VRayGlobalIllumination** render element
28. Set the **GI Quality** to 75%. Render and save the image to the **VFB History**



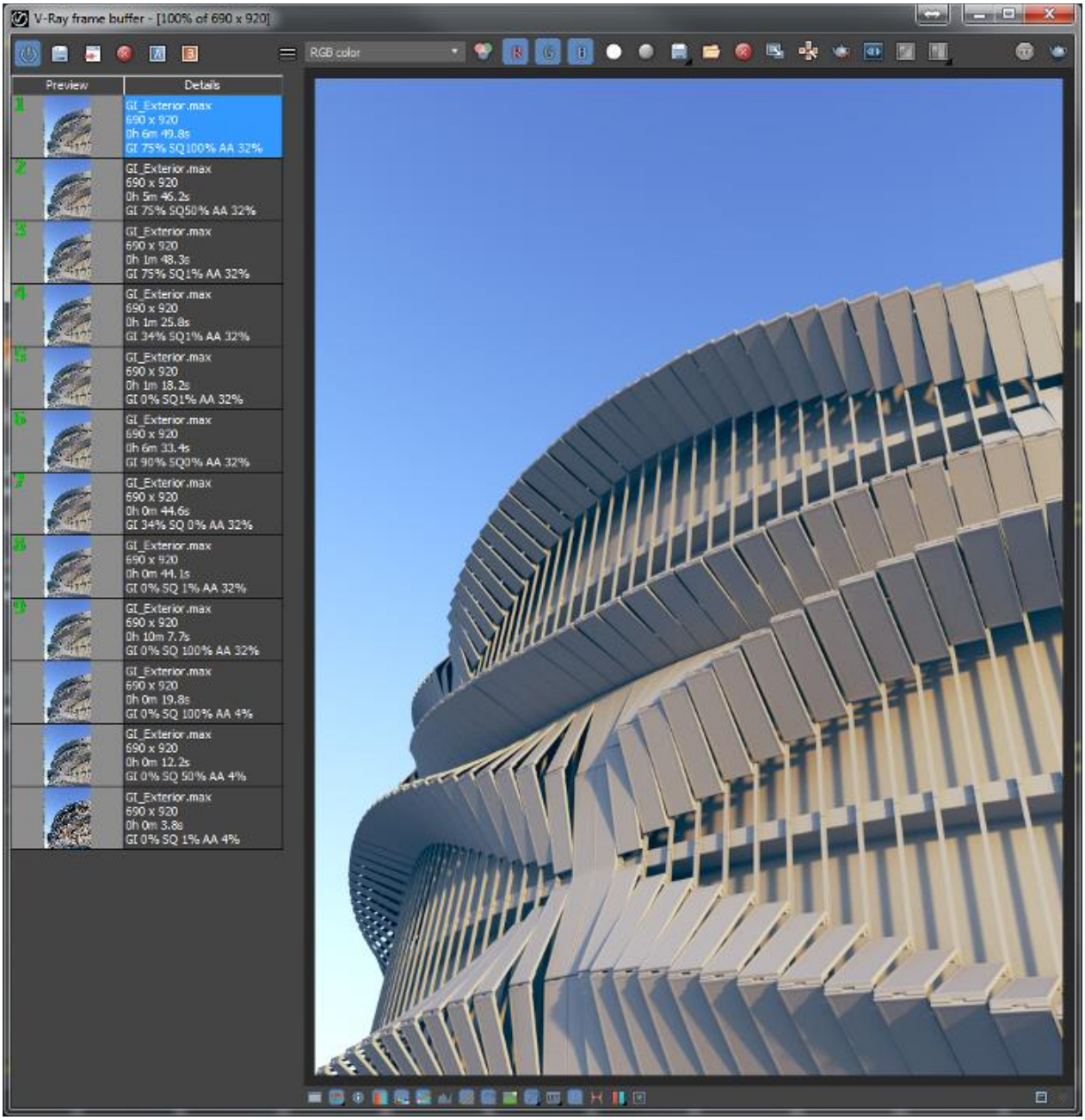


29. Compare the last two images you rendered and note the difference in the **VRayGlobalIllumination** render element
30. Set the **Shading Quality** to 50%. Render and save the image to the **VFB History**

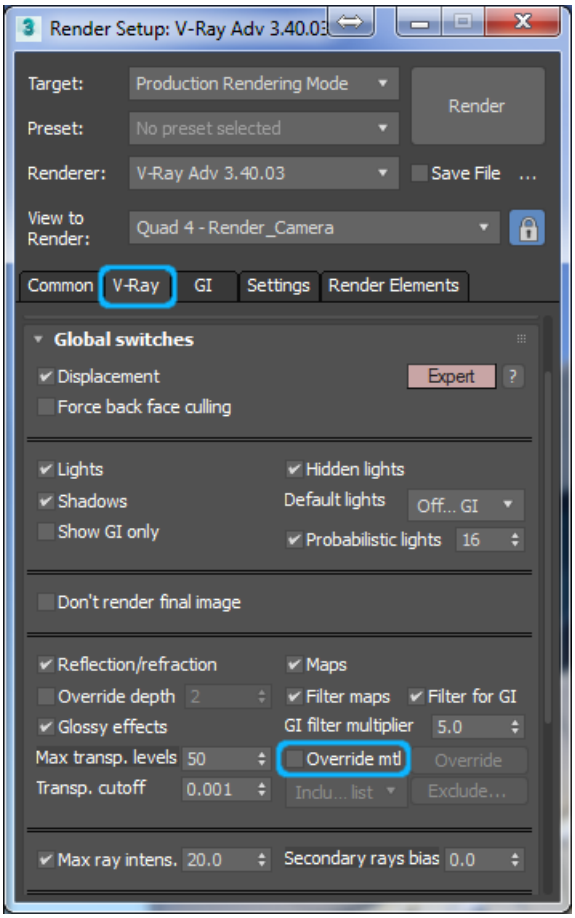




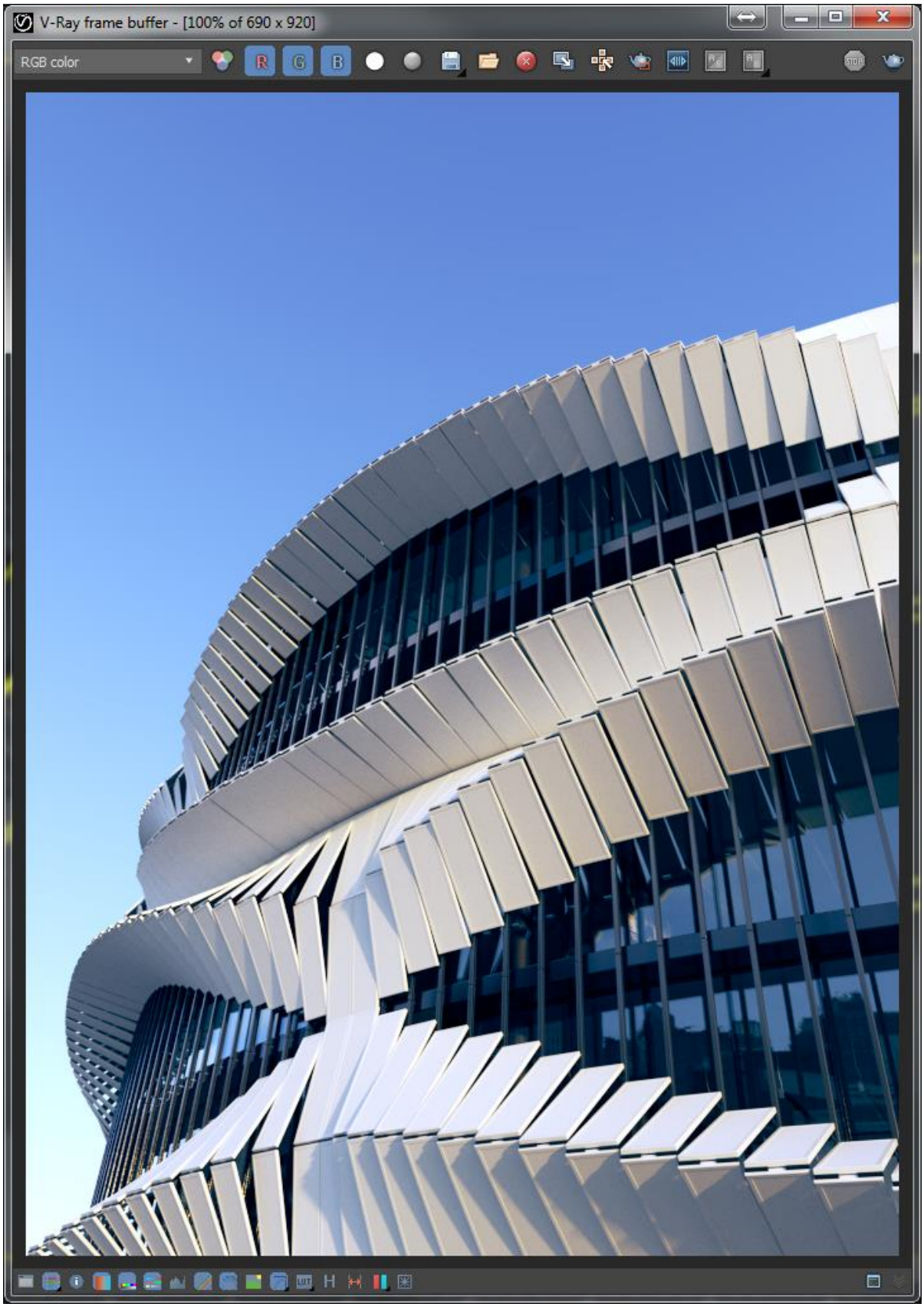
31. Compare the last two images you rendered and note the difference in the **RGB** and the **VRayGlobalIllumination** render element. Why did the **Shadow Quality** affect the quality of the global illumination?
32. For the final production quality set the **Shading Quality** to 100%. Render and save the image to the **VFB History**



33. Compare the three images that we noted to have production quality global illumination
34. Open the **Render Setup** window and in the **V-Ray** tab, in the **Global switches** rollout disable the **Override mtl** check box:



35. Render the final image:

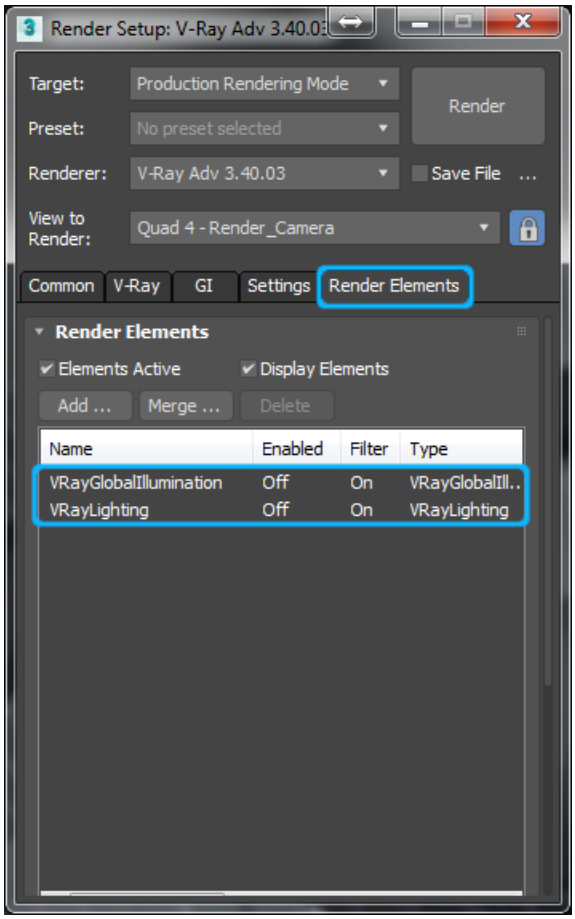

V-Ray frame buffer - [100% of 690 x 920]
RGB color
R
G
B
STOP

oonix.io

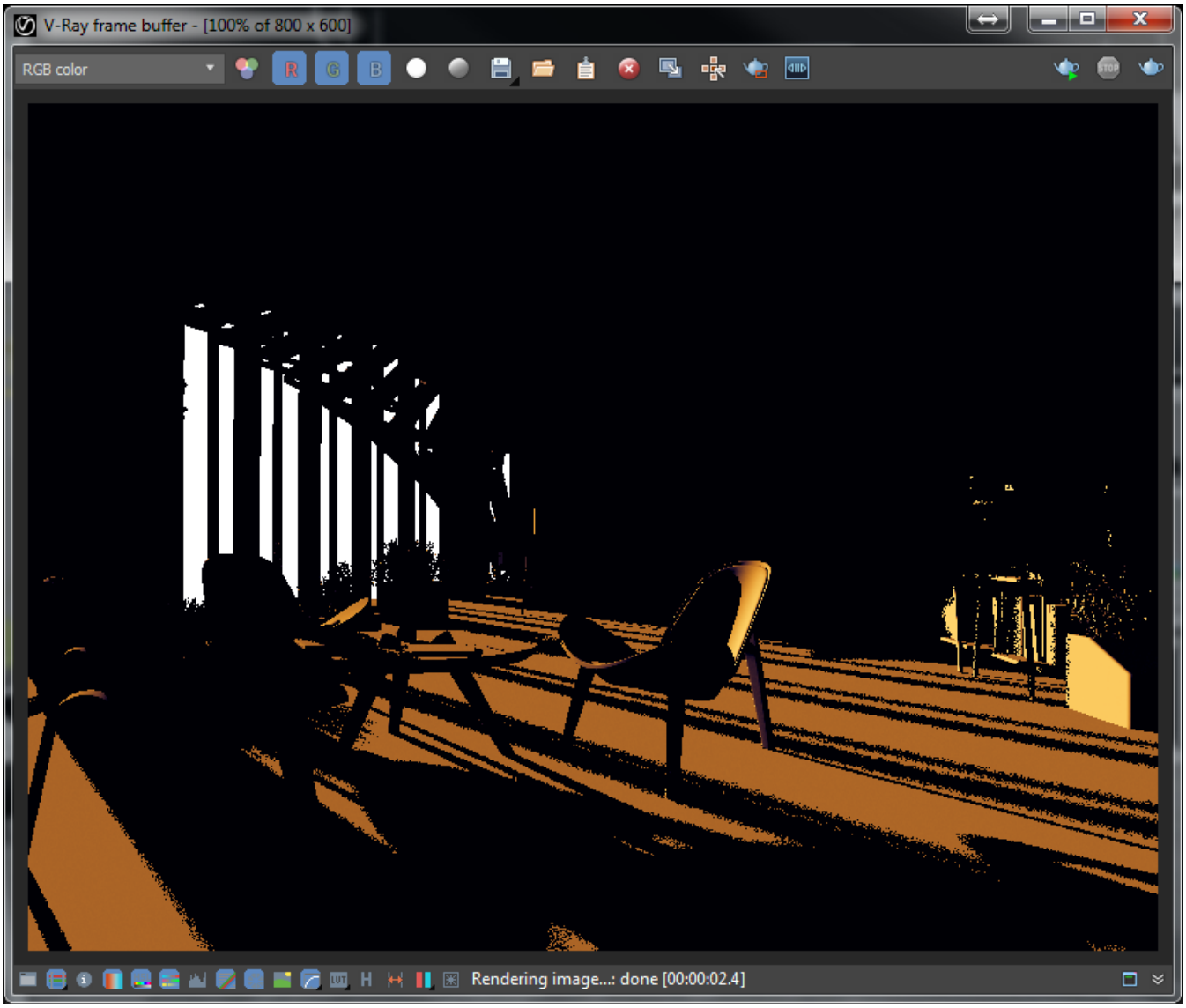
GI FOR INTERIOR SCENES

This demonstration covers the workflow for setting up the Global Illumination for an interior scene:

1. In the folder **05 06 07 The_Office** open the scene named **GI_Interior_Start.max**
2. Open the **Render Setup** and in the **Render Elements** tab note that we have added the **VRayGlobalIllumination** and **VRayLighting** render elements.

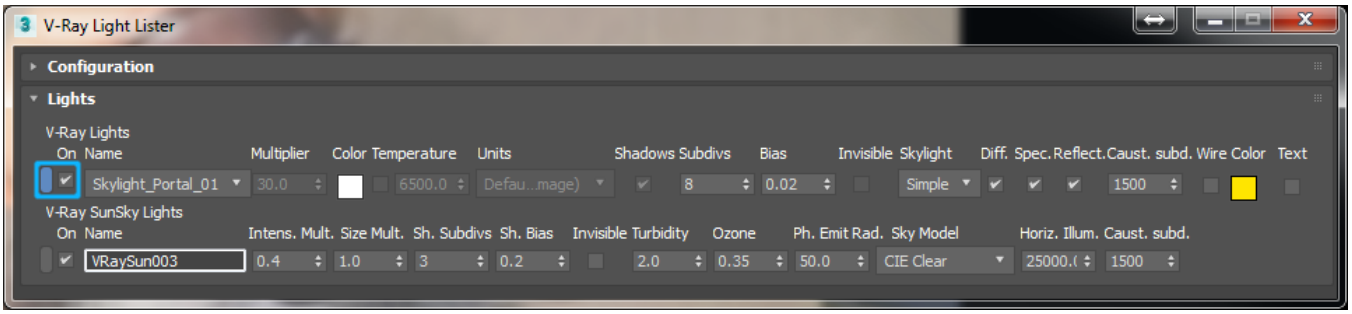


3. Render an image and note that we only see the direct illumination from the **V-Ray Sun** used to illuminate the scene. The light from the **V-Ray Sky** is not visible because we haven't enabled **GI**.

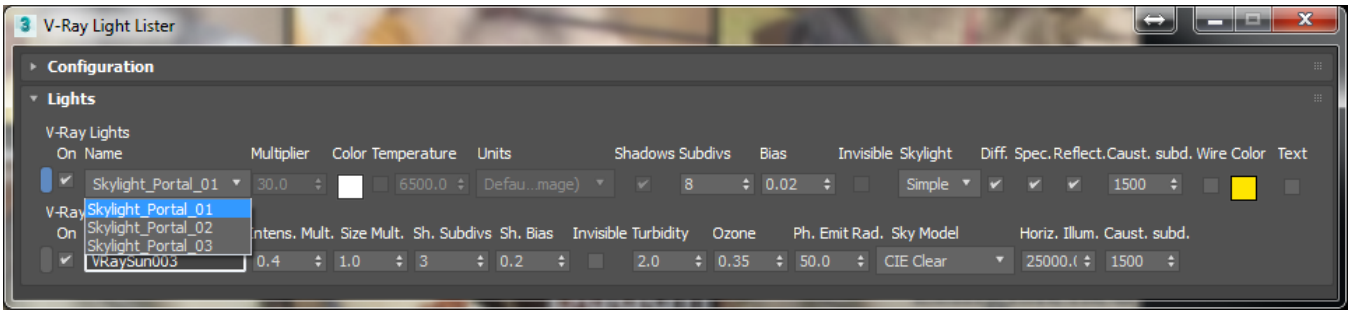


4. Open the **V-Ray Light Lister**

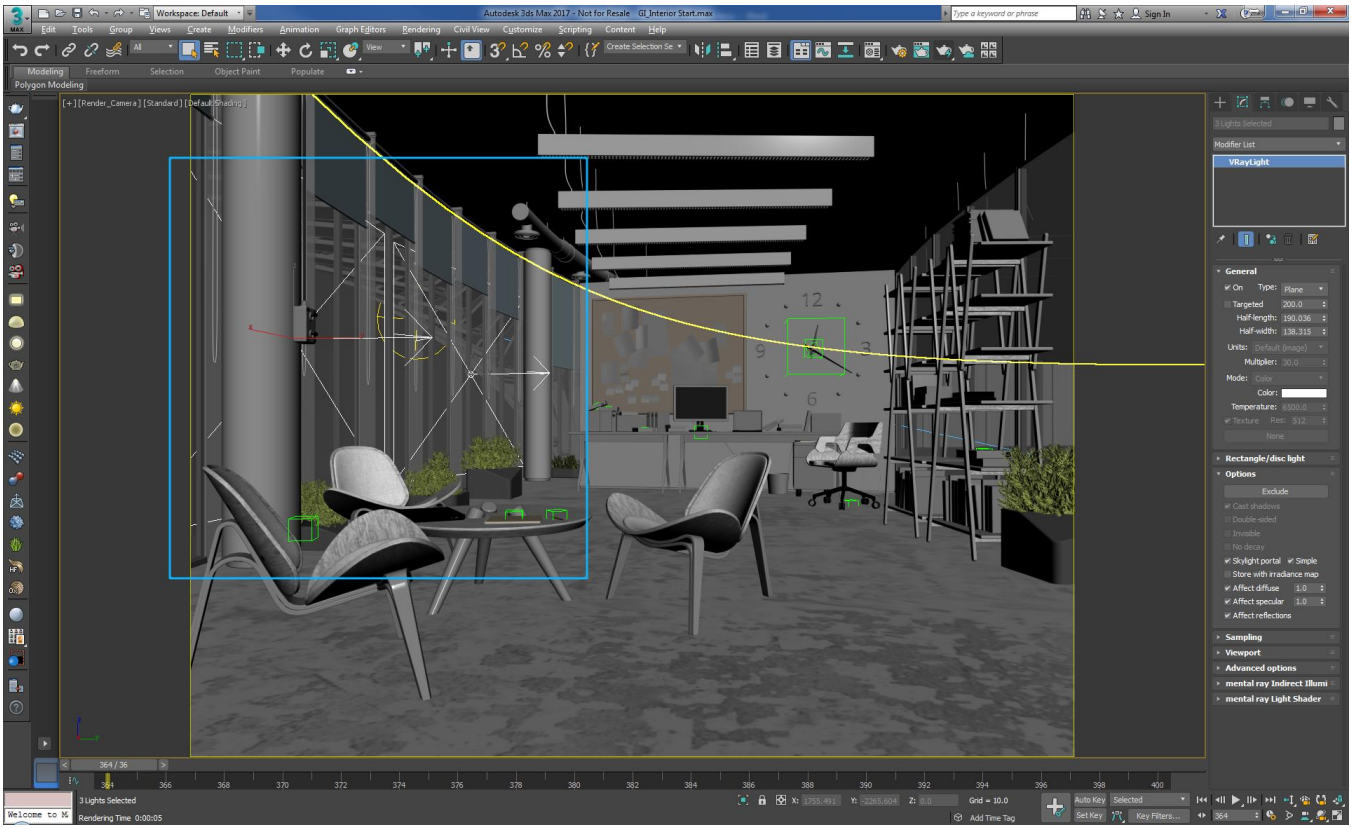
5. Select and enable the **Skylight_Portal_01** V-Ray Light:



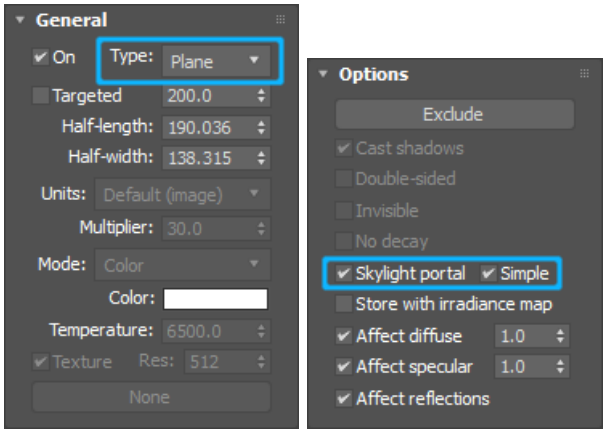
6. Click on the drop down menu and note that there are two more V-Ray lights that are instances of the first one.



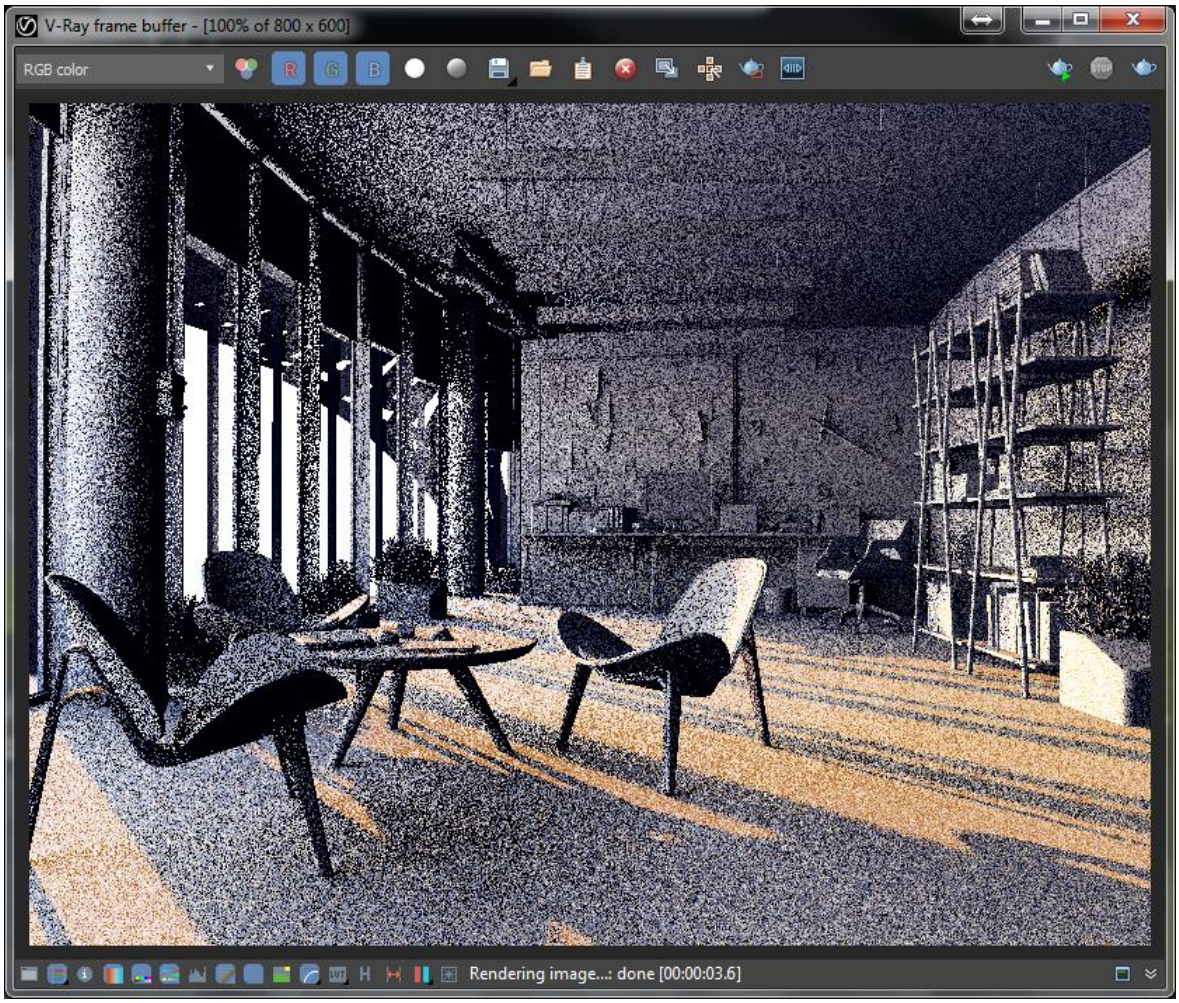
7. Note that we've placed the lights just outside the windows:



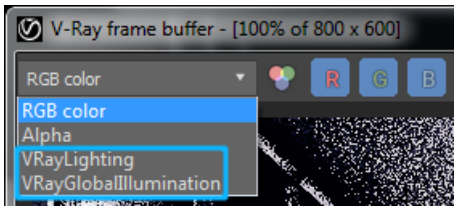
8. In the settings of the light note that this is a **V-Ray Light** with the **Type** set to **Plane** and we have enabled the **Skylight portal** and **Simple** checkboxes.

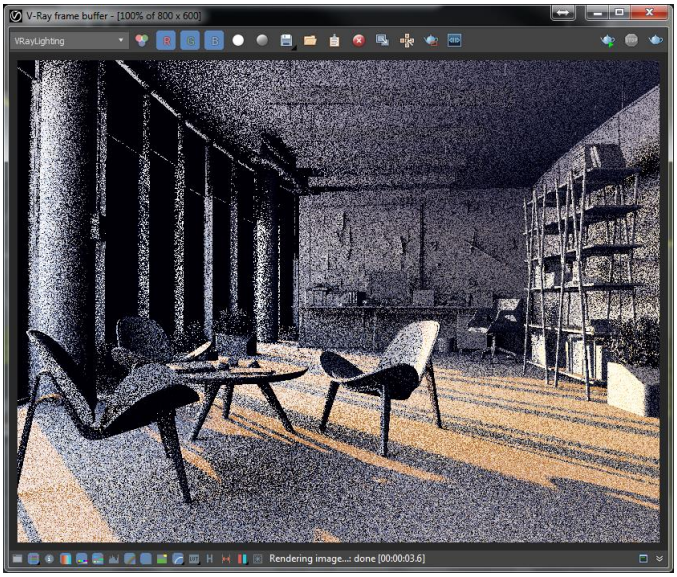


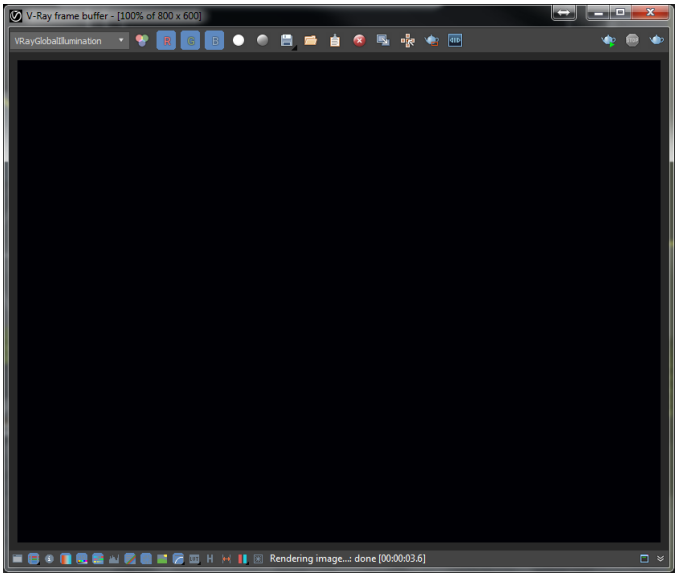
9. Render an image:



10. Note that we have much more light in our scene. The **V-Ray Lights** are shining direct light with the color and intensity of the **V-Ray Sky** because they are switched to **Skylight portal** mode of operation. If you look at the **VRayLighting** and **VRayGlobalIllumination** render elements, you'll see that we still have no Global Illumination in the scene:

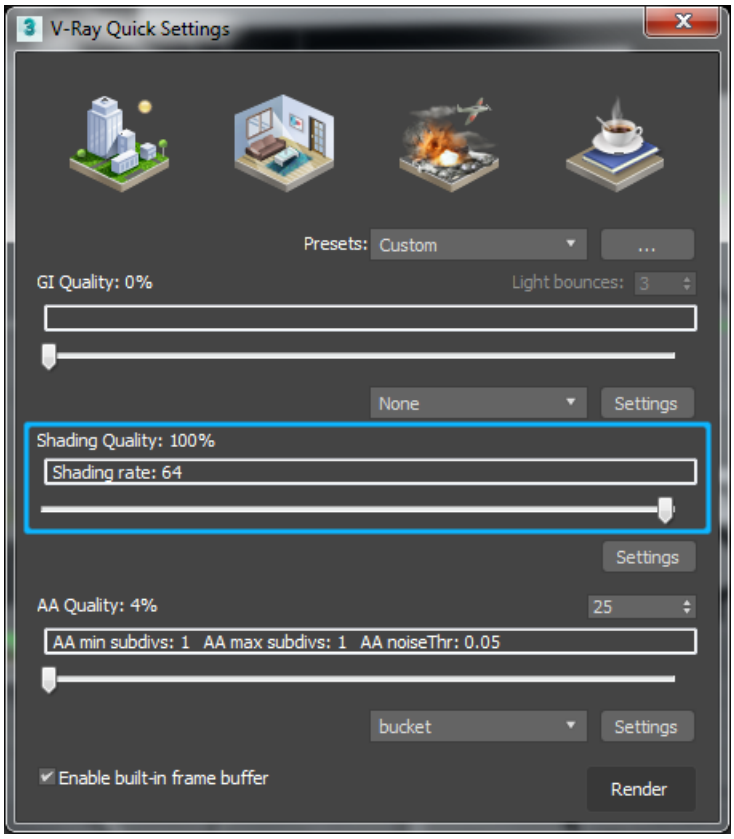


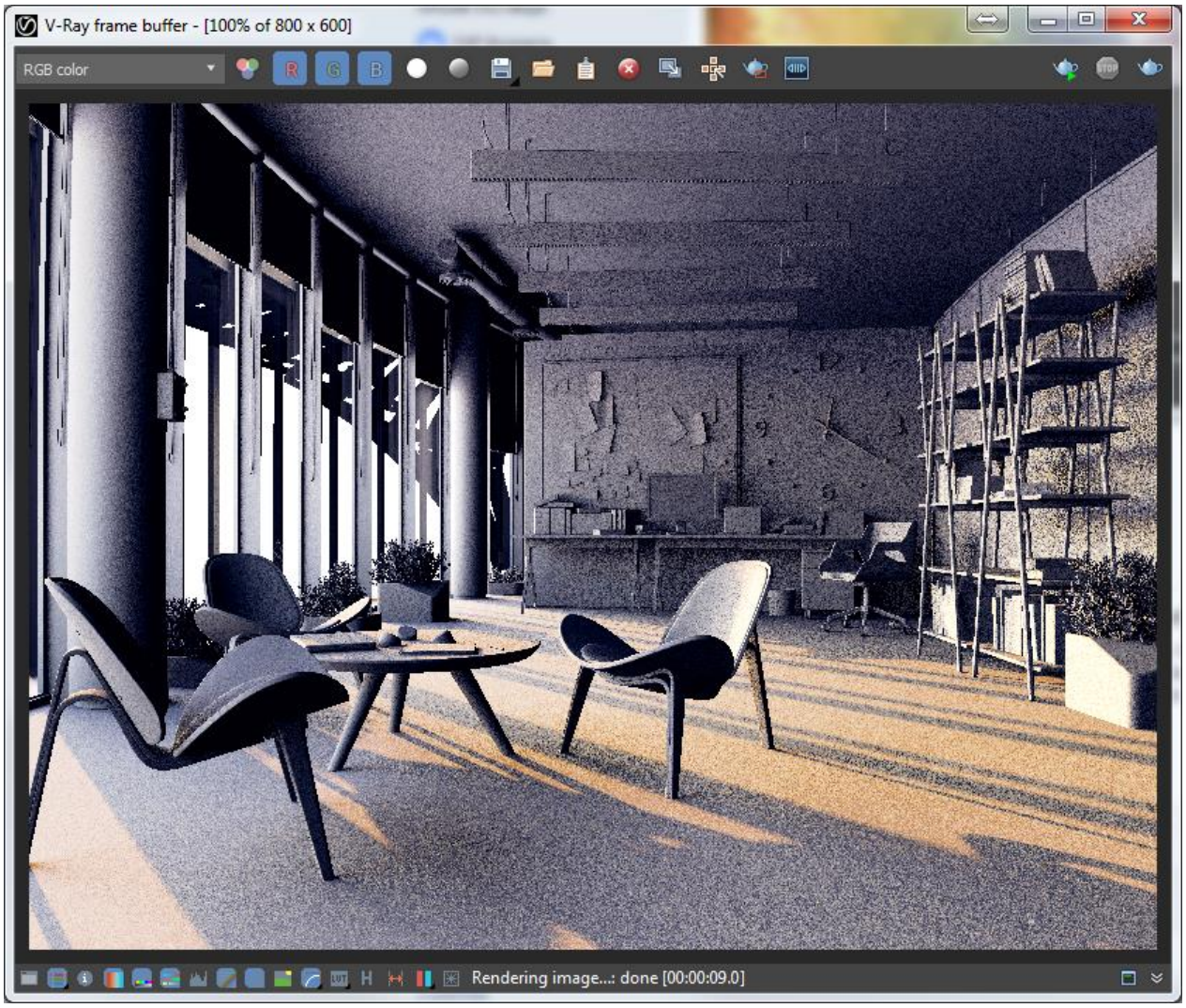




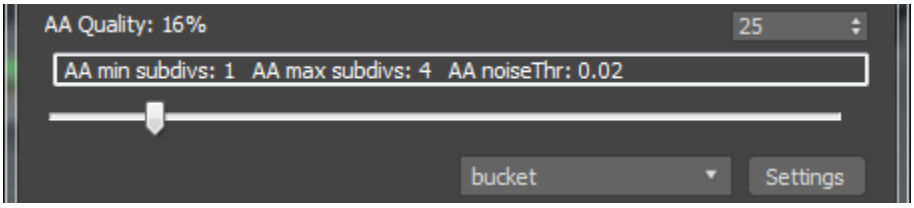
11. Open the **V-Ray Quick Settings**:

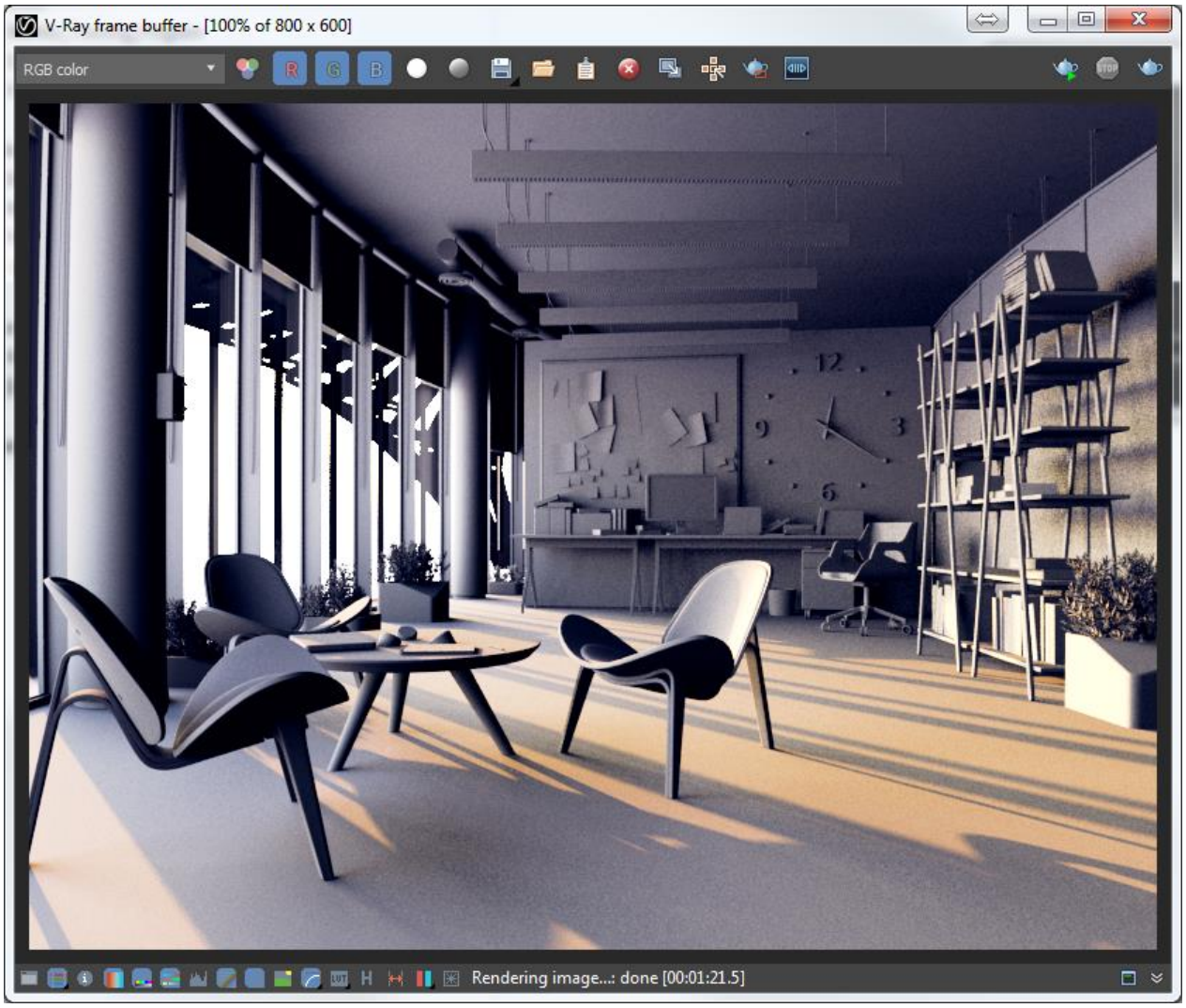
12. Increase the **Shading Quality** parameter to 100% get rid of some of the noise:


V-Ray Quick Settings
Presets:
Custom
...
GI Quality: 0%
Light bounces:
3
None
Settings
Shading Quality: 100%
Shading rate: 64
Settings
AA Quality: 4%
25
AA min subdivs: 1 AA max subdivs: 1 AA noiseThr: 0.05
bucket
Settings
Enable built-in frame buffer
Render

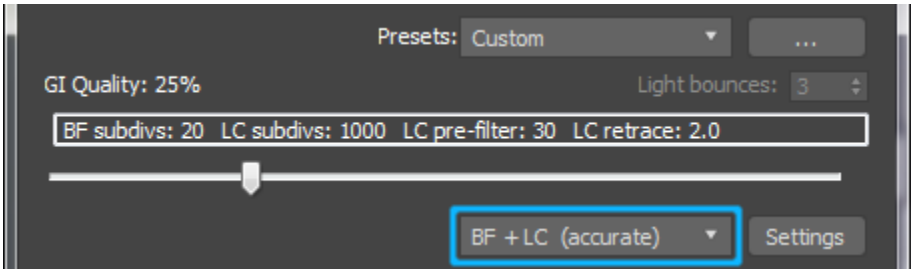


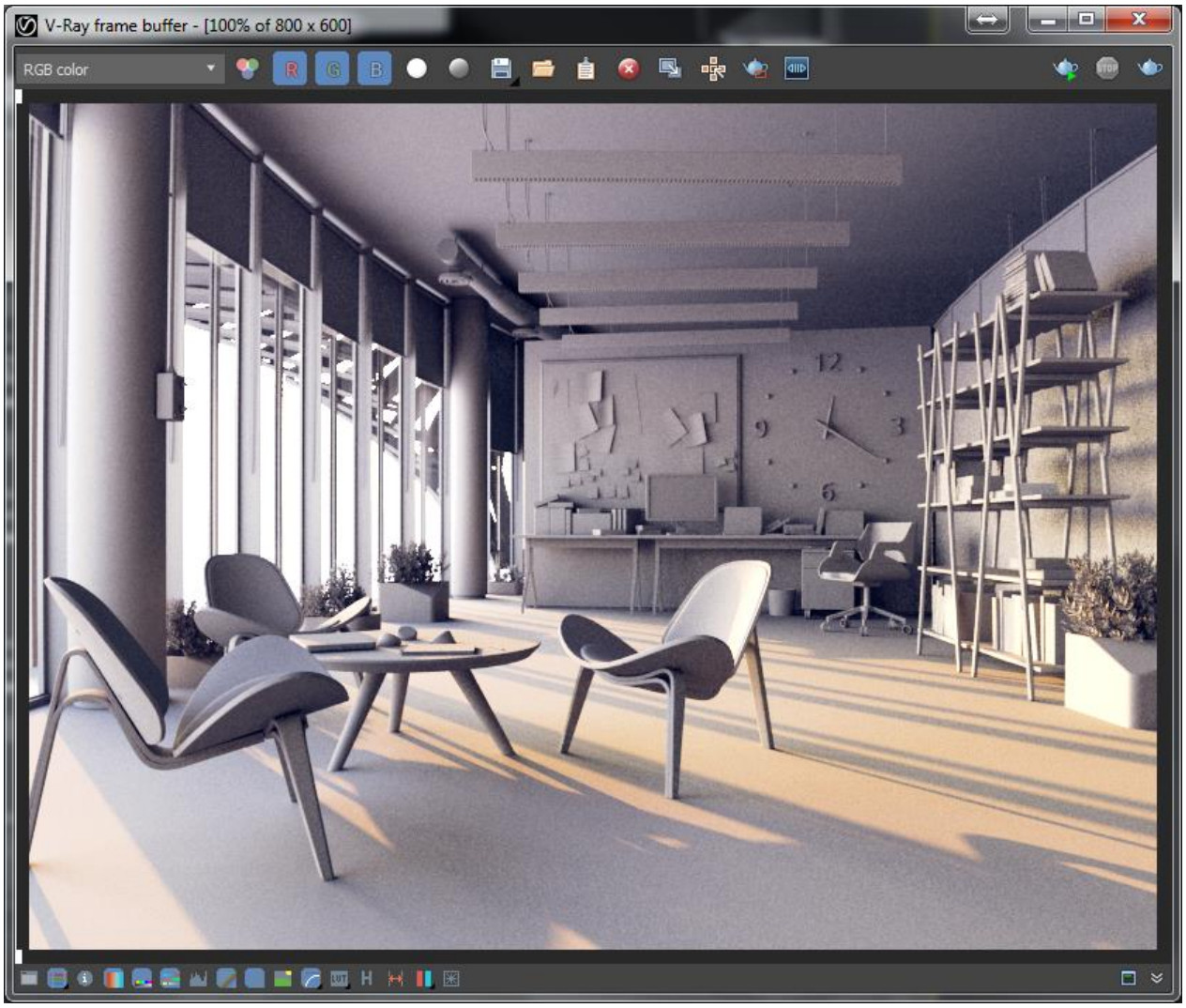
13. To remove the last of the noise, increase the **AA Quality** to 16%



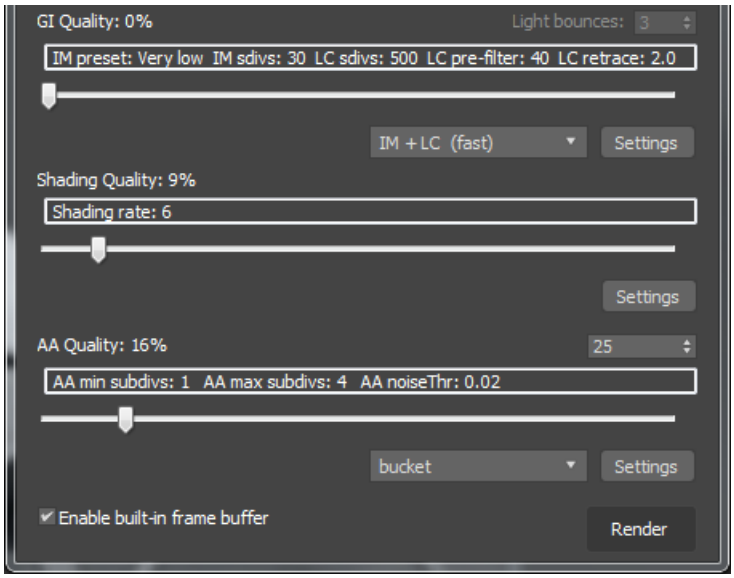


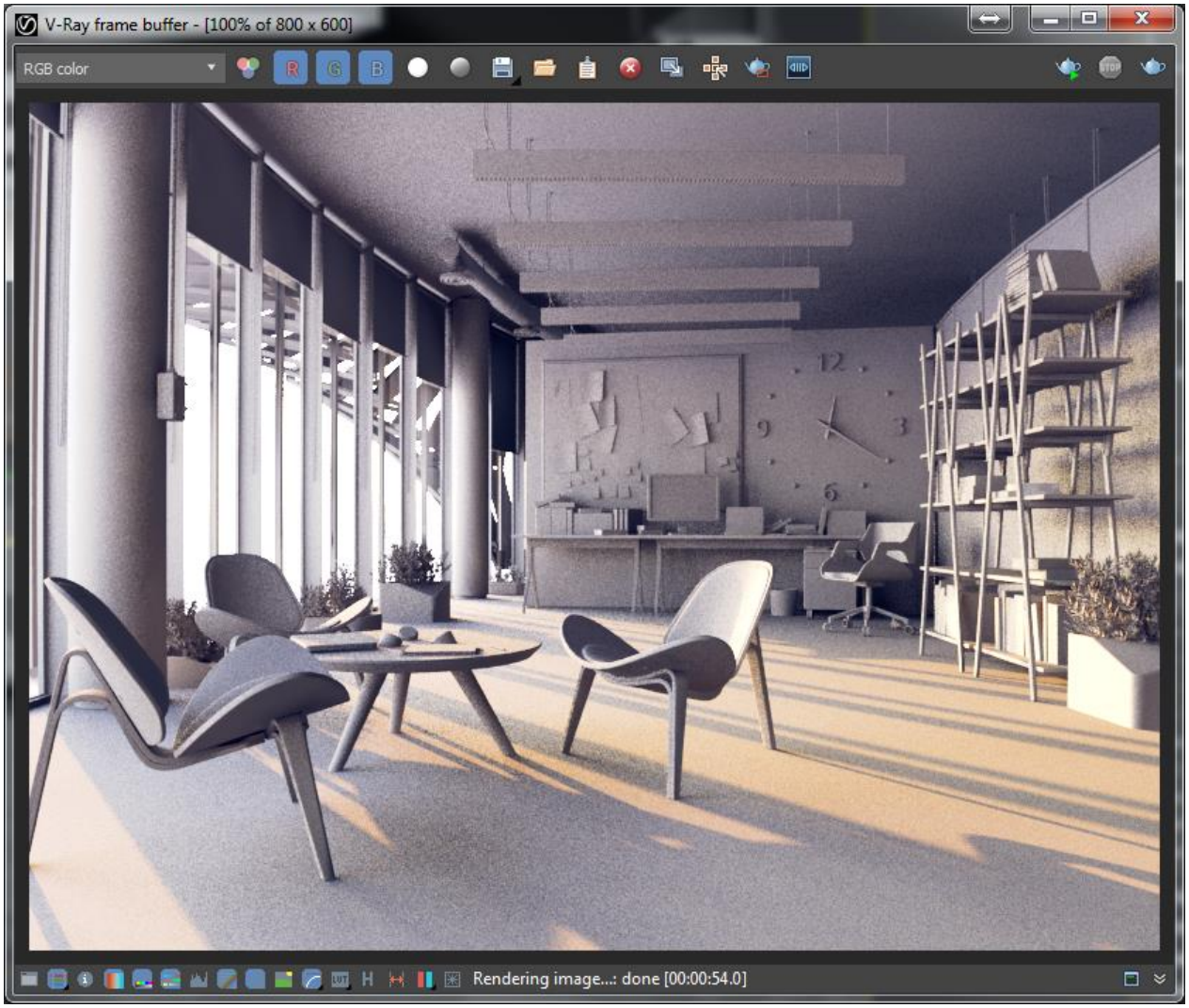
14. Switch the GI to BF + LC (accurate) and set the GI Quality to 25%. Render



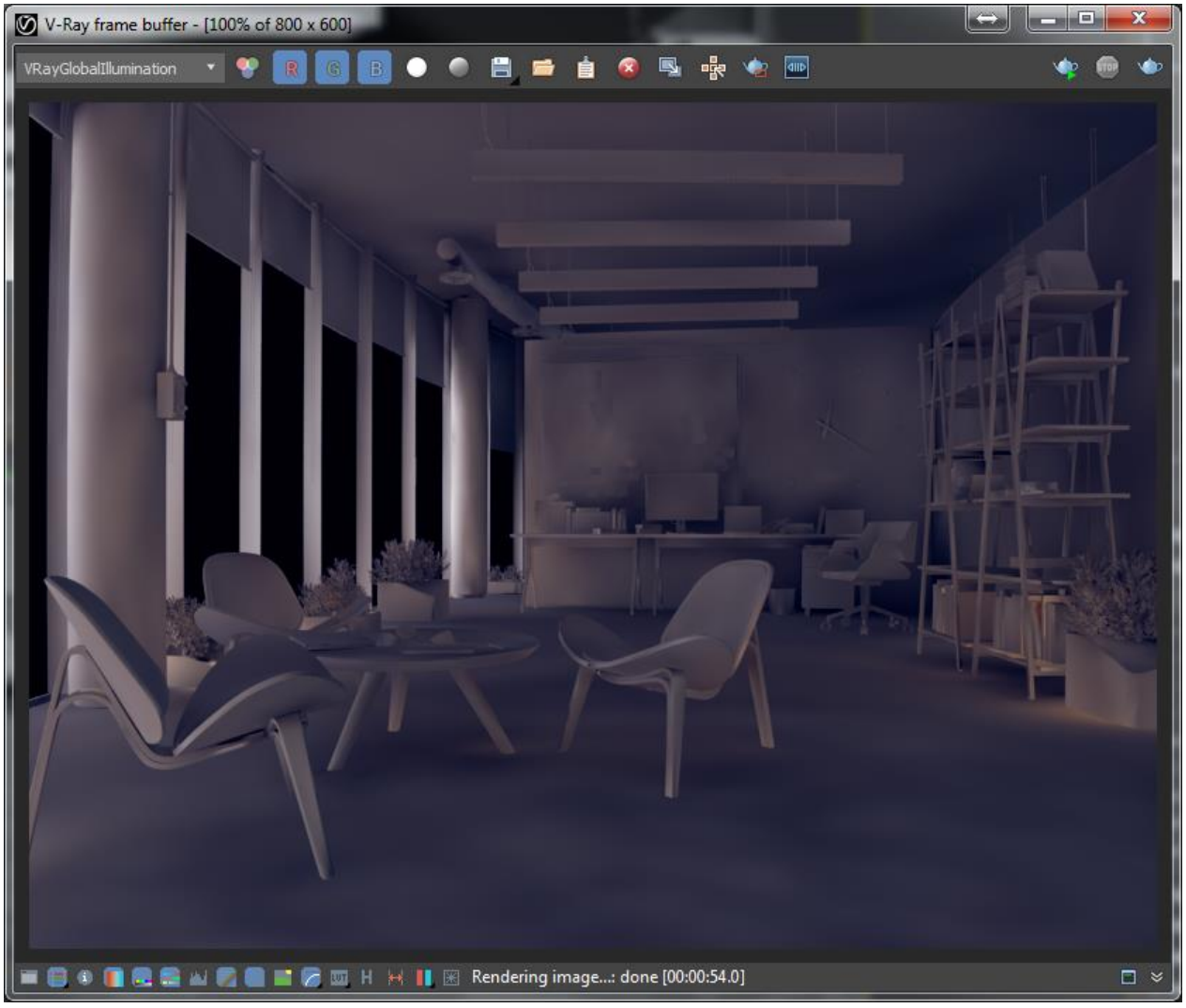


15. We do not need to increase the **GI Quality** more than that because when we are using **Brute Force** as **Primary Bounce** engine the **Shading Quality** parameter also improves the quality of the **Brute Force**. The **Light Cache** produces a good enough solution as a **Secondary Bounce** at these settings.
16. The noise can be further reduced by balancing the Shading Quality and AA Quality but we are going to leave it for now because this will increase the render times. If you have time you can try to reduce the **Shading Quality** to 50% and increase the **AA Quality** to 36%
17. Switch the GI dropdown to **IM + LC (fast)**, set the **GI Quality** to 0%, the **Shading Quality** to 9% and the **AA Quality** to 16%. We will work on the GI only and the **Shading Quality** and **AA Quality** are set to such values that we have good ratio of render time and noise. Hit Render

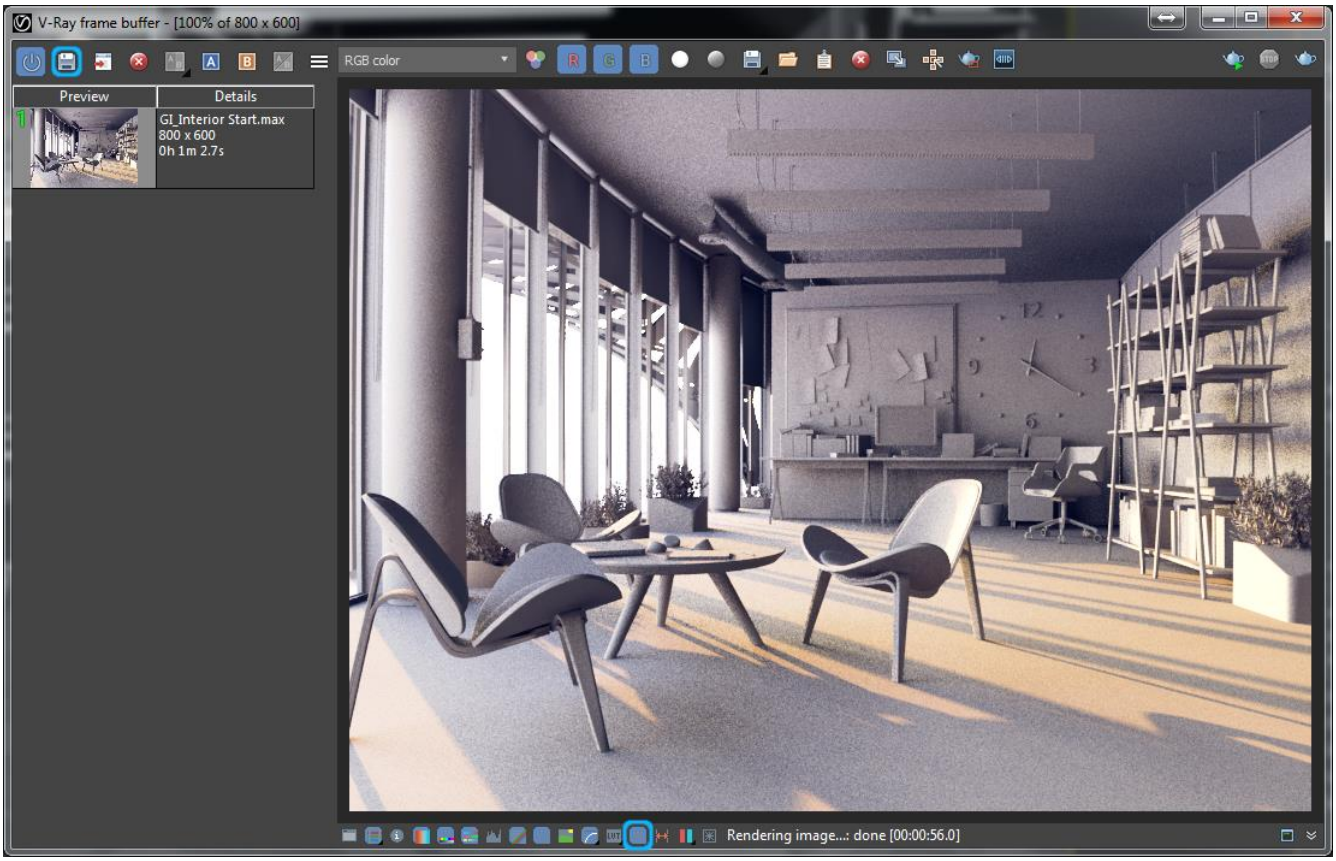

GI Quality: 0%
Light bounces: 3
IM preset: Very low IM sdivs: 30 LC sdivs: 500 LC pre-filter: 40 LC retrace: 2.0
IM + LC (fast)
Settings
Shading Quality: 9%
Shading rate: 6
Settings
AA Quality: 16%
25
AA min subdivs: 1 AA max subdivs: 4 AA noiseThr: 0.02
bucket
Settings
Enable built-in frame buffer
Render


V-Ray frame buffer - [100% of 800 x 600]
RGB color
Rendering image...: done [00:00:54.0]

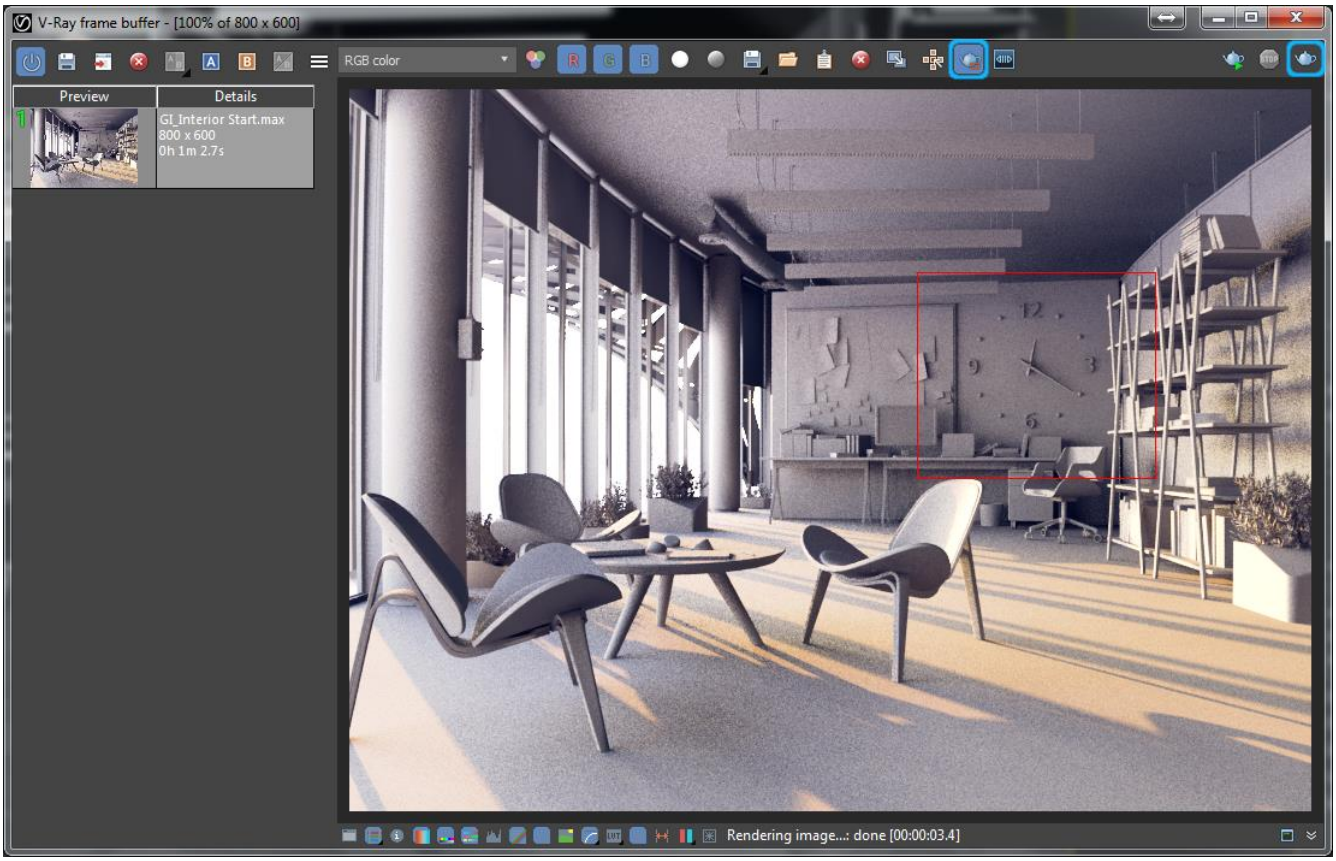
18. Look at the **VRayGlobalIllumination** render element:



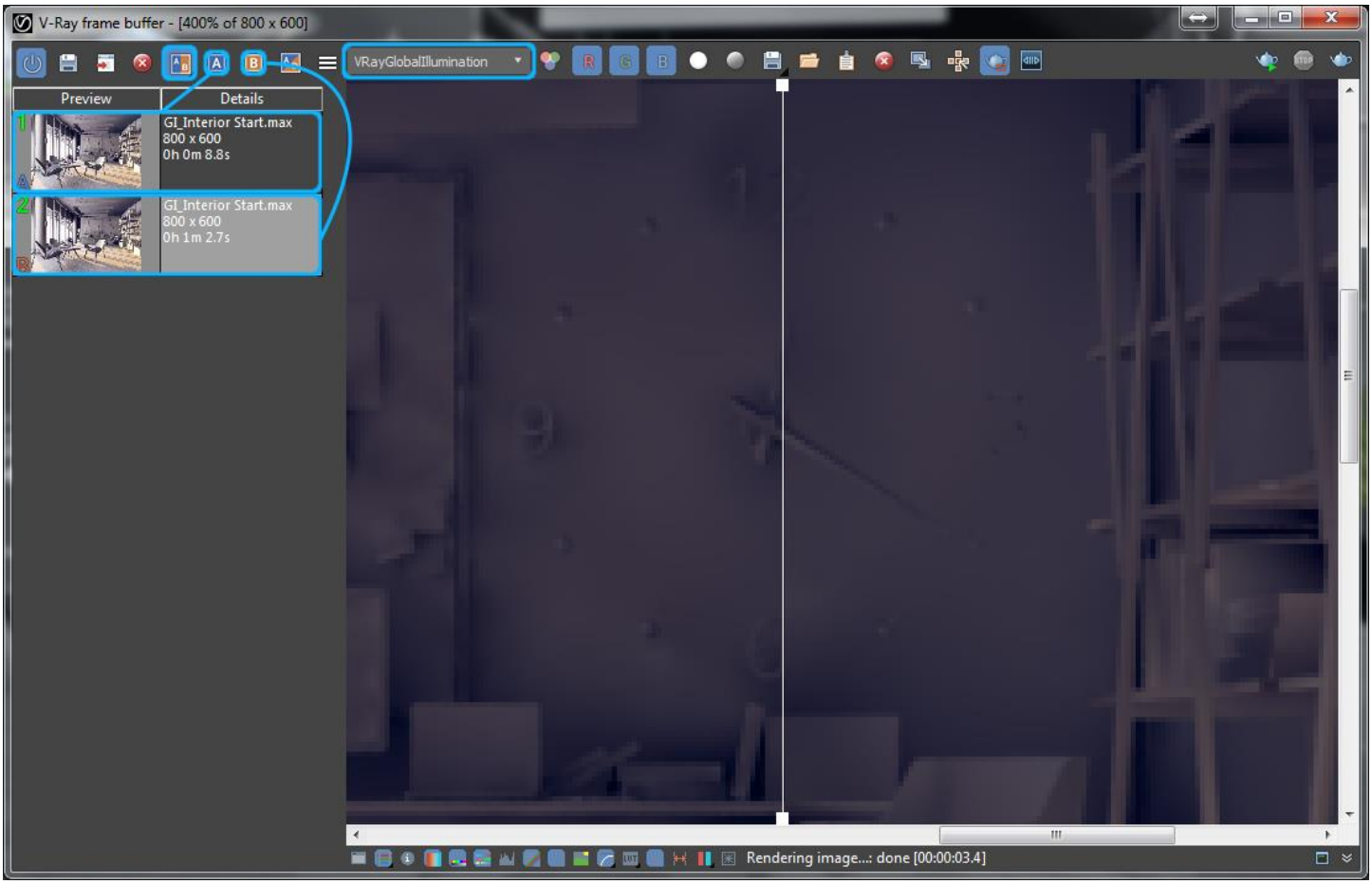
19. Switch the **VFB** view back to the **RGB color**
20. Save the image to the **VFB History**:



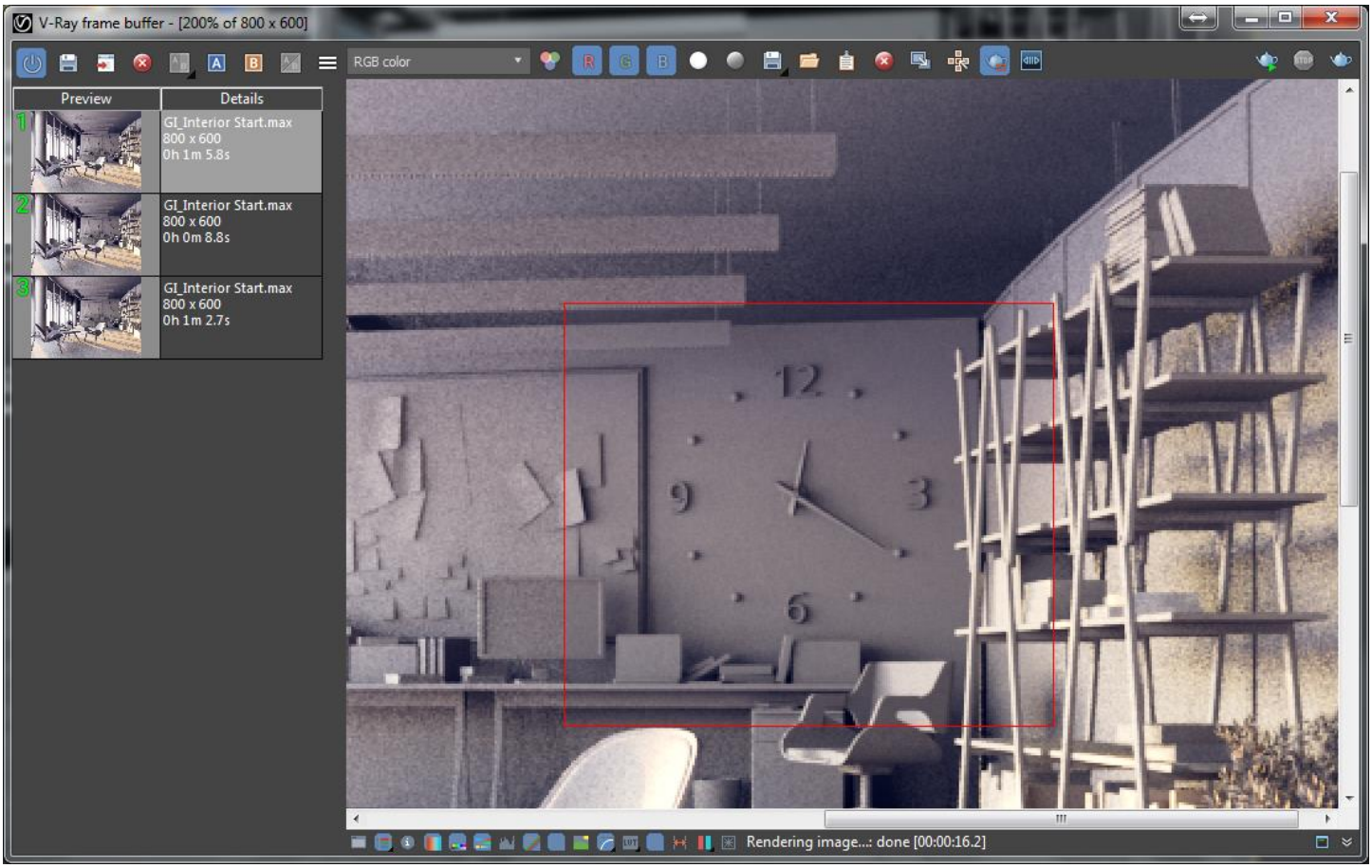
21. Increase the **GI Quality** to 50%
22. Use the **Region Render** button of the **VFB** to draw a rectangle around the clock on the wall. This way we can work a bit faster. Render an image



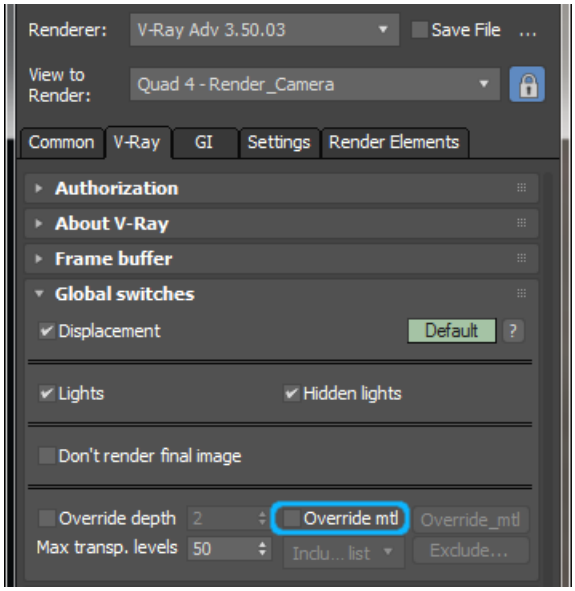
23. Save the image to the **VFB History** and use the **A/B Comparison** tool in the VFB to compare it to the previous one. To better see the effect, look at the **VRayGlobalIllumination** render element and zoom in on the area we are rendering:



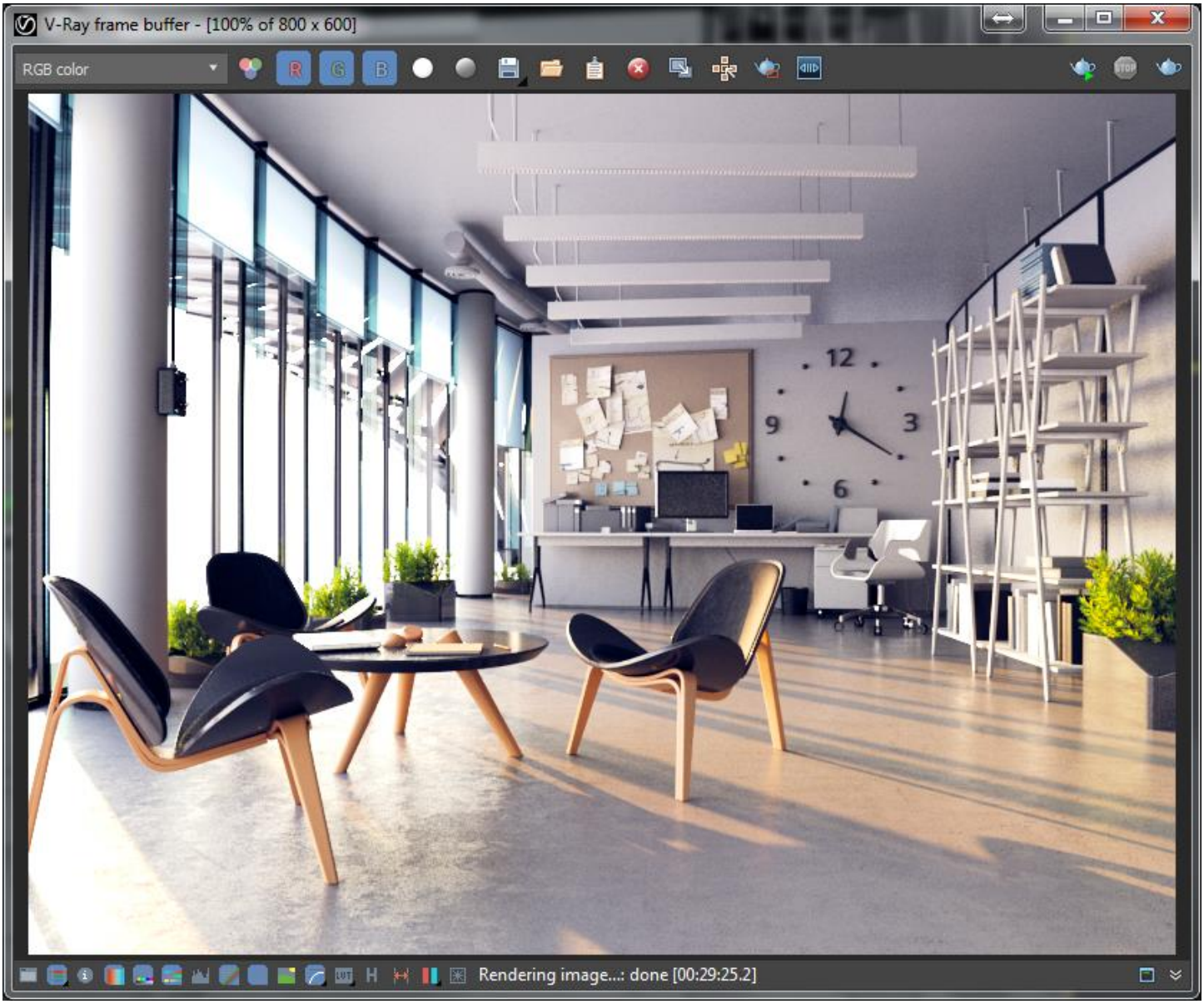
24. Increase the **GI Quality** to 75% and then to 100% and render. Note how this affects the **VRayGlobalIllumination** render element with the help of the A/B Comparison tool.
25. Leave the **GI Quality** at 100%
26. Set the **Shading Quality** to 25% and the **AA Quality** to 32% and render an image. Look at the RGB color.



27. This are the final quality settings we'll be using.
28. Open the **Render Setup** and in the **V-Ray** tab, in the **Global Switches** rollout disable the **Override mtl** checkbox. Skip this step if you do not have enough time and render power.



29. Disable the **Render Region** and render the final image:

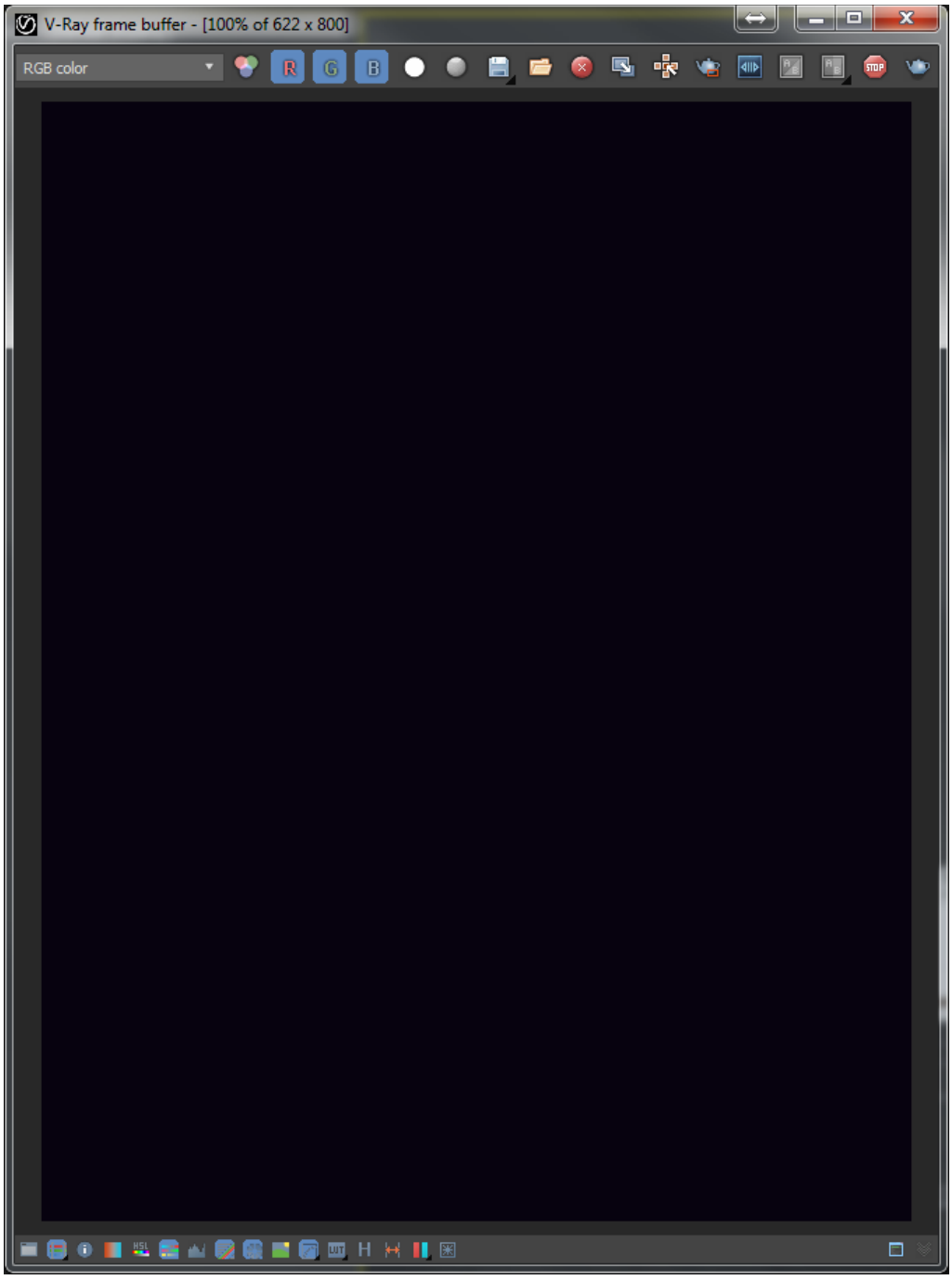


oonix.io

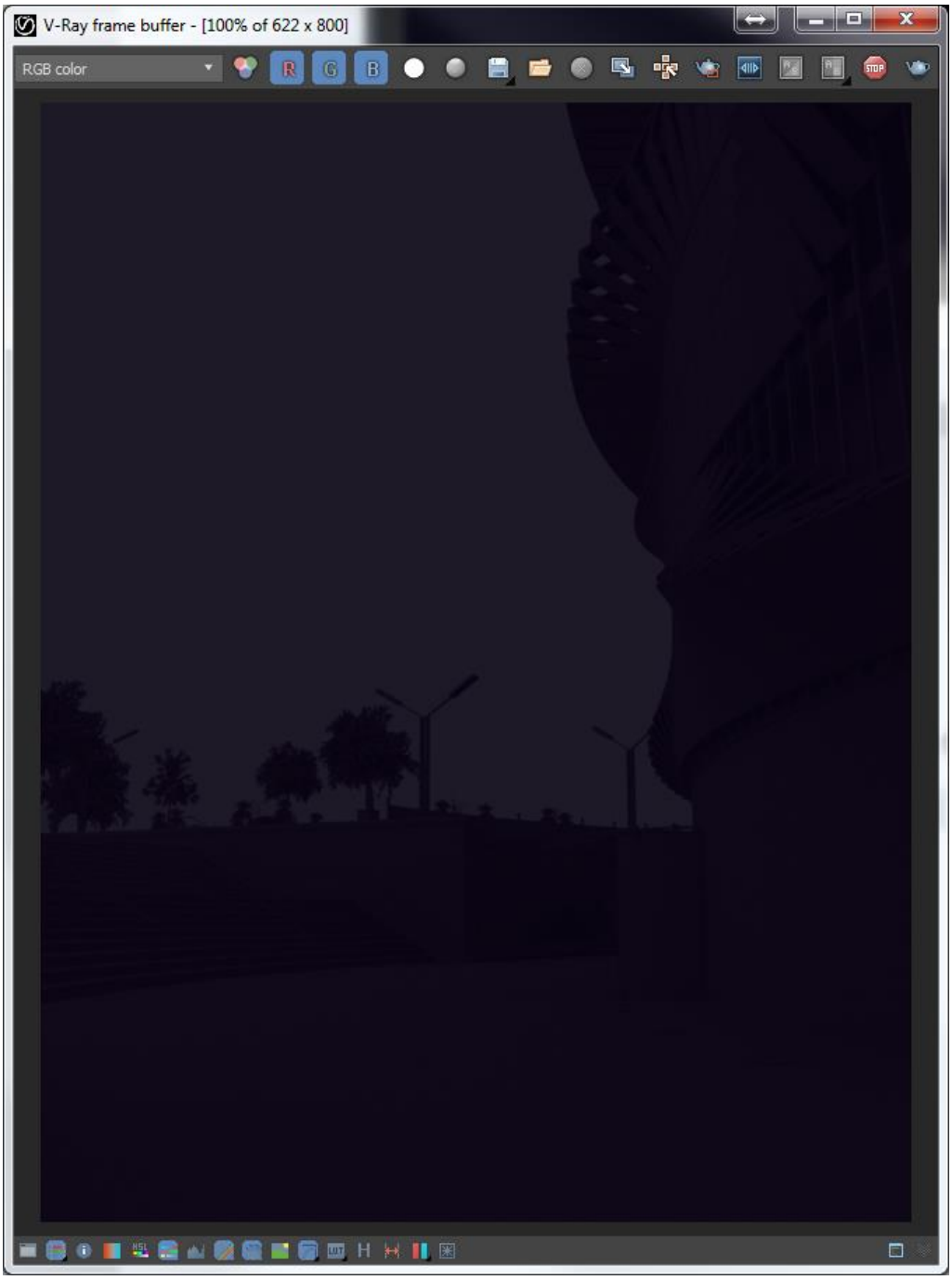
V-RAY DOME LIGHT

This demonstration covers the some of the settings of the V-Ray Dome Light.

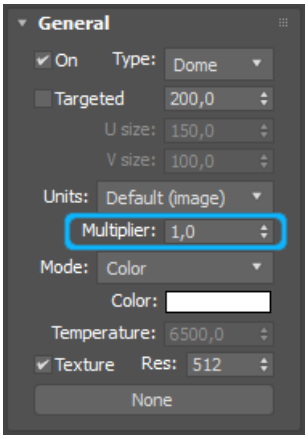
1. In the folder **03 04 Office Building** open the scene named **04 V-Ray Dome Light.max**
2. Start V-Ray RT

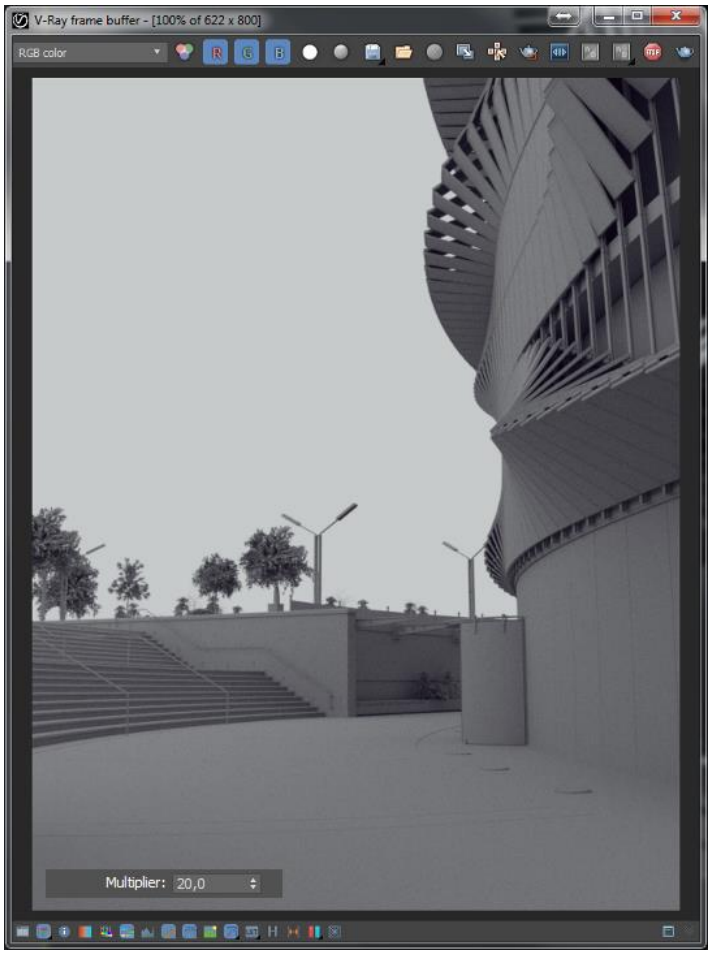


3. Create a V-Ray Dome Light and place it anywhere in the scene:

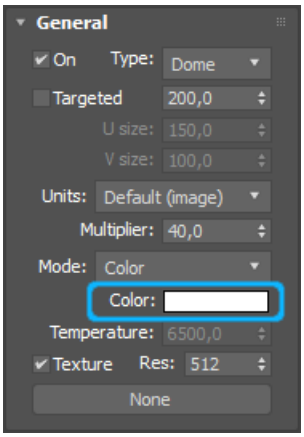

V-Ray frame buffer - [100% of 622 x 800]
RGB color
R
G
B
STOP

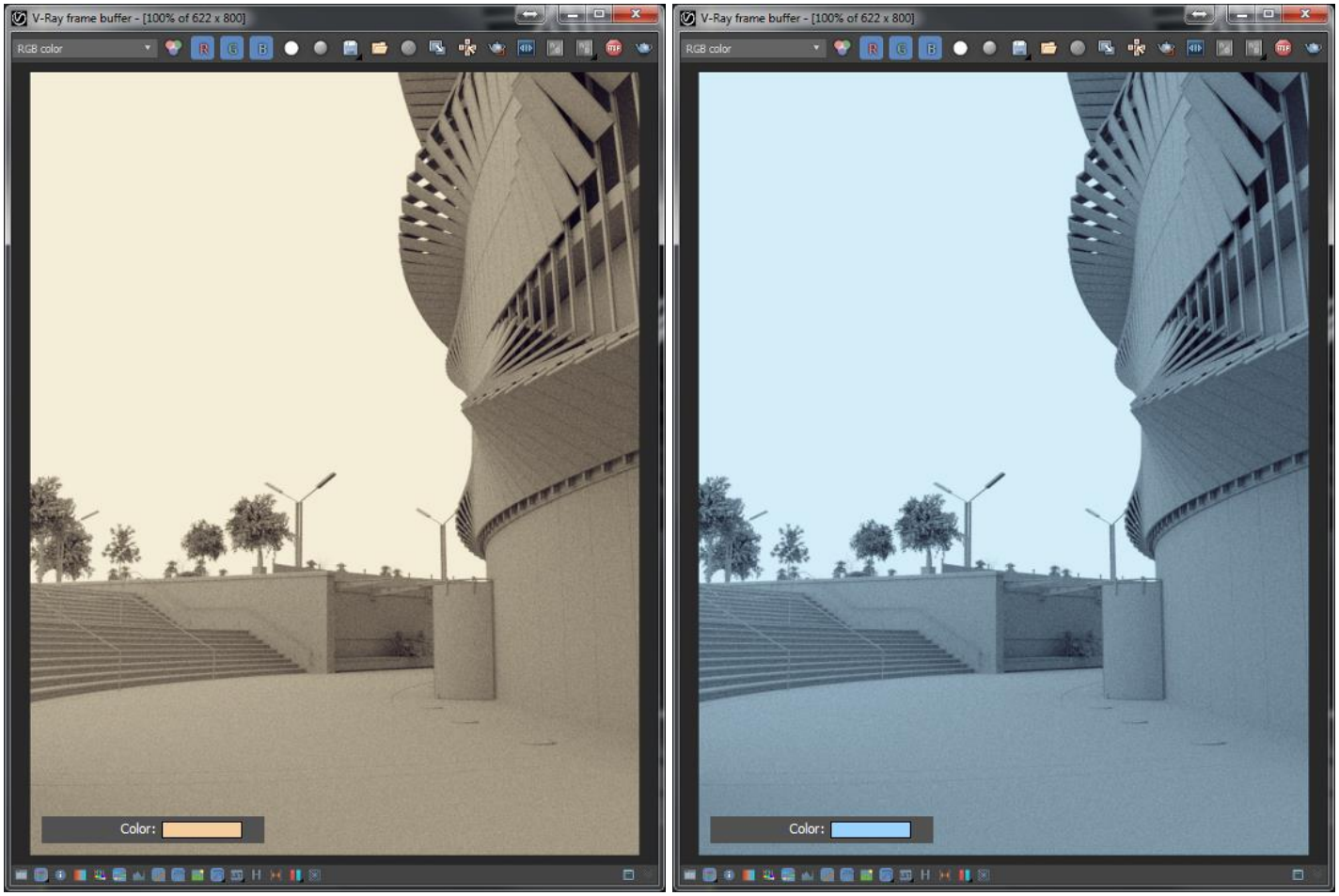
4. In the **Modify** tab of the **Command Panel** try different values for the **Multiplier** parameter:



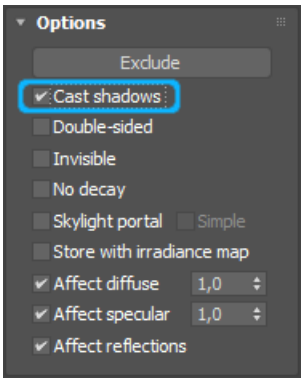


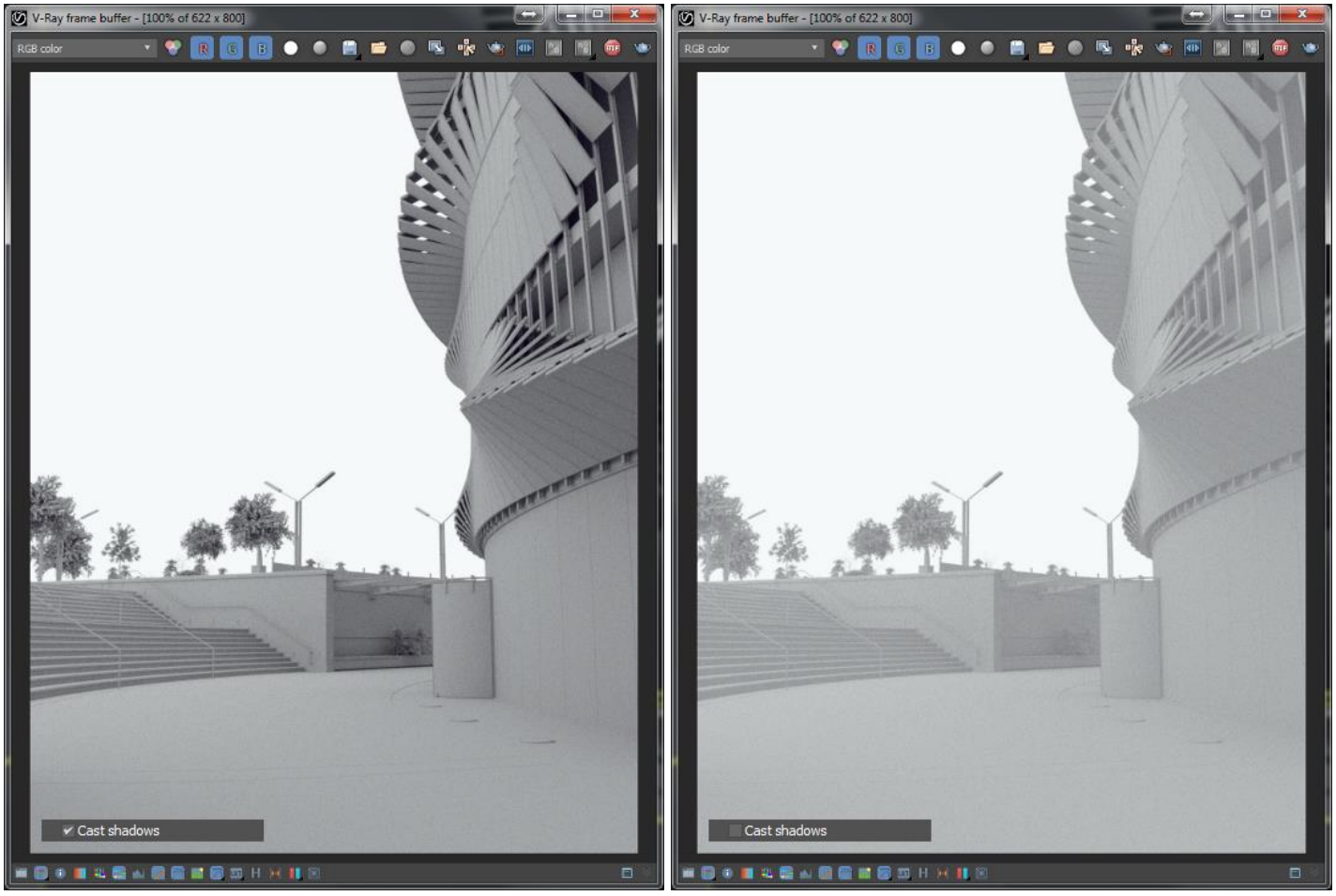
5. Set the **Multiplier** to 40,0
6. Try different values for the **Color** parameter:



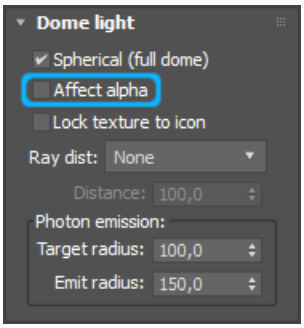


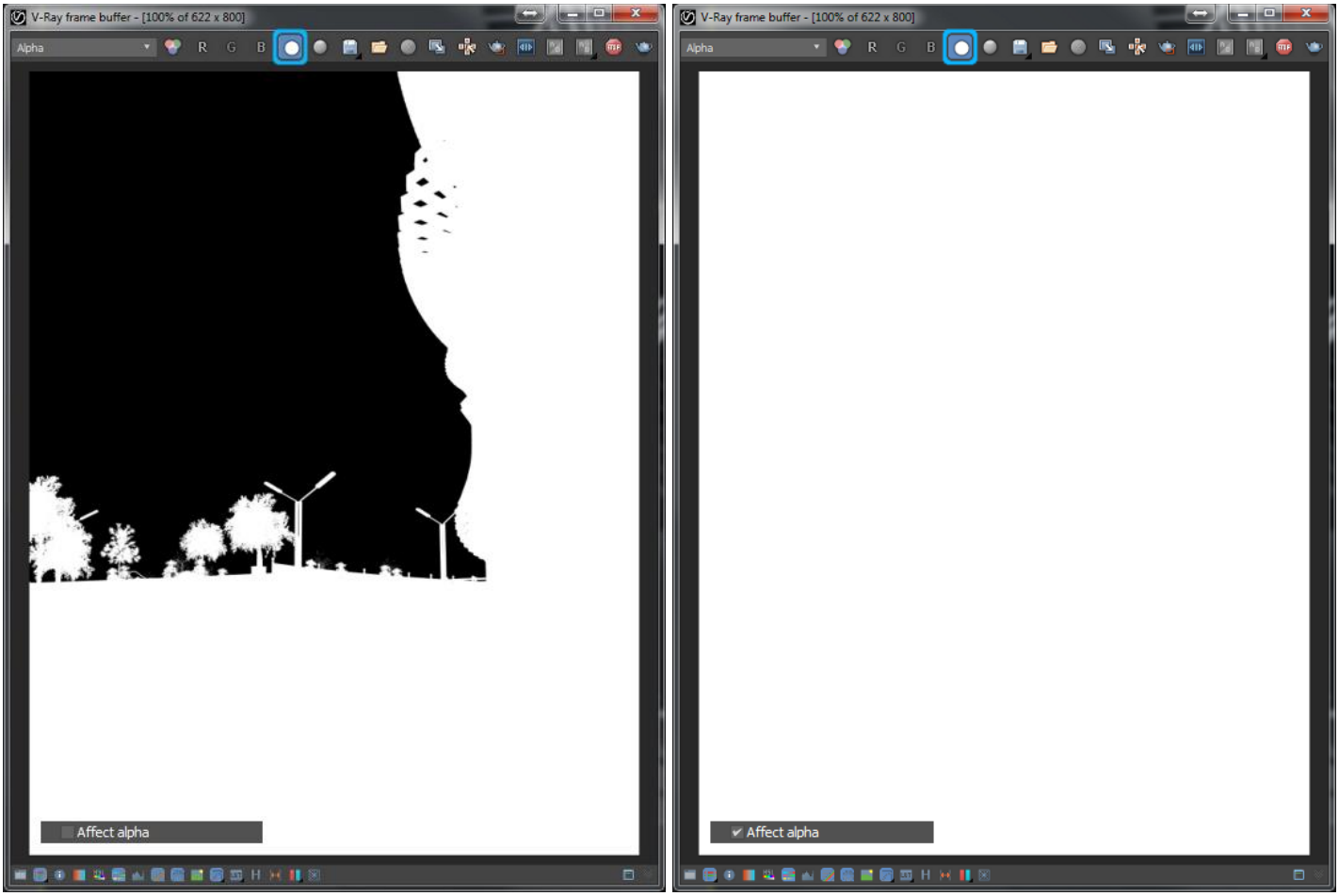
7. Set the **Color** to white
8. In the **Options** rollout toggle the **Cast shadows** checkbox and note the difference:



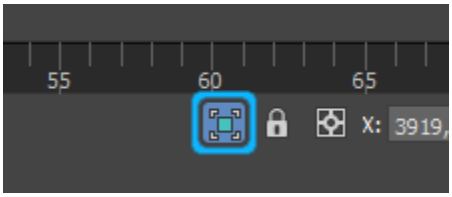


9. Make sure the **Cast shadows** check box is enabled
10. In the **Dome light** rollout toggle the **Affect alpha** check box. Note the difference in the alpha channel

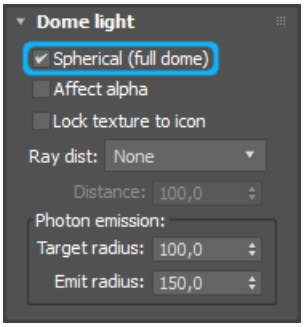


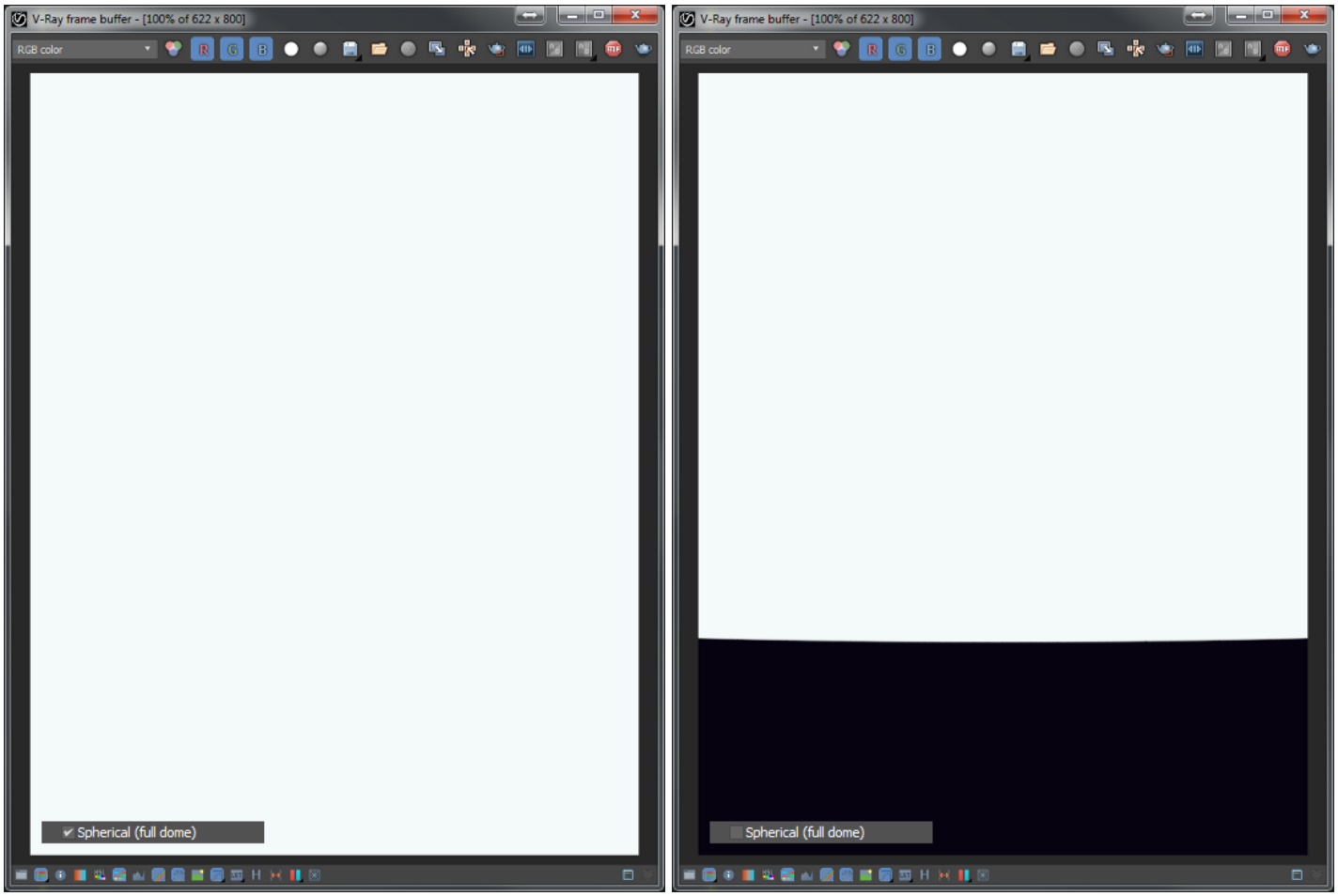


11. Make sure the **Affect alpha** check box is disabled
12. Use the **Isolate Selection toggle** to isolate the V-Ray Dome Light

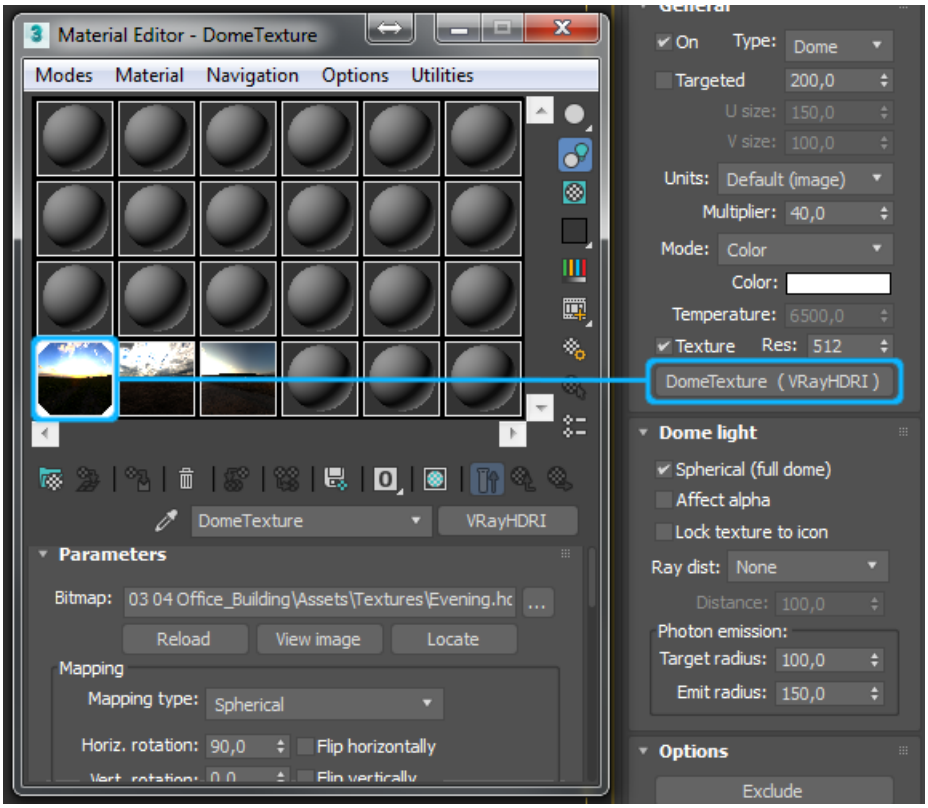


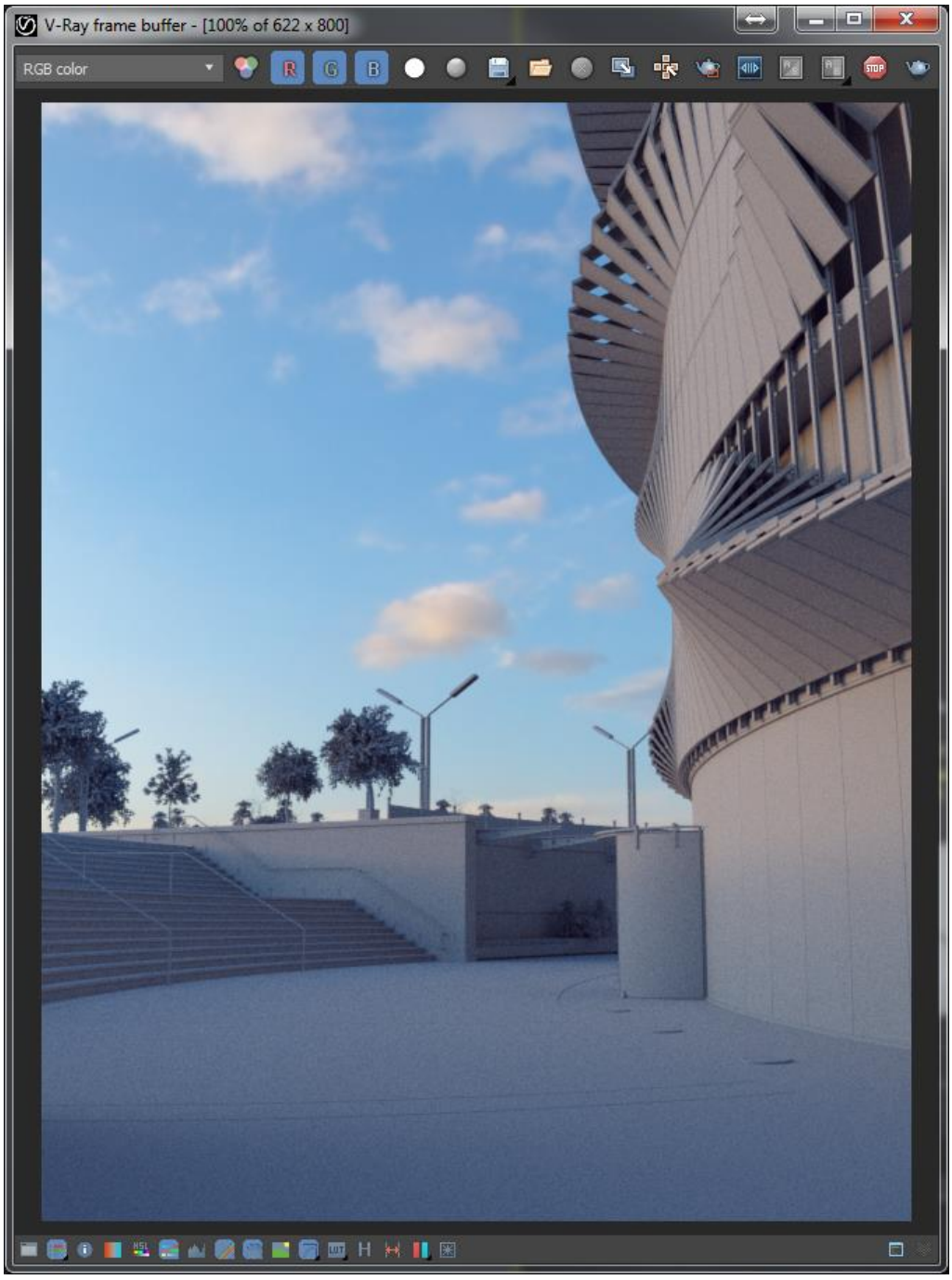
13. Toggle the **Spherical (full dome)** check box and note the effect:



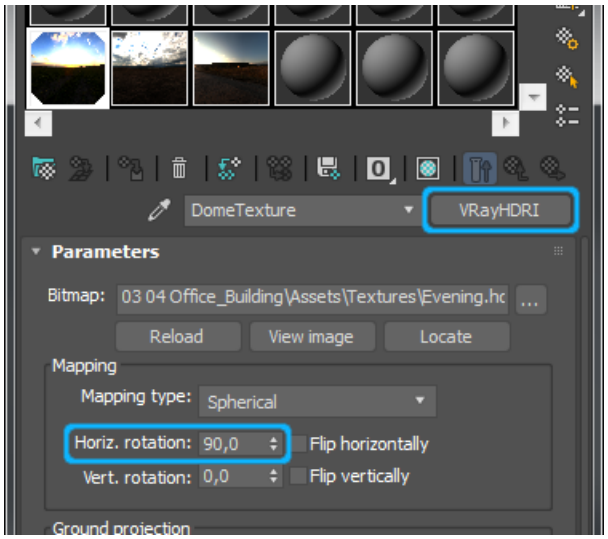


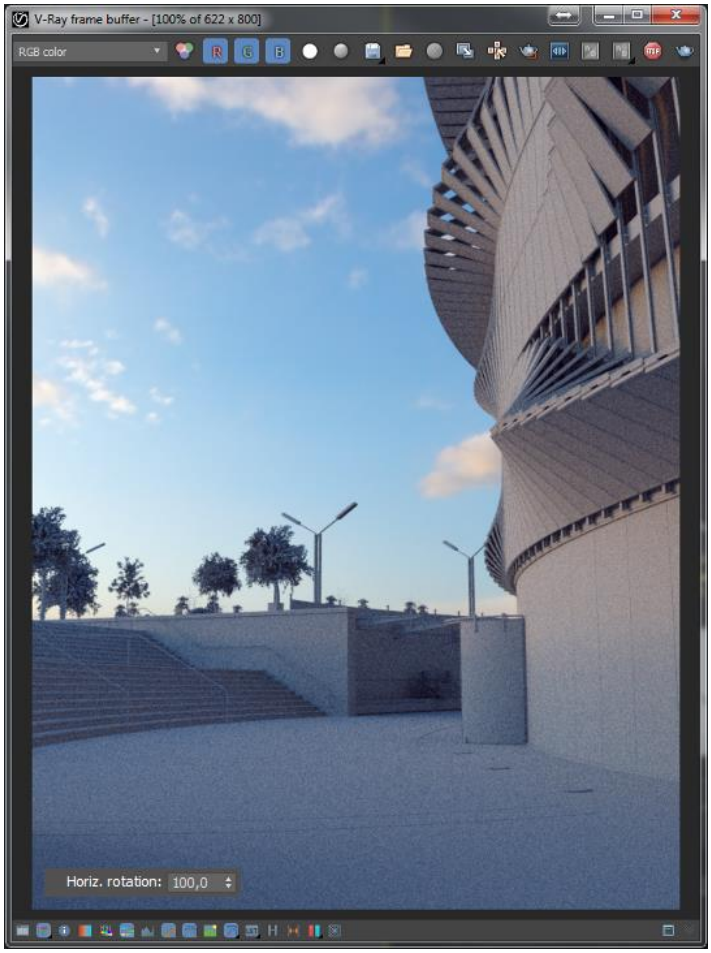
14. Make sure that the **Spherical (full dome)** check box is enabled
15. Disable the **Isolate Selection toggle**
16. Open the **Material Editor**, find the **DomeTexture** (**VRayHDRI**) and connect it to the texture slot of the **V-Ray Dome Light**:

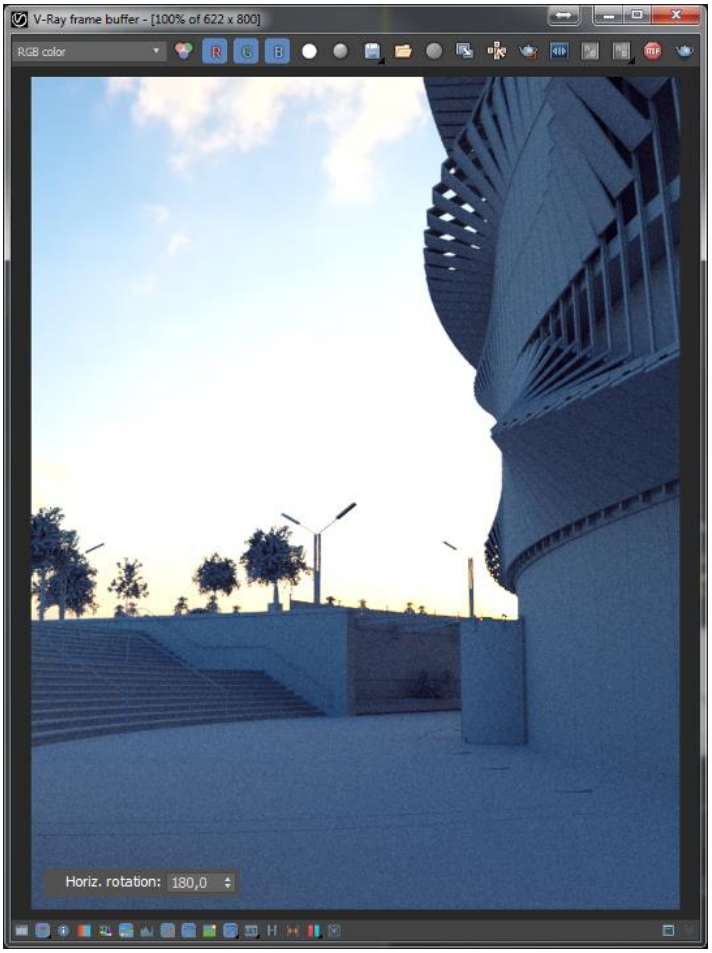

Material Editor - DomeTexture
Modes
Material
Navigation
Options
Utilities
DomeTexture
VRayHDRI
Parameters
Bitmap:
03 04 Office_Building\Assets\Textures\Evening.hc
Reload
View image
Locate
Mapping
Mapping type:
Spherical
Horiz. rotation:
90,0
Flip horizontally
On
Type:
Dome
Targeted
200,0
U size:
150,0
V size:
100,0
Units:
Default (image)
Multiplier:
40,0
Mode:
Color
Color:
Temperature:
6500,0
Texture
Res:
512
DomeTexture (VRayHDRI)
Dome light
Spherical (full dome)
Affect alpha
Lock texture to icon
Ray dist:
None
Distance:
100,0
Photon emission:
Target radius:
100,0
Emit radius:
150,0
Options
Exclude



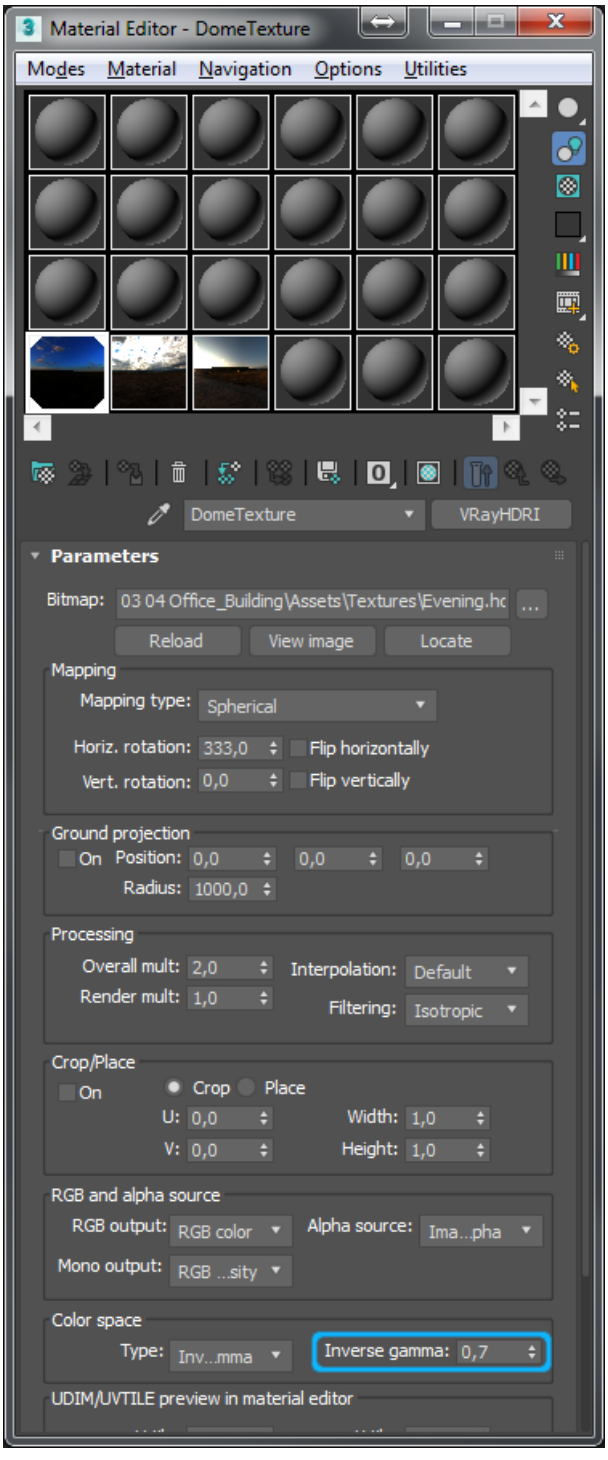
17. Note that we are using a **VRayHDRI** node to load the .hdri image. In the settings of the **DomeTexture** node try different values for the **Horiz. rotation** parameter:

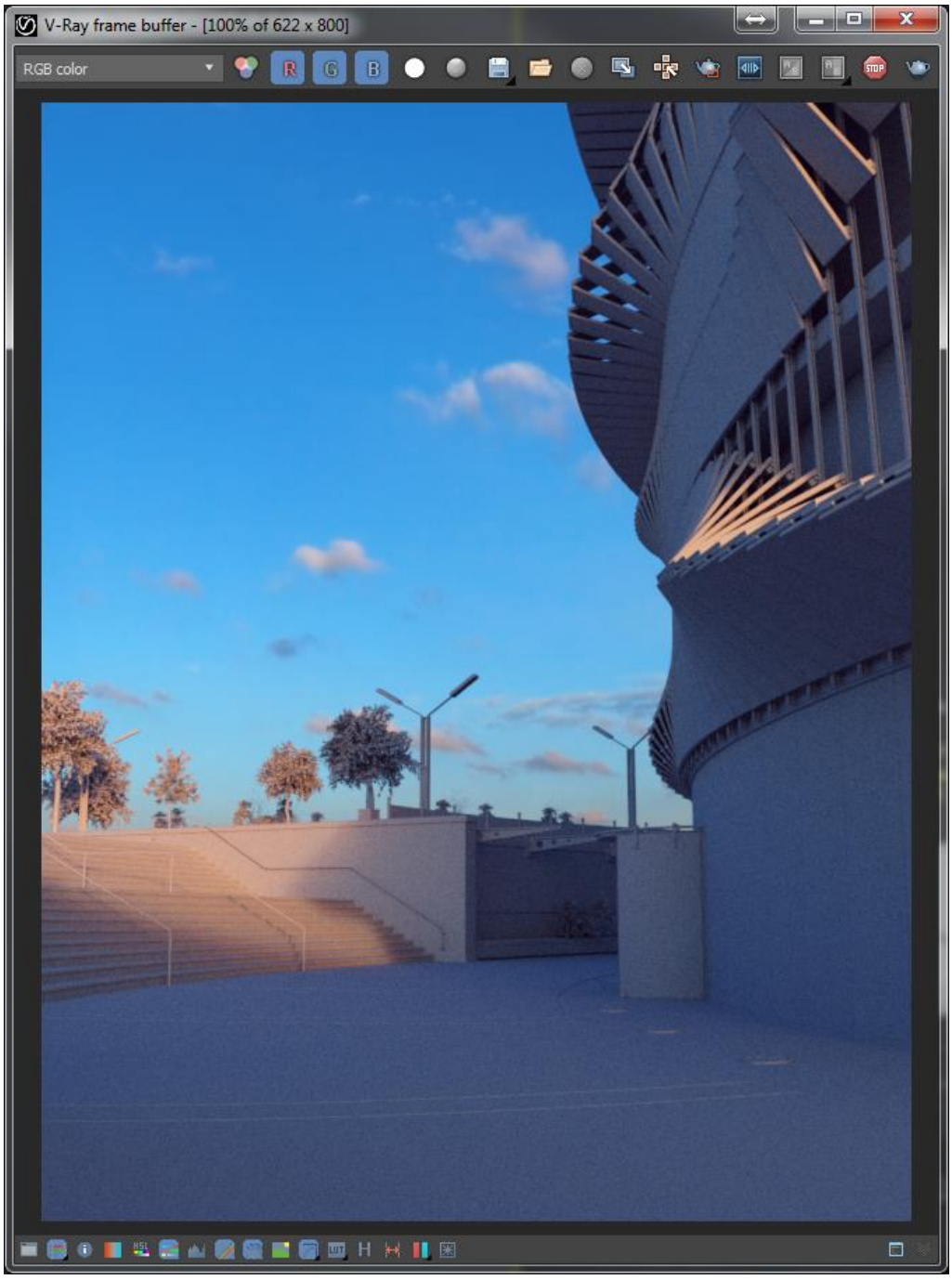




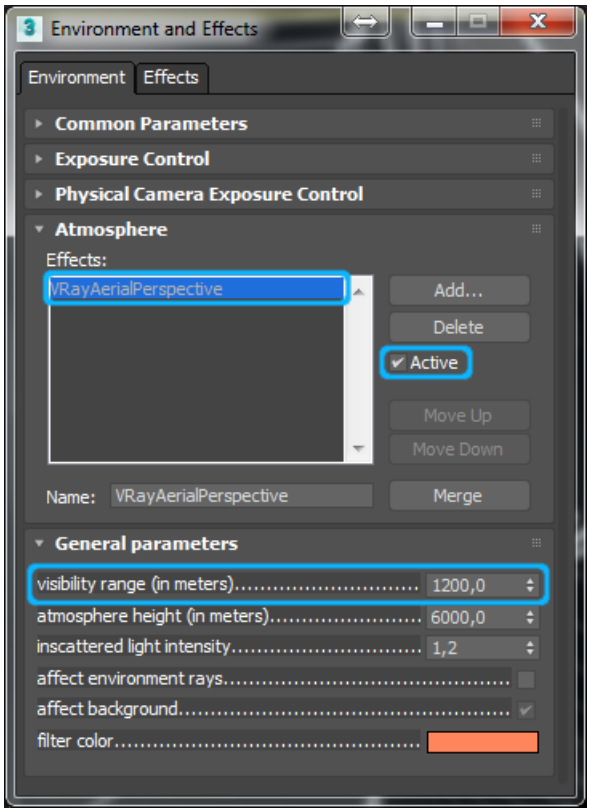


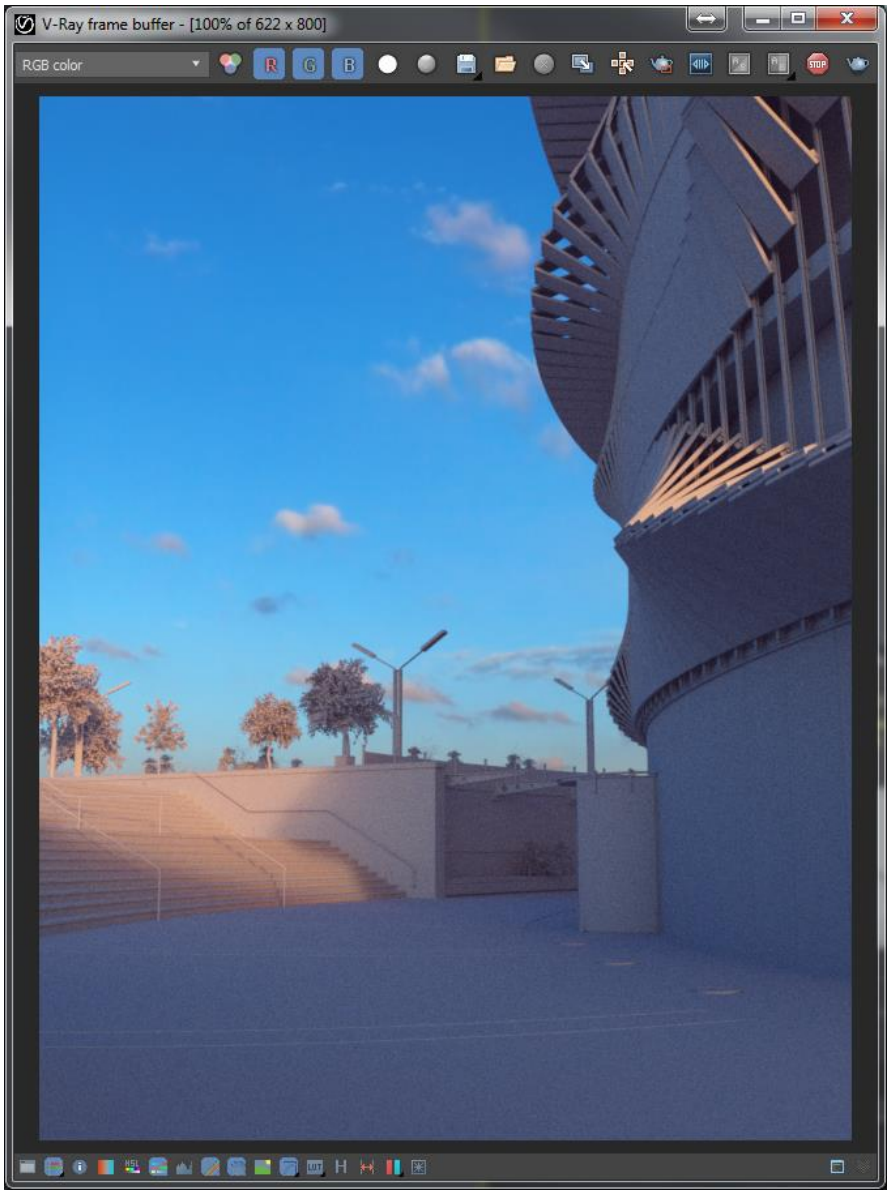
18. Set the **Horiz. rotation** to 333,0
19. Set the **Inverse gamma** to 0,7


Material Editor - DomeTexture
Modes Material Navigation Options Utilities
DomeTexture
VRayHDRI
Parameters
Bitmap: 03 04 Office_Building\Assets\Textures\Evening.hc
Reload View image Locate
Mapping
Mapping type: Spherical
Horiz. rotation: 333,0 Flip horizontally
Vert. rotation: 0,0 Flip vertically
Ground projection
On Position: 0,0 0,0 0,0
Radius: 1000,0
Processing
Overall mult: 2,0 Interpolation: Default
Render mult: 1,0 Filtering: Isotropic
Crop/Place
On Crop Place
U: 0,0 Width: 1,0
V: 0,0 Height: 1,0
RGB and alpha source
RGB output: RGB color Alpha source: Ima...pha
Mono output: RGB ...sity
Color space
Type: Inv...mma Inverse gamma: 0,7
UDIM/UVTILE preview in material editor

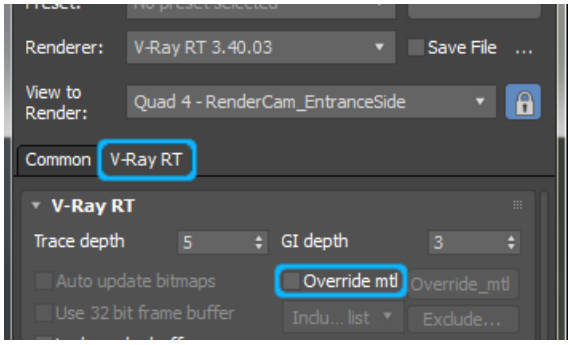


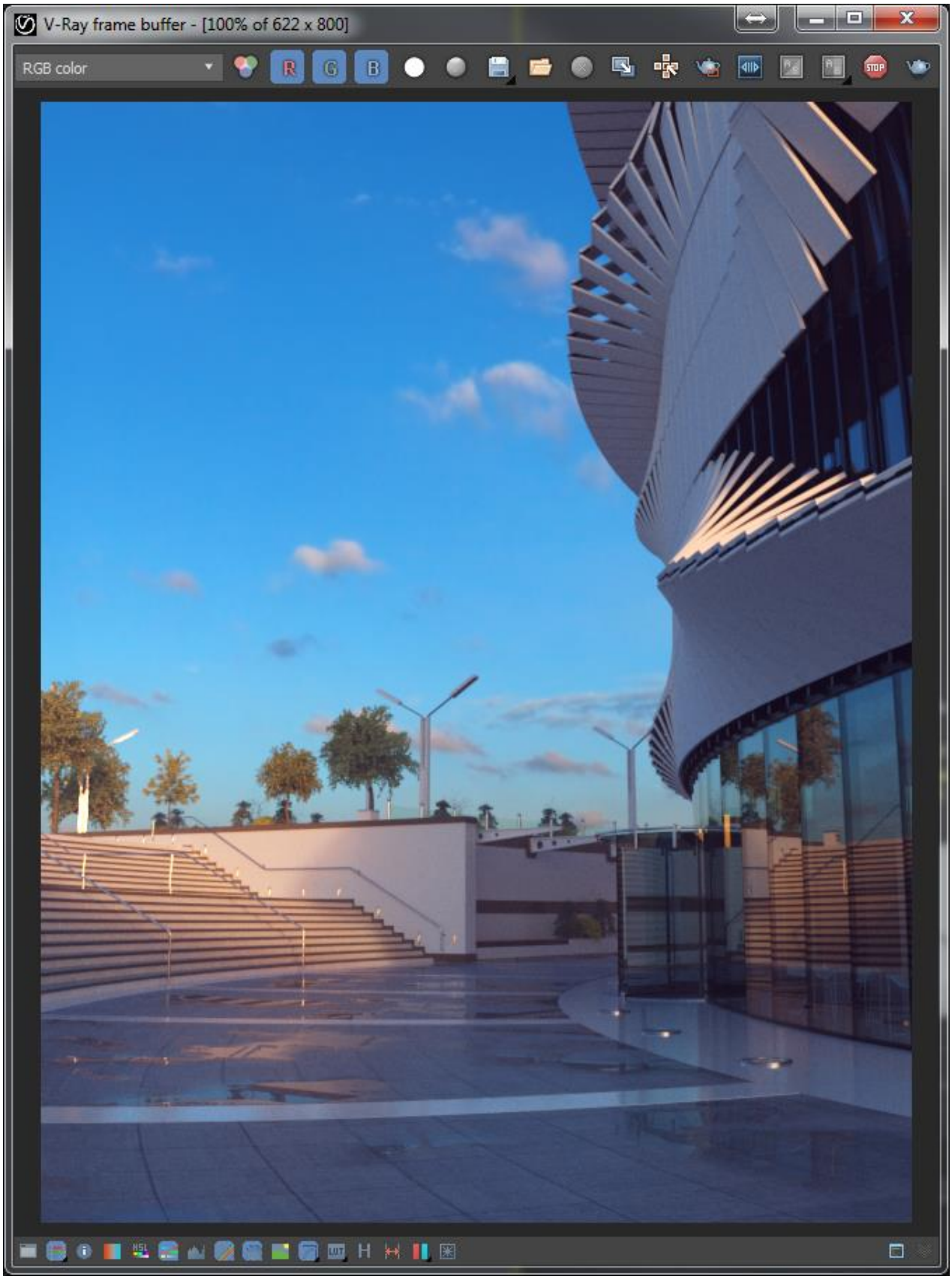
20. Press “8” to open the **Environment and Effects** menu and in the **Atmosphere** rollout select the **VRayAerialPerspective** plug-in, enable the **Active** check box and change the **visibility range (in meters)** parameter to 1200,0:


Environment and Effects
Environment
Effects
Common Parameters
Exposure Control
Physical Camera Exposure Control
Atmosphere
Effects:
VRayAerialPerspective
Add...
Delete
Active
Move Up
Move Down
Name:
VRayAerialPerspective
Merge
General parameters
visibility range (in meters)
1200,0
atmosphere height (in meters)
6000,0
inscattered light intensity
1,2
affect environment rays
affect background
filter color



21. In the **Render Setup** dialog and in the settings for **V-Ray RT** disable the **Override mtl** check box. Wait for the final render.



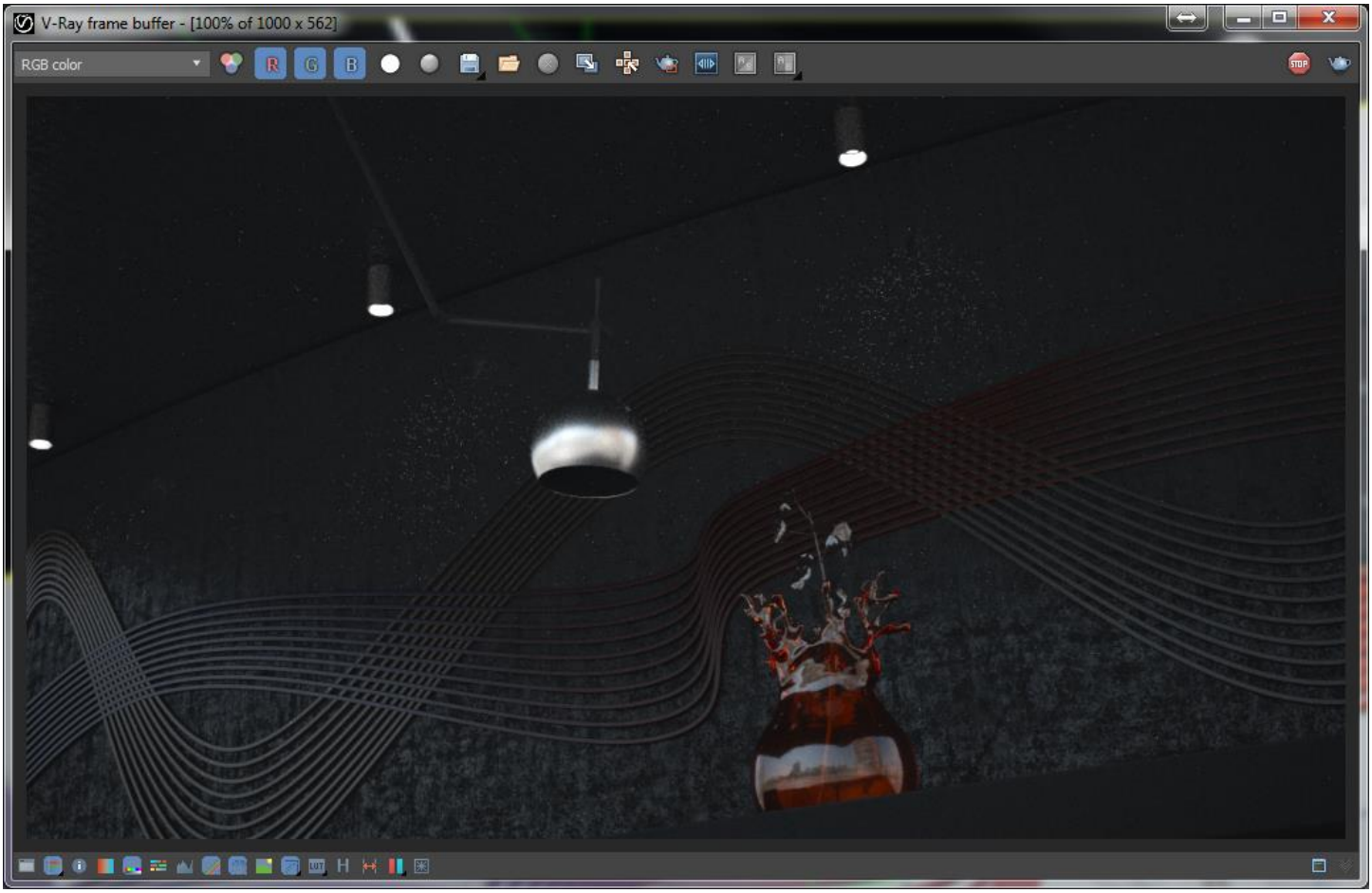

V-Ray frame buffer - [100% of 622 x 800]
RGB color
R
G
B
STOP

oonix.io

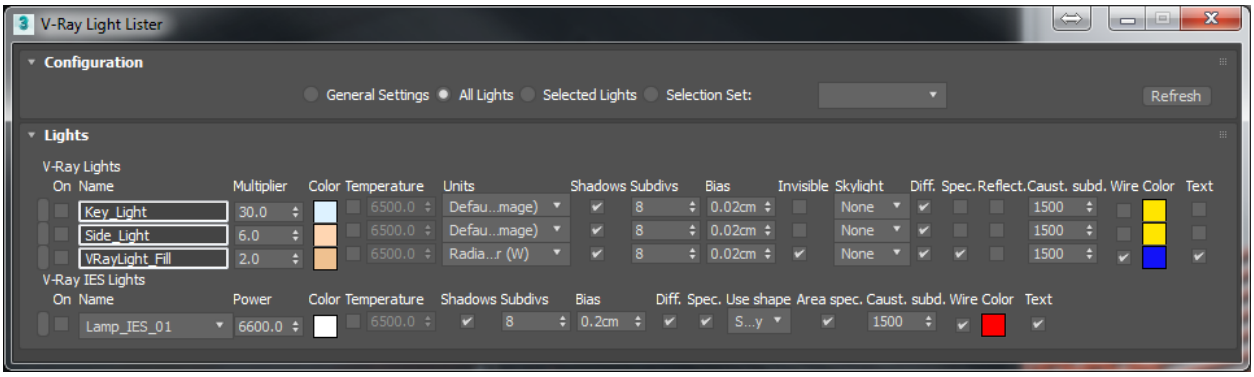
V-RAY IES LIGHT

This demonstration covers the way artists can use the V-Ray IES Light in 3ds Max.

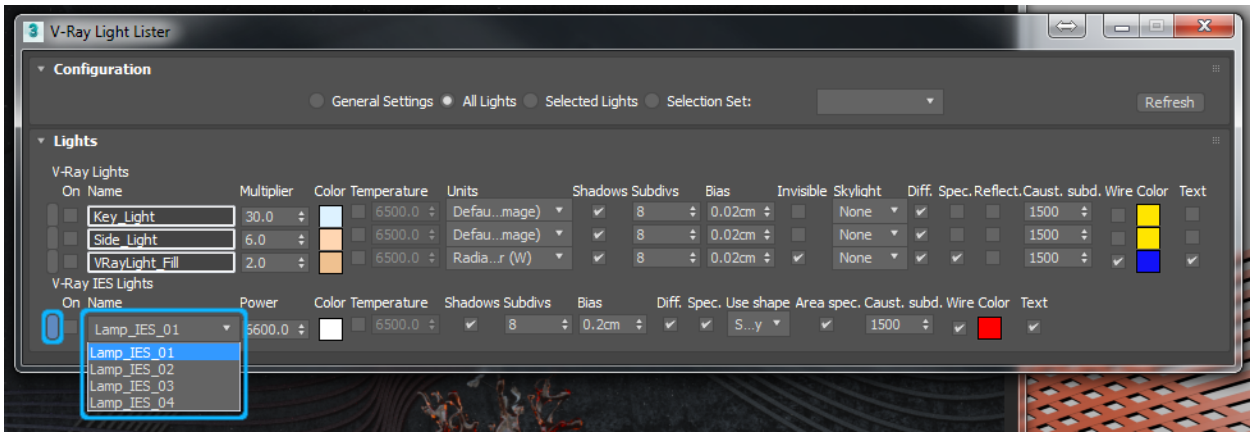
1. In the folder **03 04 Office Building** open the scene named **04 V-Ray IES Light.max**
2. Start **V-Ray RT**:



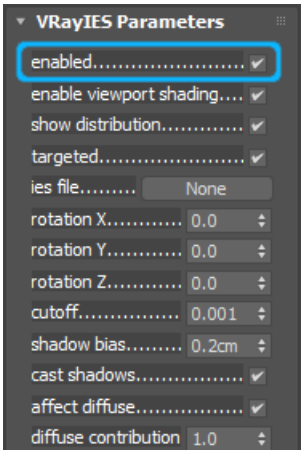
3. Open the V-Ray Light Lister:



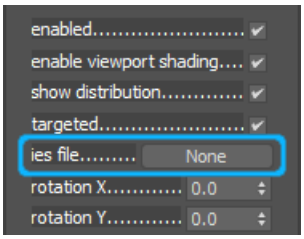
4. Select the **Lamp_IES_01** light and open the drop down menu. Note that there are four different V-Ray IES Lights which are all instances of the first one.



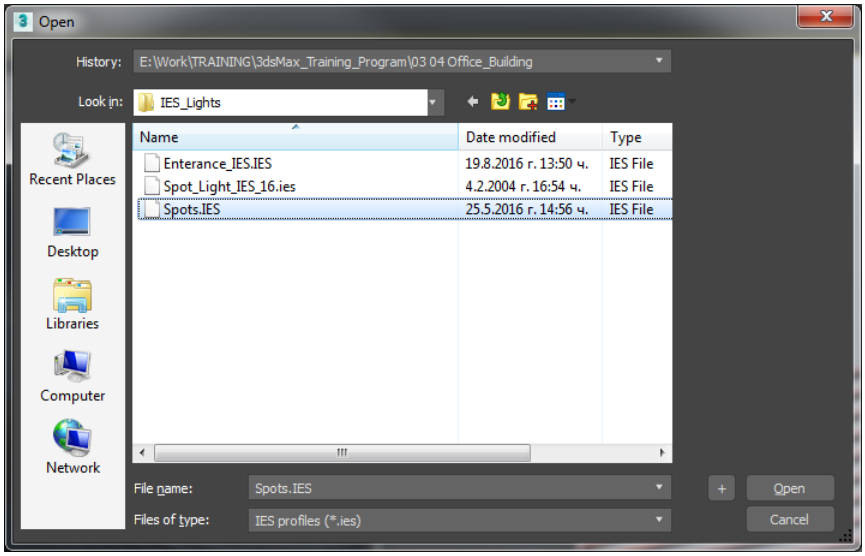
5. In the settings of the V-Ray IES Light check the **enabled** check box:

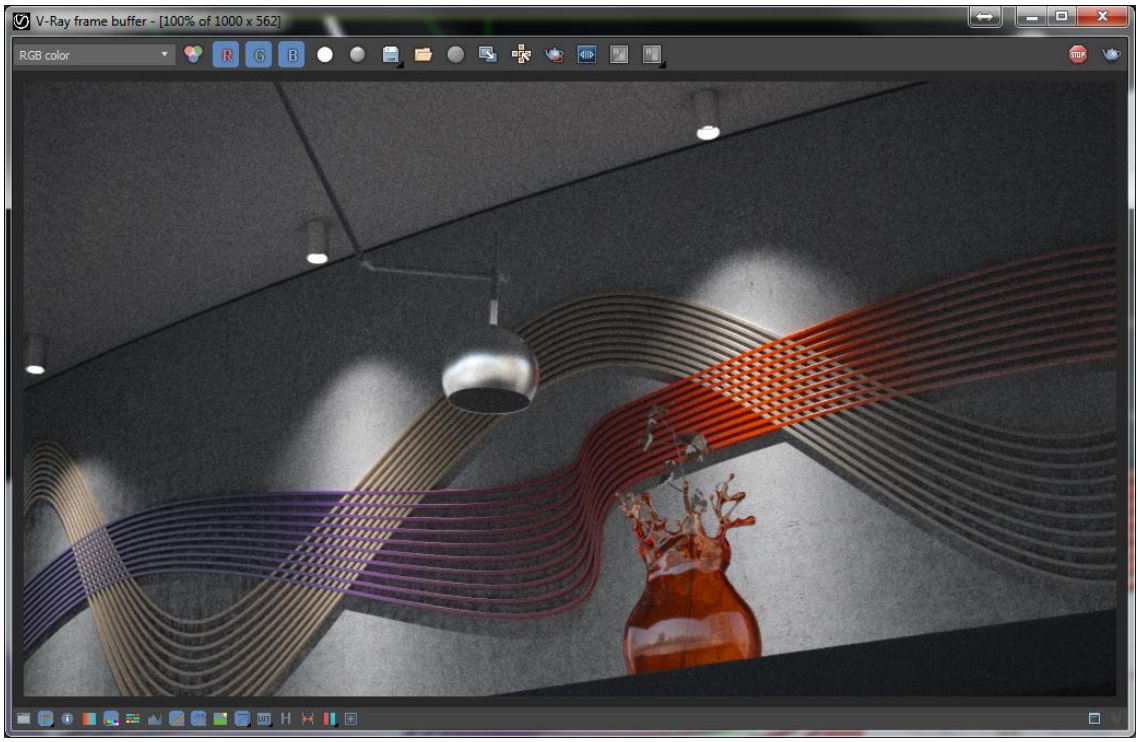


6. Note that this didn't have any effect on the render output
7. Click on the **None** button next to the **ies file** parameter:

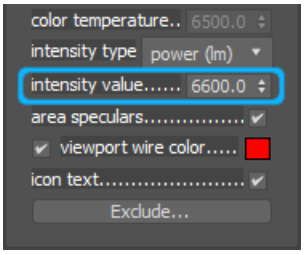


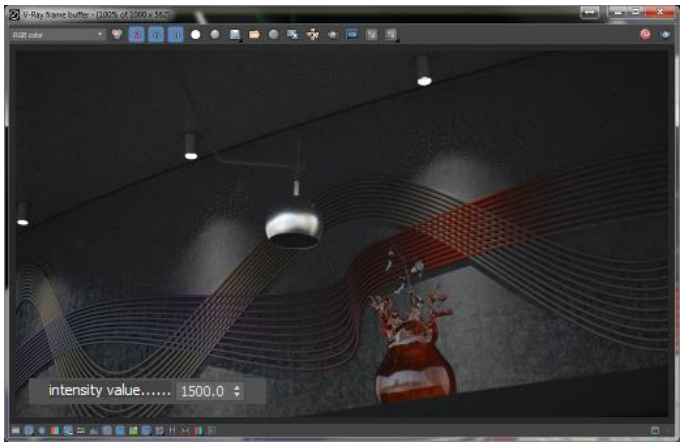
8. Browse to the location **rootProjectFolder\03 04 Office_Building\Assets\IES_Lights** and load the **Spots.IES** file:

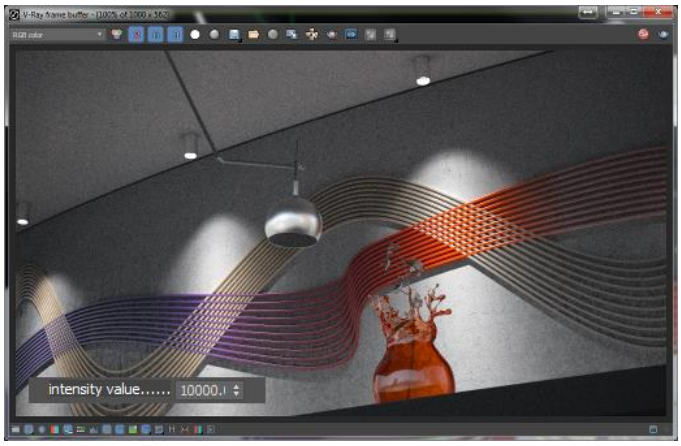




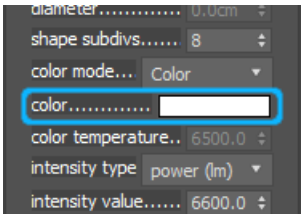
9. Try different values for the **intensity value** parameter. Keep in mind that the original value here (6600) is the physically accurate one, provided by the manufacturer.

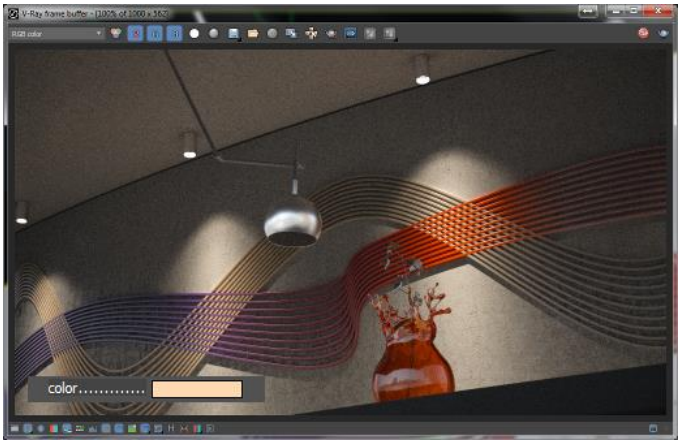


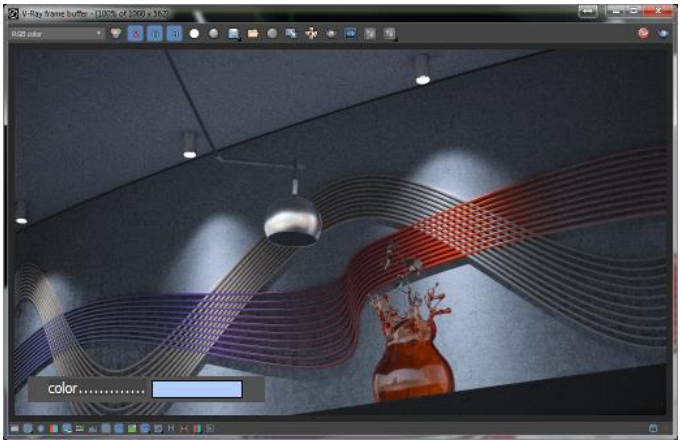




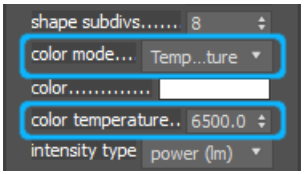
10. Set the intensity value to 6600
11. Try different values for the color parameter

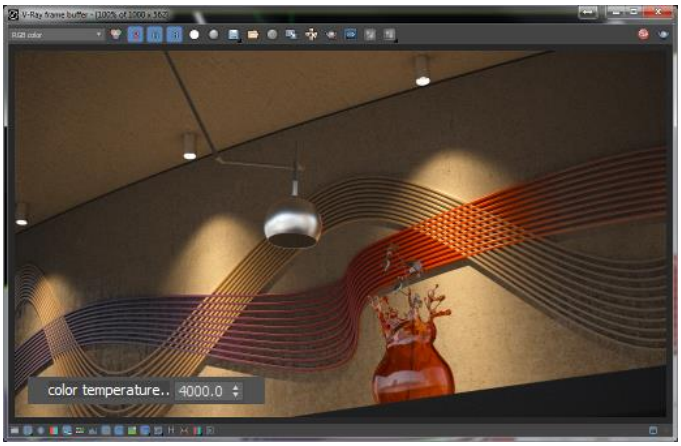


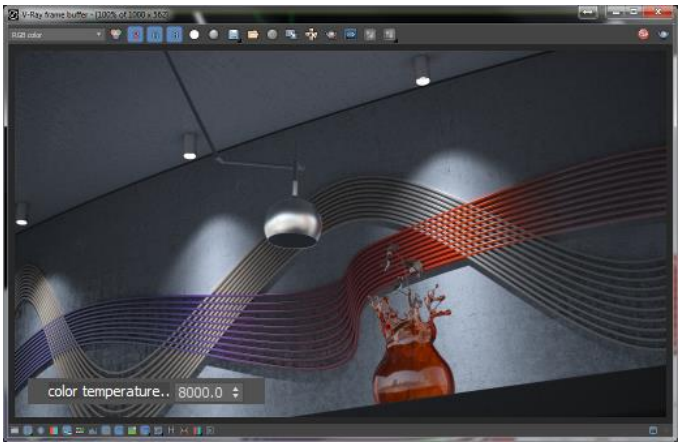




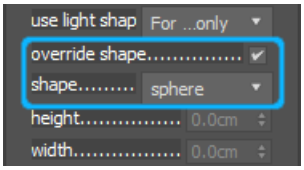
12. Switch the **color mode** to **Temperature** and try different values for the **color temperature** parameter:



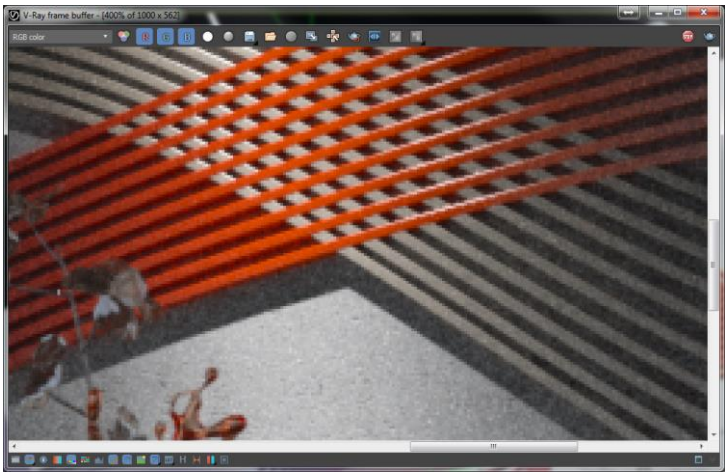




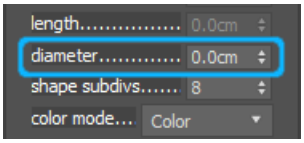
13. Switch the **color mode** to **Color** and set the **color** parameter to white.
14. Enable the **override shape** checkbox and make sure that the **shape** parameter is set to **sphere**:

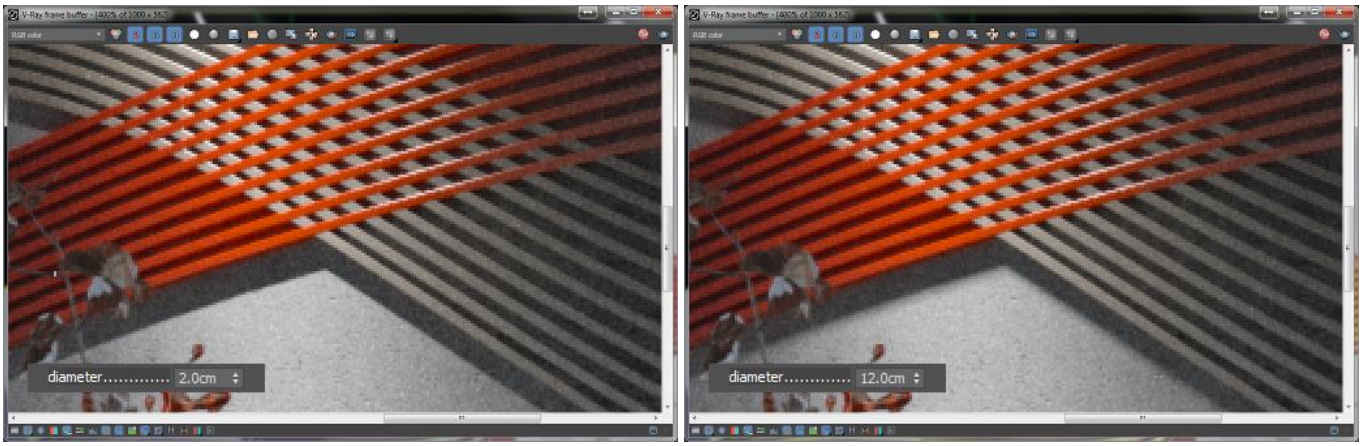


15. In the **V-Ray Frame Buffer** zoom into an area where you can better see the shadows cast by the light:

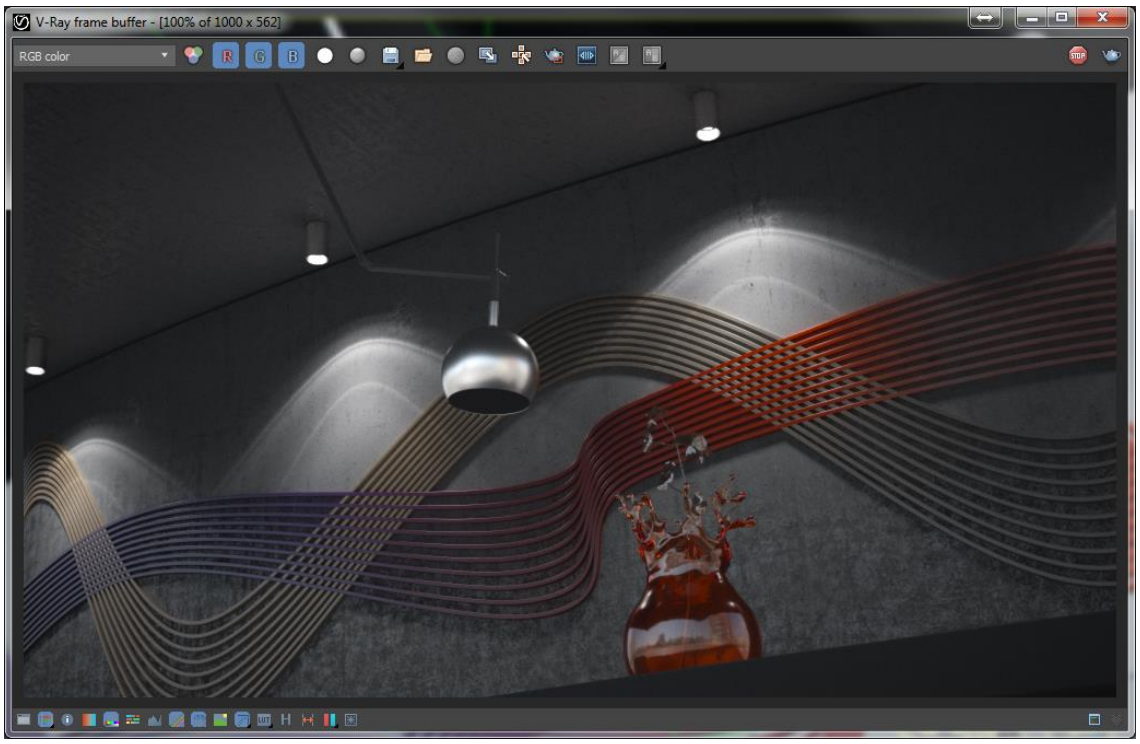


16. Try different values for the diameter parameter and note the effect on the shadows

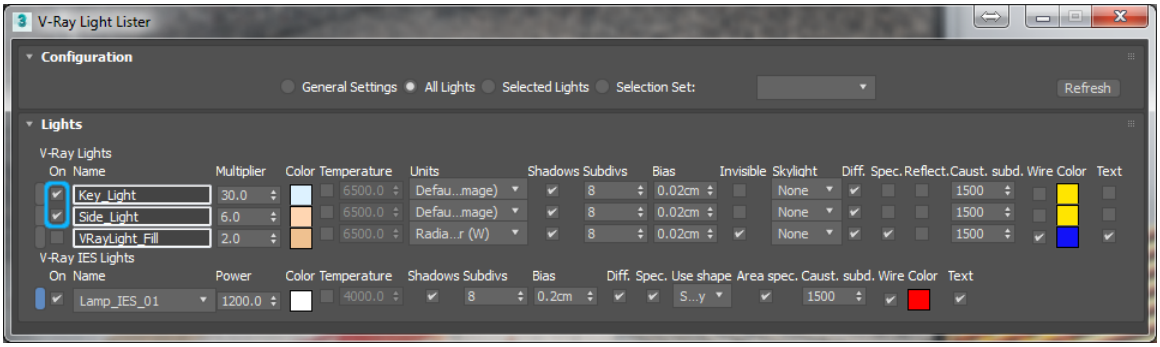


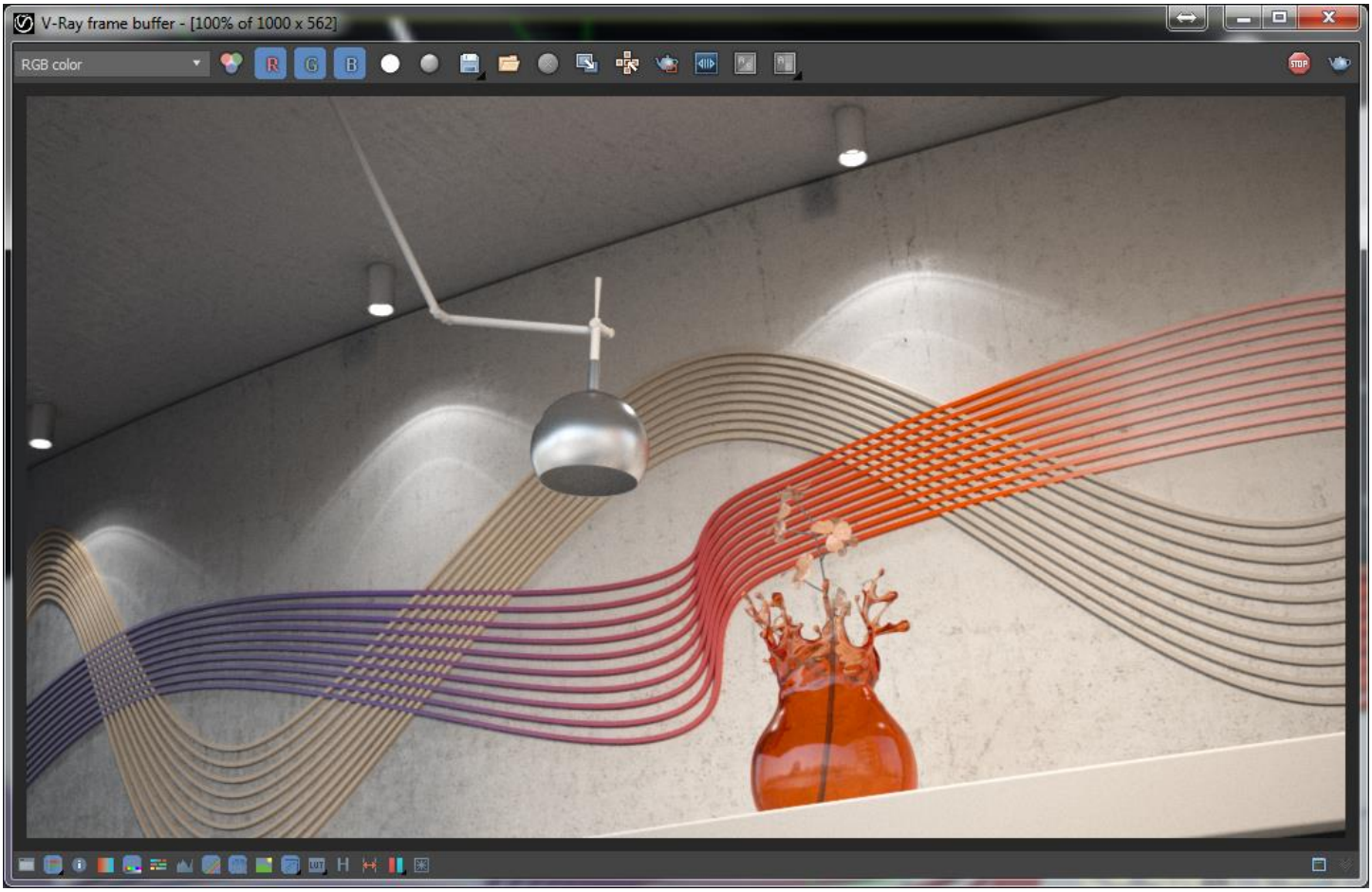


17. Disable the **override shape** check box
18. In the **ies file** field load the **Spot_Light_IES_16.ies** file. Note that these lights are way too bright and we cannot really see the light shape.
19. Set the **intensity value** to **1200**



20. Open the **V-Ray Light Lister** and enable the **Key_Light** and **Side_Light**





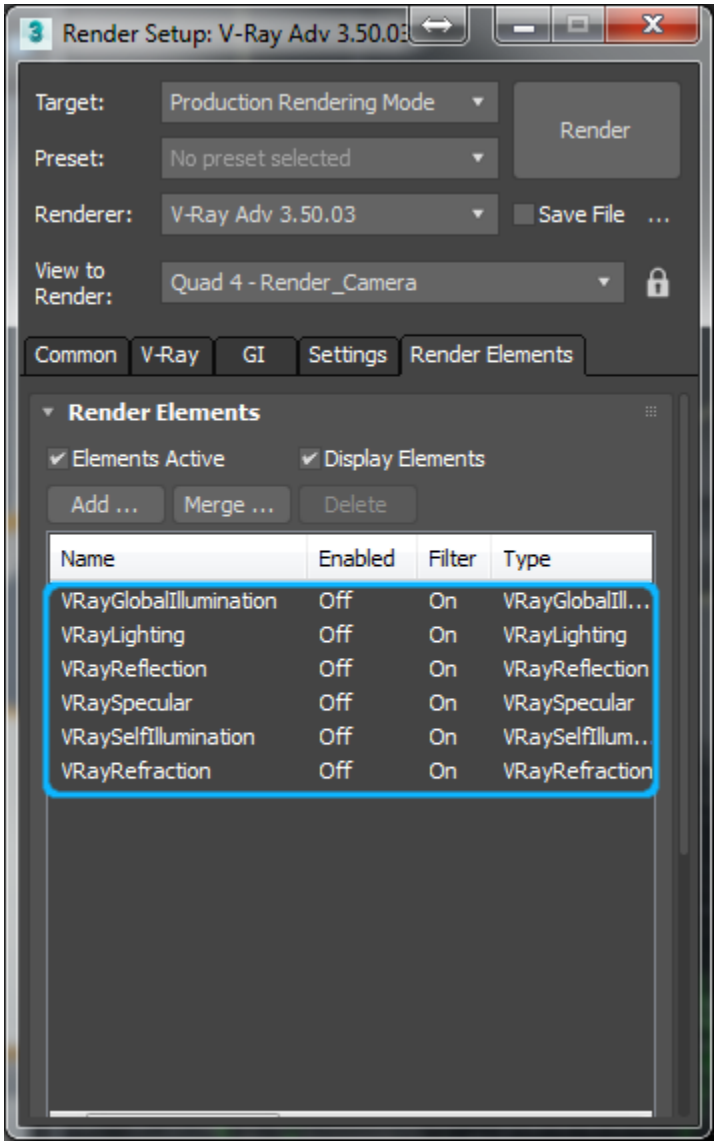
oonix.io

V-RAY MATERIAL

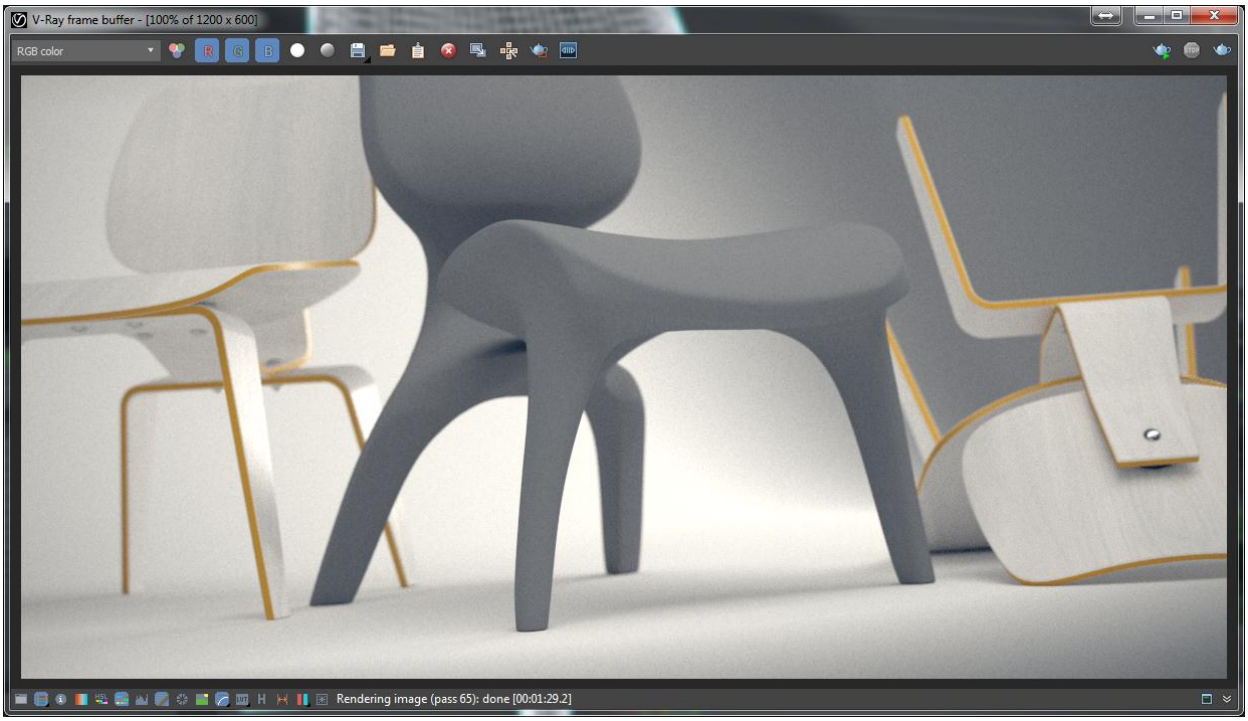
Reflection basics

This demonstration covers some of the ways artists can use the V-Ray Material in 3ds Max to create reflective materials.

1. In the folder **09 Studio** open the scene named **01 VRay Mtl A.max**
2. Open the **Render Setup** and note that we have added several render elements:

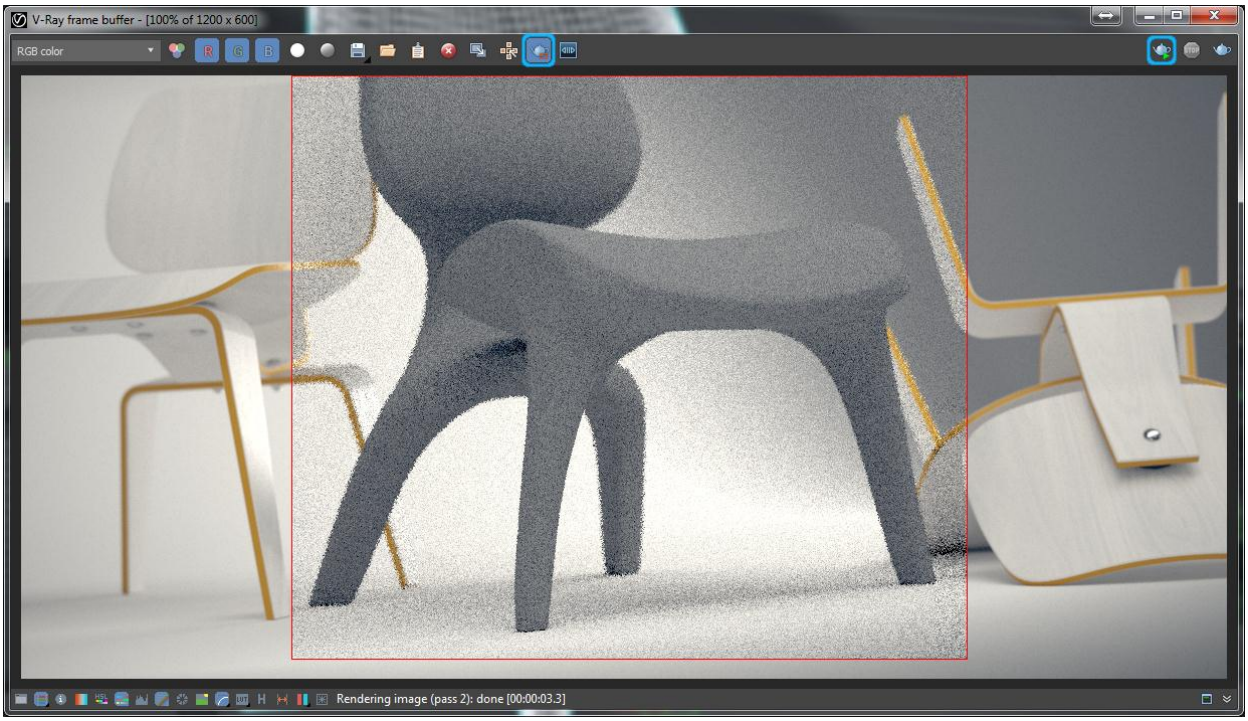


3. Hit **Render** and wait a while for the render to clear out

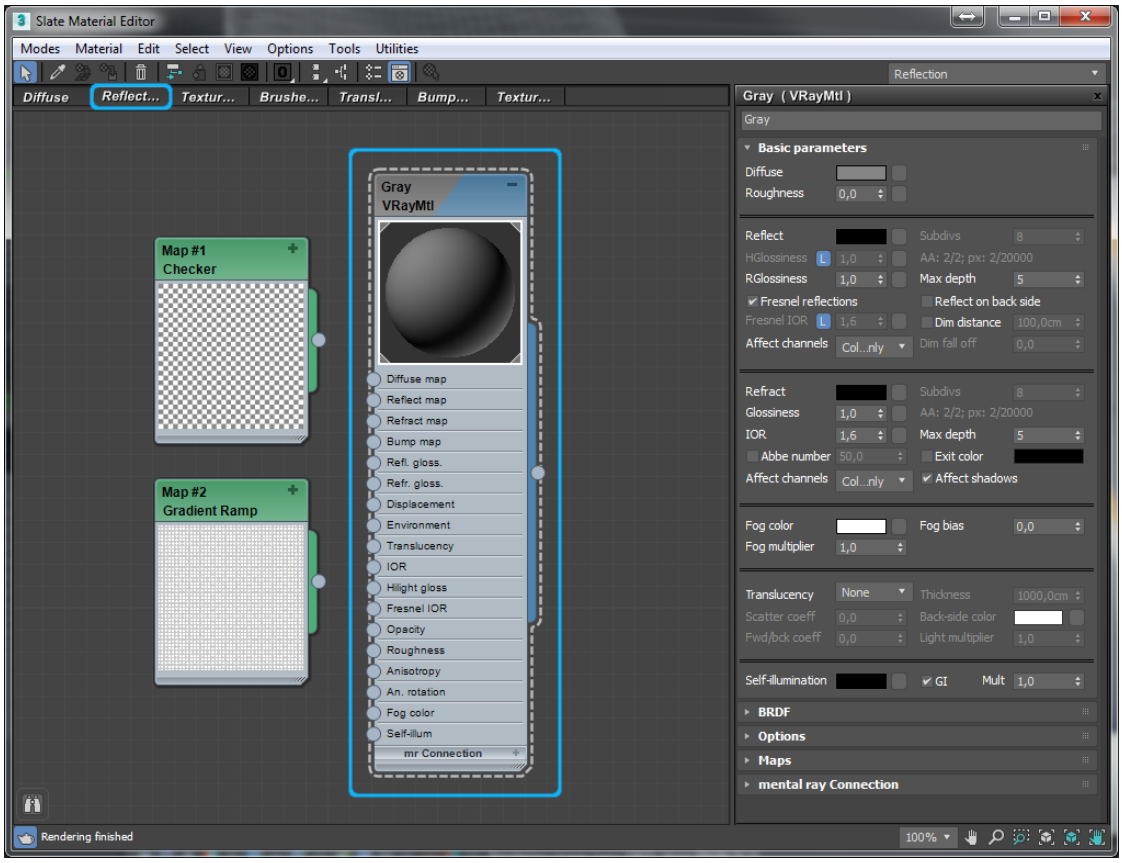


4. In the V-Ray Frame Buffer click the **Stop** button:

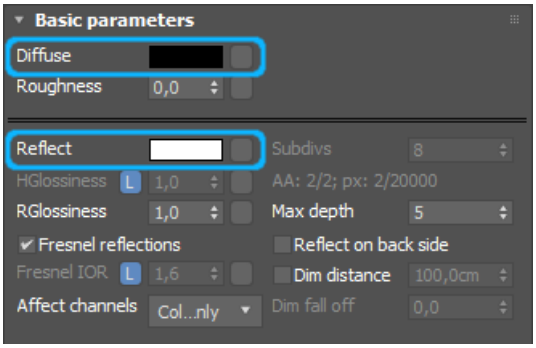
5. Use the **Region Render** tool to draw an area around the gray chair and then click the **Start interactive rendering** button in the **V-Ray Frame Buffer**

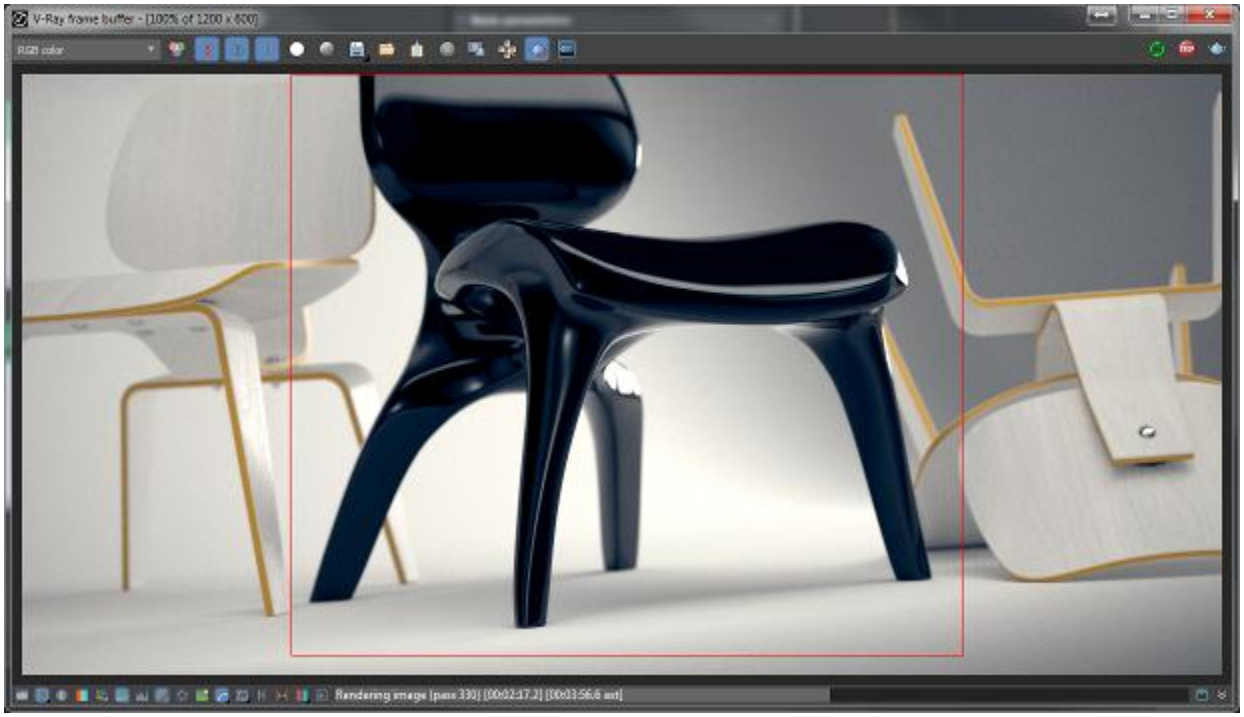


6. Open the **Slate Material Editor** and in the **Reflection** tab select the **Gray VRayMtl** material.

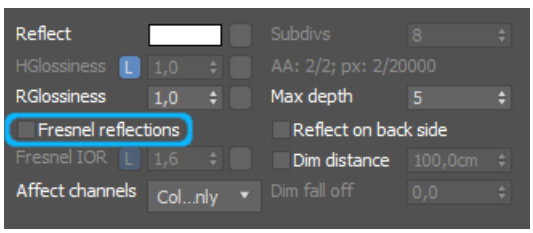


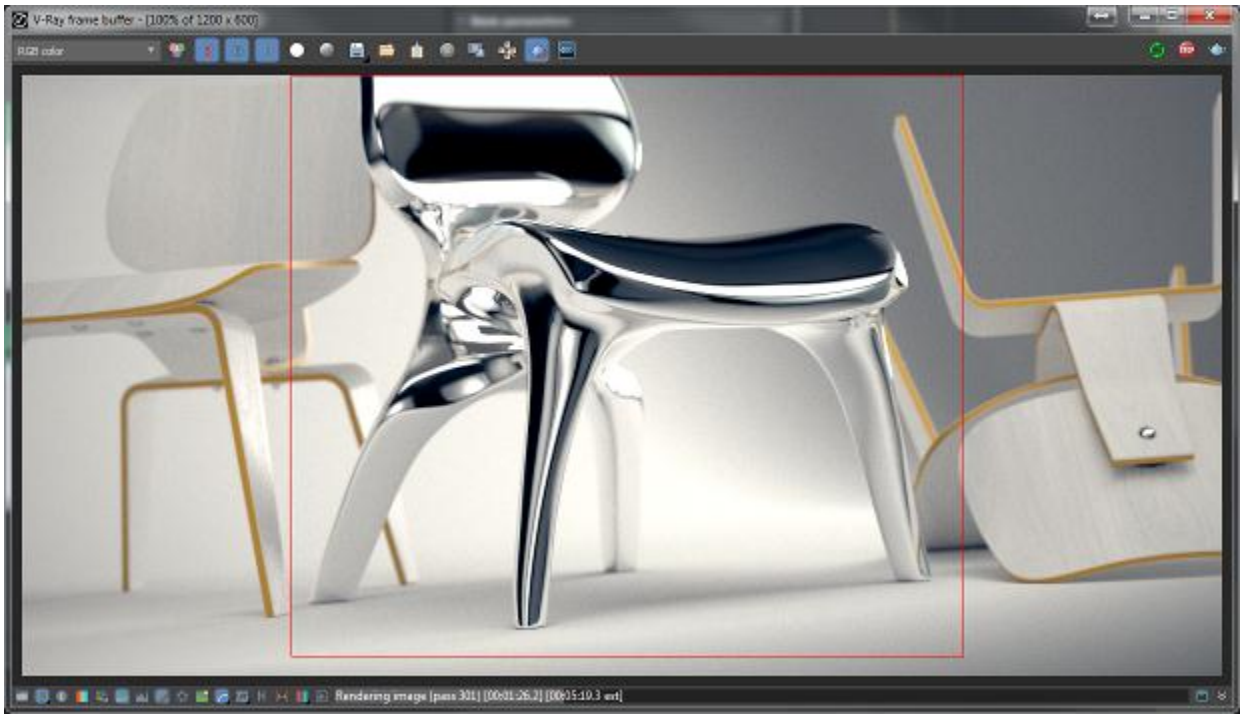
7. Set the **Diffuse** parameter to black and the **Reflect** parameter to white



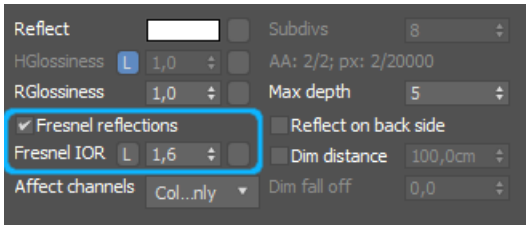


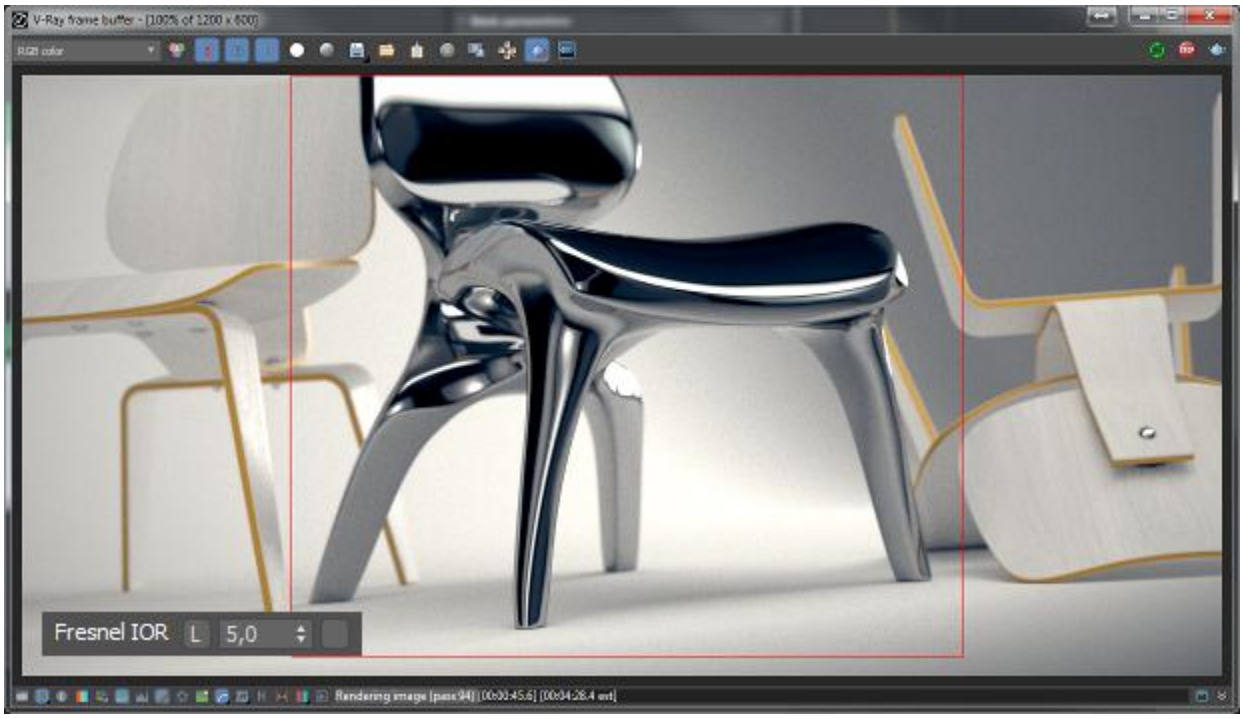
8. Disable the **Fresnel reflections** checkbox

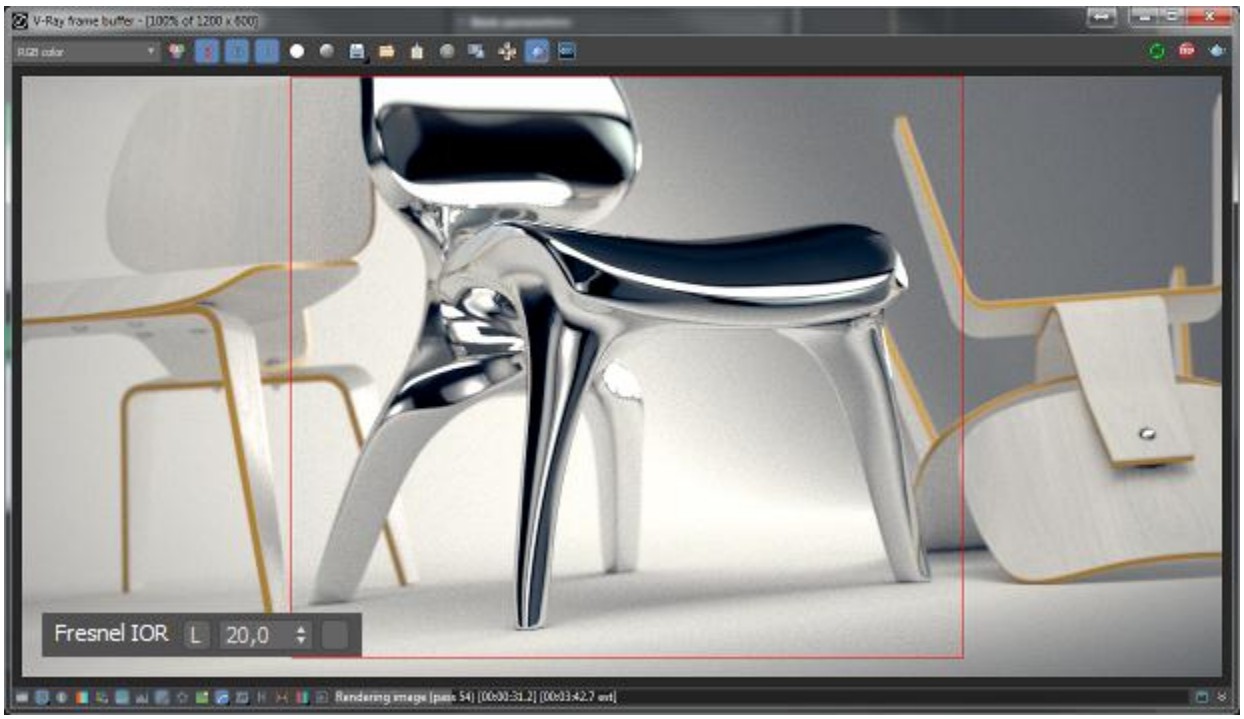




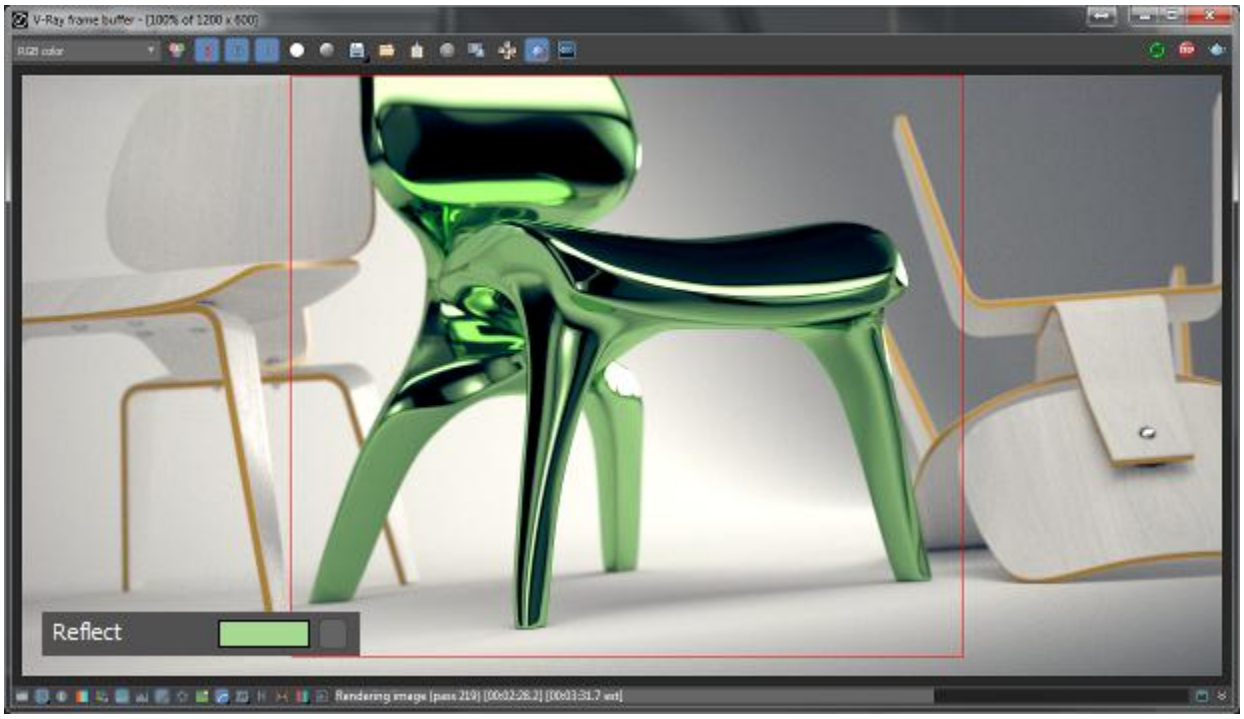
9. Enable the **Fresnel reflections** check box, unlock the **Fresnel IOR** by clicking the **L** button next to it and try different values for the **Fresnel IOR** parameter

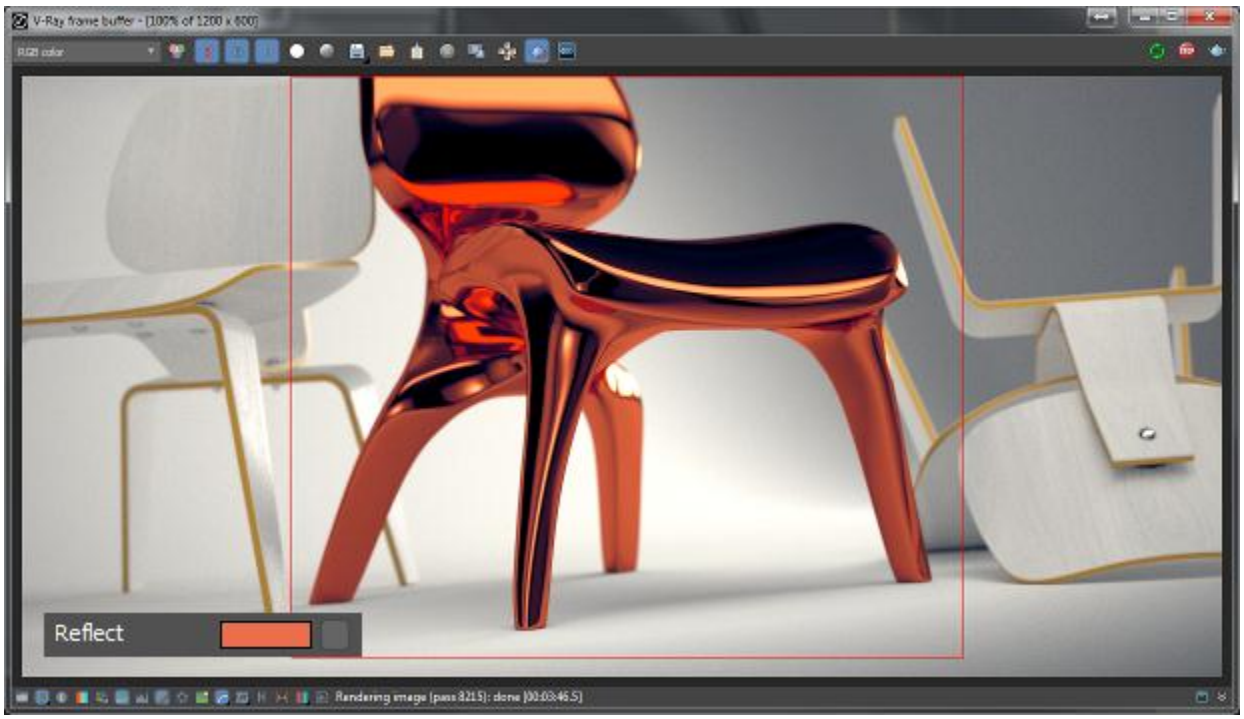




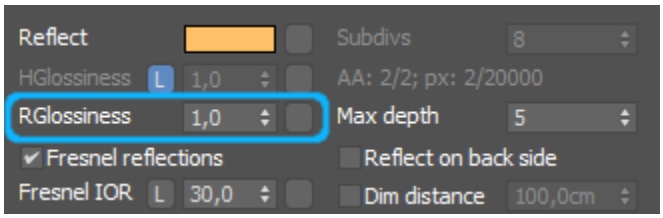


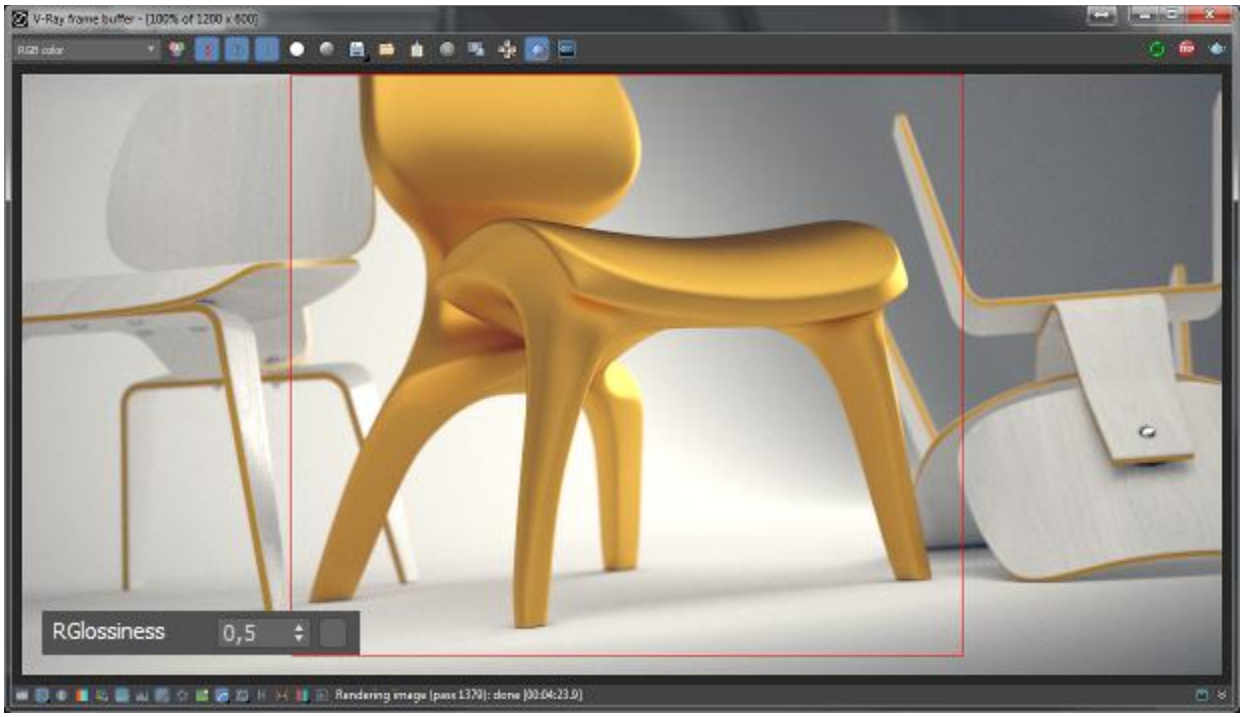
10. Set the **Fresnel IOR** parameter to 30,0
11. Try different colors for the **Reflect** parameter:

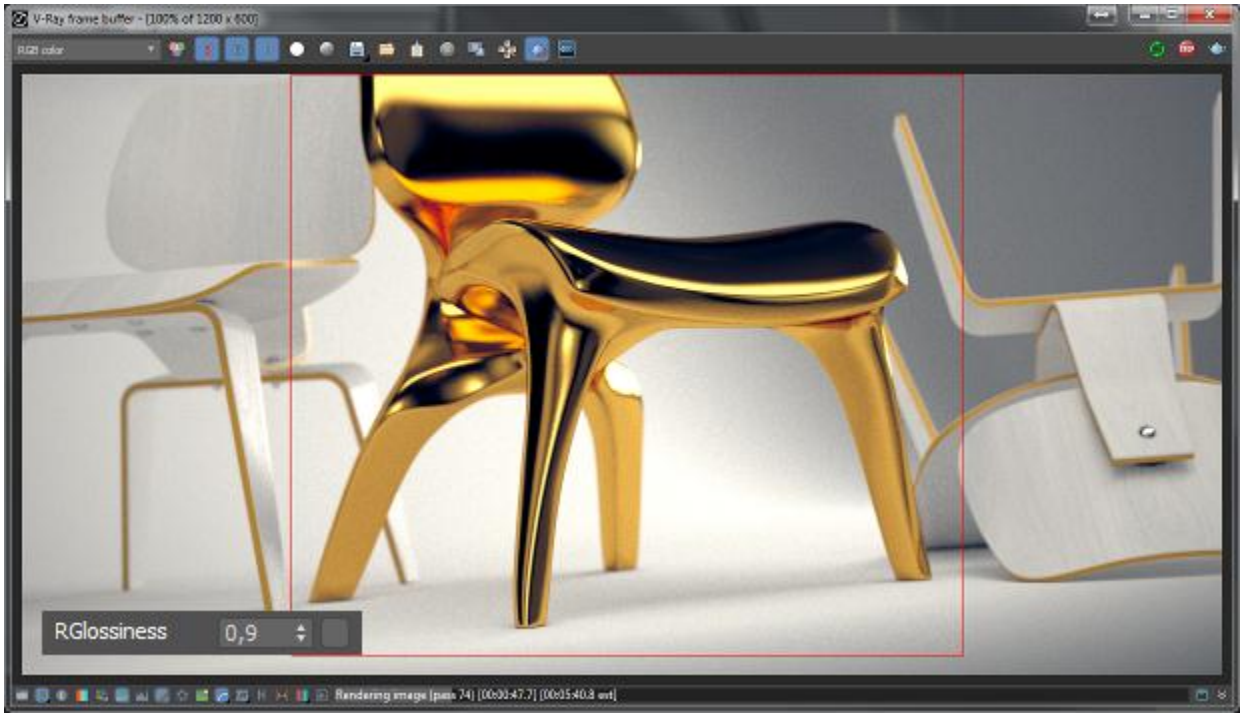




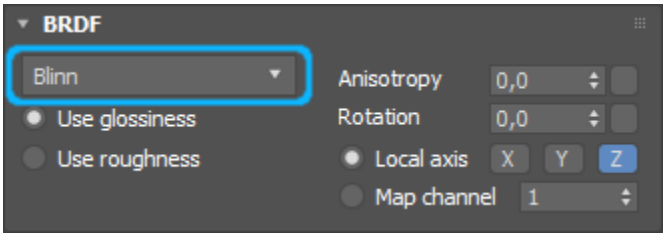
12. Set the color of the **Reflect** parameter to RGB: 25;152;255:
13. Try different values for the **RGlossines** parameter:

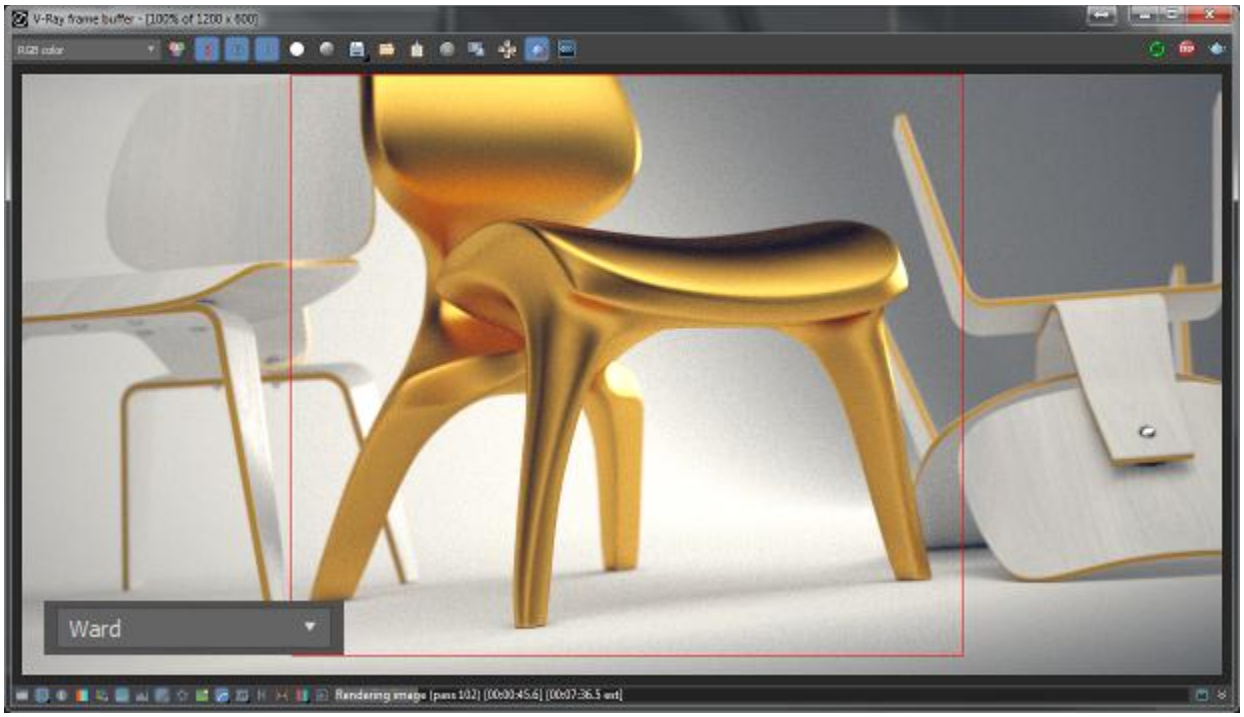

Reflect
Subdivs 8
HGlossiness L 1,0
AA: 2/2; px: 2/20000
RGlossiness 1,0
Max depth 5
Fresnel reflections
Reflect on back side
Fresnel IOR L 30,0
Dim distance 100,0cm

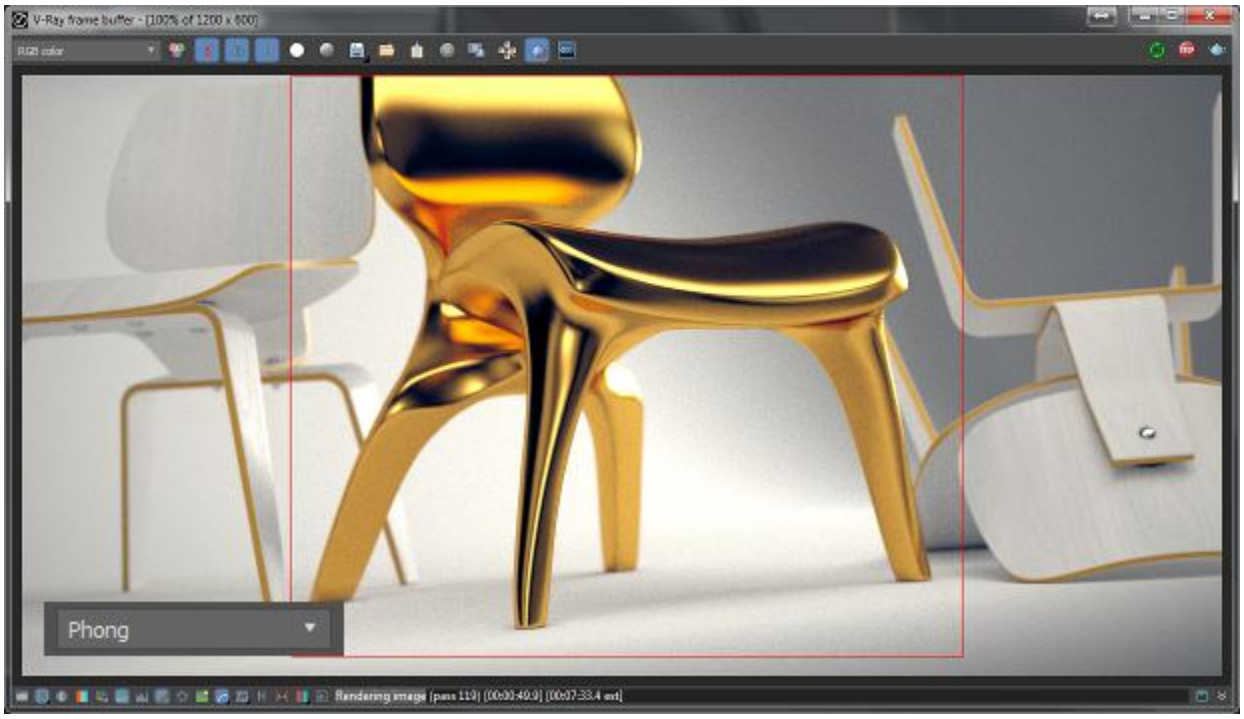

RGlossiness 0,5


RGlossiness 0,9

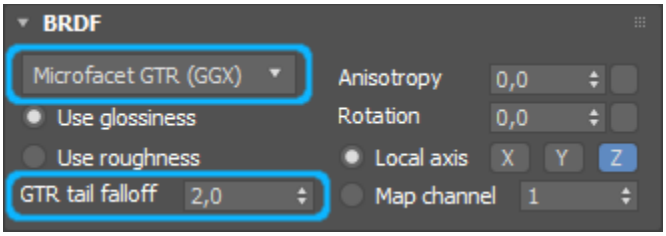
14. Set the **RGlossiness** parameter to 0,8
15. Try different options for the **BRDF** type

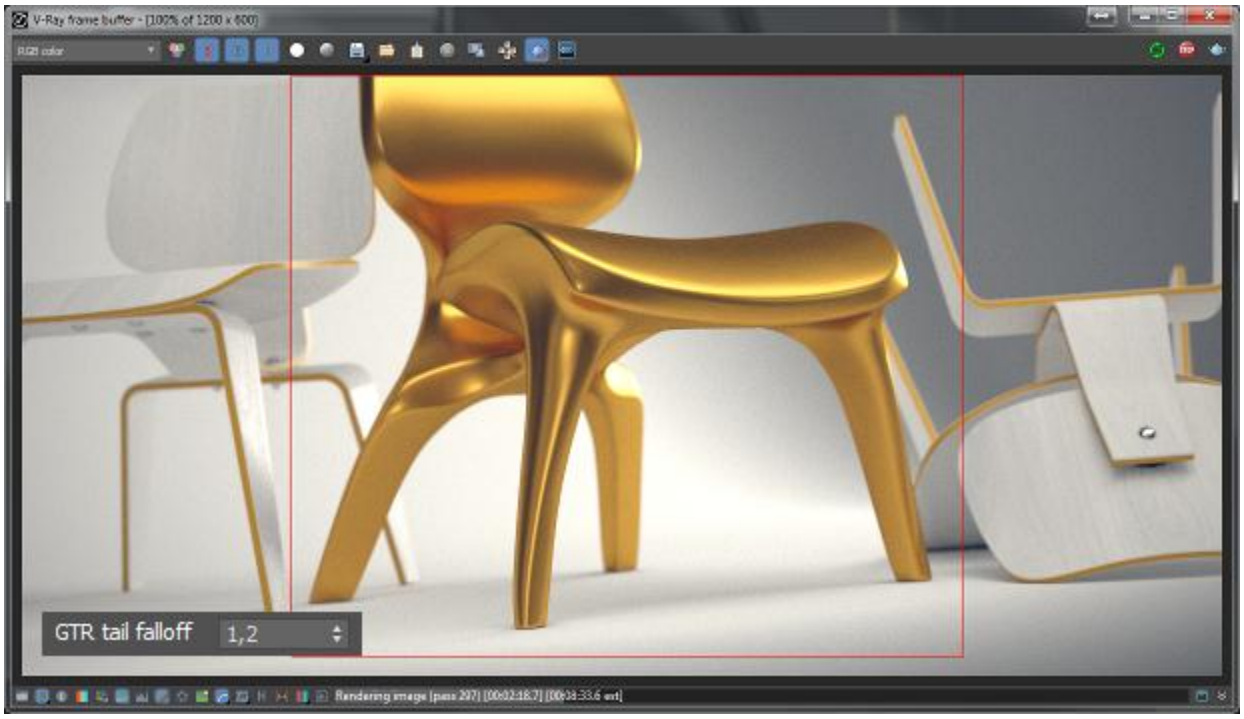


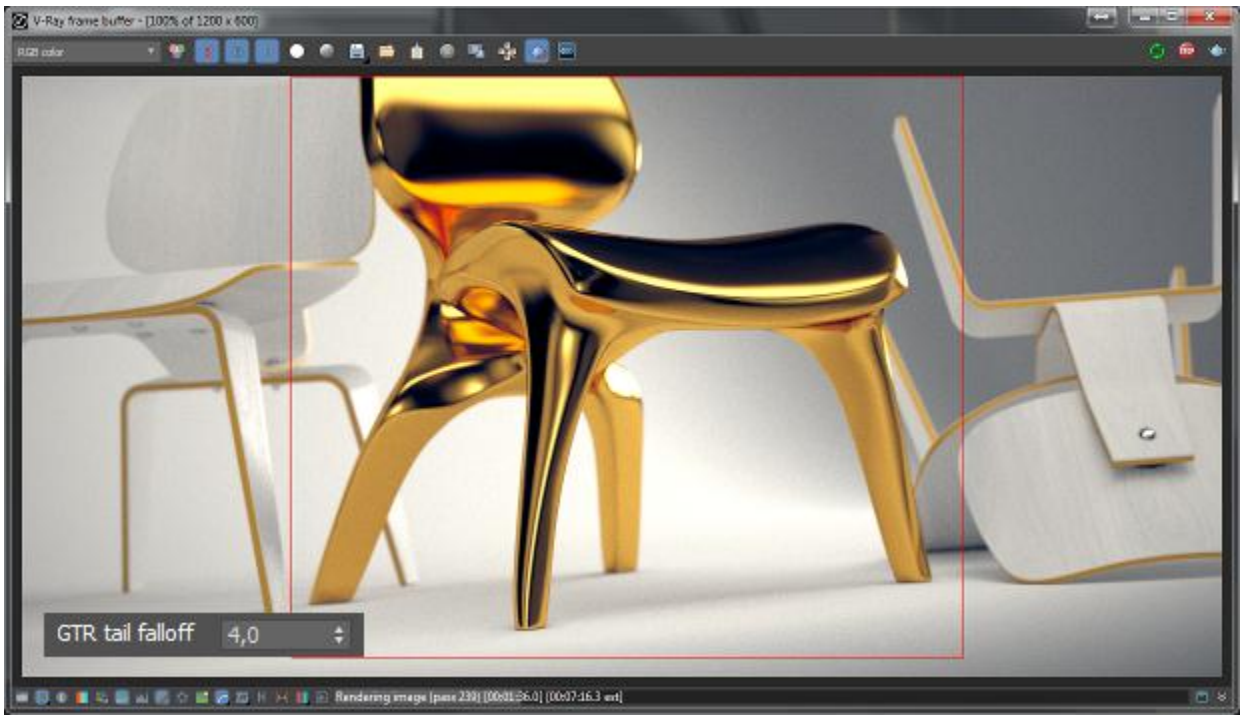




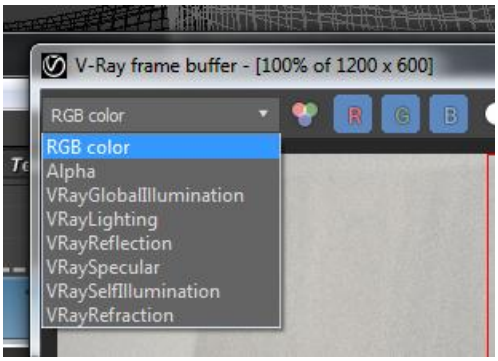
16. Set the **BRDF** type to **Microfacet GTR (GGX)** and try different values for the **GTR tail falloff** parameter:

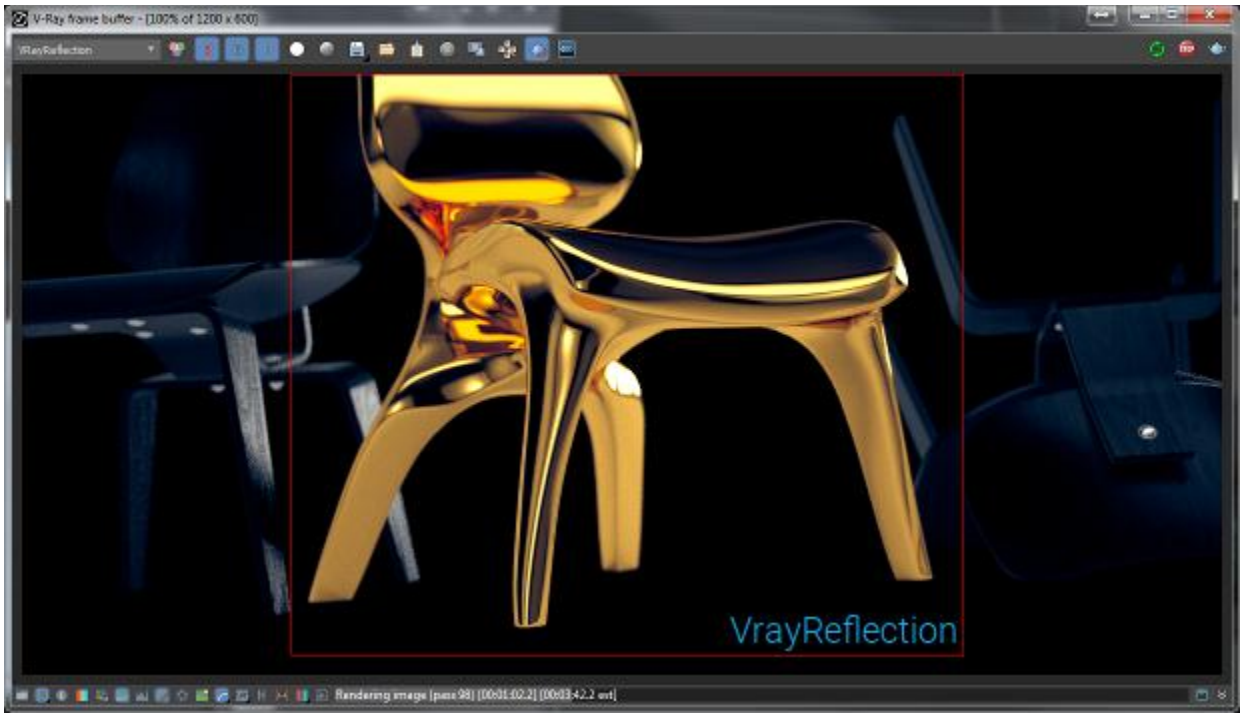


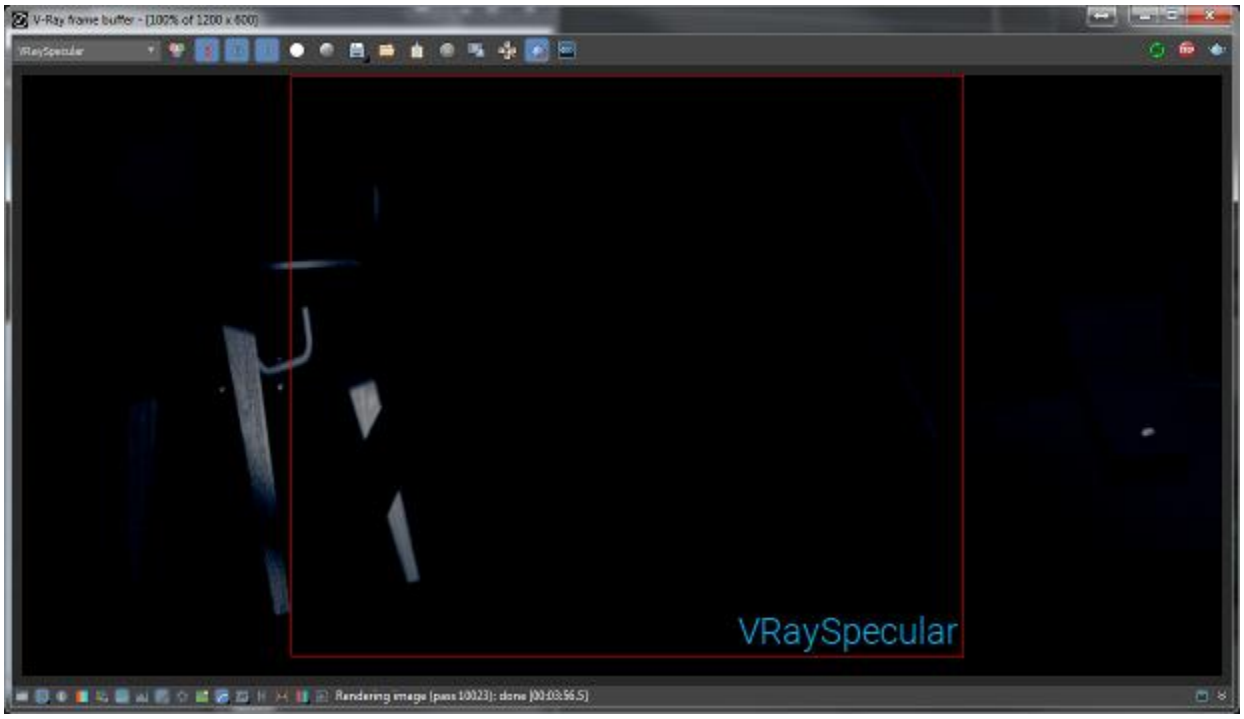




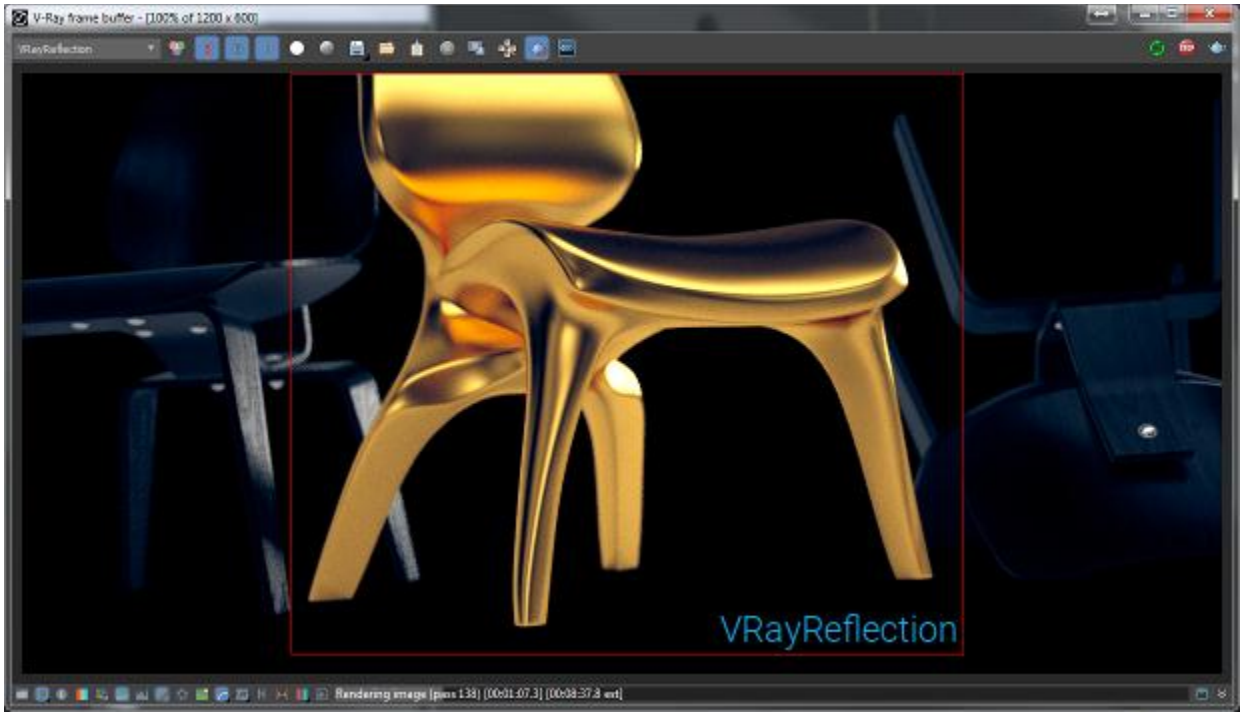
17. Set the **BRDF** type to **Blinn**
18. Set the **RGlossiness** parameter to 1,0 and in the V-Ray Frame Buffer examine the **VRayReflection** and **VRaySpecular** render elements:

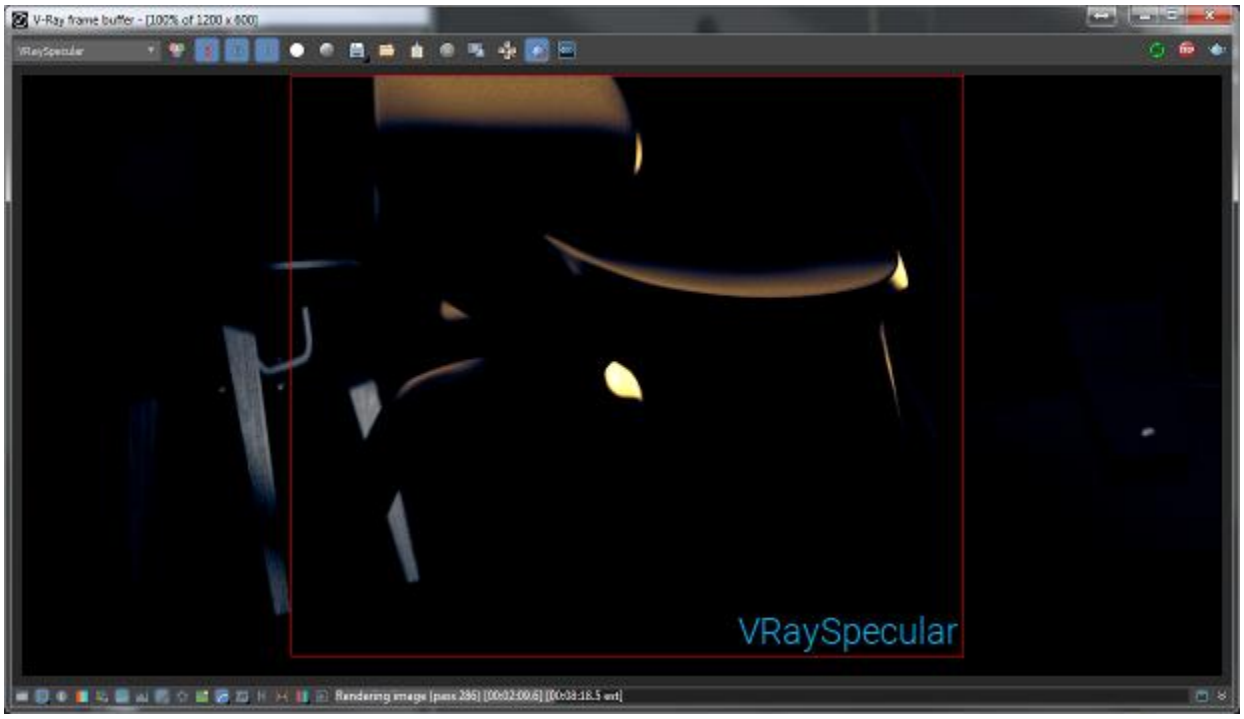

V-Ray frame buffer - [100% of 1200 x 600]
RGB color
R
G
B
RGB color
Alpha
VRayGlobalIllumination
VRayLighting
VRayReflection
VRaySpecular
VRaySelfIllumination
VRayRefraction


VrayReflection

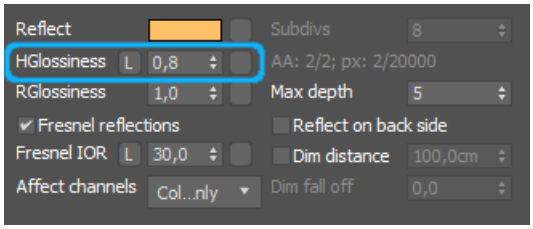


19. Set the **RGlossiness** parameter to 0,8 and in the V-Ray Frame Buffer examine the **VRayReflection** and **VRaySpecular** render elements:

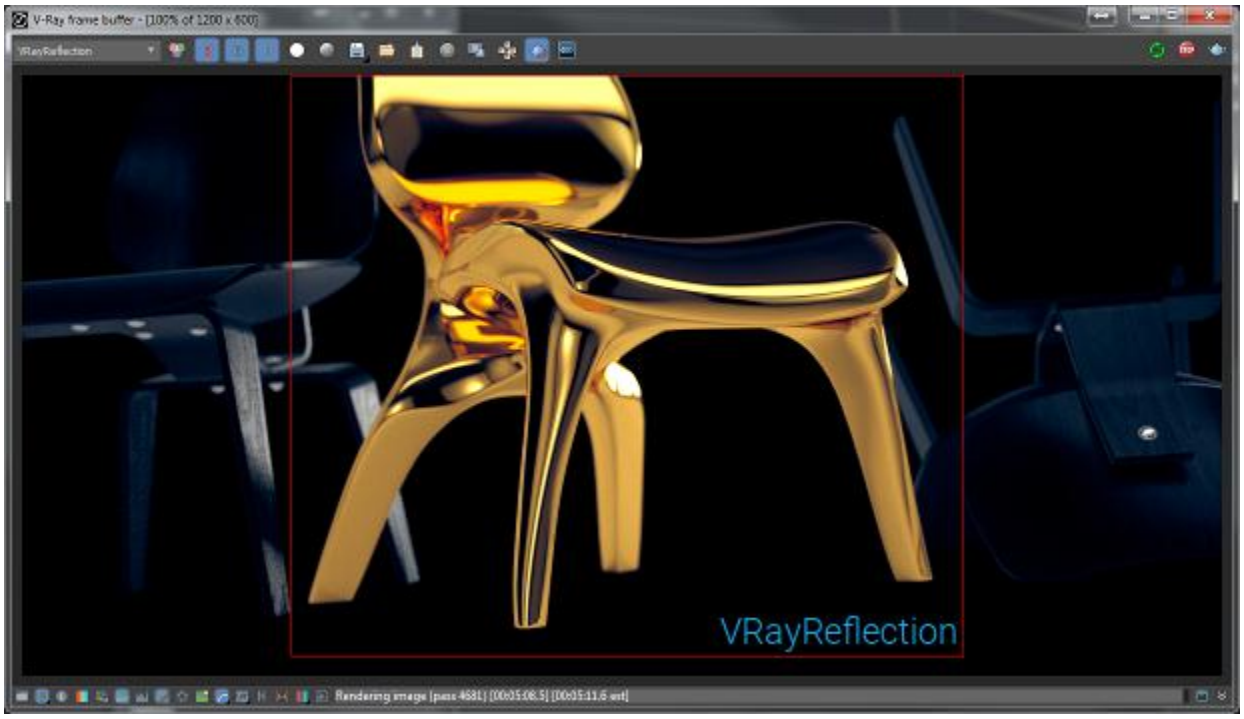


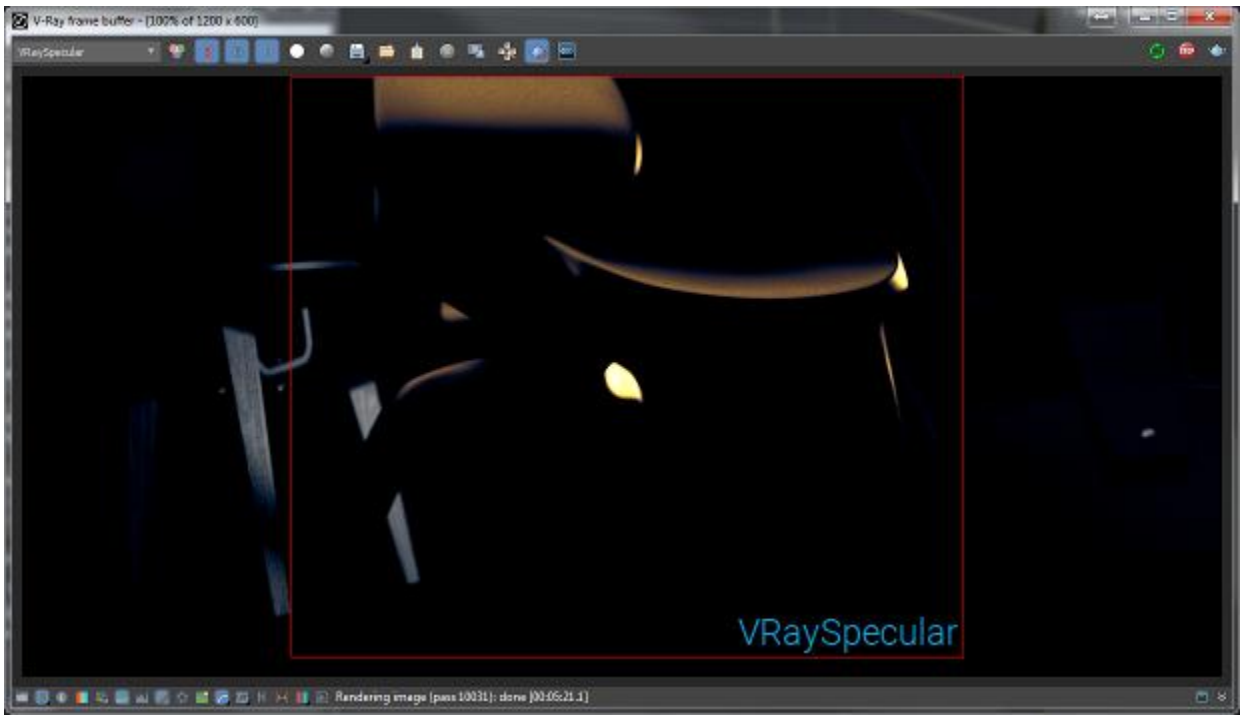


20. Set the **RGlossiness** parameter to 1,0
21. Unlock the **HGlossiness** parameter by clicking the **L** button and set it to 0,8

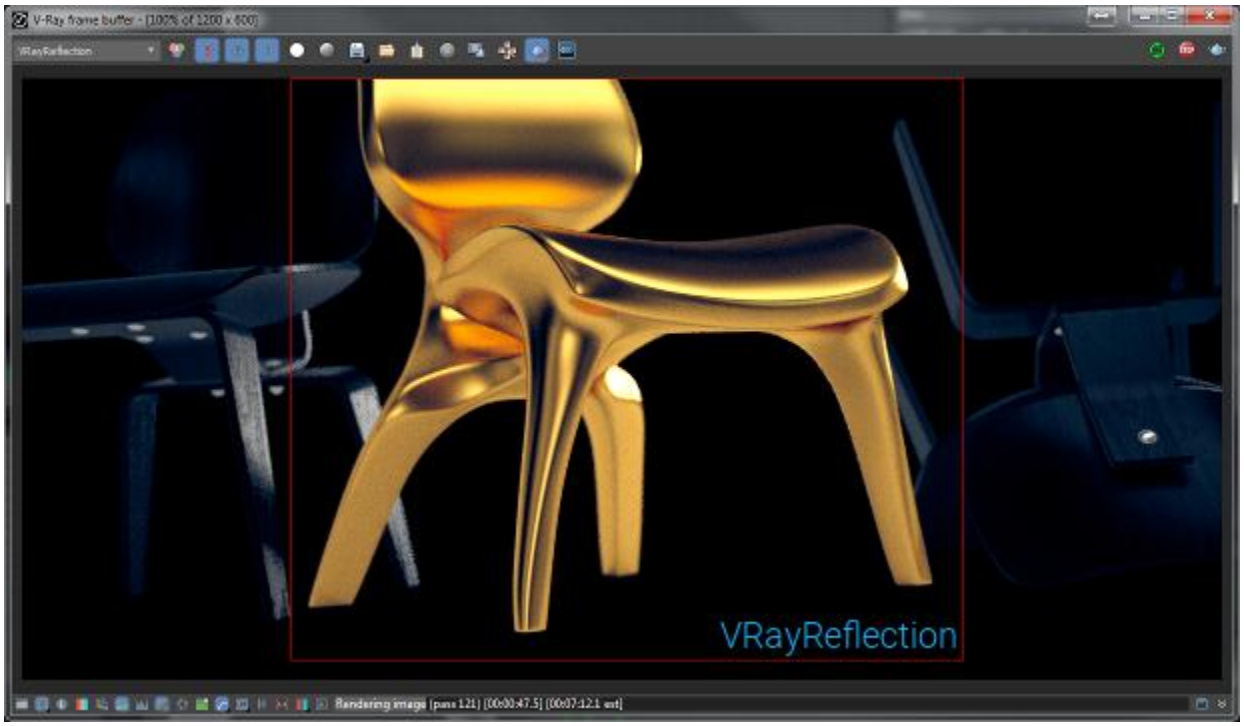


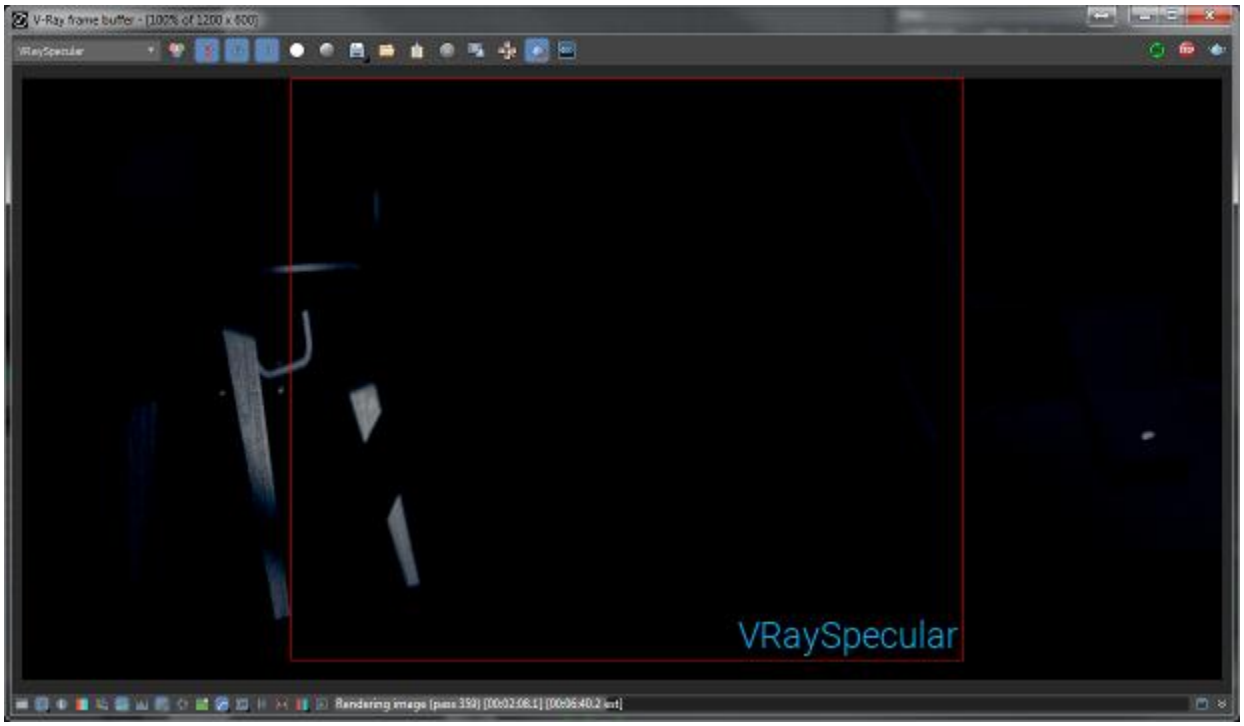
22. In the V-Ray Frame Buffer examine the **VRayReflection** and **VRaySpecular** render elements:



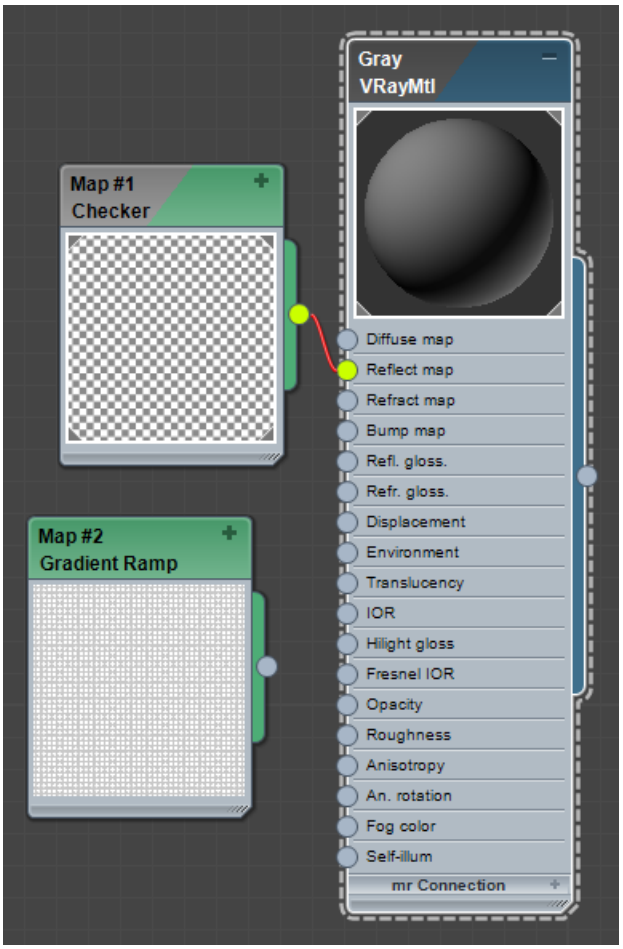


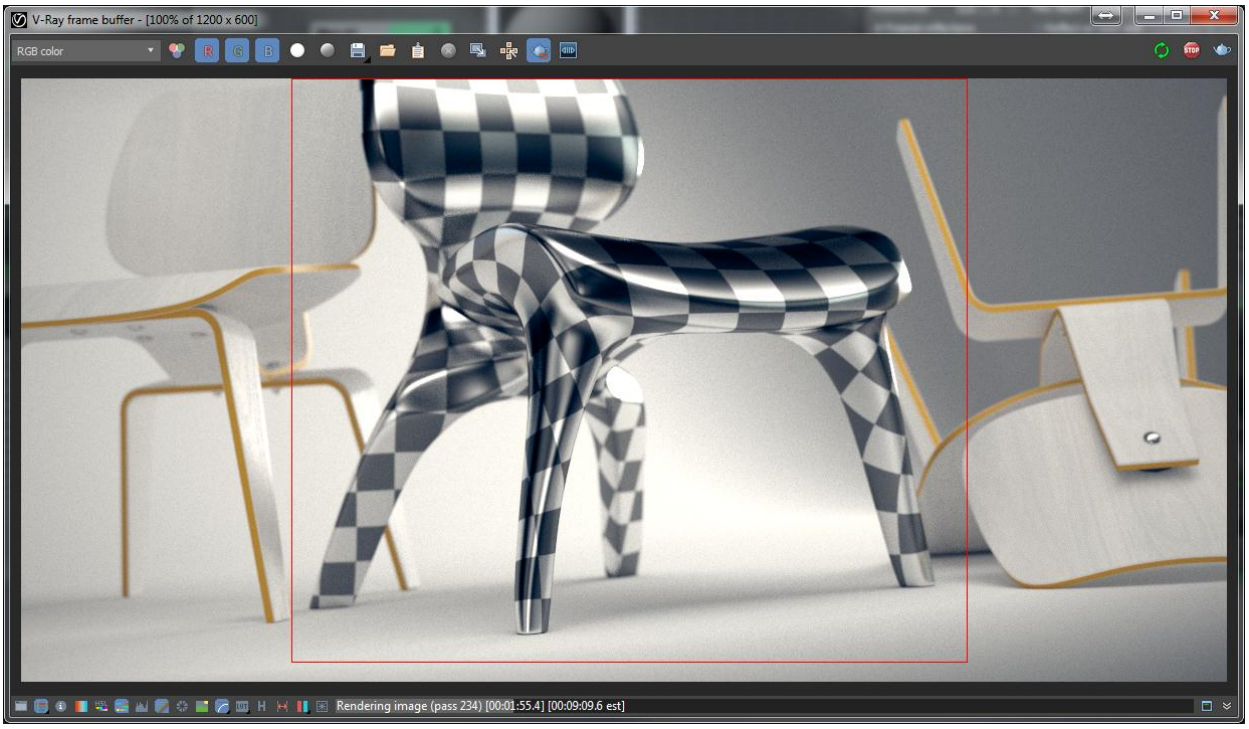
23. Set the **HGlossiness** parameter to 1,0 and the **RGlossiness** parameter to 0,8 and examine the **VRayReflection** and **VRaySpecular** render elements:



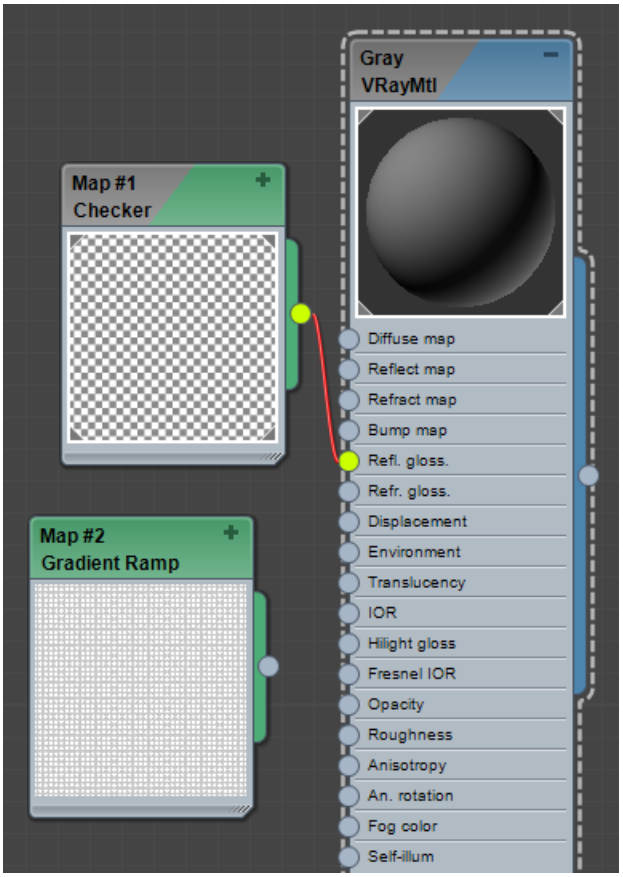


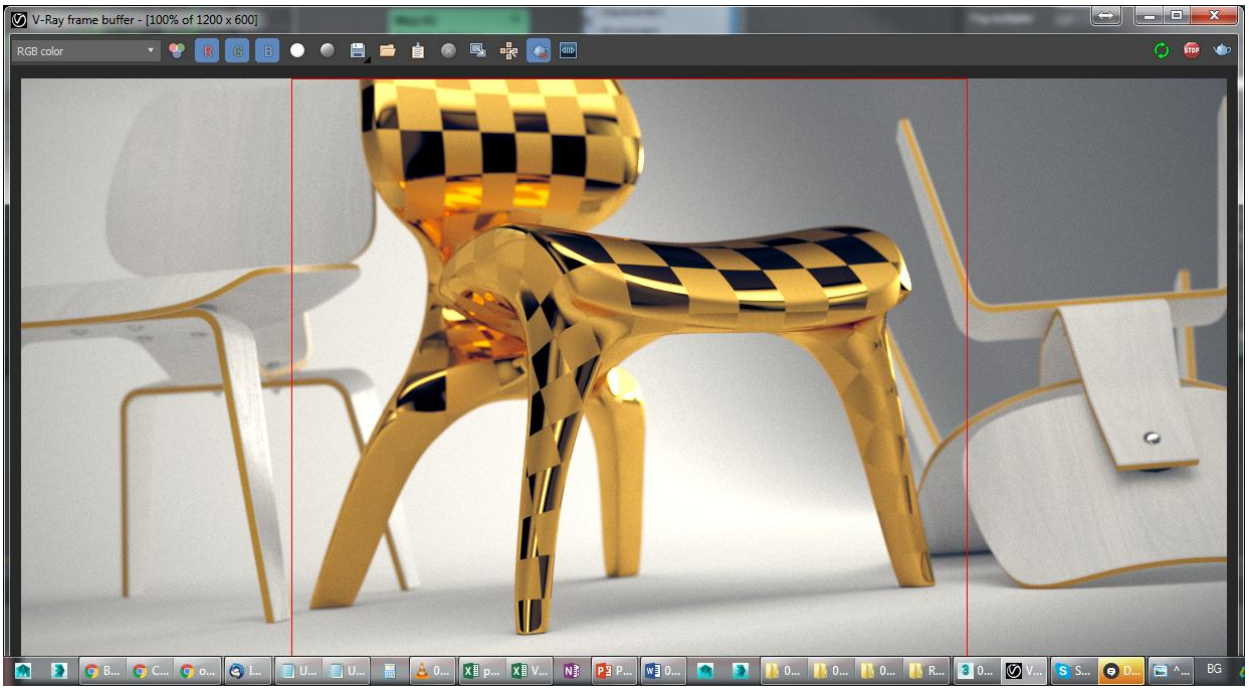
24. Lock the **HGlossiness** by pressing the L button and make sure that the **RGlossiness** parameter is set to 0,8
25. Connect the **Map#1 Checker** to the **Reflect map** slot of the **Gray VRayMtl** material:


Gray
VRayMtl
Map #1
Checker
Map #2
Gradient Ramp
Diffuse map
Reflect map
Refract map
Bump map
Refl. gloss.
Refr. gloss.
Displacement
Environment
Translucency
IOR
Hilight gloss
Fresnel IOR
Opacity
Roughness
Anisotropy
An. rotation
Fog color
Self-illum
mr Connection

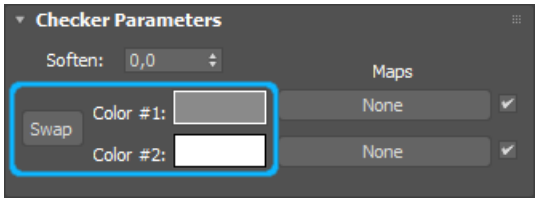

V-Ray frame buffer - [100% of 1200 x 600]
RGB color
Rendering image (pass 234) [00:01:55.4] [00:09:09.6 est]

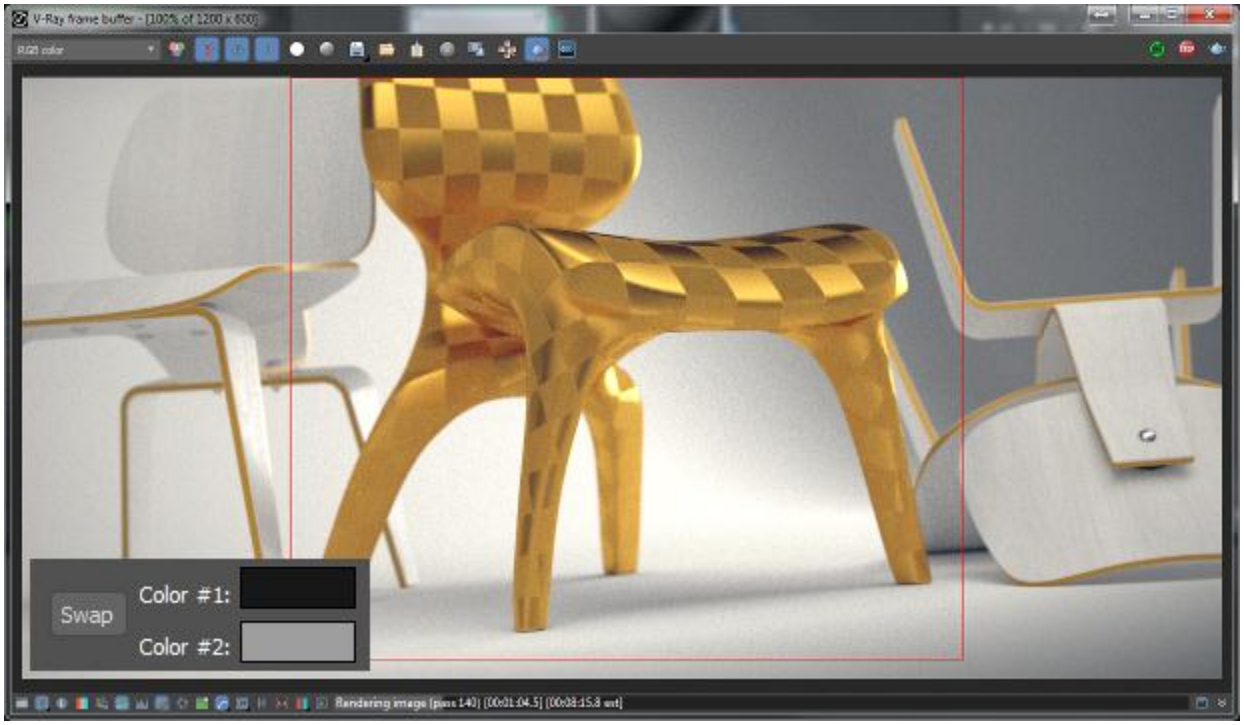
26. Break the texture connection to the **Reflect map** slot and connect the **Map #1 Checker** map to the **Refl. gloss.** slot of the **Gray VRayMtl** material:



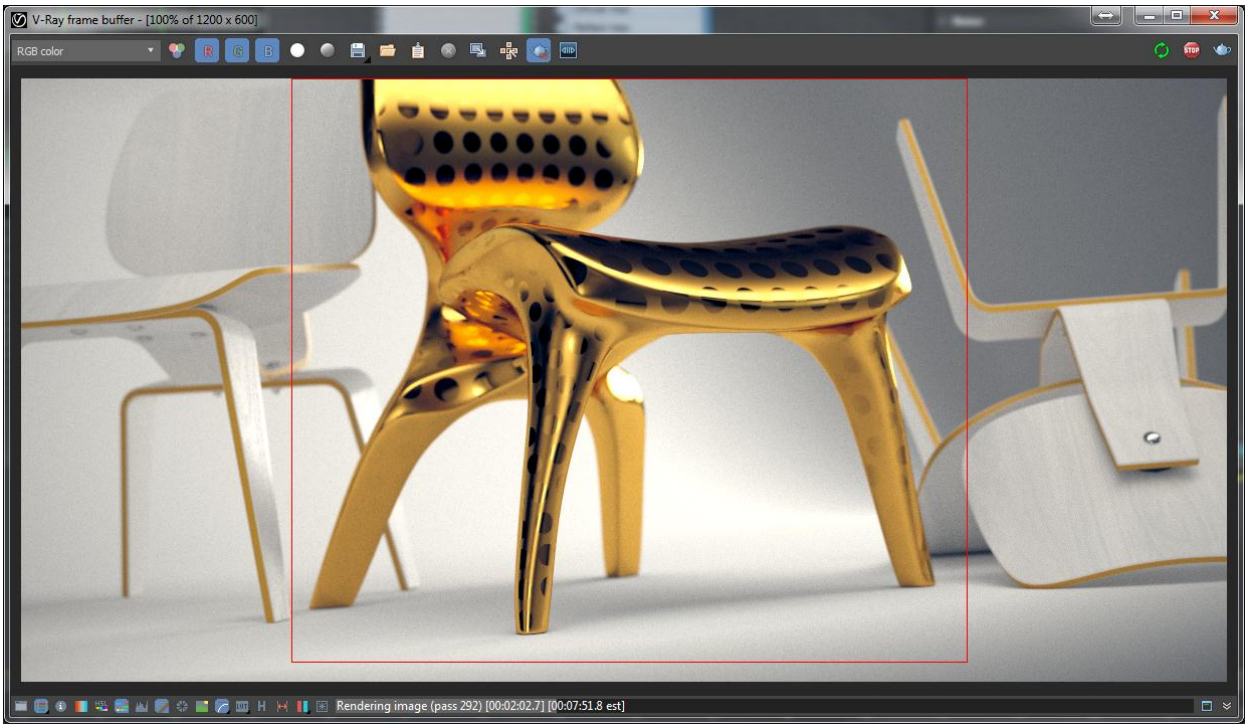


27. Select the **Map #1 Checker** and try different gray scale values for the Color #1 and Color #2 parameters:

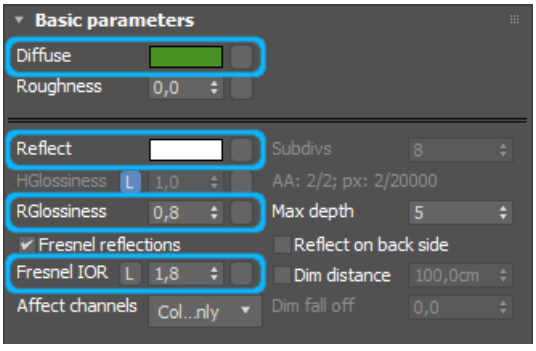


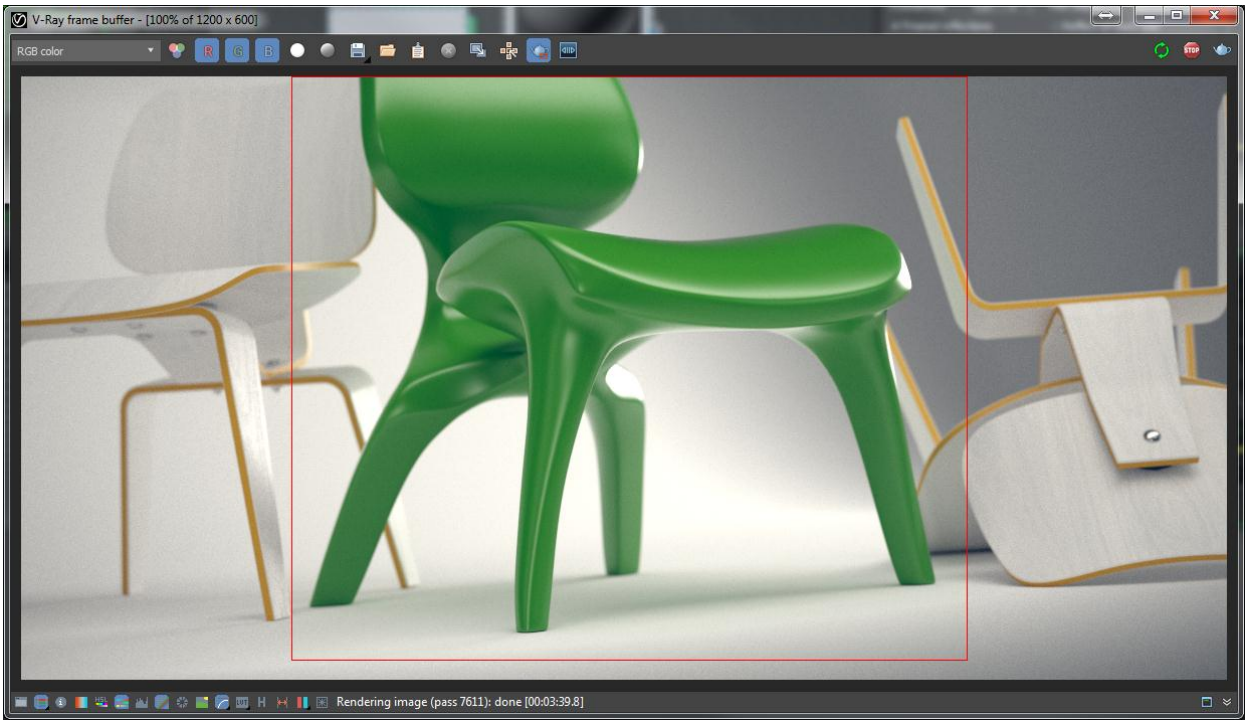


28. Connect the **Map #2 Gradient Ramp** map to the **Refl. gloss.** slot of the **Gray VRayMtl** material:

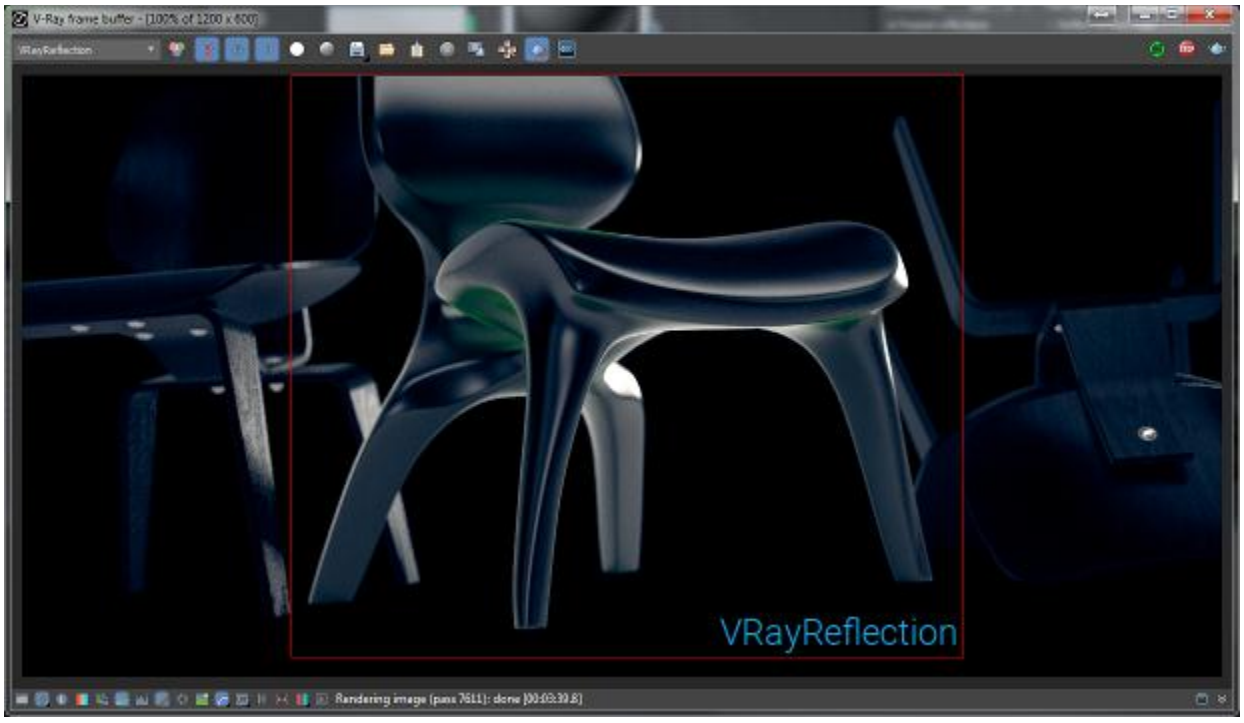


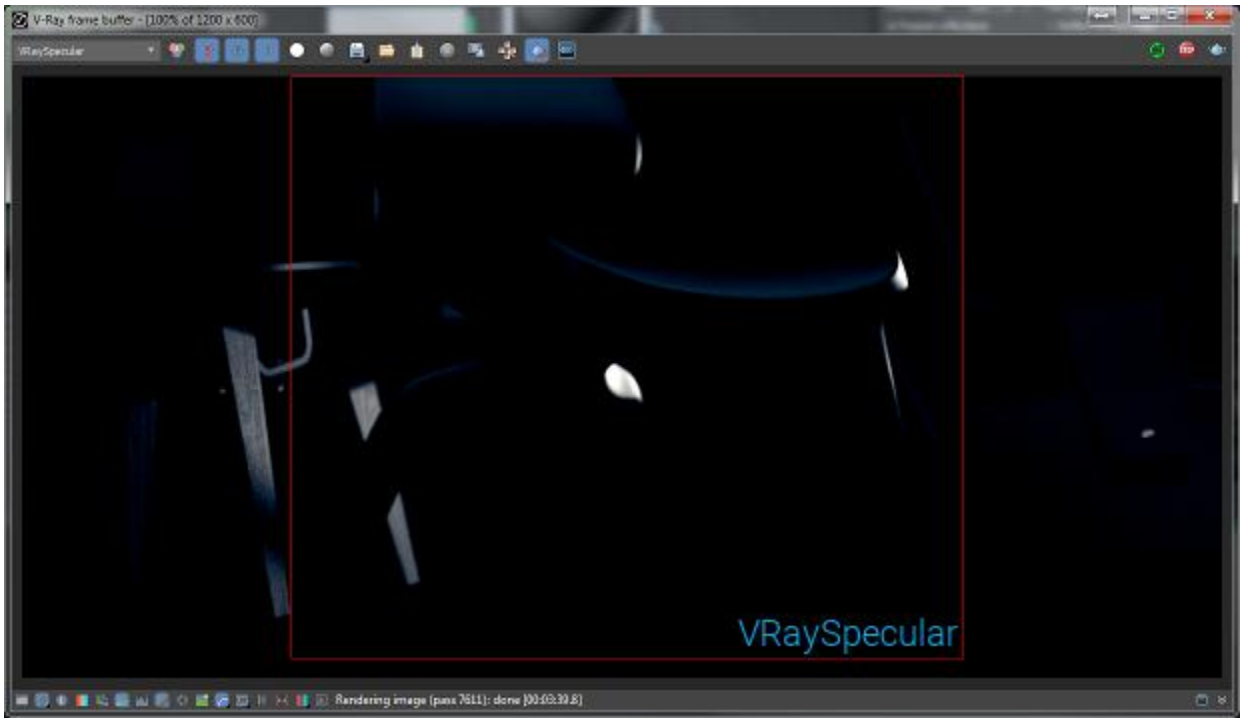
29. Break the texture connection to the **Refl. gloss.** slot of the **Gray VRayMtl** material
30. Select the **Gray VRayMtl** material and set the **Diffuse** parameter to green, **Reflect** parameter to white, **RGlossiness** parameter to 0,8 and **Fresnel IOR** parameter to 1,8

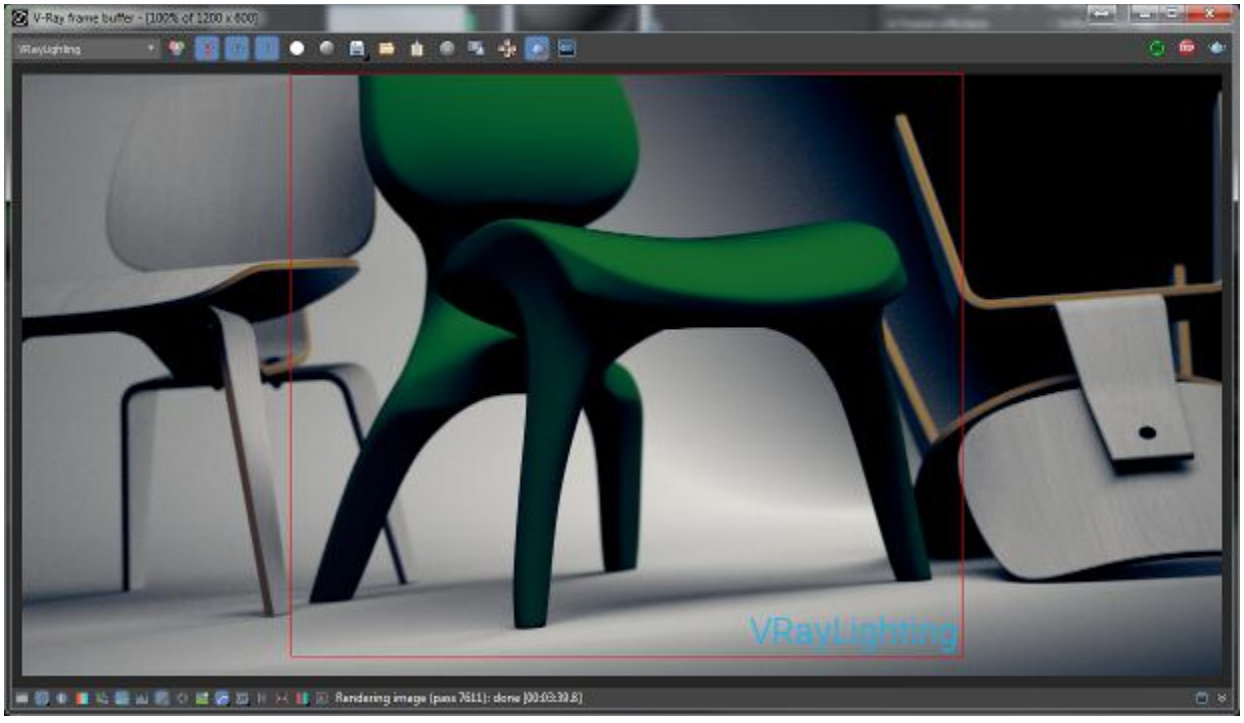


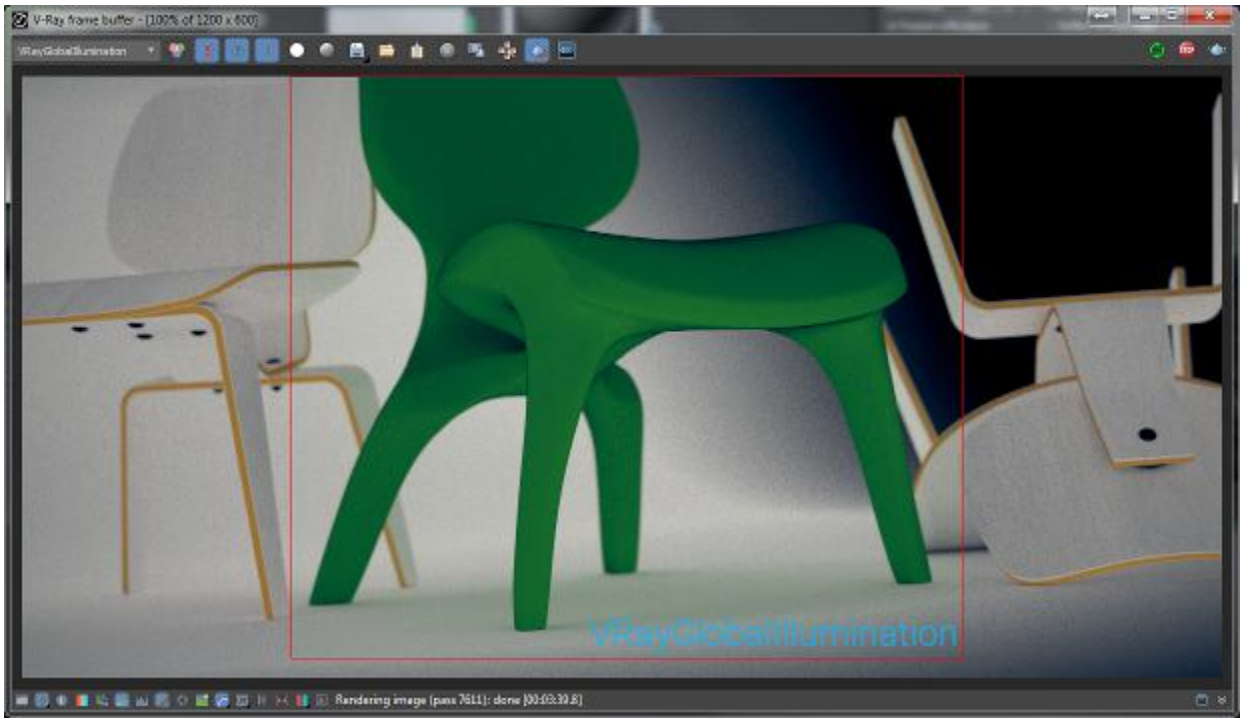


31. Examine the **VRayReflection**, **VRaySpecular**, **VRayLighting** and **VRayIndirectIllumination** render elements:




VRaySpecular


VRayLighting


V-Ray frame buffer - [100% of 1200 x 600]
VRayGlobalIllumination
Rendering image (pass 7611): done [00:03:39.8]

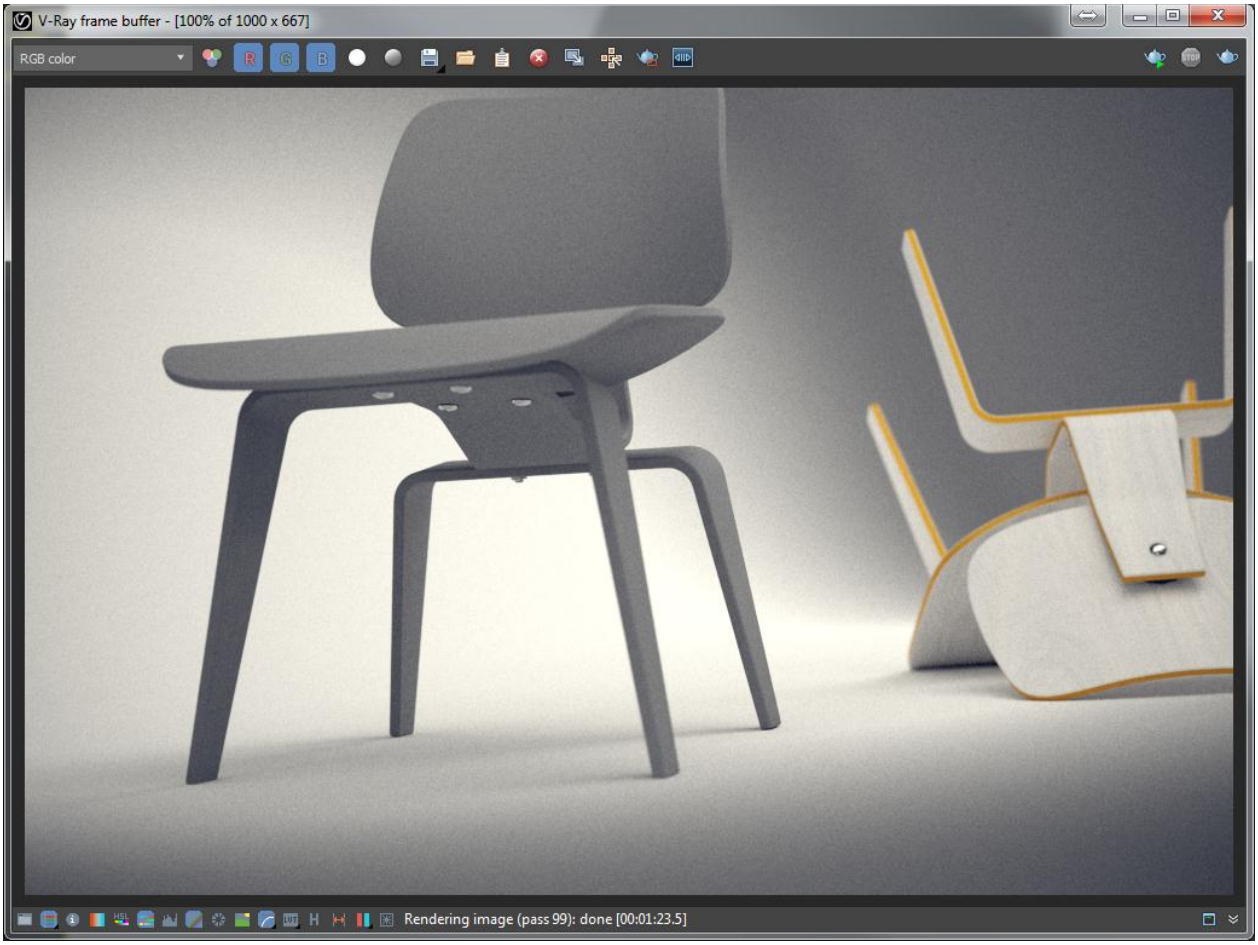
oonix.io

V-RAY MATERIAL

Refractions

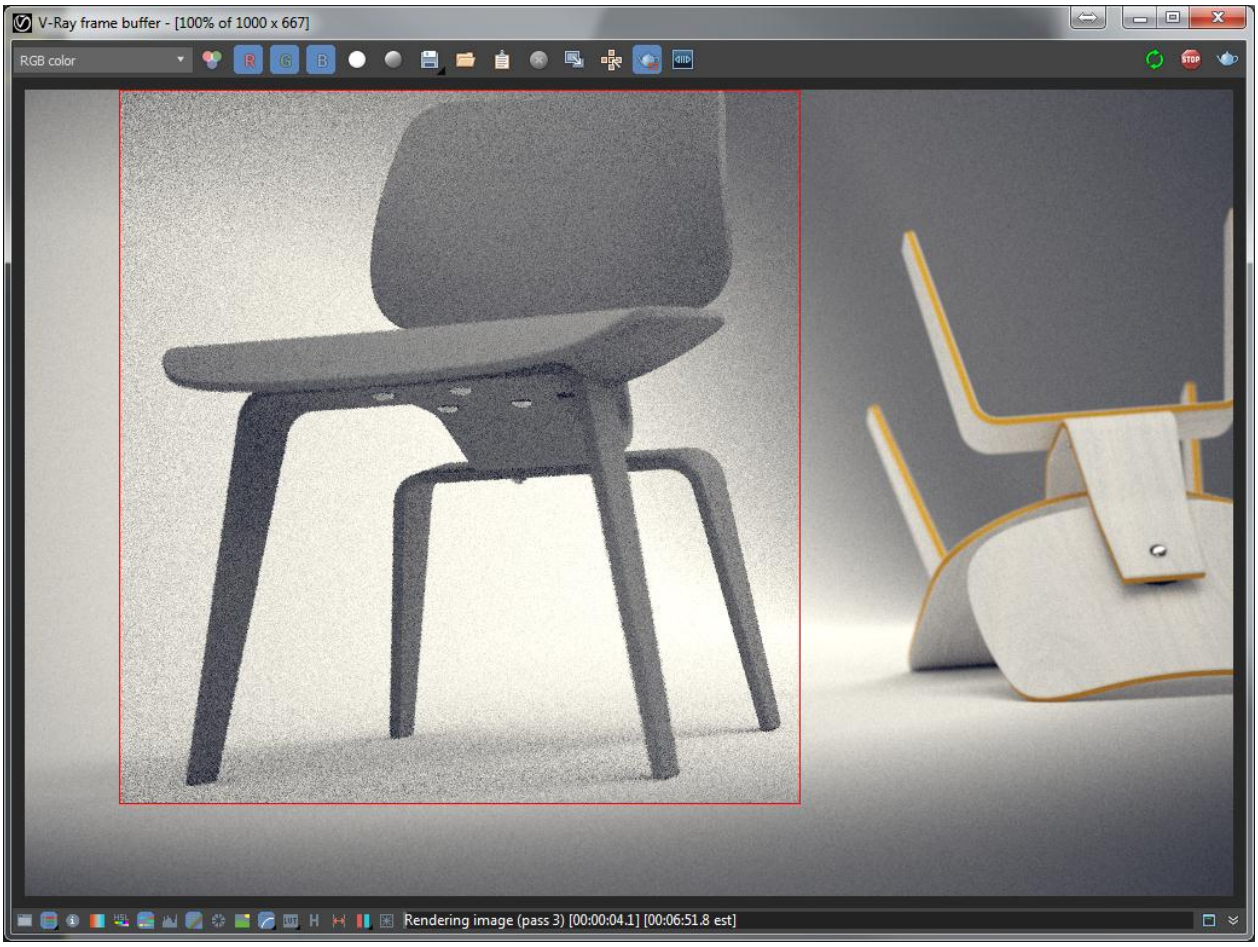
This demonstration covers the refractions layer of the V-Ray Material in 3ds Max.

1. In the folder **09 Studio** open the scene named **01 VRay Mtl B.max**
2. Hit **Render** and wait a while for the render to clear out

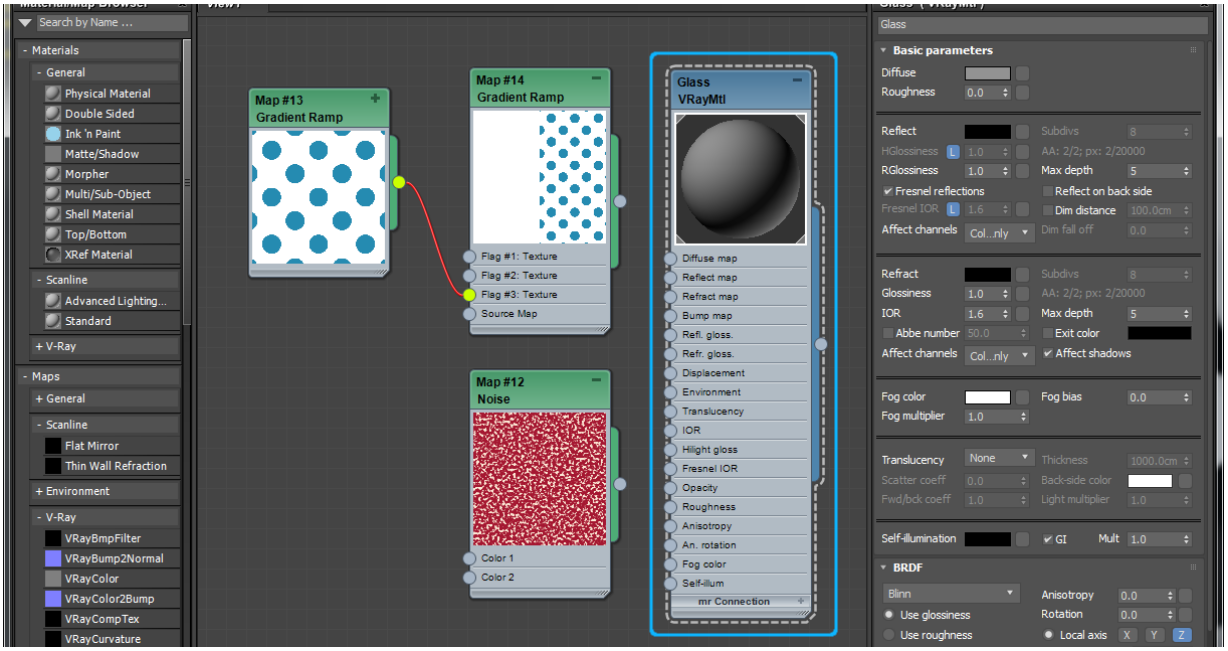


3. In the **V-Ray Frame Buffer** click the **Stop** button:

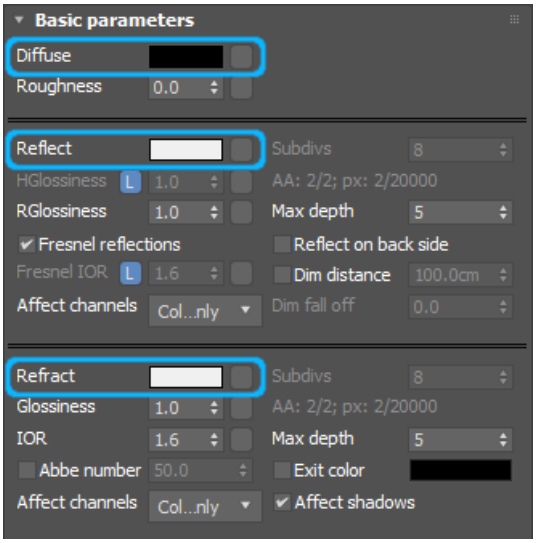
4. Use the **Region Render** tool to draw an area around the gray chair and then click the **Start interactive rendering** button in the **V-Ray Frame Buffer**

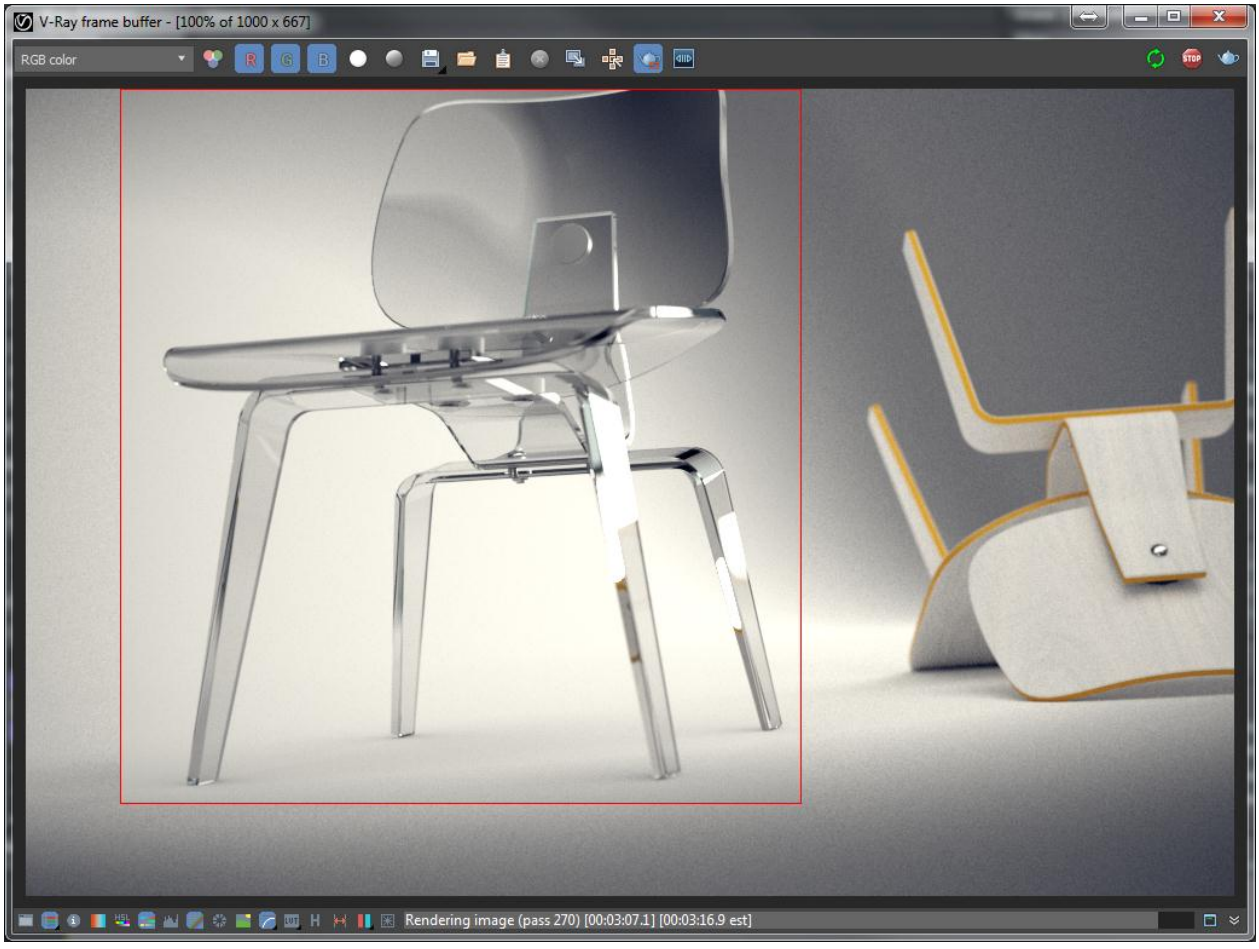


5. Open the **Slate Material Editor** and select the **Glass VRayMtl** material.

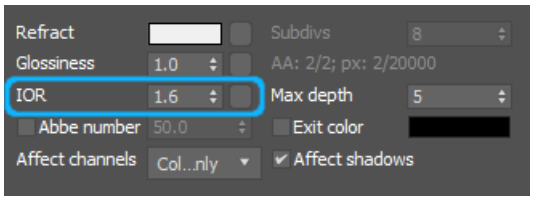


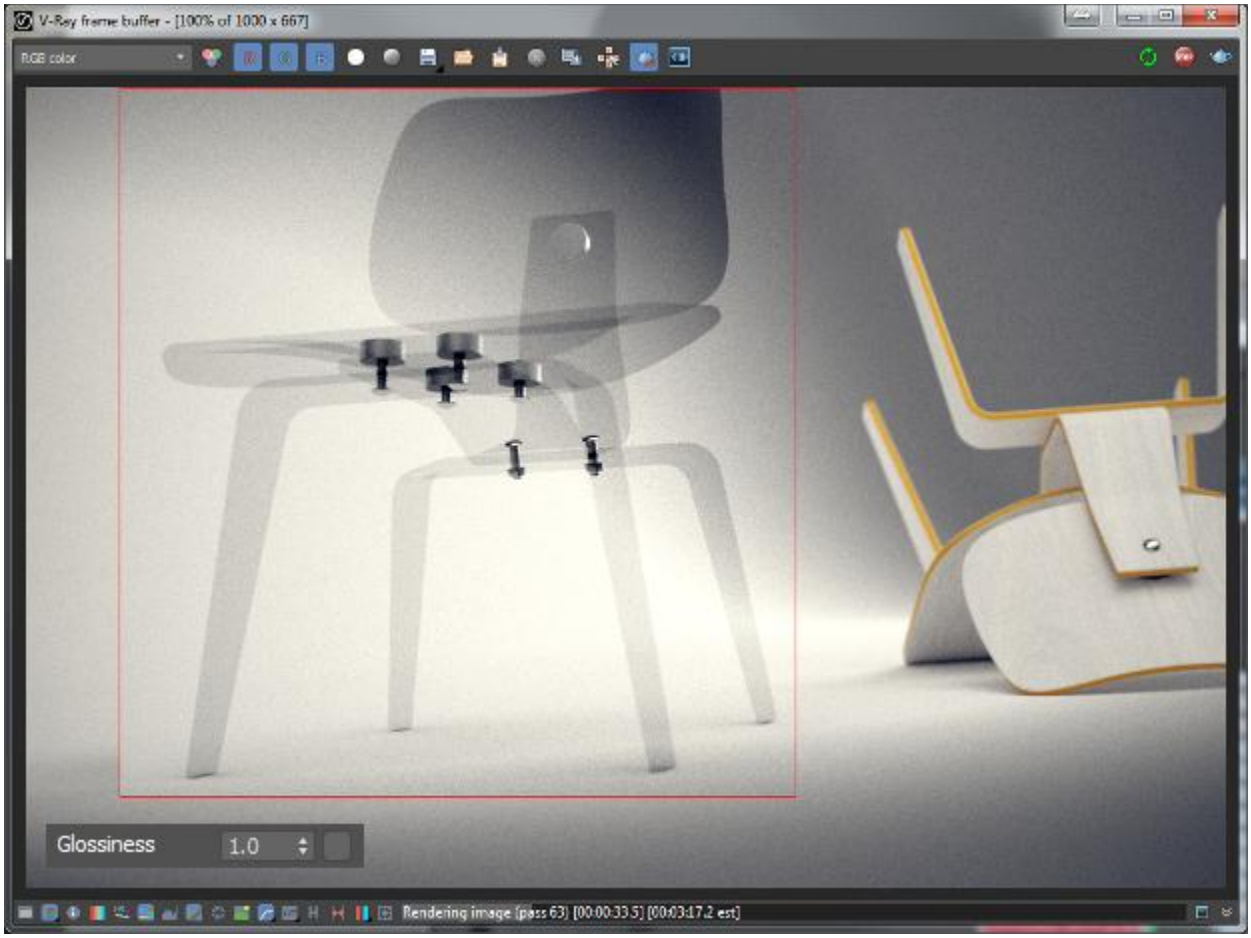
6. Make the **Diffuse** black and the **Reflect** and **Refract** almost white (Value=240)

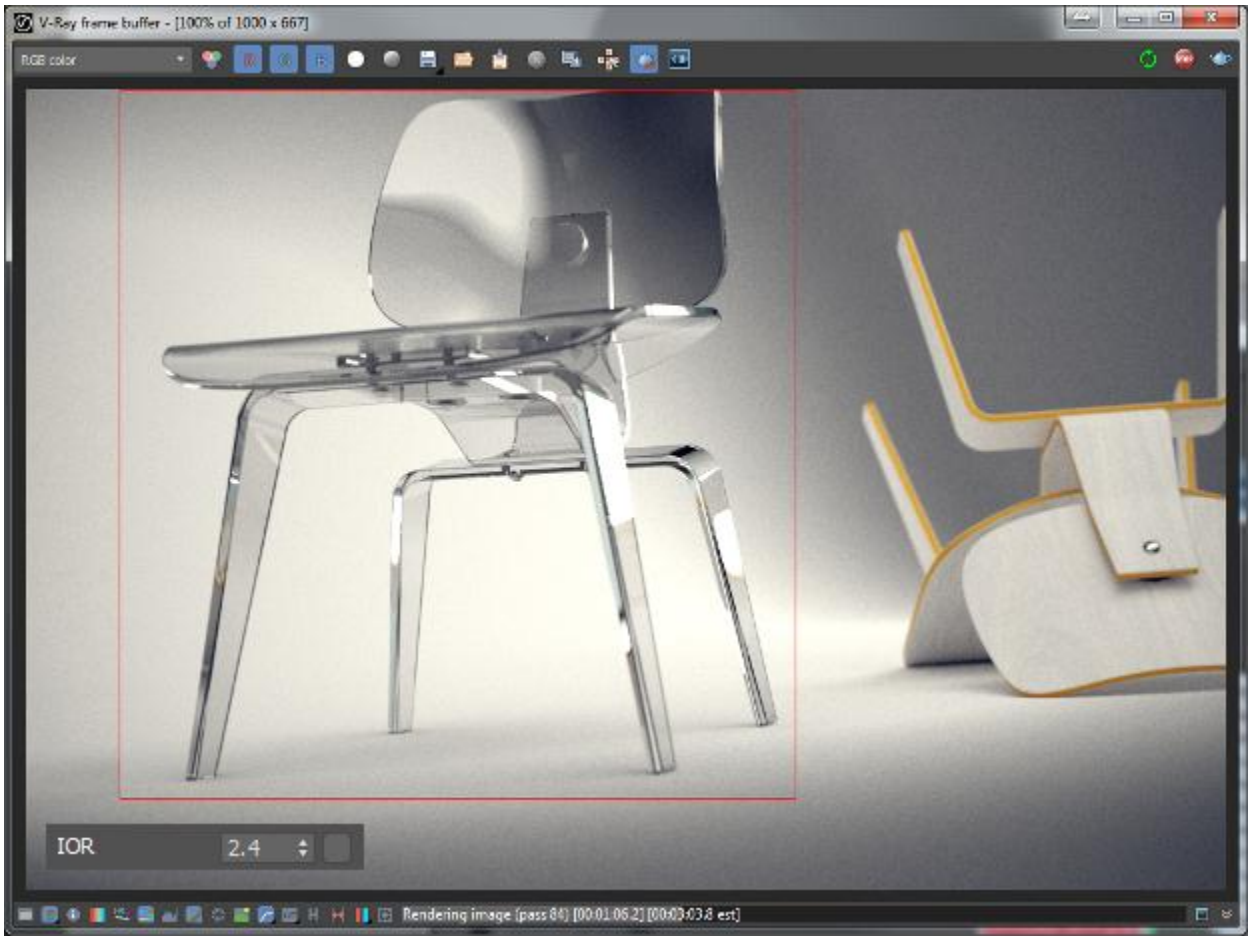




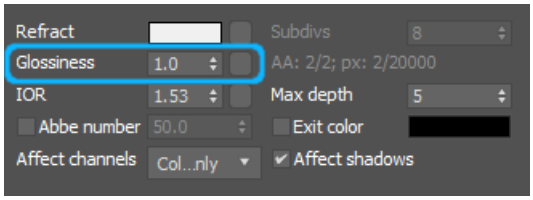
7. Try different values for the **IOR** parameter:

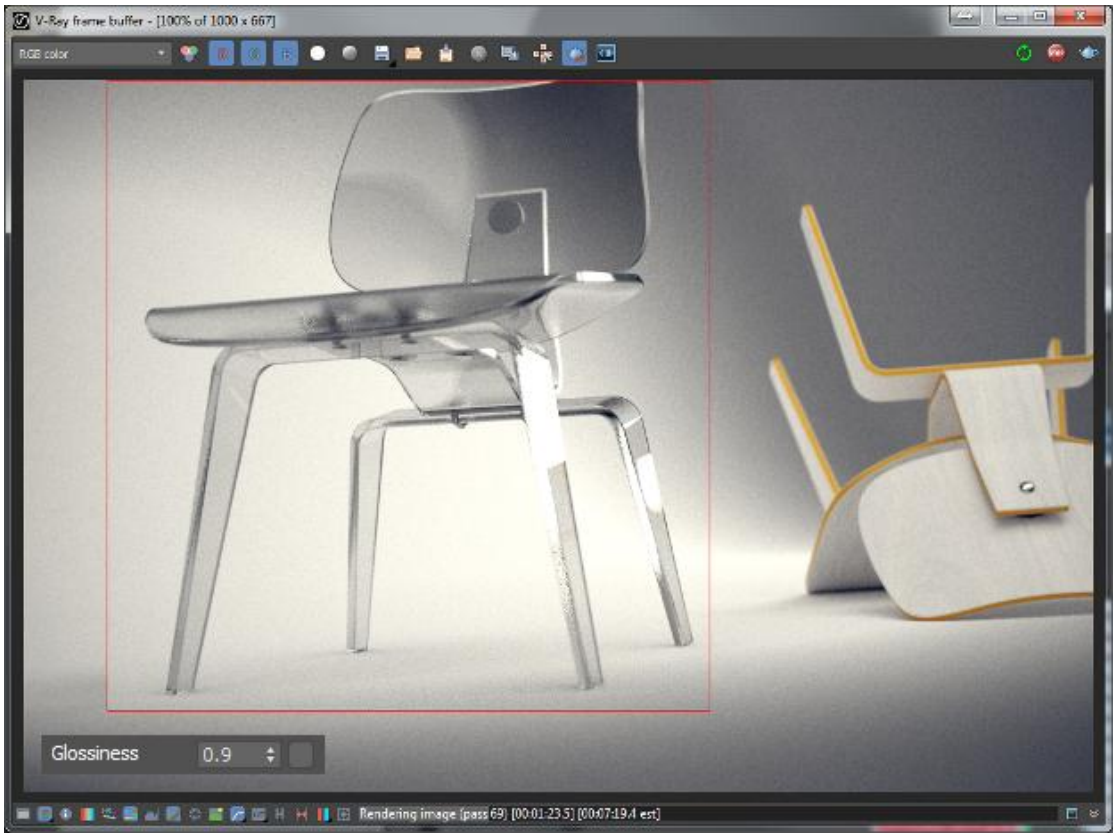

Refract
Subdivs
8
Glossiness
1.0
AA: 2/2; px: 2/20000
IOR
1.6
Max depth
5
Abbe number
50.0
Exit color
Affect channels
Col...nly
Affect shadows

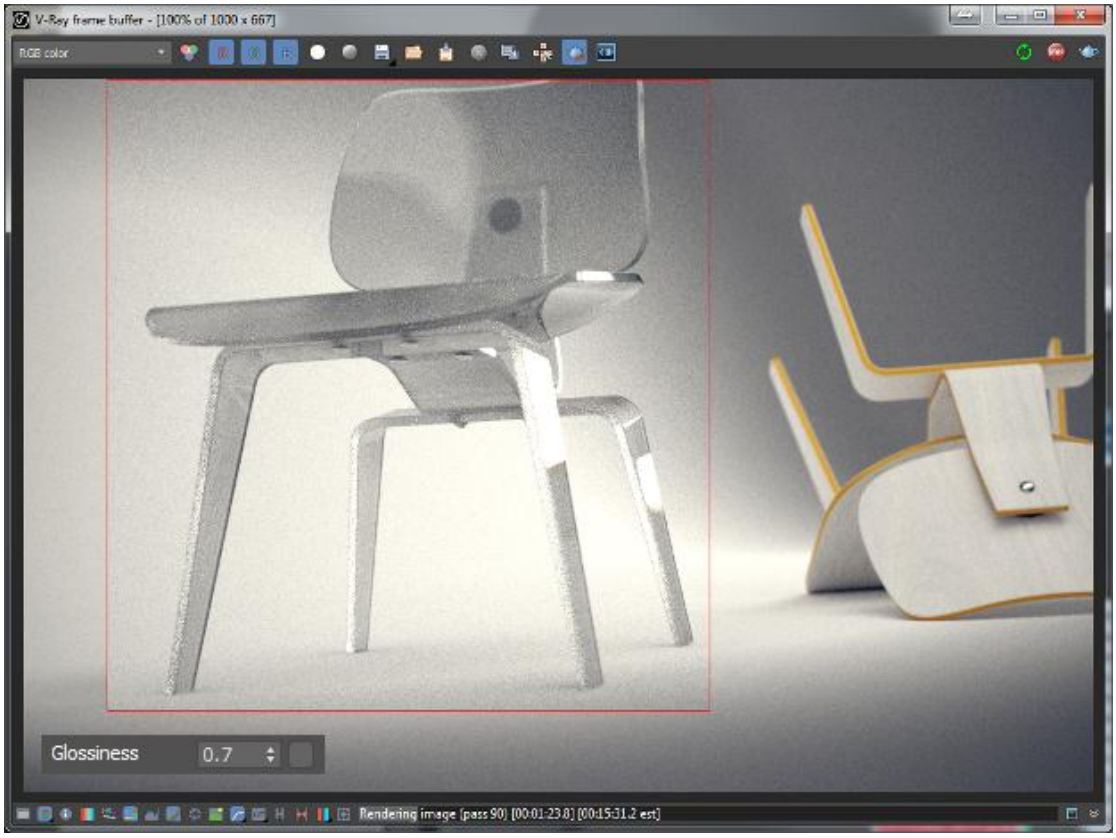

V-Ray frame buffer - [100% of 1000 x 667]
RGB color
Glossiness
1.0
Rendering image (pass 63) [00:00:33.5] [00:03:17.2 est]



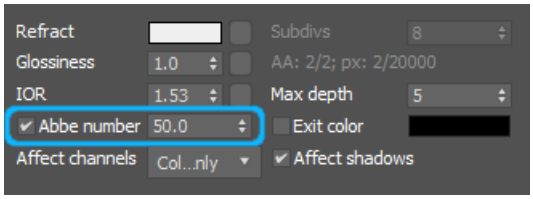
8. Set the **IOR** parameter to 1.53 and try different values for the **Glossiness** parameter:

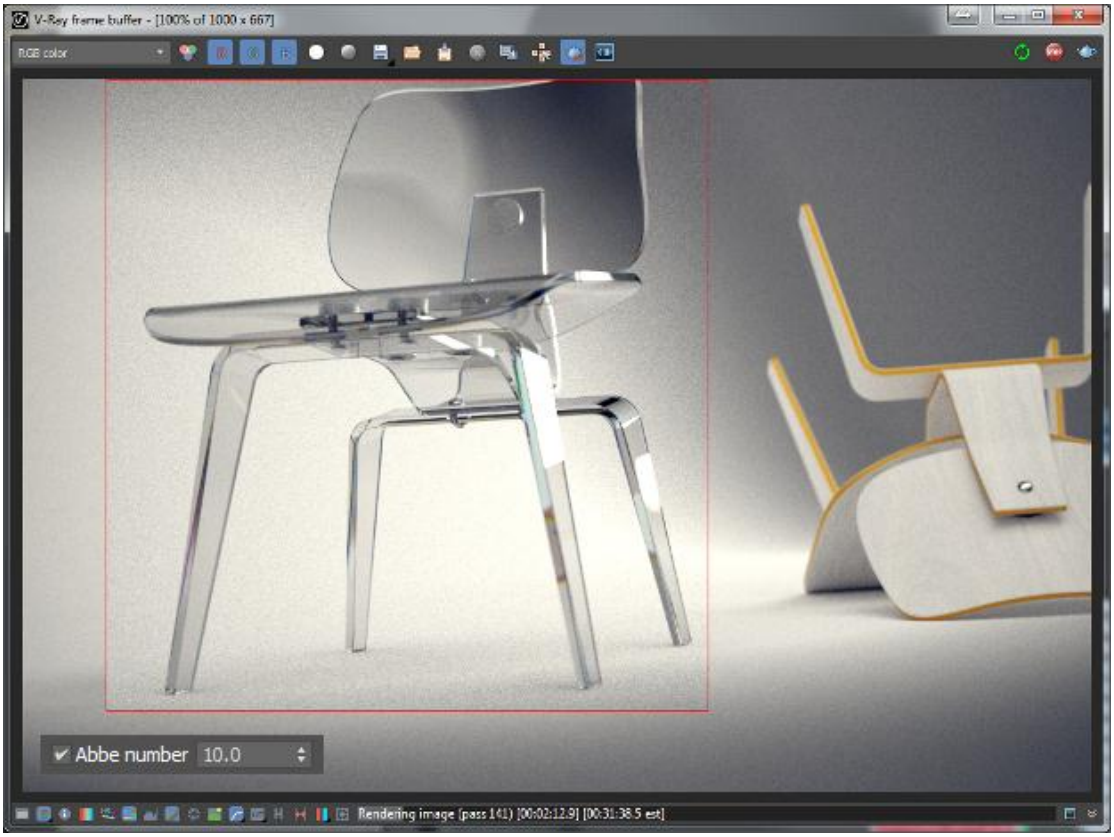


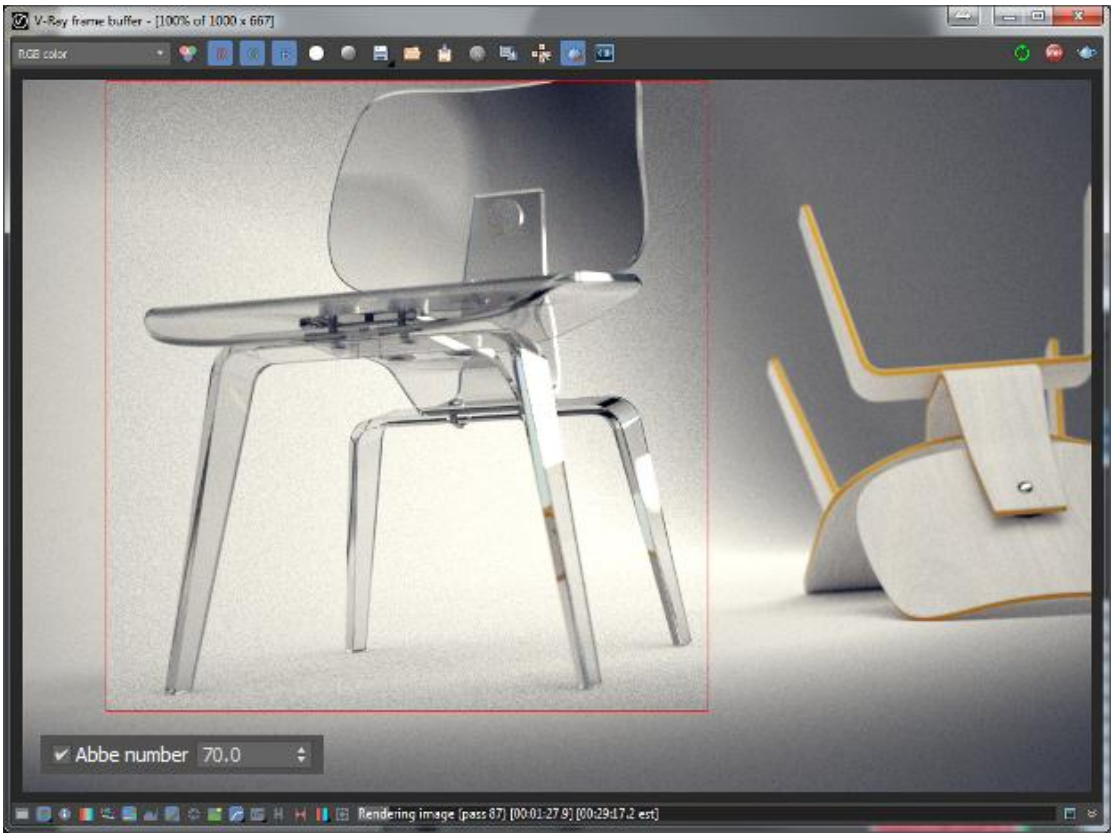

V-Ray frame buffer - [100% of 1000 x 667]
RGB color
Glossiness
0.9
Rendering image (pass 69) [00:01:23.5] [00:07:19.4 est]


V-Ray frame buffer - [100% of 1000 x 667]
RGB color
Glossiness
0.7
Rendering image (pass 90) [00:01:23.8] [00:15:31.2 est]

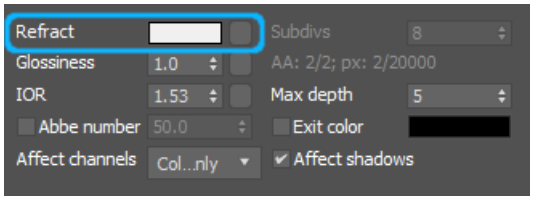
9. Set the **Glossiness** parameter to 1.0
10. Enable the **Abbe number** check box and try different values:

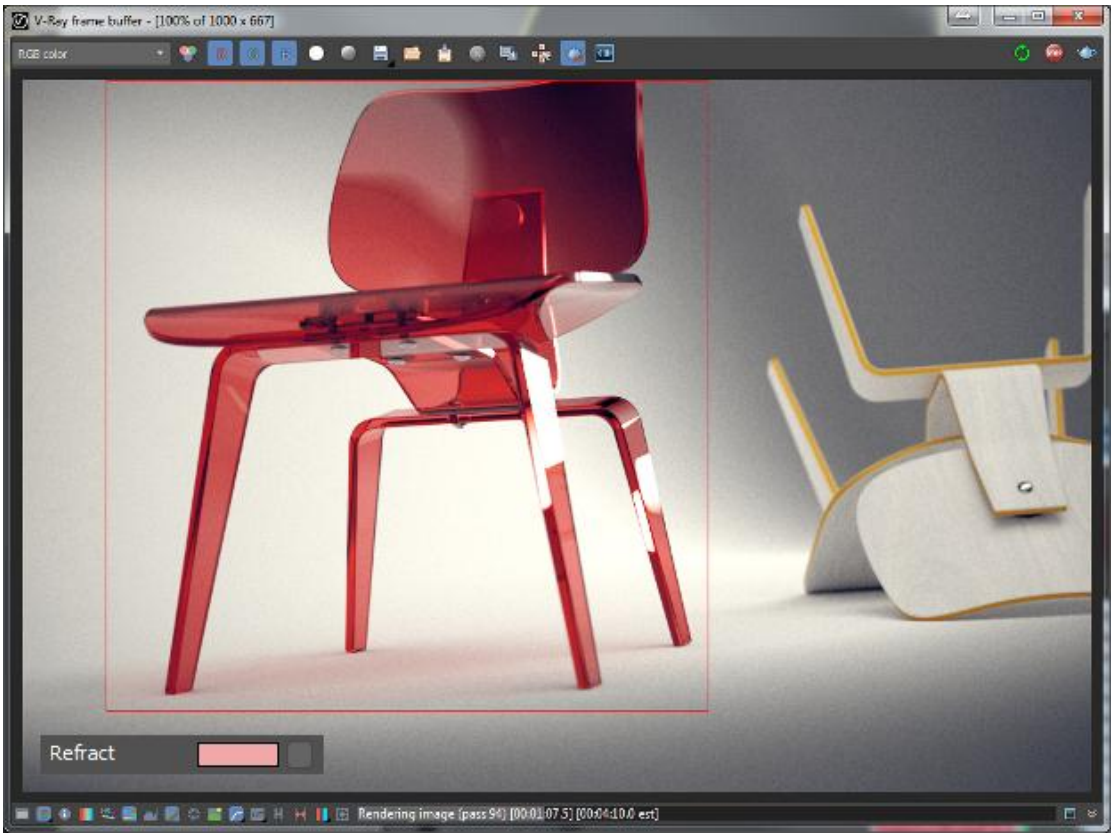


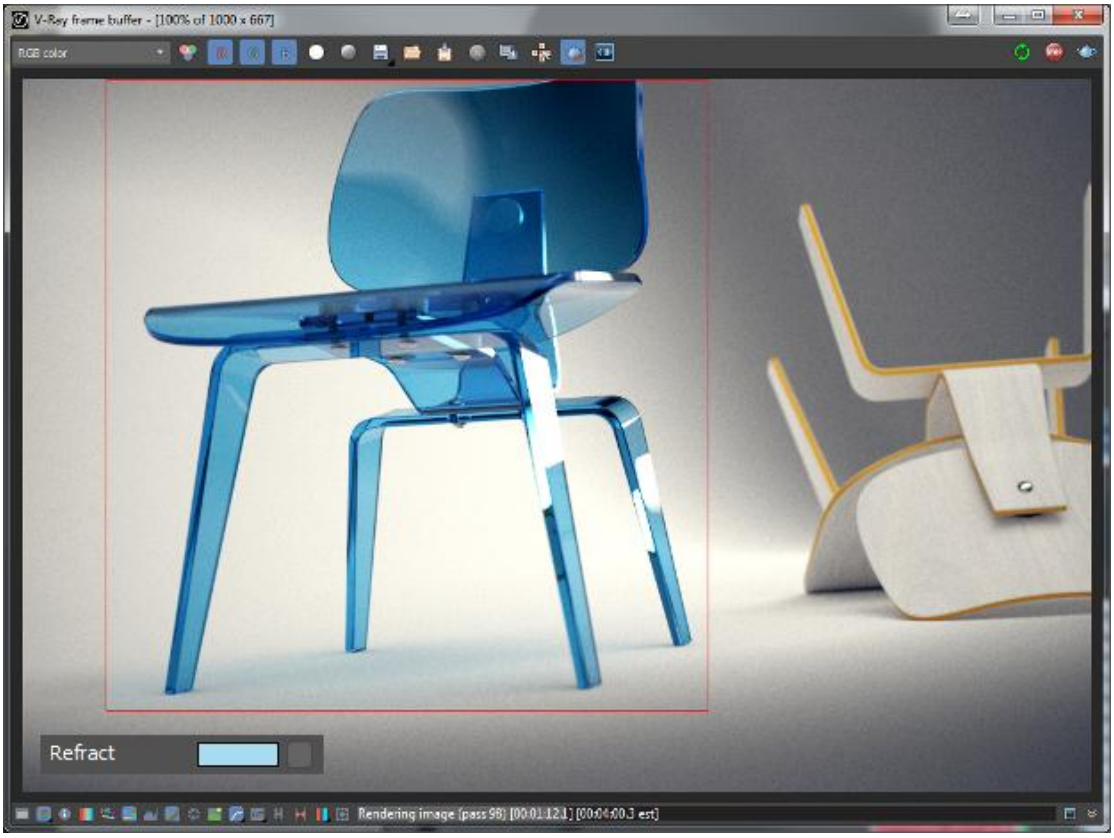




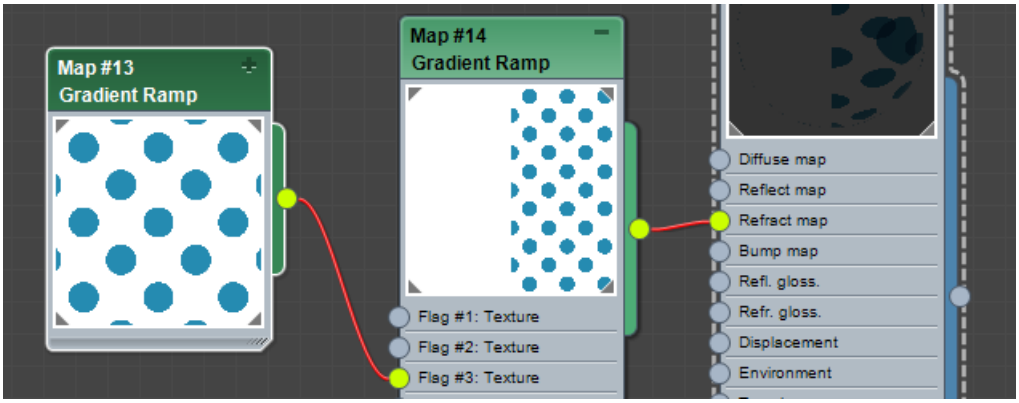
11. Disable the **Abbe number** checkbox and try different colors for the **Refract** parameter:

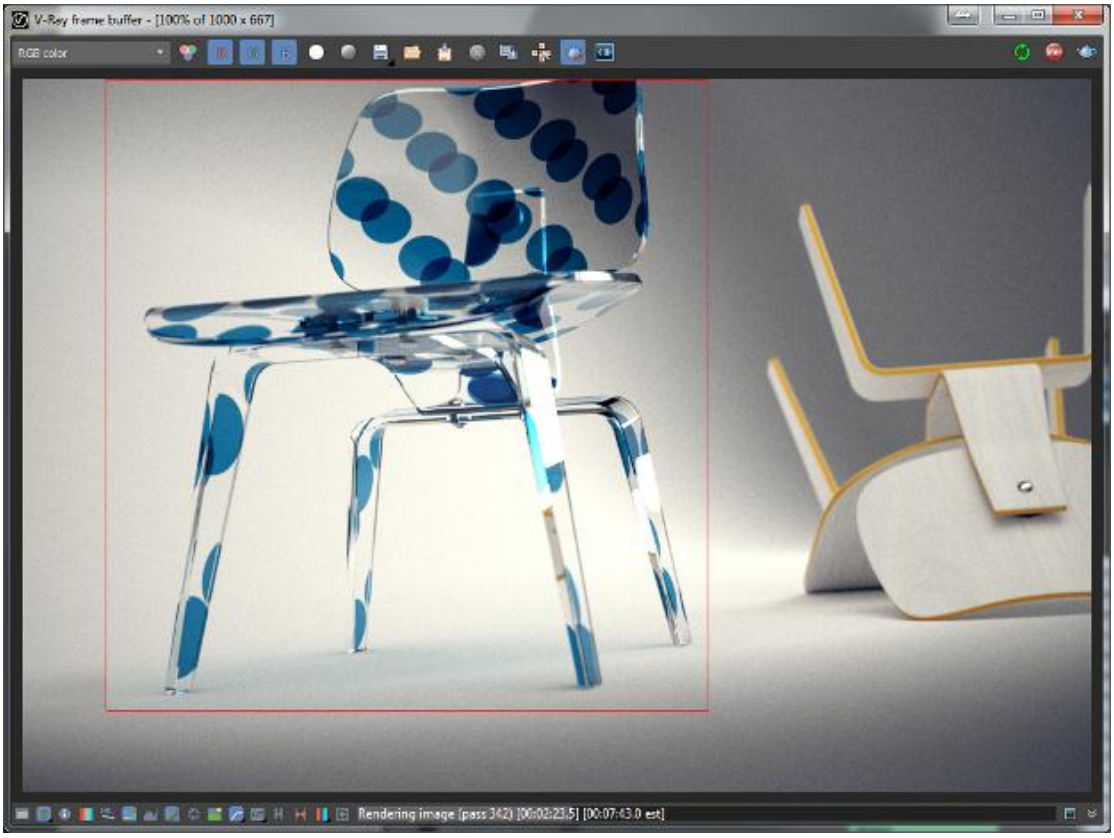



V-Ray frame buffer - [100% of 1000 x 667]
RGB color
Refract
Rendering image (pass 94) [00:01:07.5] [00:04:10.0 est]

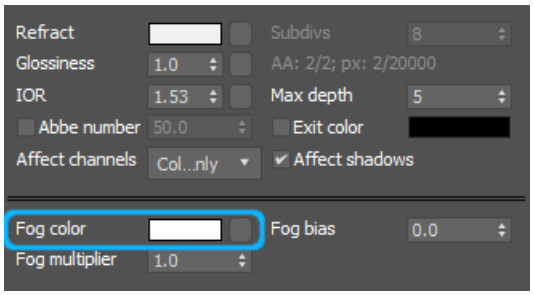

V-Ray frame buffer - [100% of 1000 x 667]
RGB color
Refract
Rendering image (pass 98) [00:01:12.1] [00:04:00.3 est]

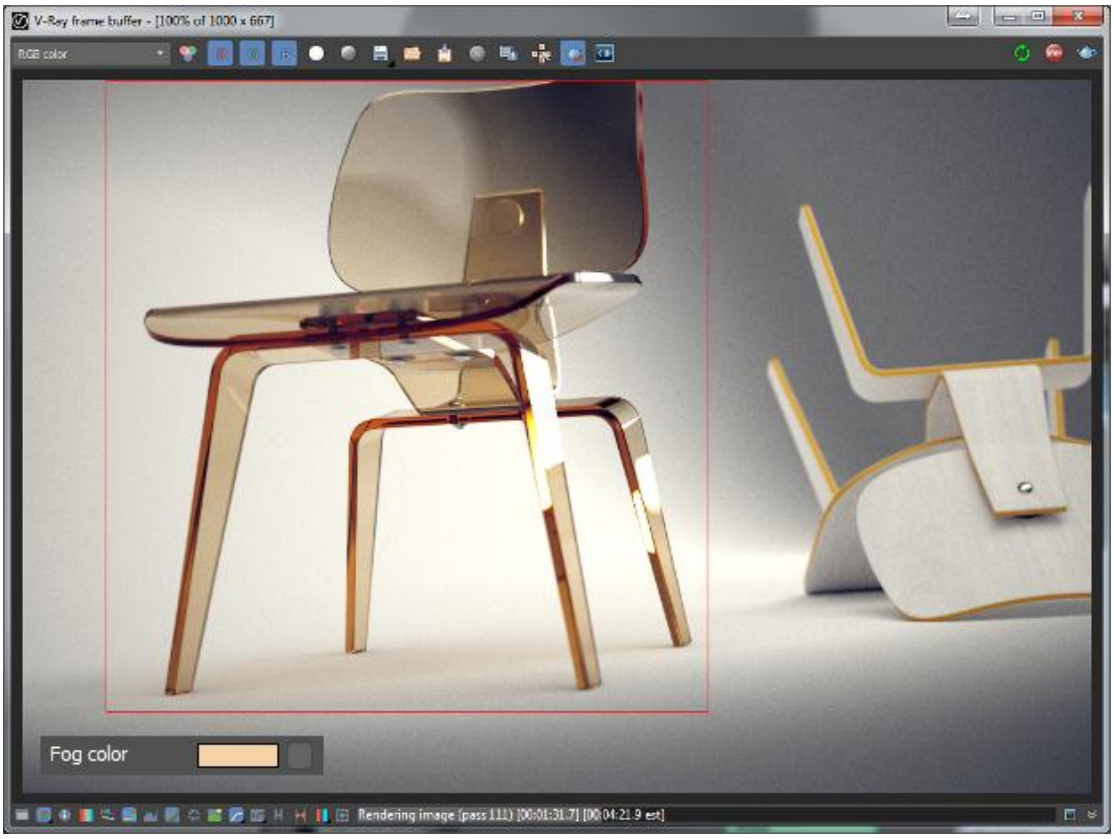
12. In the **Slate Material Editor**, connect the **Map #14 Gradient Ramp** map to the **Reflect map** slot of the **Glass VRayMtl** material

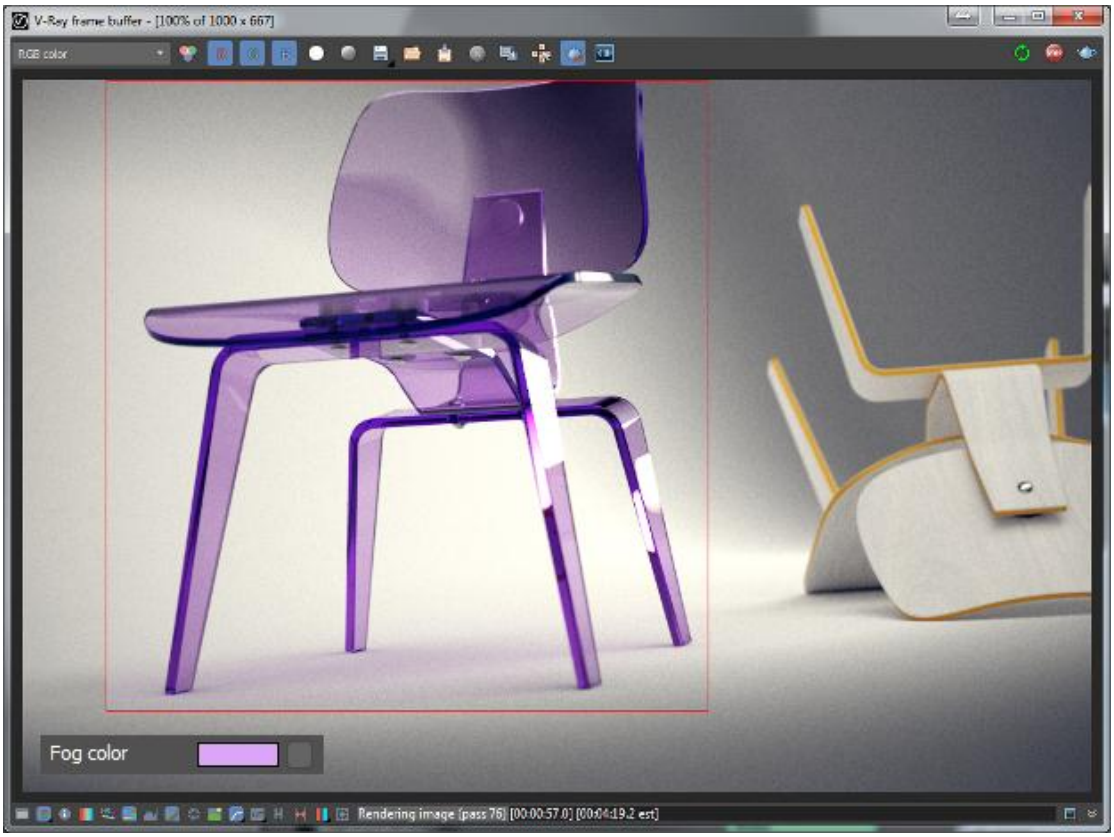




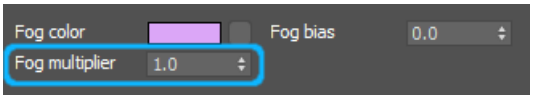
13. Break the texture connection and make the **Refract** parameter close to white (Value-240)
14. Try different colors for the Fog parameter:

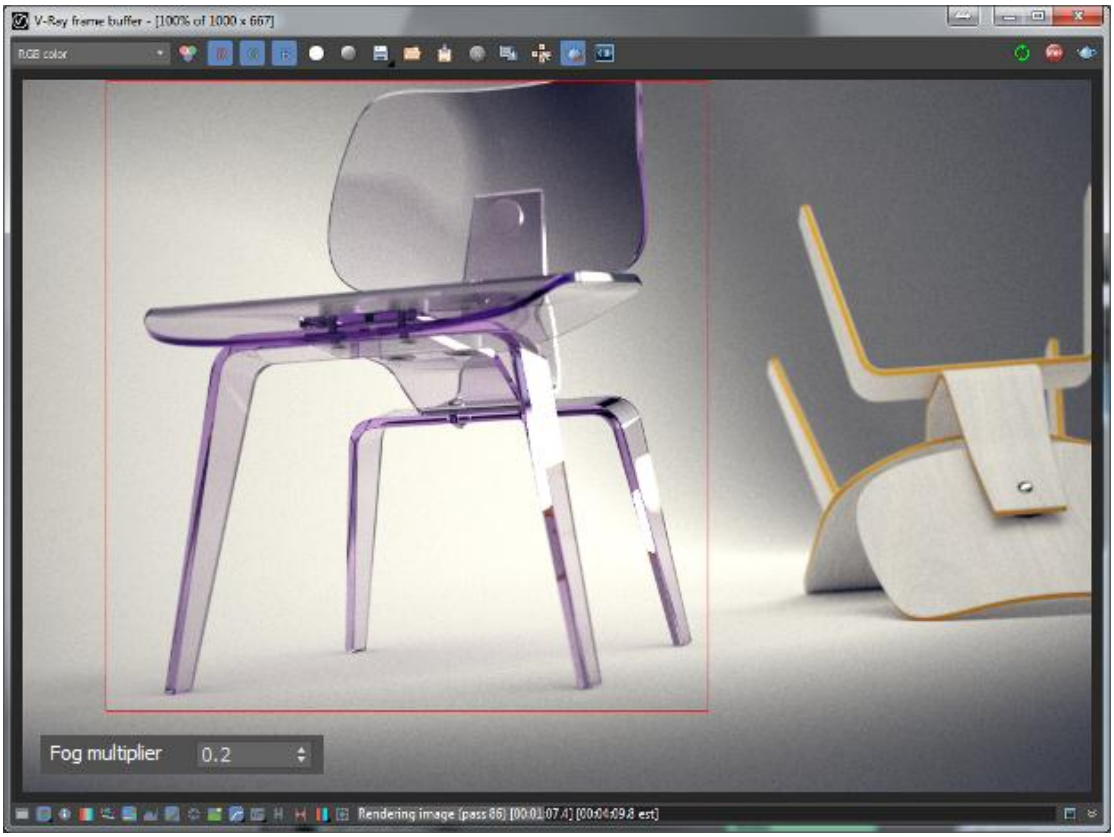

Refract
Subdivs
8
Glossiness
1.0
AA: 2/2; px: 2/20000
IOR
1.53
Max depth
5
Abbe number
50.0
Exit color
Affect channels
Col...nly
Affect shadows
Fog color
Fog bias
0.0
Fog multiplier
1.0

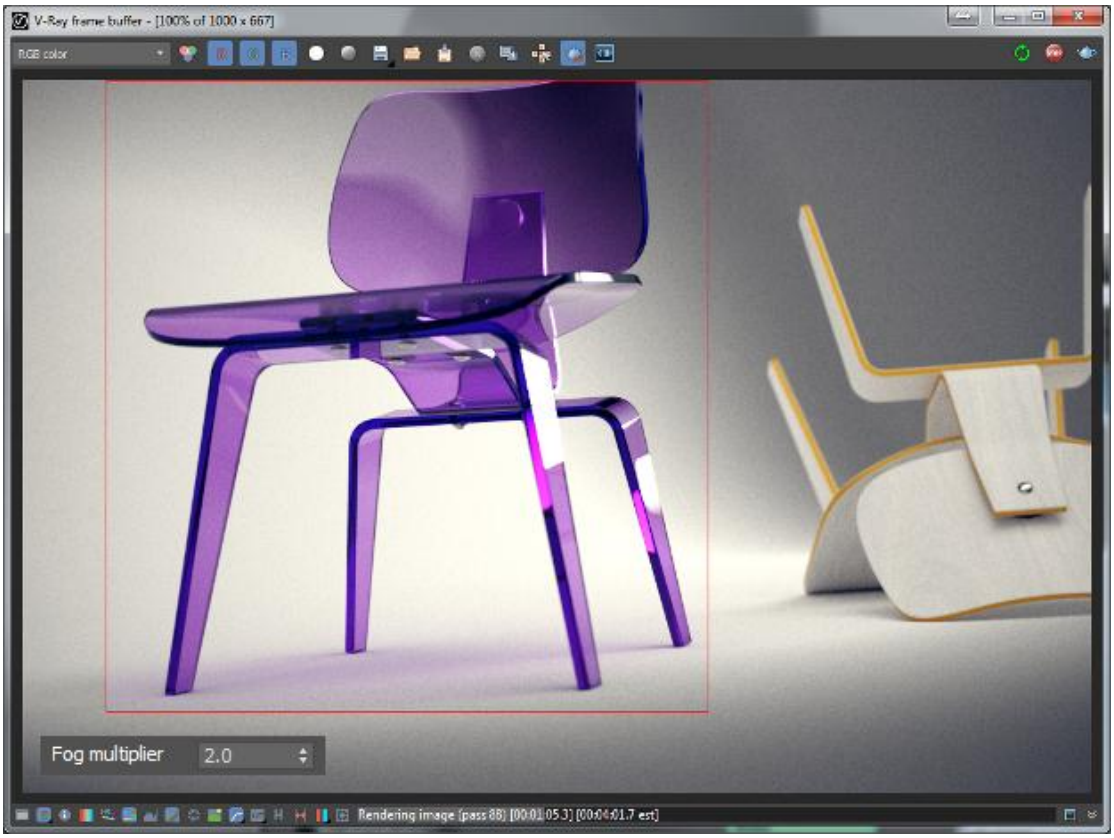

V-Ray frame buffer - [100% of 1000 x 667]
RGB color
Fog color
Rendering image (pass 111) [00:01:31.7] [00:04:21.9 est]



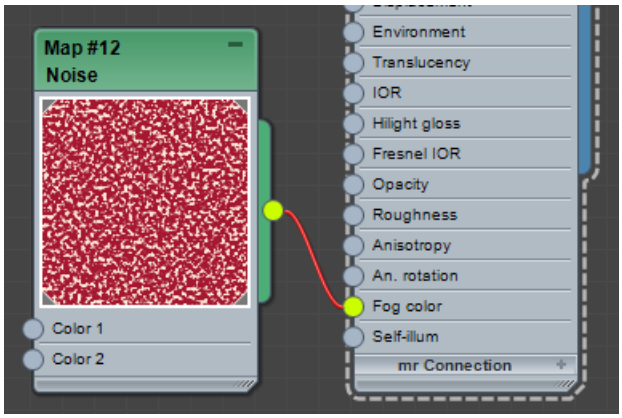
15. Try different values for the **Fog multiplier** parameter:

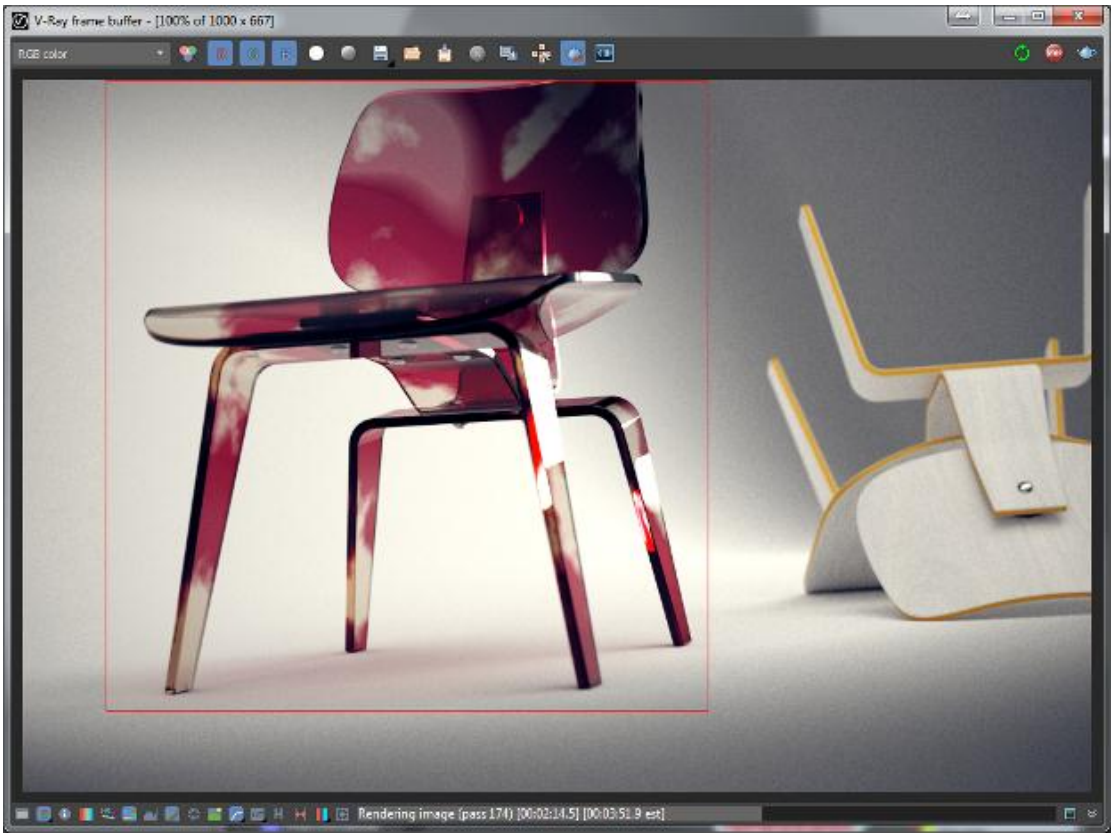



V-Ray frame buffer - [100% of 1000 x 667]
RGB color
Fog multiplier
0.2
Rendering image (pass 86) [00:01:07.4] [00:04:09.8 est]


V-Ray frame buffer - [100% of 1000 x 667]
RGB color
Fog multiplier
2.0
Rendering image (pass 86) [00:01:05.3] [00:04:01.7 est]

16. Set the **Fog multiplier** parameter to 1.0
17. In the **Slate Material Editor**, connect the **Map #12 Noise** map to the **Fog map** slot of the **Glass VRayMtl** material

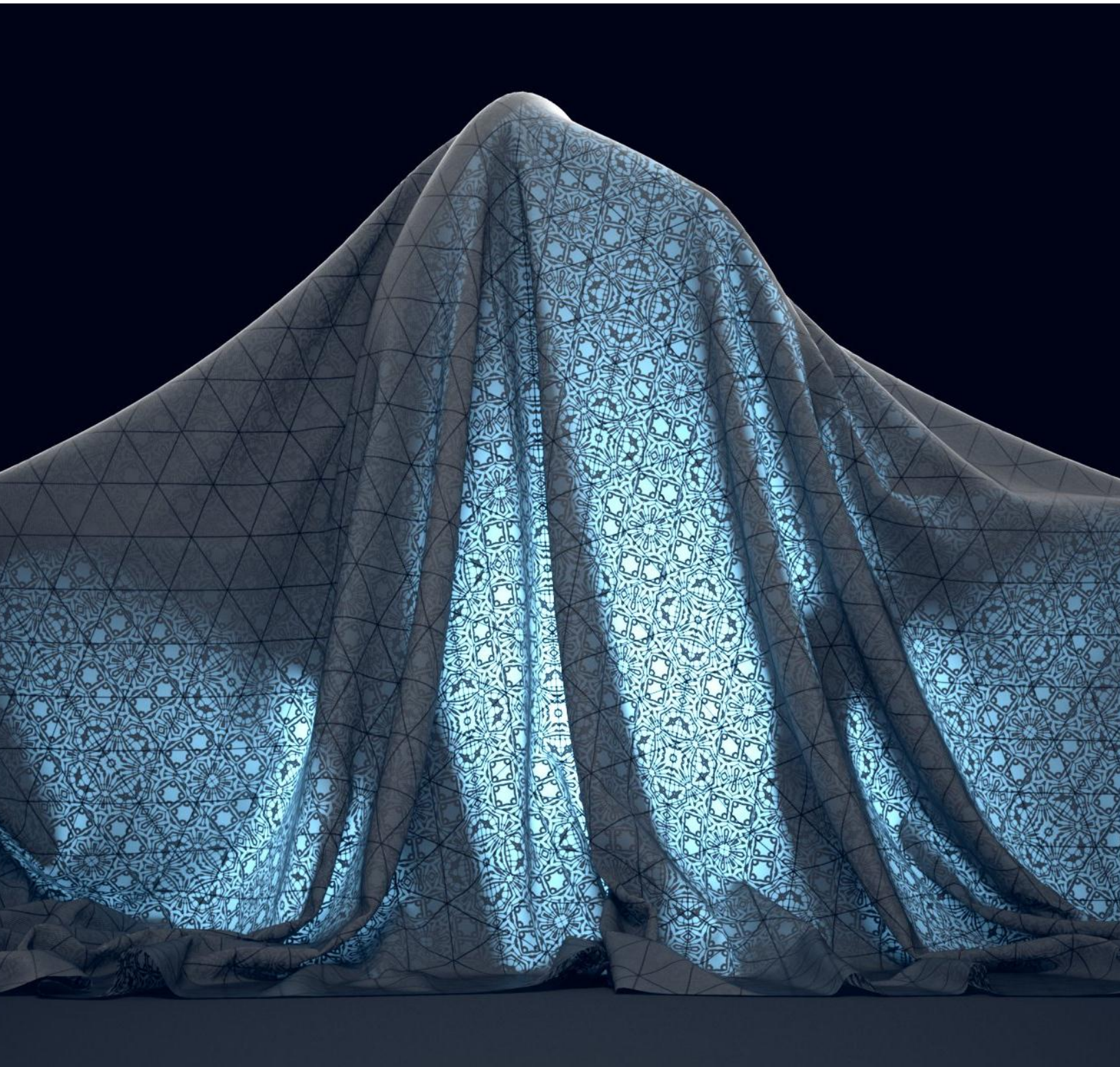




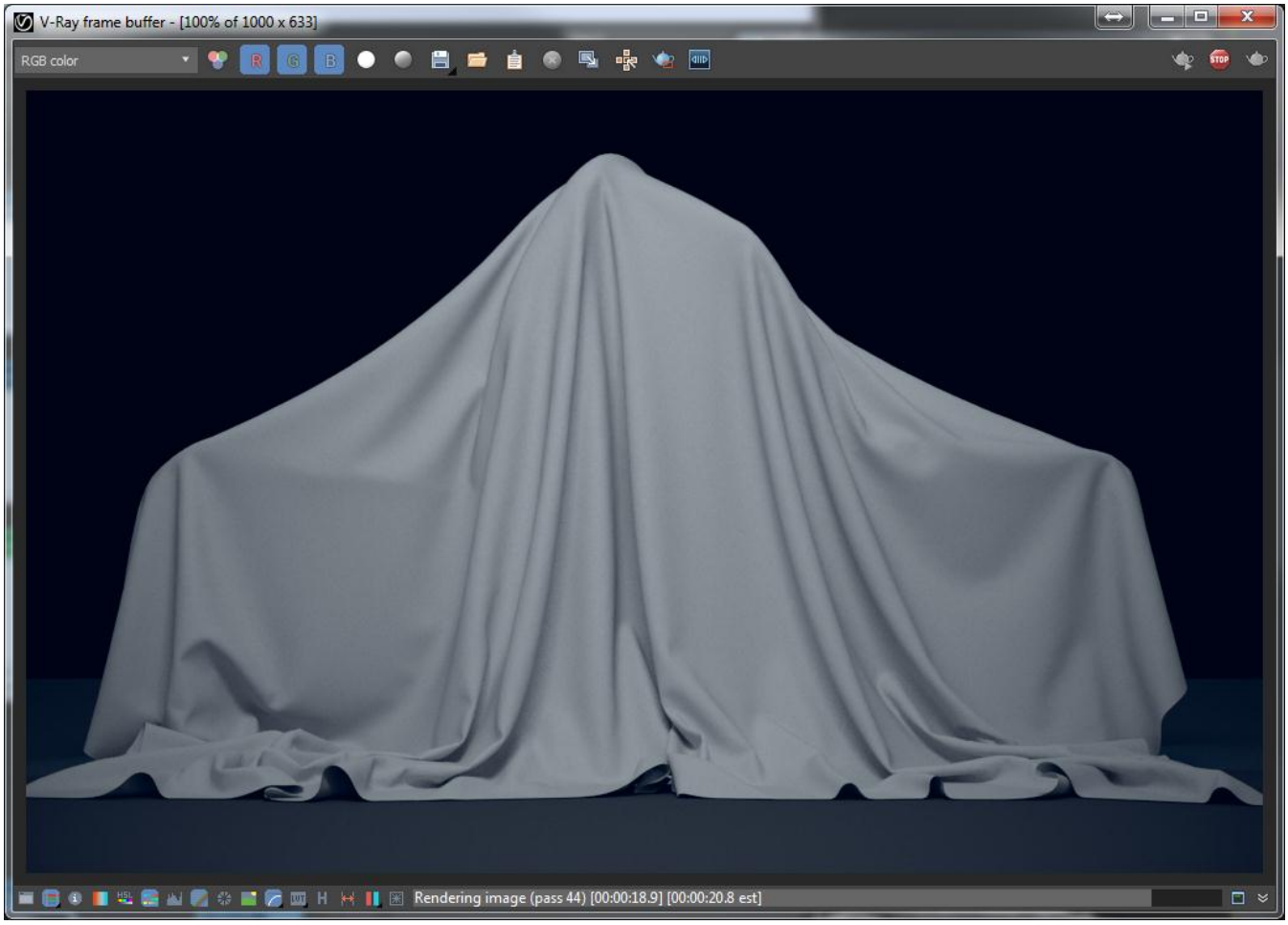
oonix.io

V-RAY TWO-SIDED MATERIAL

This demonstration covers the usage of the V-Ray Two-Sided Material in 3ds Max.

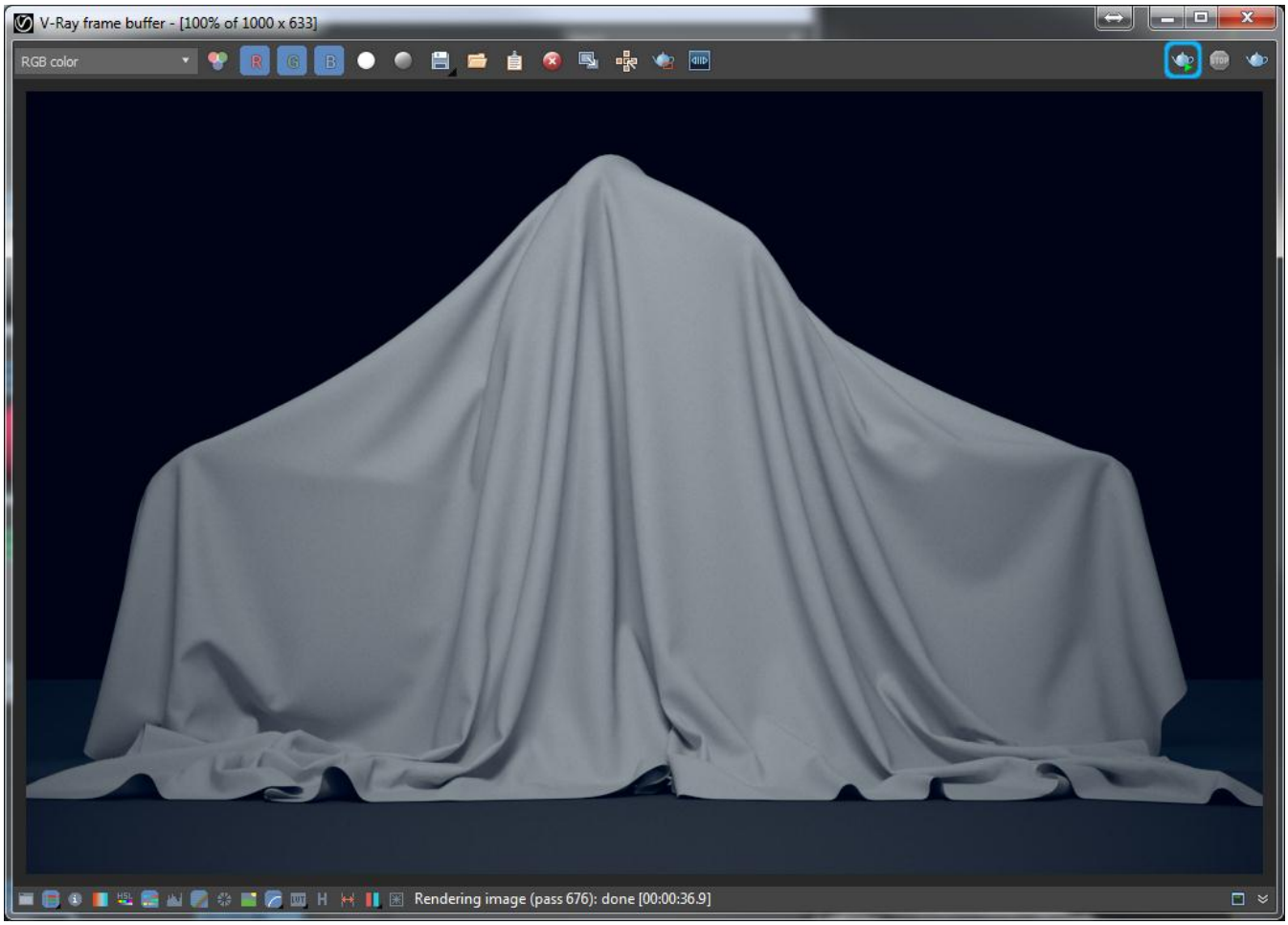


1. In the folder **09 Studio** open the scene named **04 VRay2Sided.max**
2. Hit **Render** and wait a while for the render to clear out:

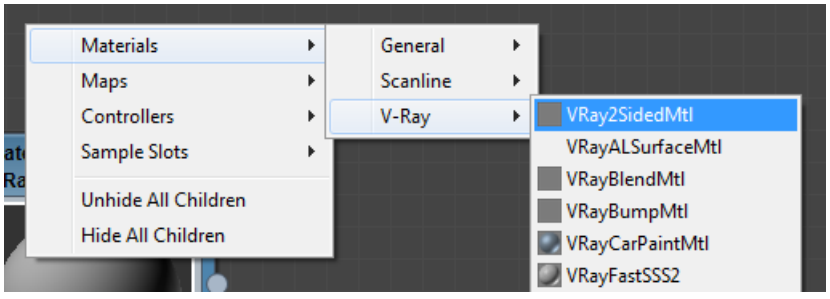


3. In the V-Ray Frame Buffer click the **Stop** button:

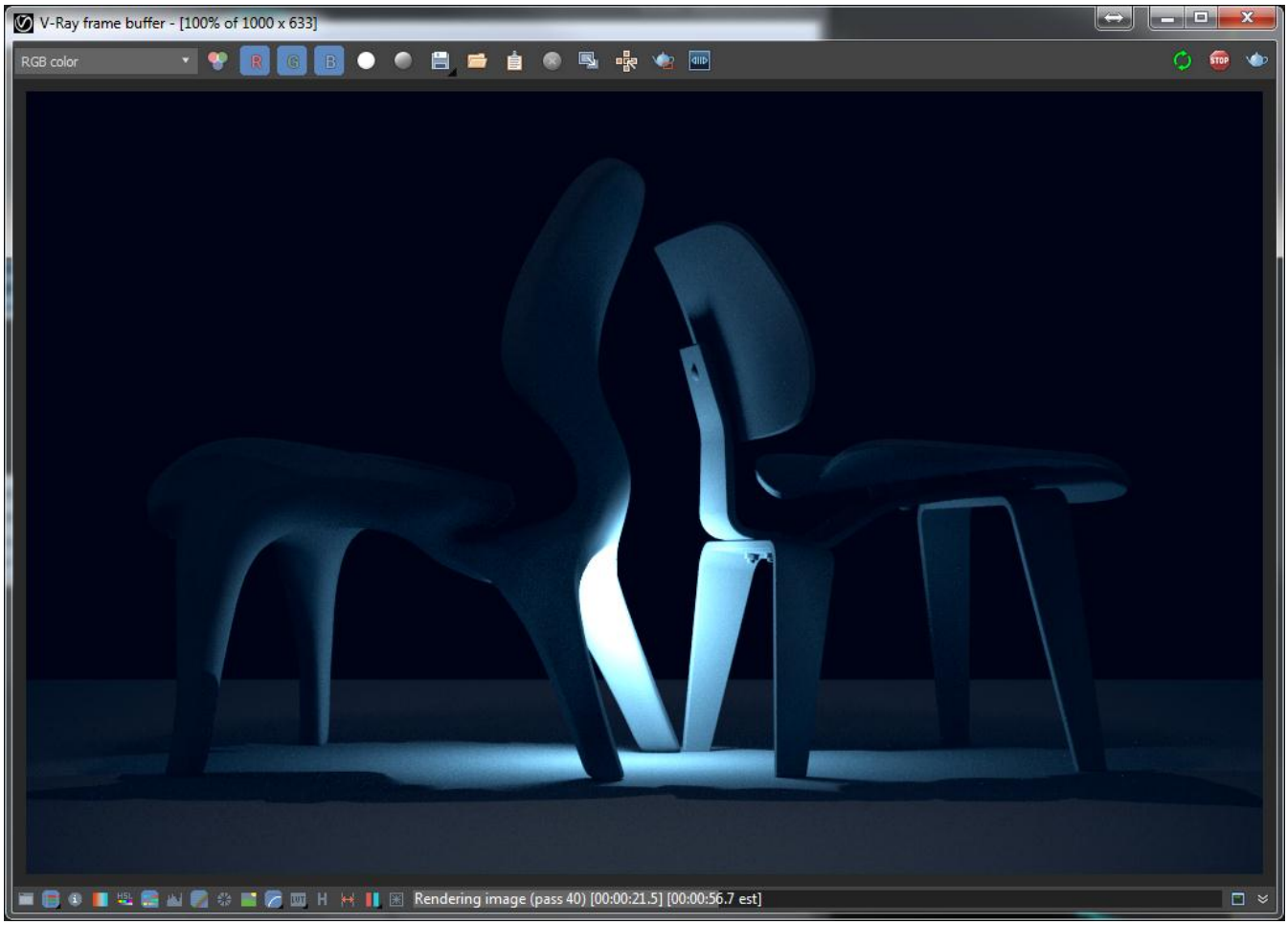
4. Click the **Start interactive rendering** button in the **V-Ray Frame Buffer**



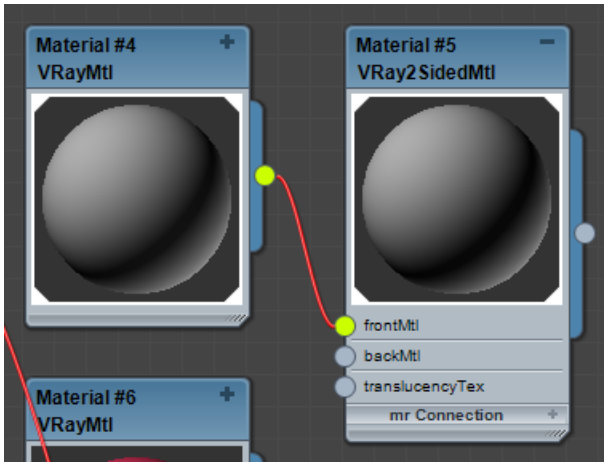
5. In the **Slate Material Editor**, right click and create a new **VRay2SidedMtl**:

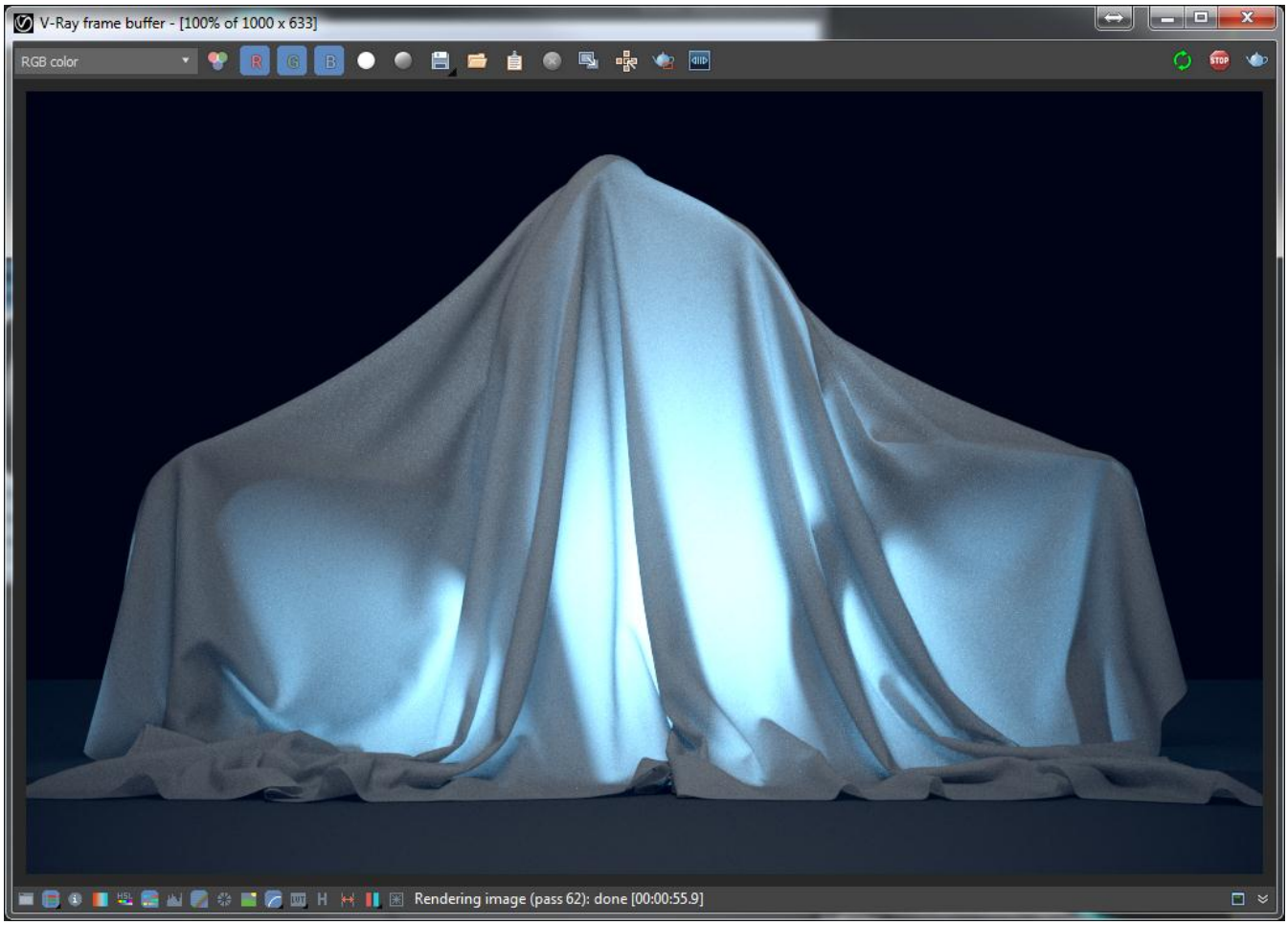


6. Assign the **VRay2SidedMtl** to the cloth (**Cover**) geometry in the scene:

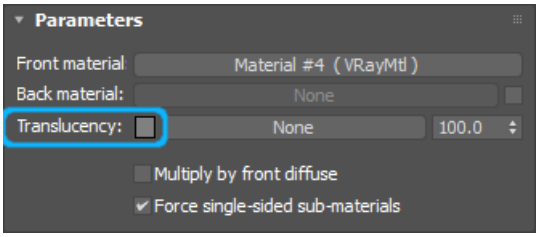


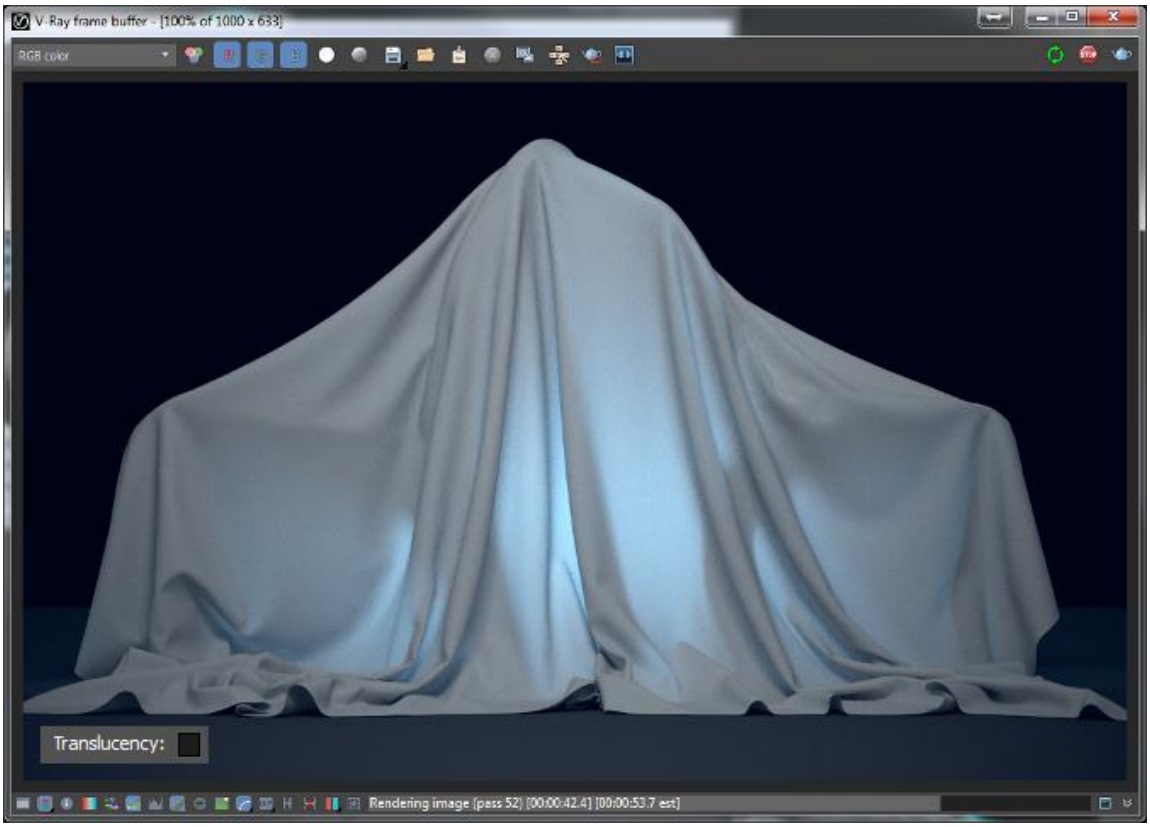
7. In the Slate Material Editor connect the Material#4 VRayMtl material to the frontMtl slot of the Material #5 VRay2SidedMtl:

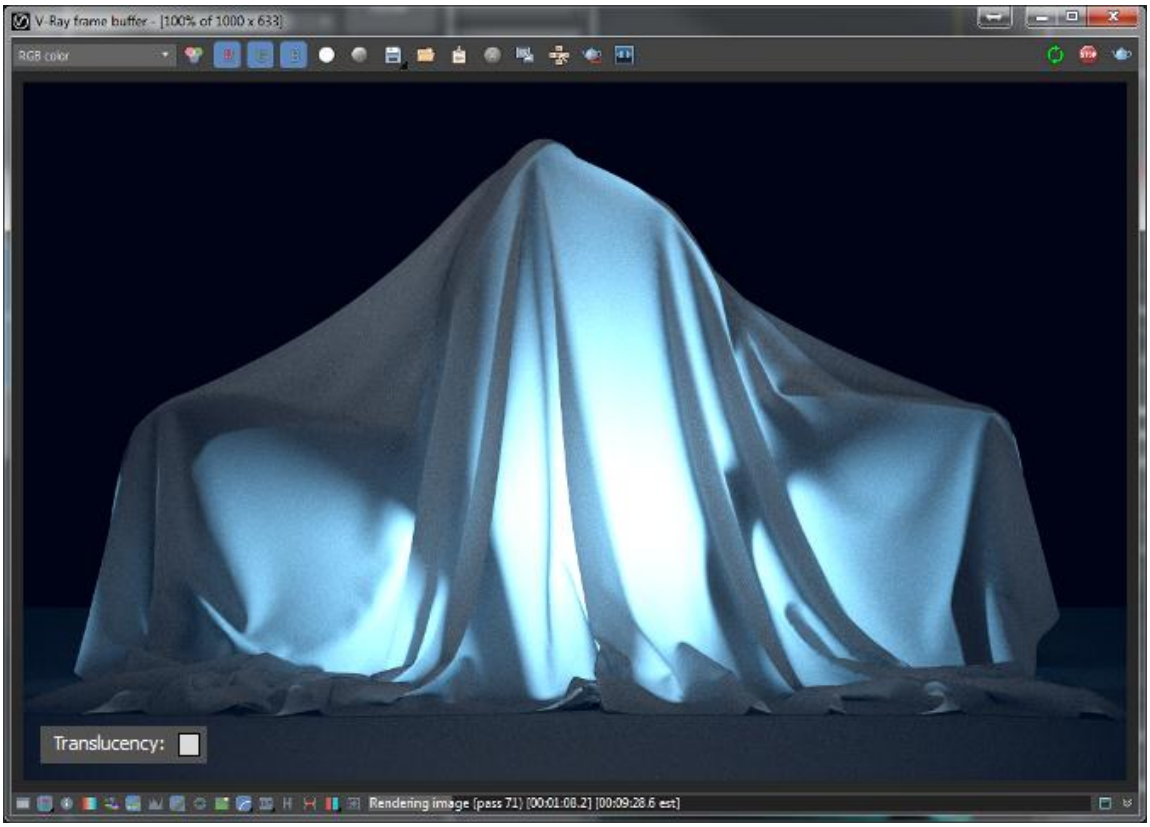




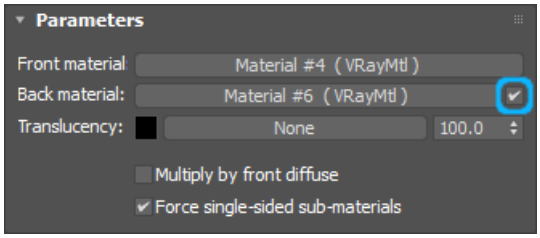
8. Select the **Material #5 VRay2SidedMtl** and try different grayscale colors for the **Translucency** parameter:

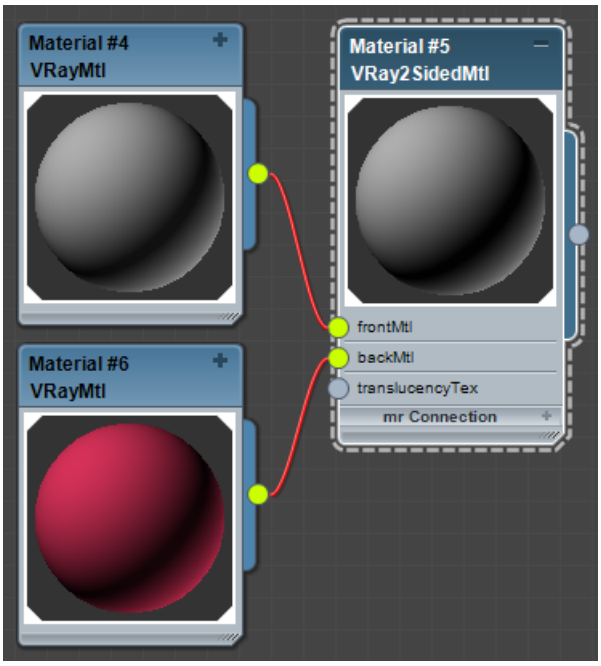



V-Ray frame buffer - [100% of 1000 x 633]
RGB color
Translucency:
Rendering image (pass 52) [00:00:42.4] [00:00:53.7 est]

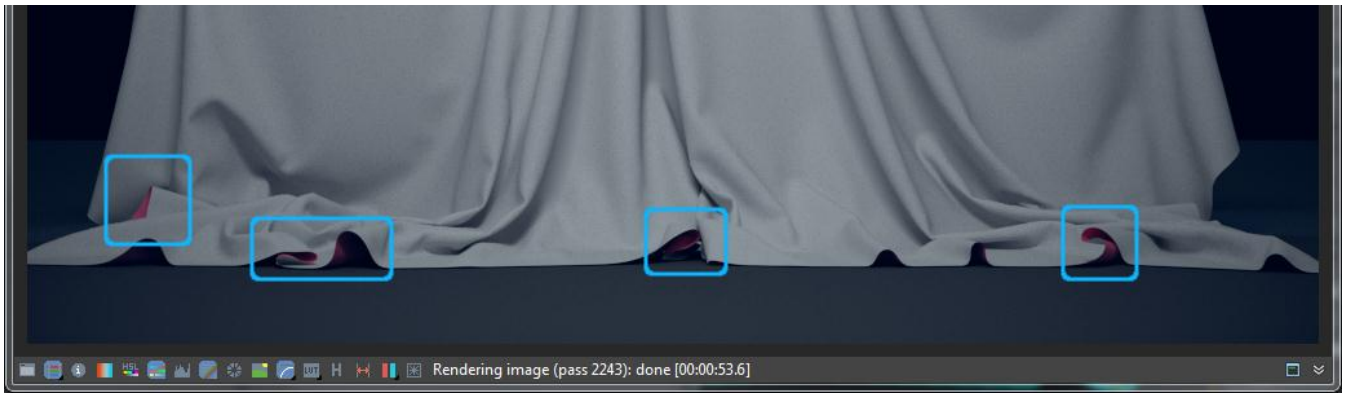

V-Ray frame buffer - [100% of 1000 x 633]
RGB color
Translucency:
Rendering image (pass 71) [00:01:08.2] [00:09:28.6 est]

9. Make the **Translucency** color completely black, enable the **Back material** checkbox and connect the **Material #6 VRayMtl** to the **Back material** slot of the **VRay2SidedMtl** material:

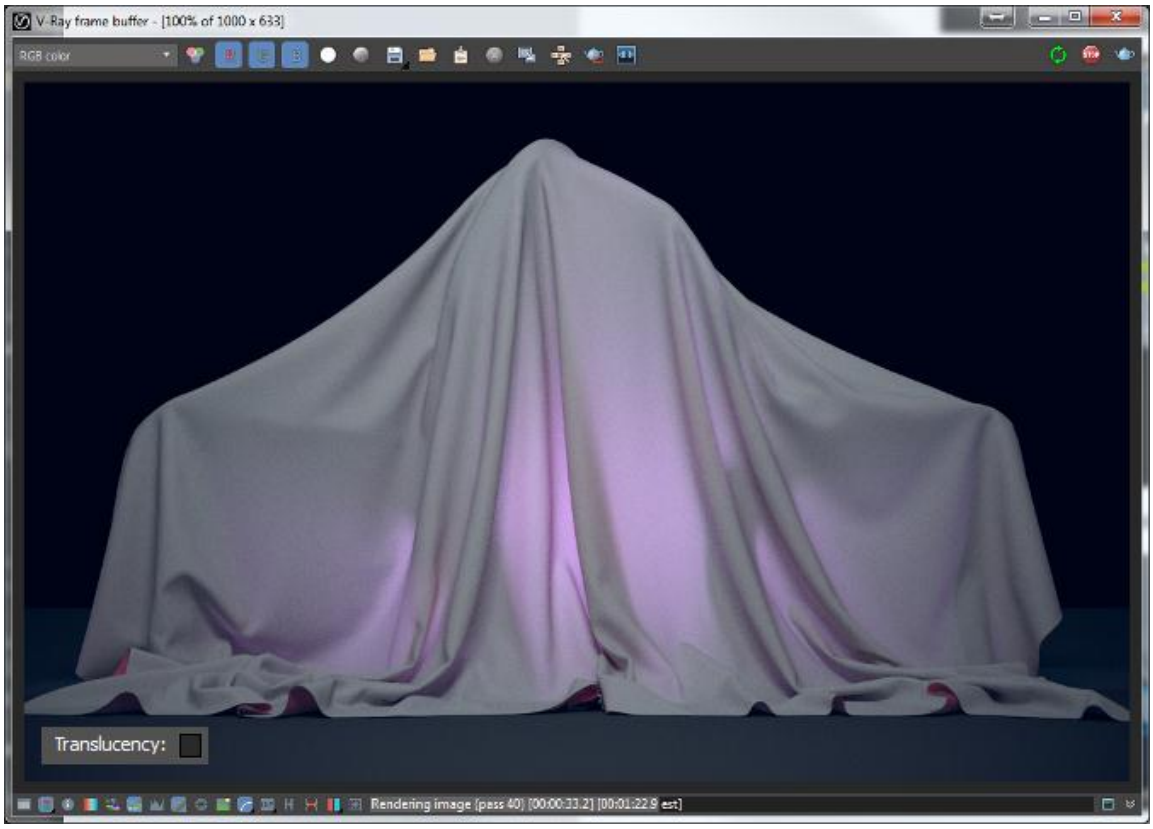


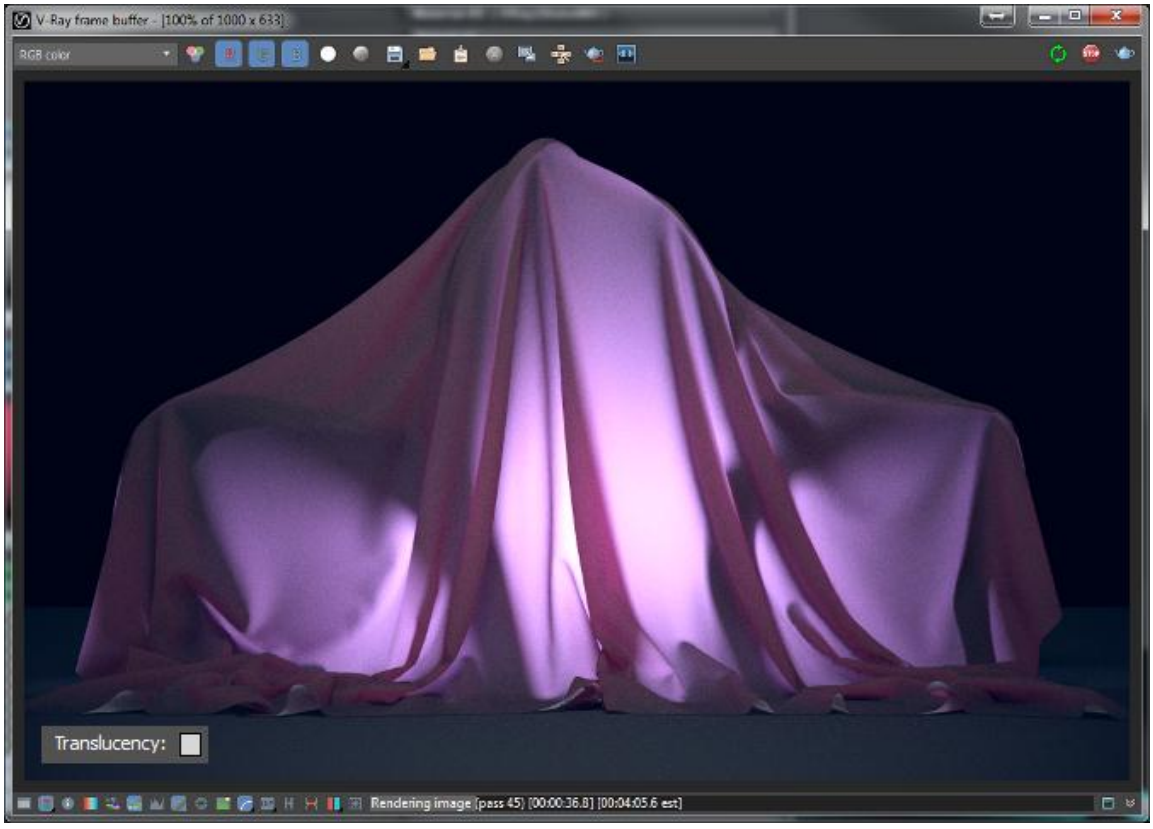


10. Note that the red material appears on the other side of the cloth geometry:

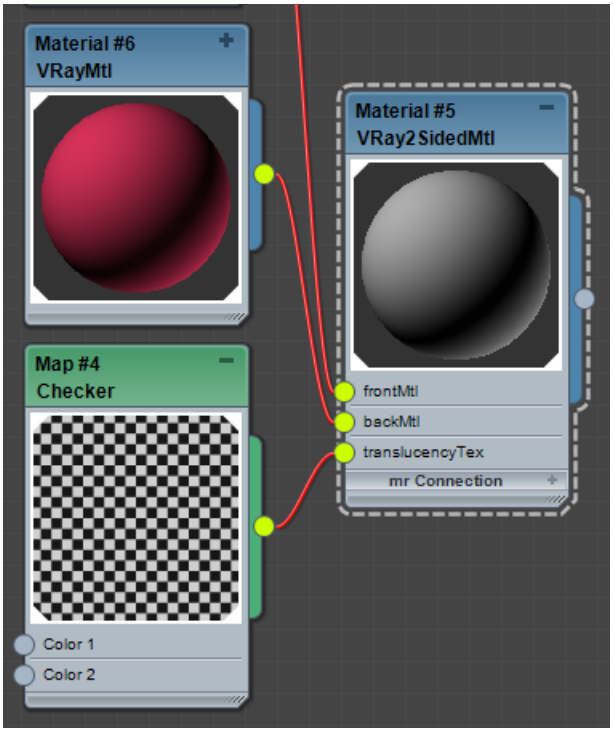


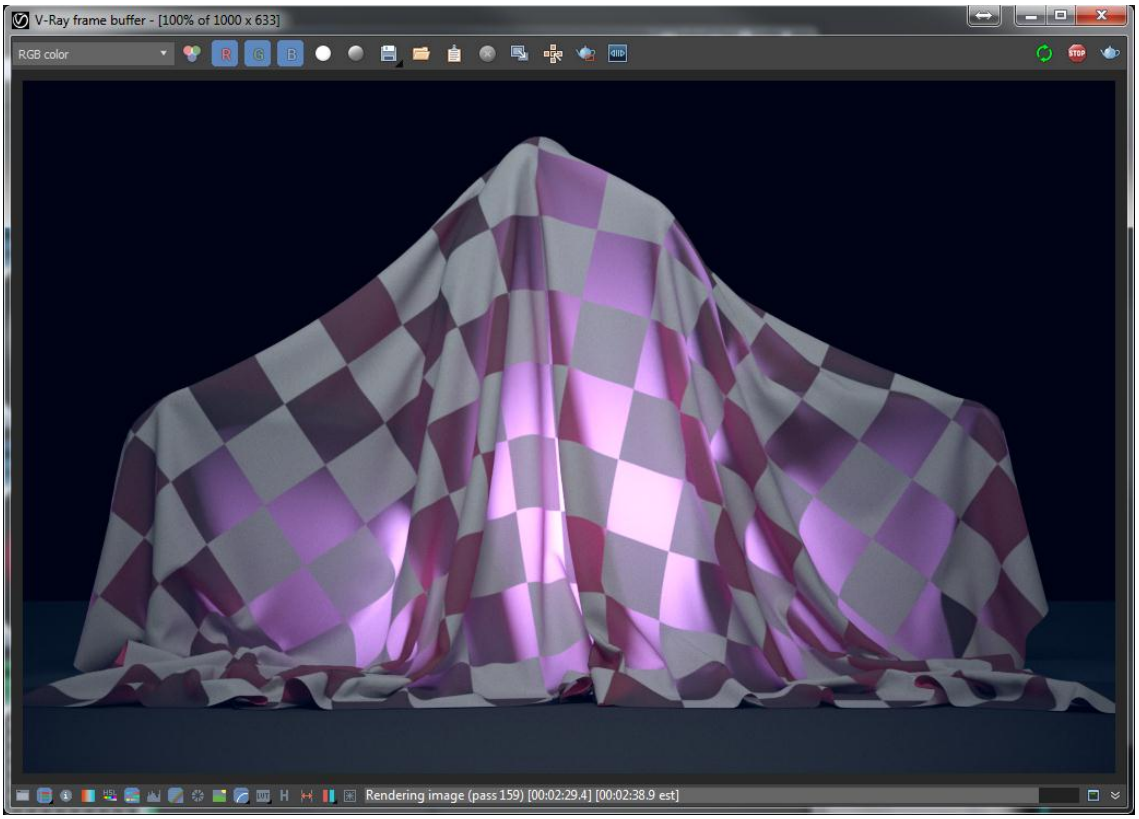
11. Try different grayscale colors for the **Translucency** parameter:


V-Ray frame buffer - [100% of 1000 x 633]
RGB color
Translucency:
Rendering image (pass 40) [00:00:33.2] [00:01:22.9 est]

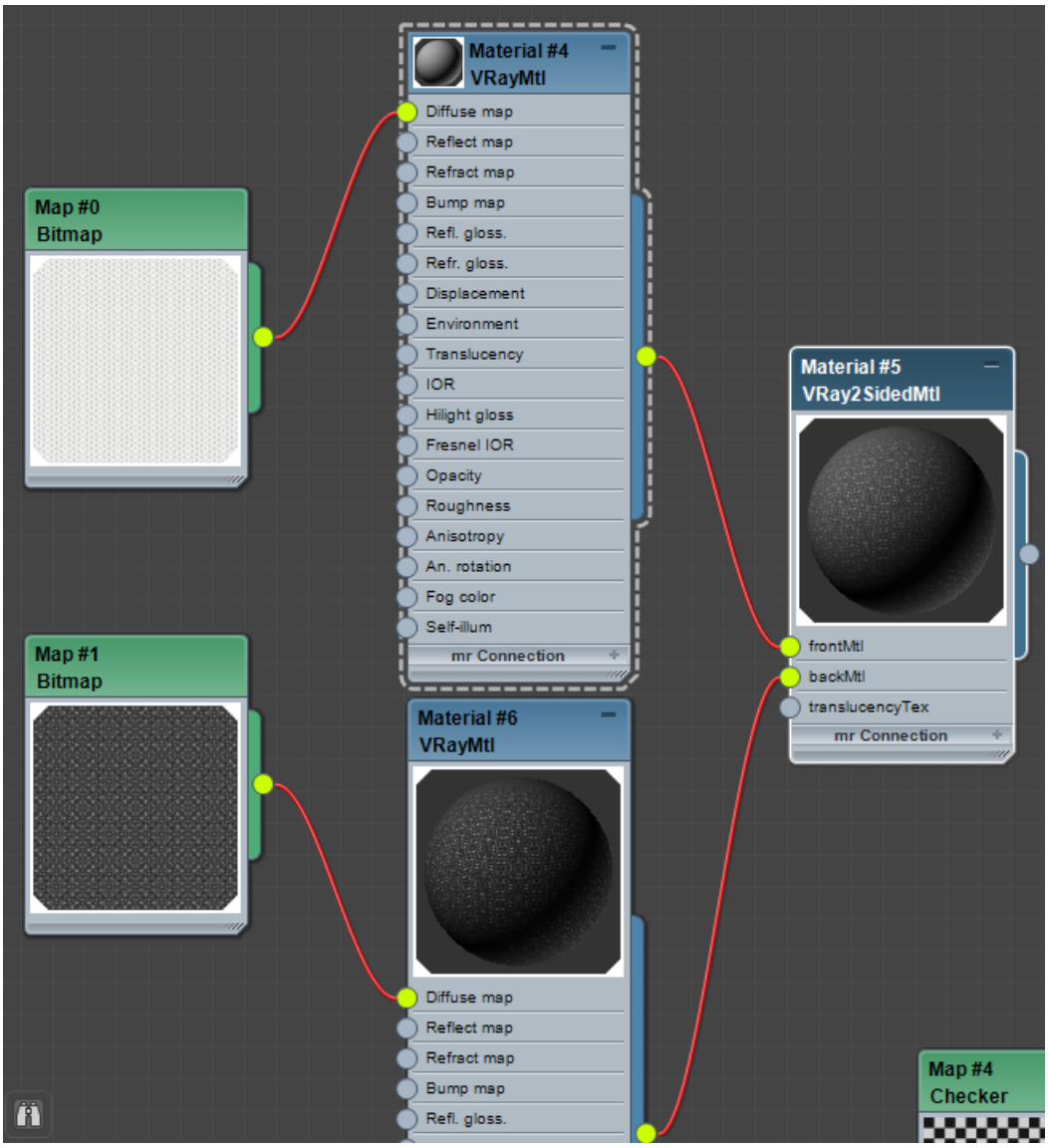

V-Ray frame buffer - [100% of 1000 x 633]
RGB color
Translucency:
Rendering image (pass 45) [00:00:36.8] [00:04:05.6 est]

12. In the **Slate Material Editor** connect the **Map #4 Checker** map to the **translucencyTex** slot of the VRayTwoSidedMtl:

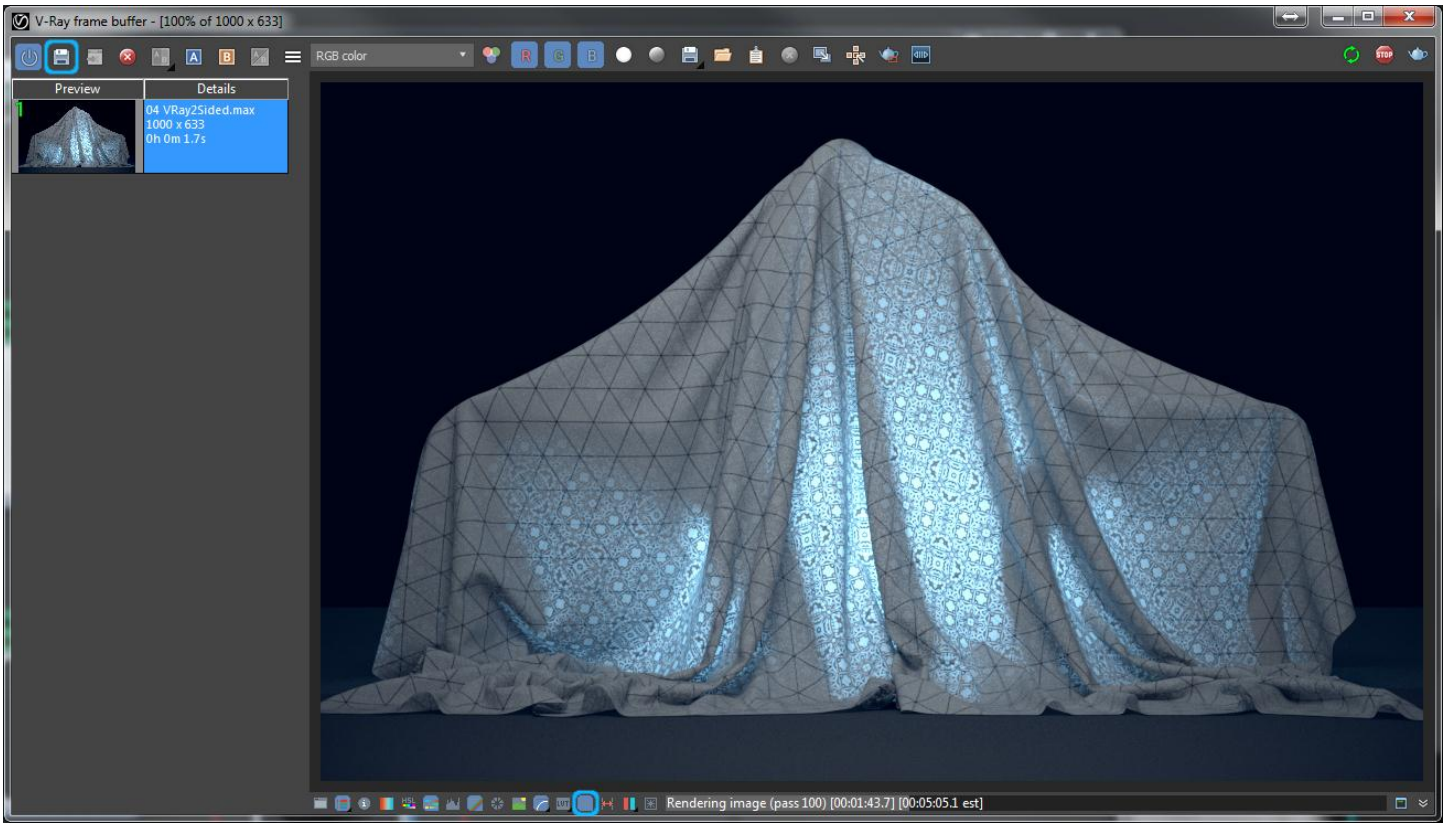




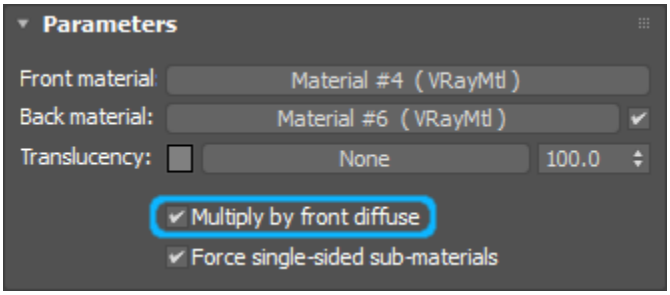
13. Break the texture connection from the previous step
14. Set the **Translucency** color to 50% gray
15. Connect the **Map #0 Bitmap** to the **Diffuse map** slot of the **Material #4 VRayMtl** and the **Map #1 Bitmap** to the **Diffuse map** slot of the **Material #6 VRayMtl** material:

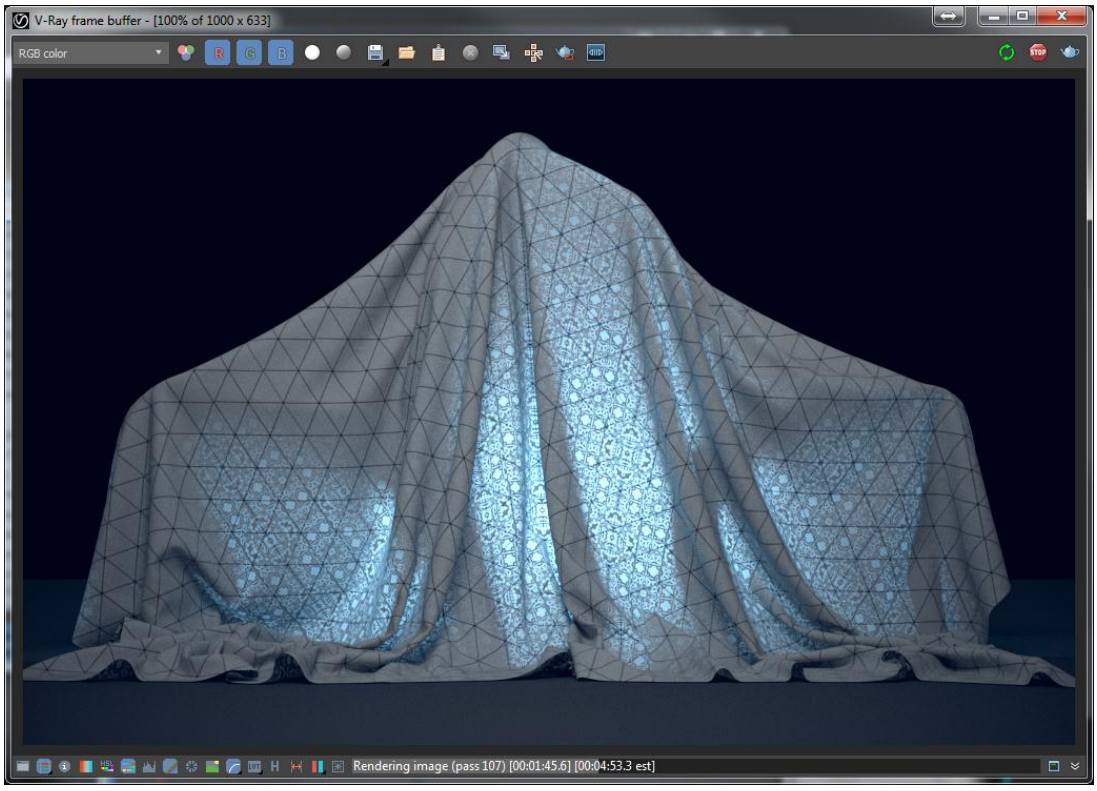


16. When the image clears out a bit save it to the VFB History:

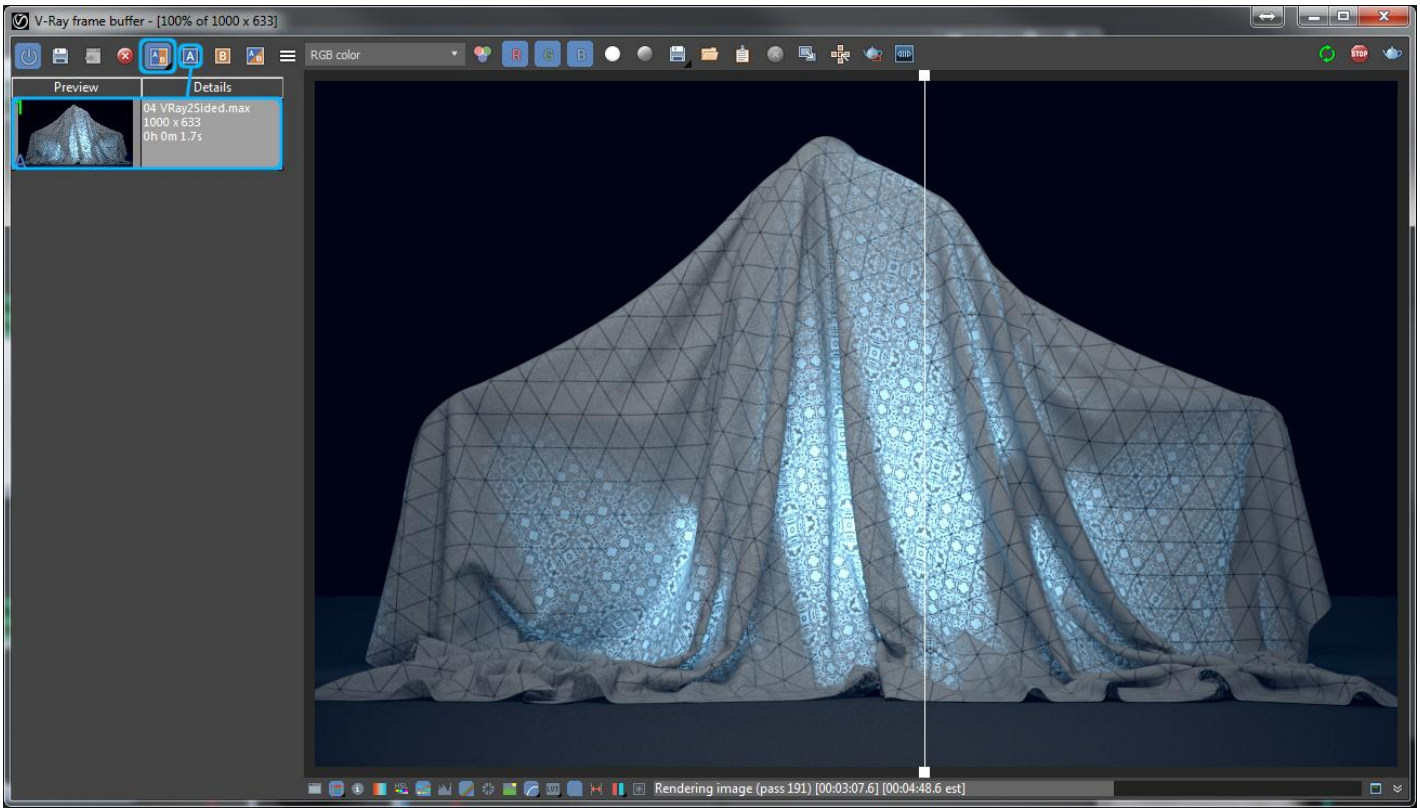


17. Enable the **Multiply by front diffuse** check box:





18. Use **the A/B comparison** to better see the effect of the previous step:

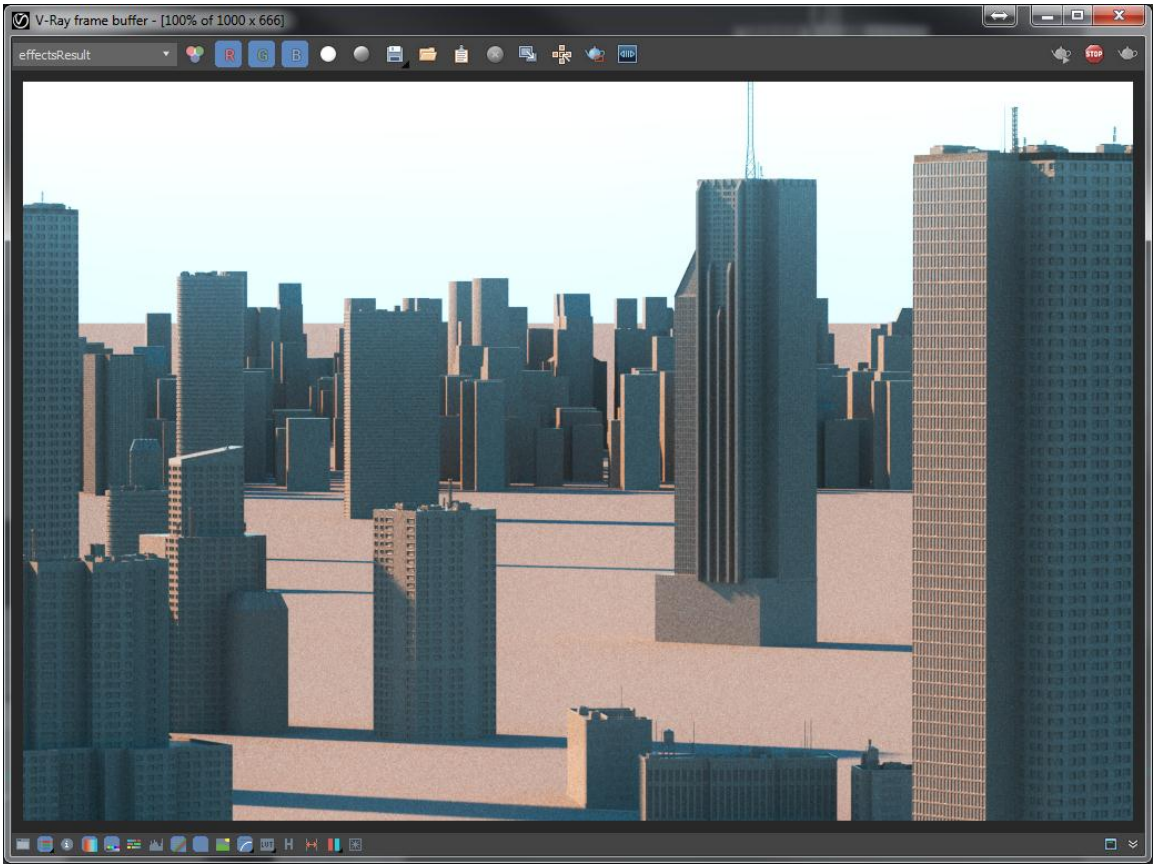


oonix.io

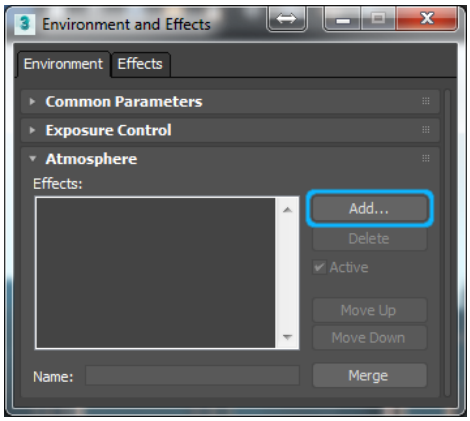
V-RAY ENVIRONMENT FOG

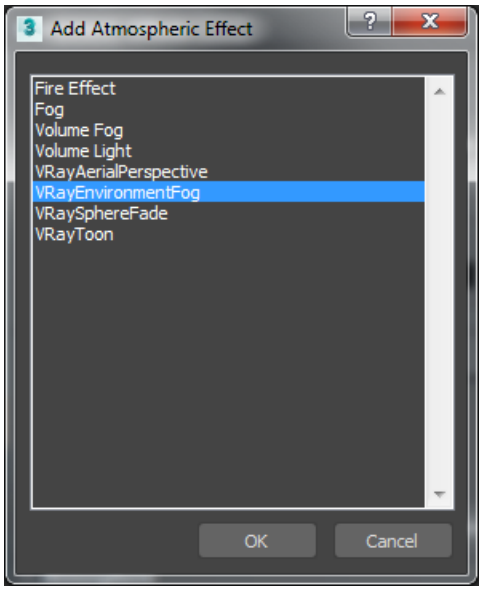
This demonstration covers the usage of the V-Ray Environment Fog environment effect in 3ds Max.

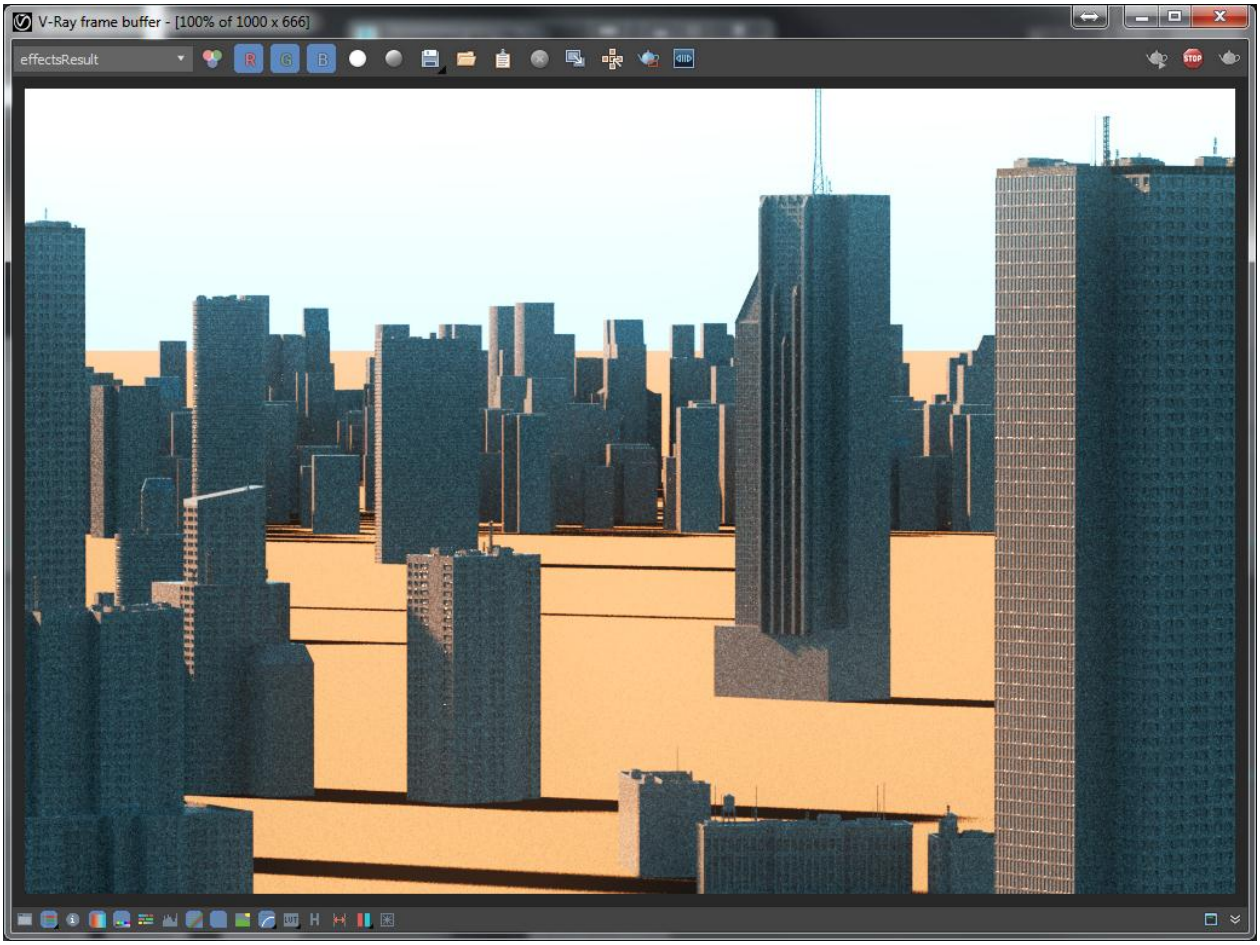
1. In the folder **10 City_Fog** open the scene named **Aerial_Fog_Simple.max**
2. Click **ActiveShade** to run **V-Ray RT**:



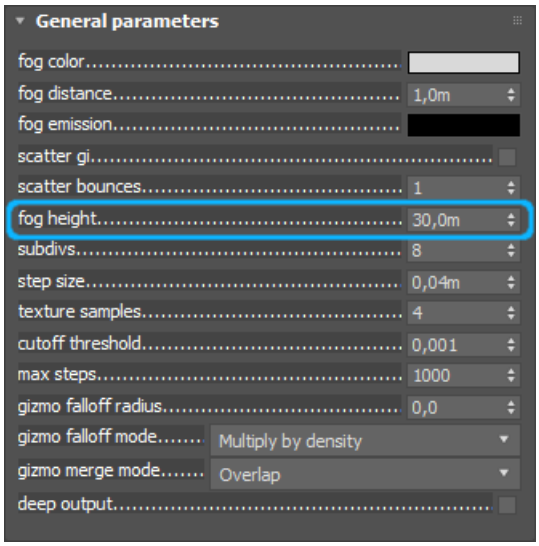
3. Press 8 to open the **Environment and Effects** window and in the **Atmosphere** rollout click the **Add** button and create a new **VRayEnvironmentFog** atmospheric effect:

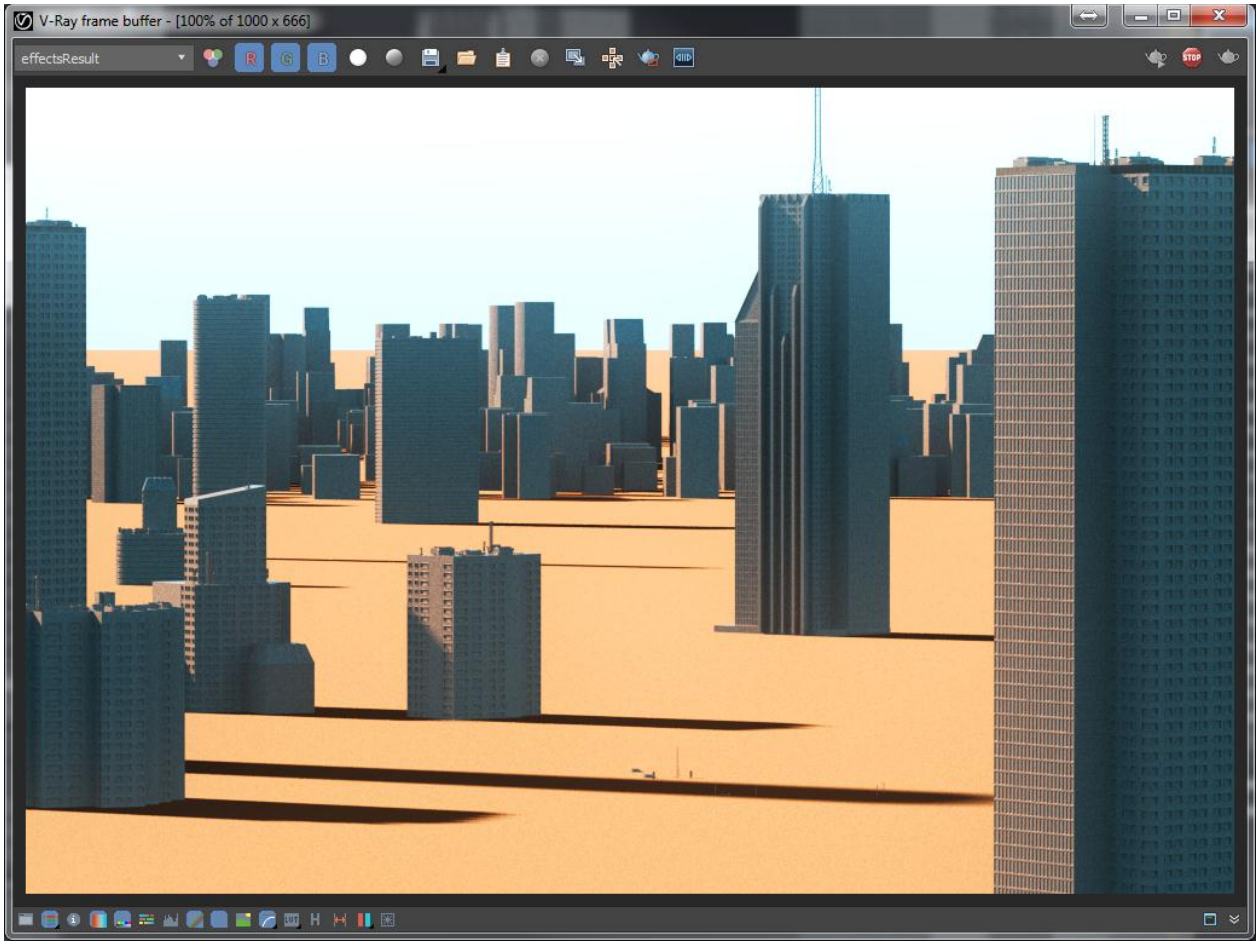




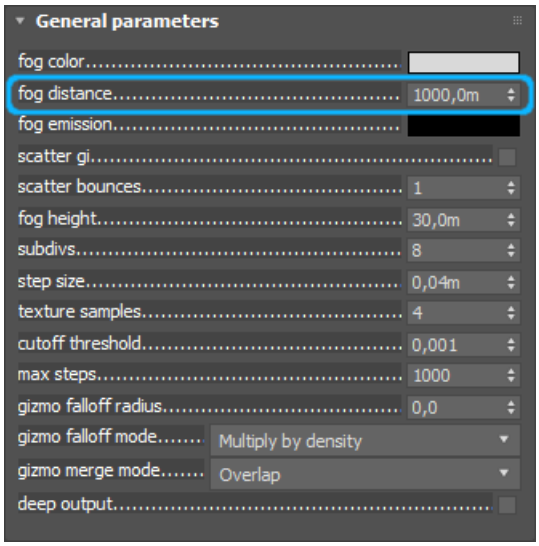


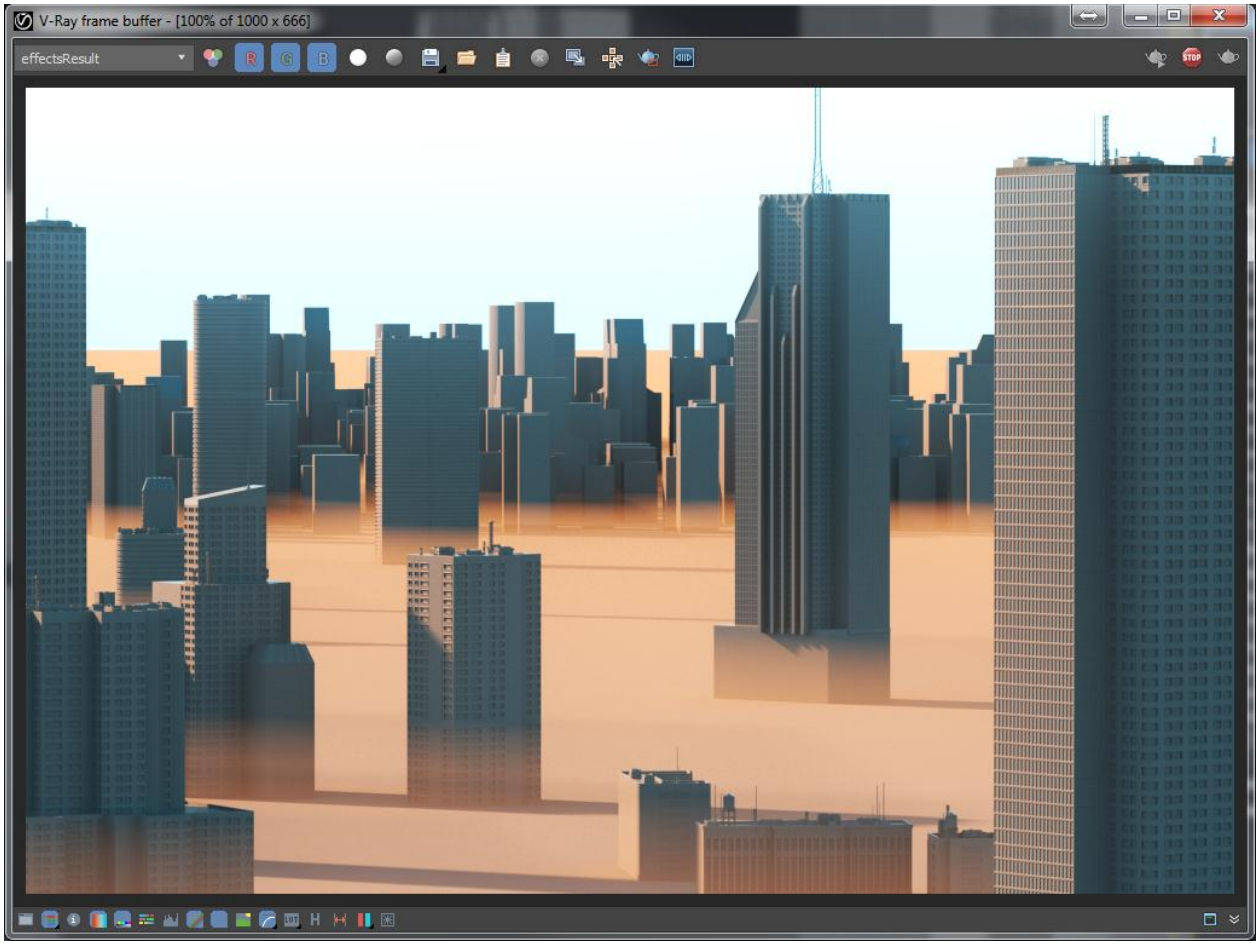
4. In the settings of the **VRayEnvironmentFog** set the **fog height** parameter to 30.0m



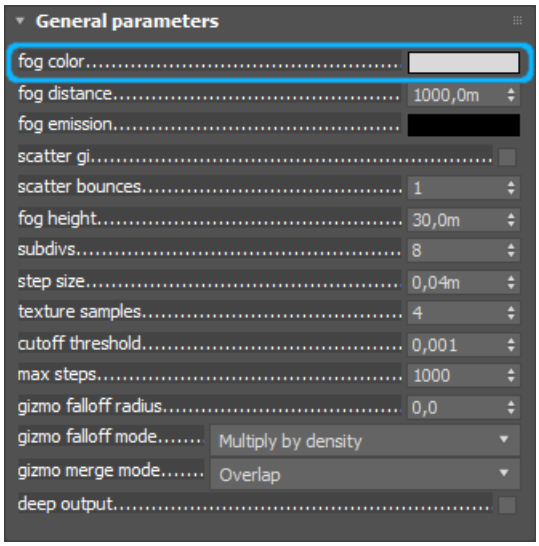


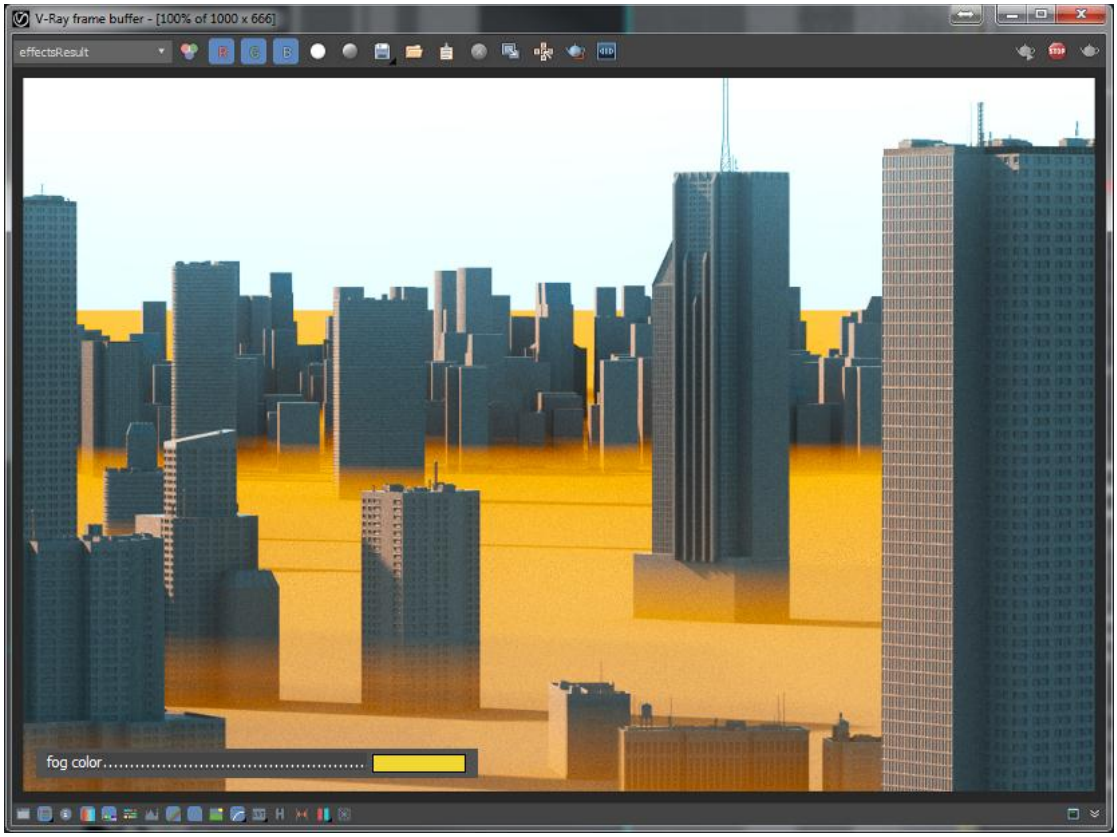
5. Set the fog distance parameter to 1000,0

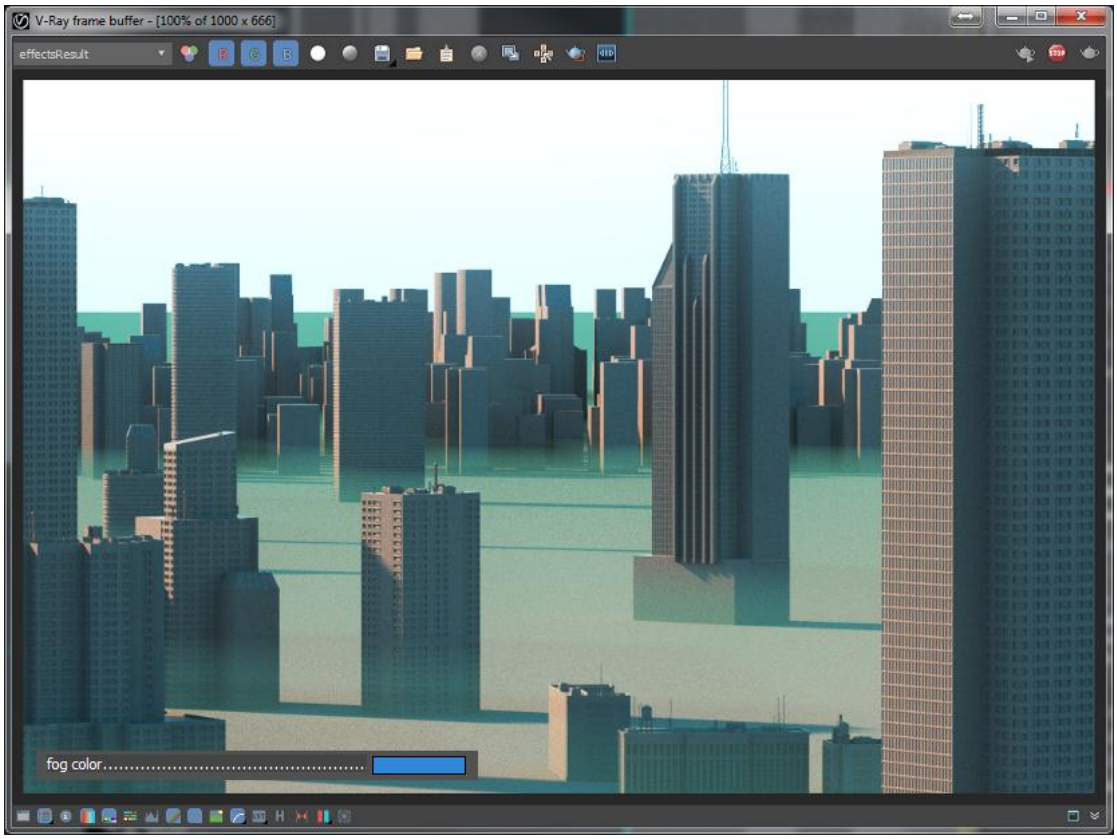




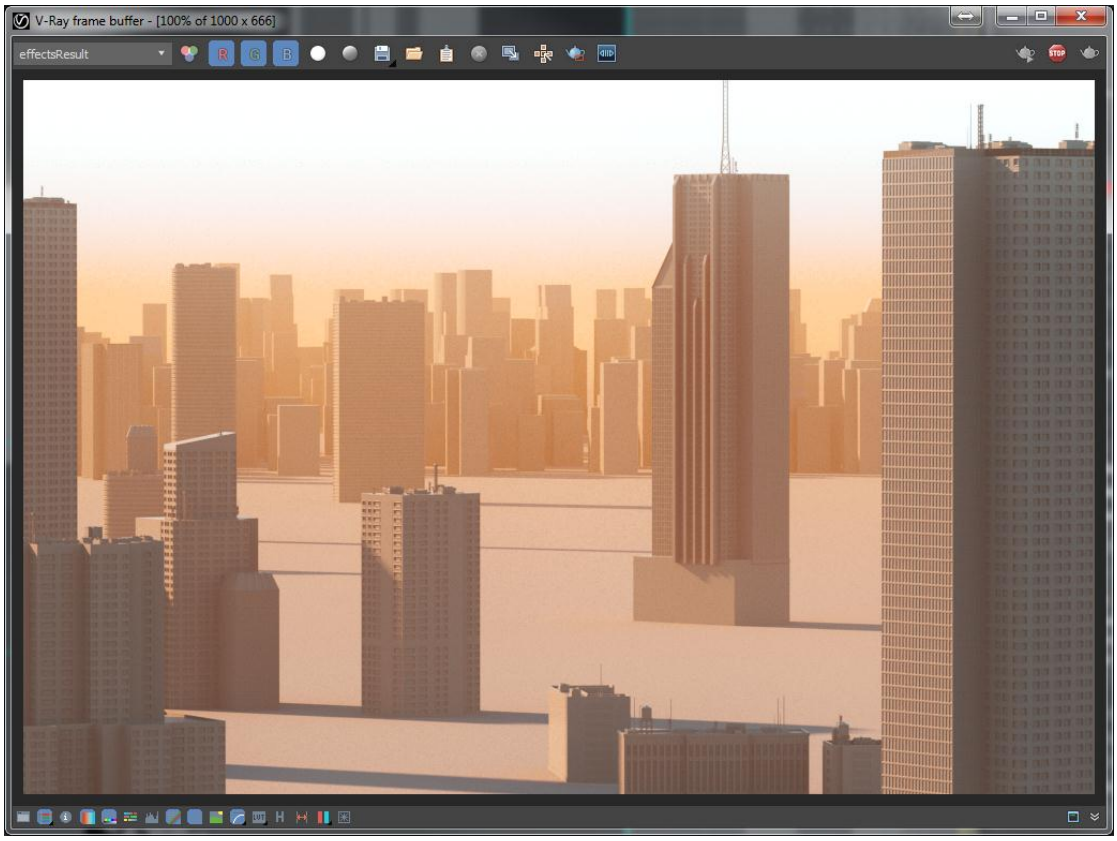
6. Try different colors for the **fog color** parameter:


General parameters
fog color
fog distance 1000,0m
fog emission
scatter gi
scatter bounces 1
fog height 30,0m
subdivs 8
step size 0,04m
texture samples 4
cutoff threshold 0,001
max steps 1000
gizmo falloff radius 0,0
gizmo falloff mode Multiply by density
gizmo merge mode Overlap
deep output

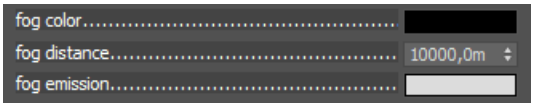

V-Ray frame buffer - [100% of 1000 x 666]
effectsResult
fog color



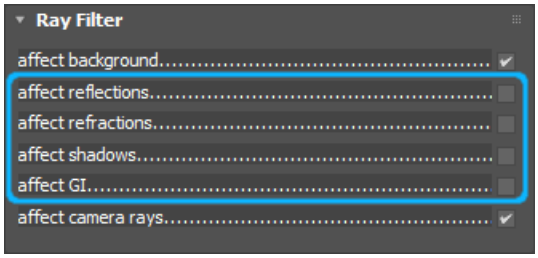
7. Set the **fog color** parameter to light gray (Value=220), the **fog distance** parameter to 10000,0 m and the **fog height** parameter to 330,0 m and note how much time it takes to clear out the image



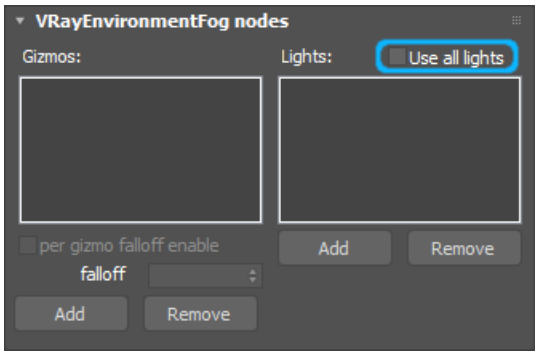
8. Swap the colors of the **fog color** and **fog emission** parameters.

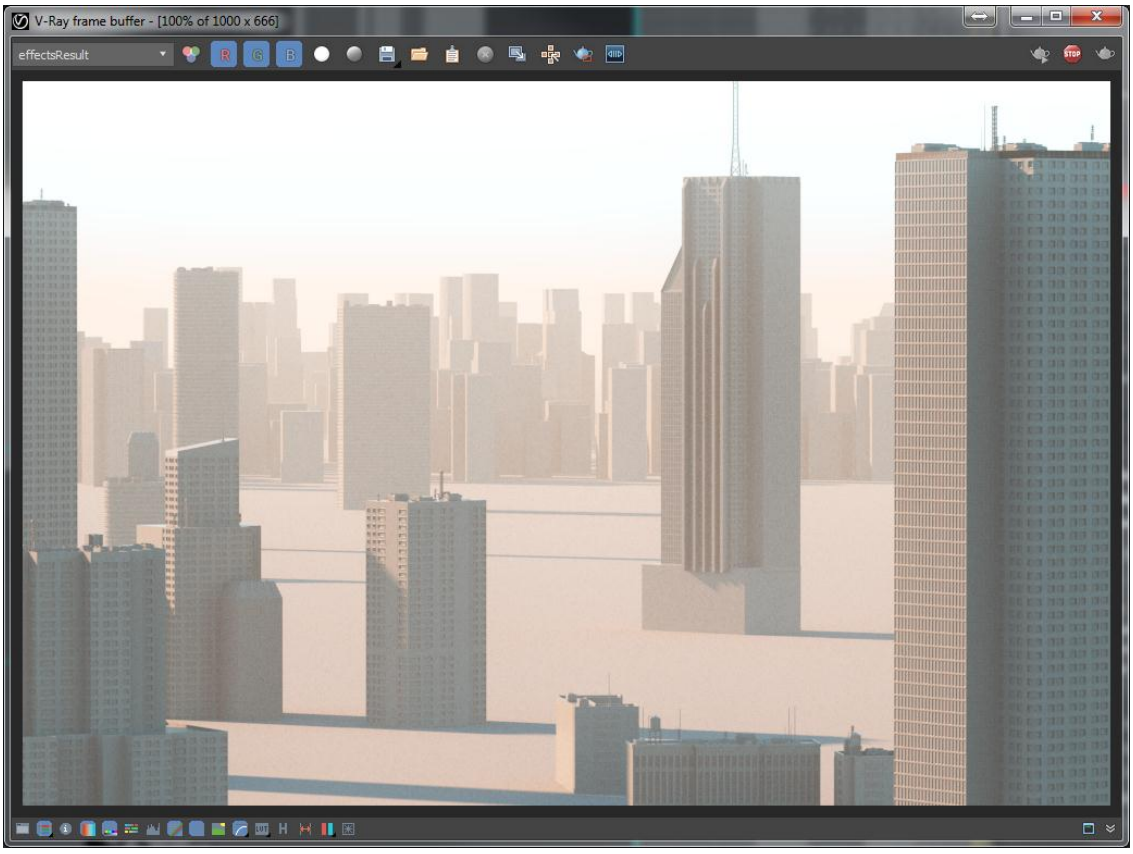


9. In the **Ray Filter** rollout disable the **affect reflections**, **affect refractions**, **affect shadows** and **affect GI** checkboxes:

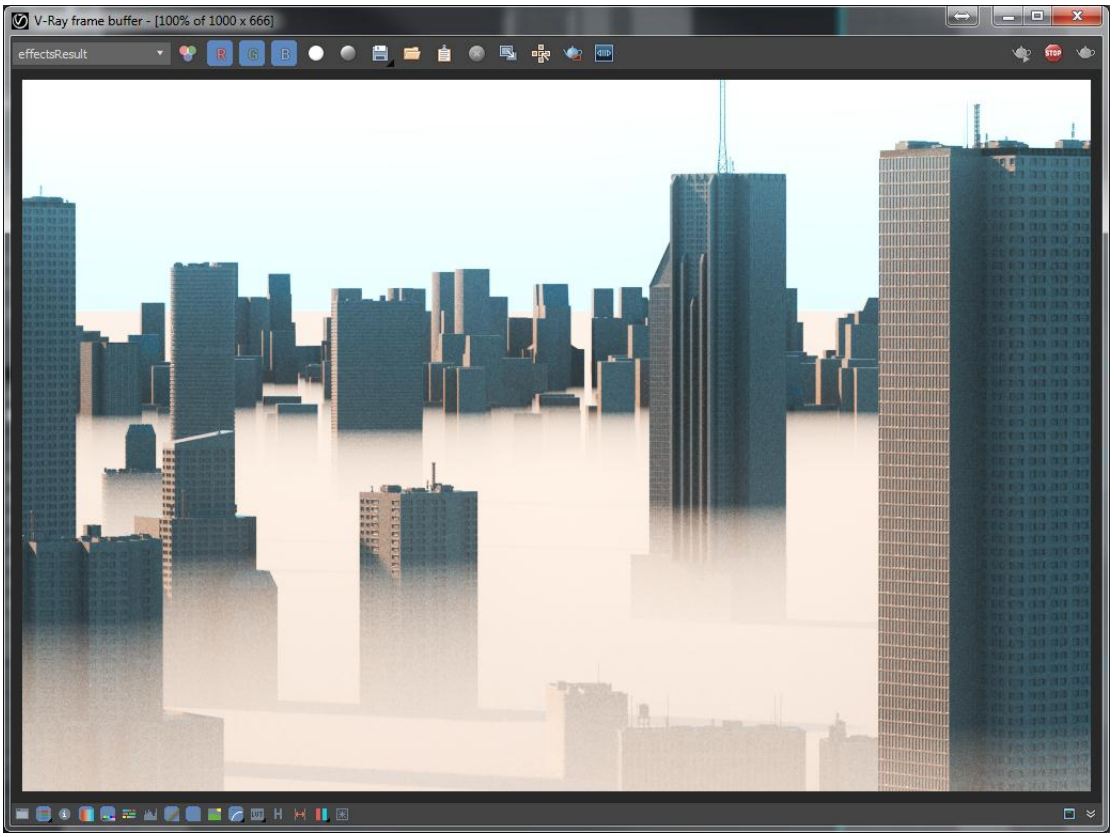


10. Disable the **Use all lights** checkbox in the **VRayEnvironmentFog** nodes rollout:

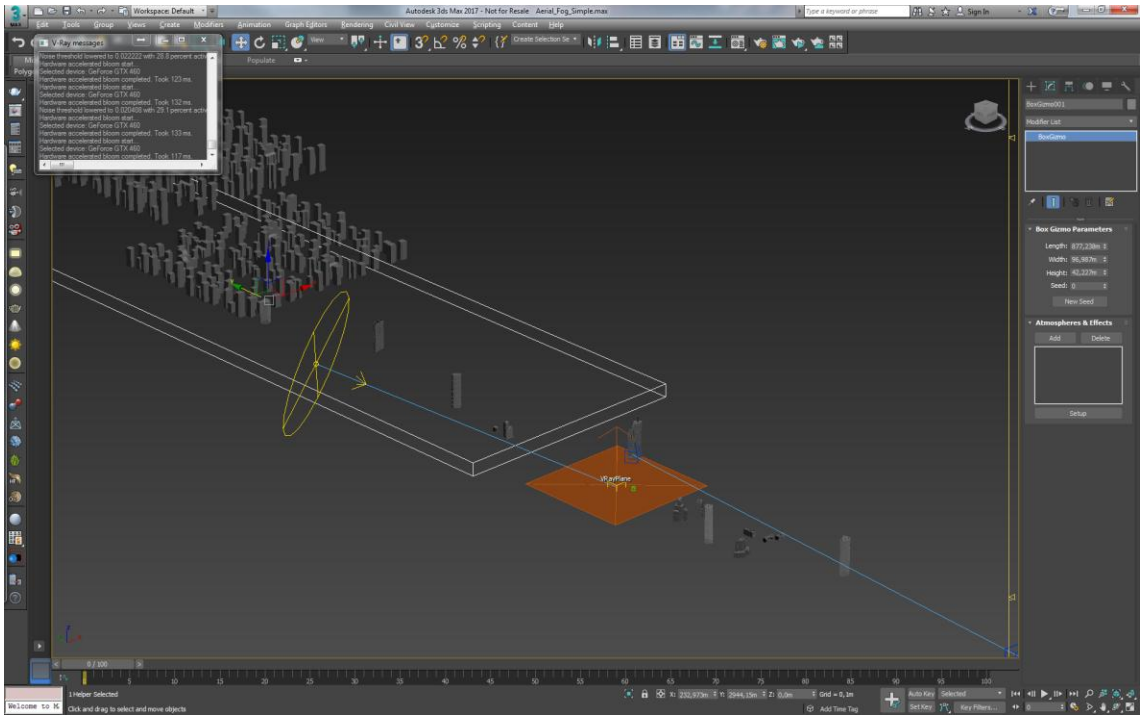




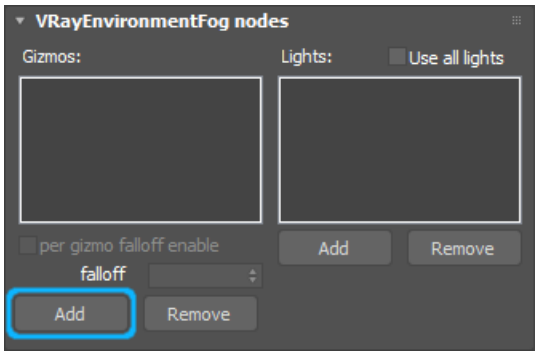
11. This produces a visually similar result but because we are not tracing reflections, refractions shadows and GI when calculating the fog, the render times are much faster. This only works if we use the emission color to fake light bouncing around in the fog.
12. Set the **fog height** parameter to 60.0m and the **fog distance** parameter to 800,0m

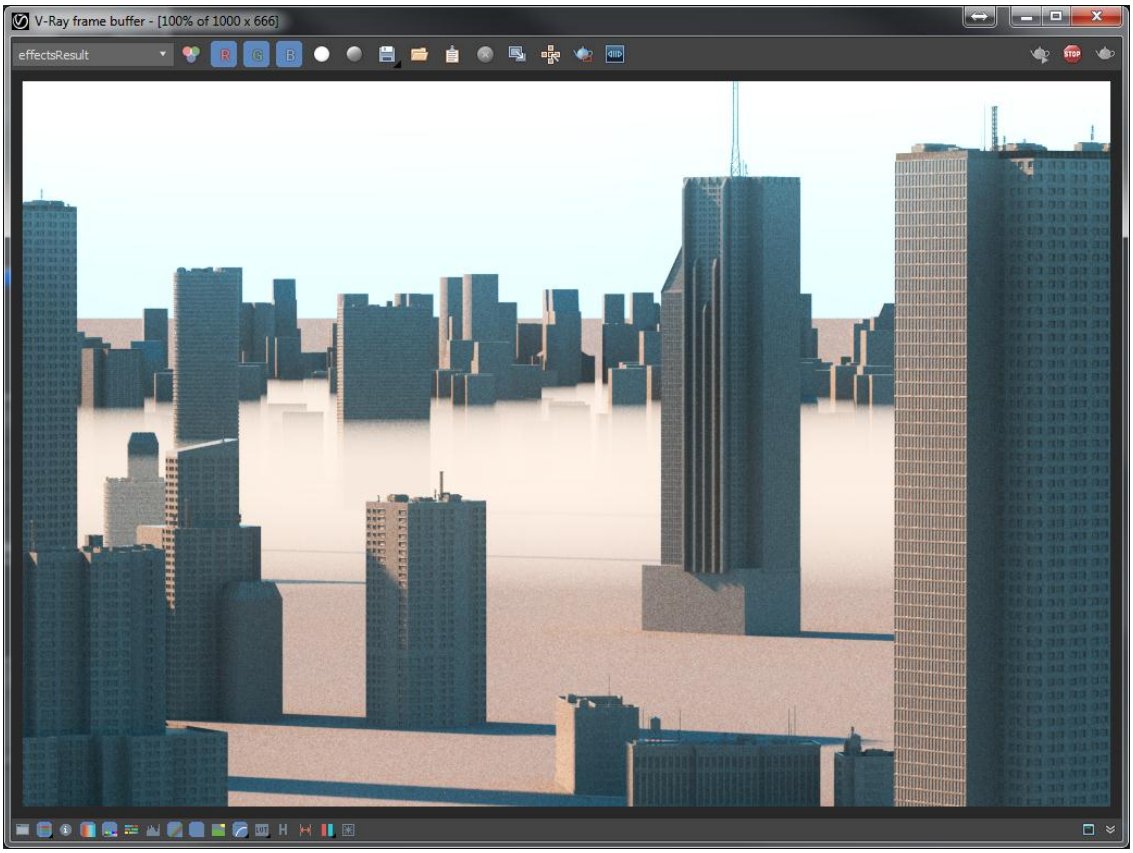


13. Switch to the perspective view, zoom out and note that we have a **BoxGizmo** in the scene (white box) in the image:

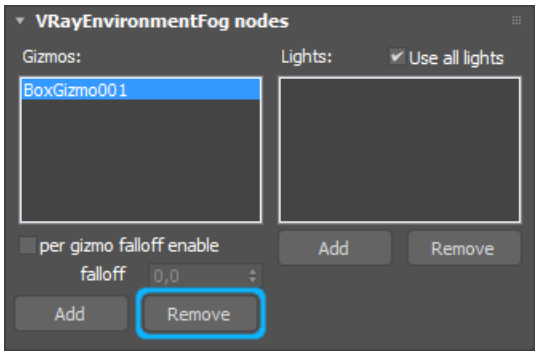


14. In the settings of the **VRayEnvironmentFog** atmospheric effect scroll down to the **VRayEnvironmentFog nodes** rollout, click the **Add** button under the **Gizmos** list and select the **Box Gizmo** from the Perspective view:

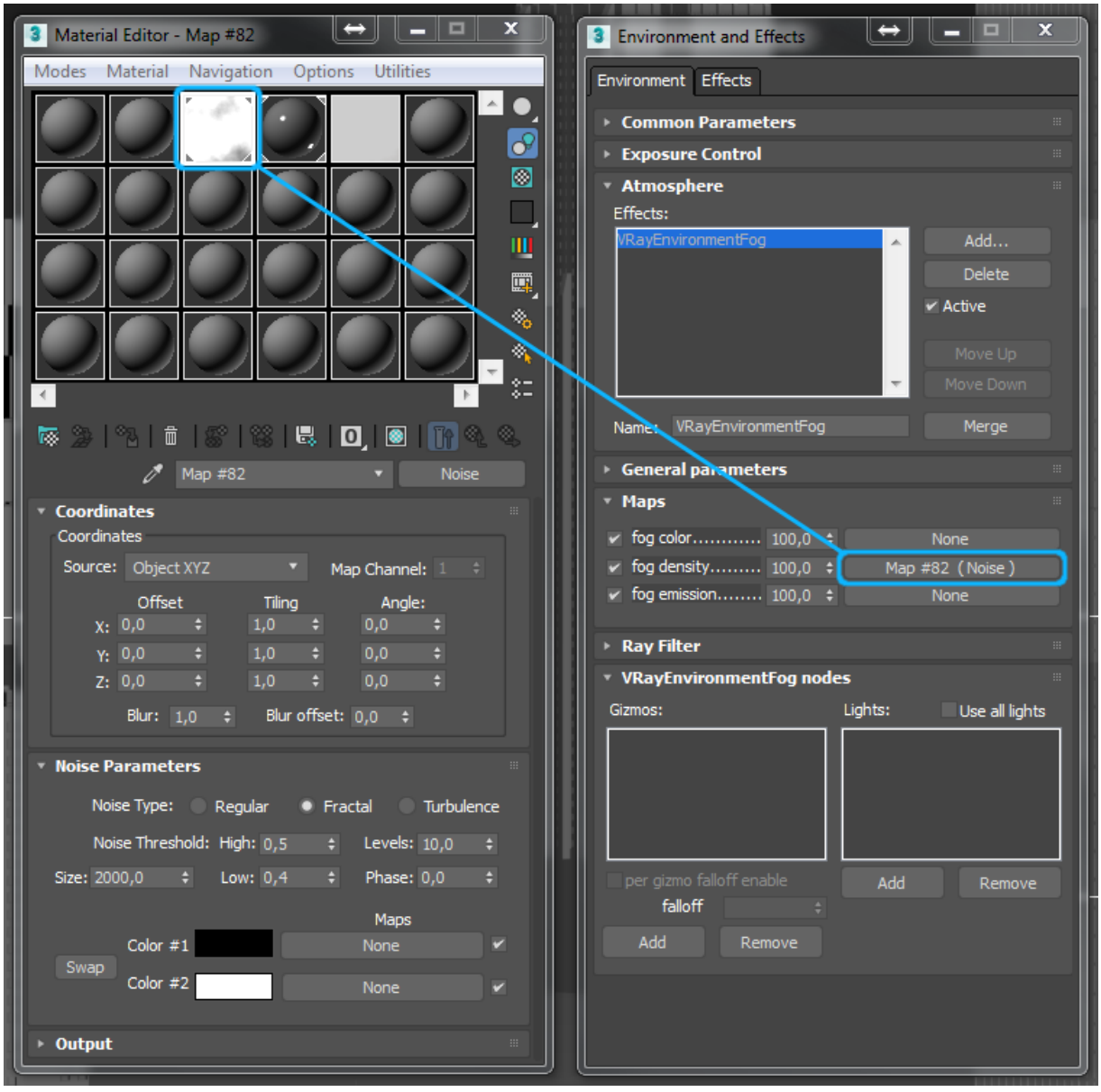


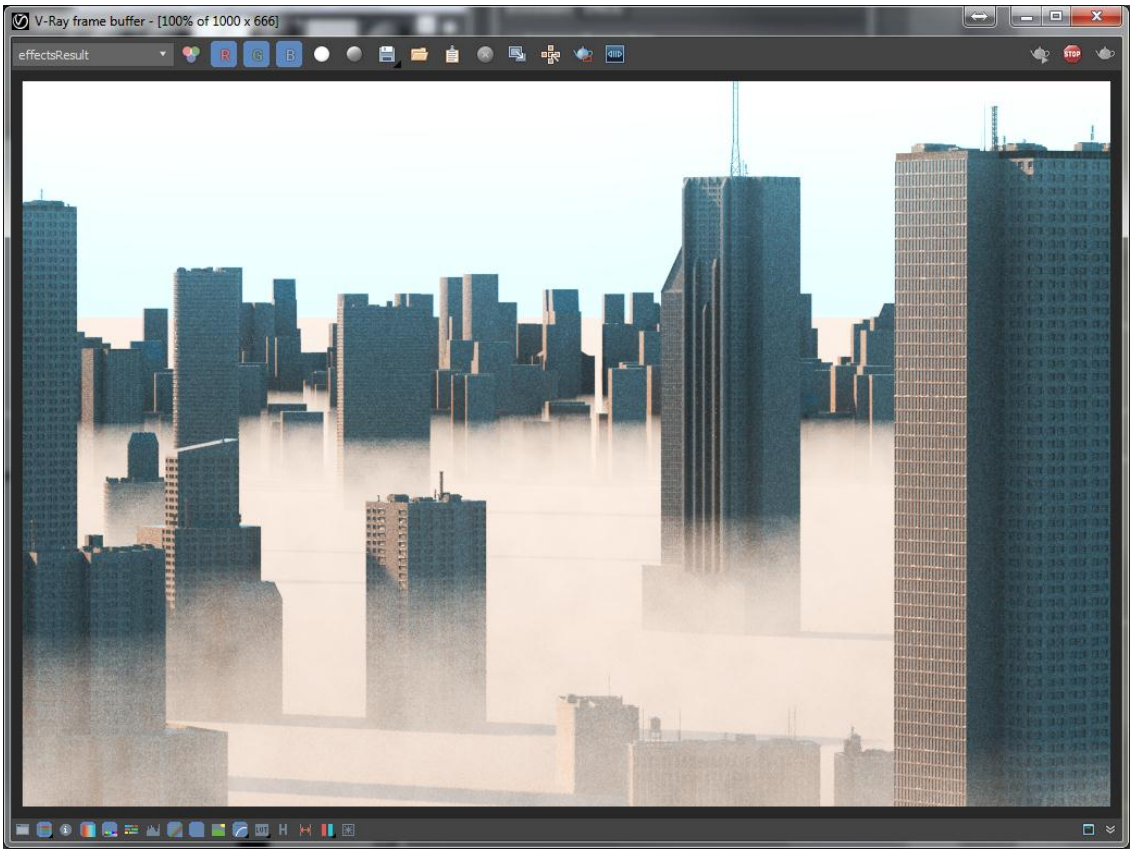


15. Note that the **V-Ray Environment Fog** is confined within the **Box Gizmo**.
16. Select the **BoxGizmo001** from the list and click the **Remove** button:

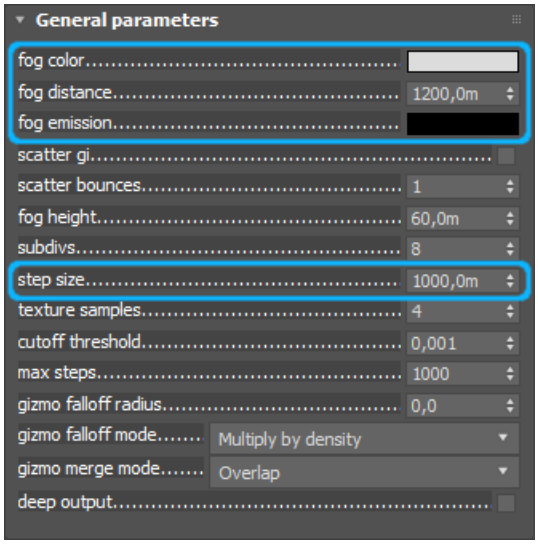


17. Open the **Material Editor** and connect the **Map #82 Noise** map to the **fog density** map slot:

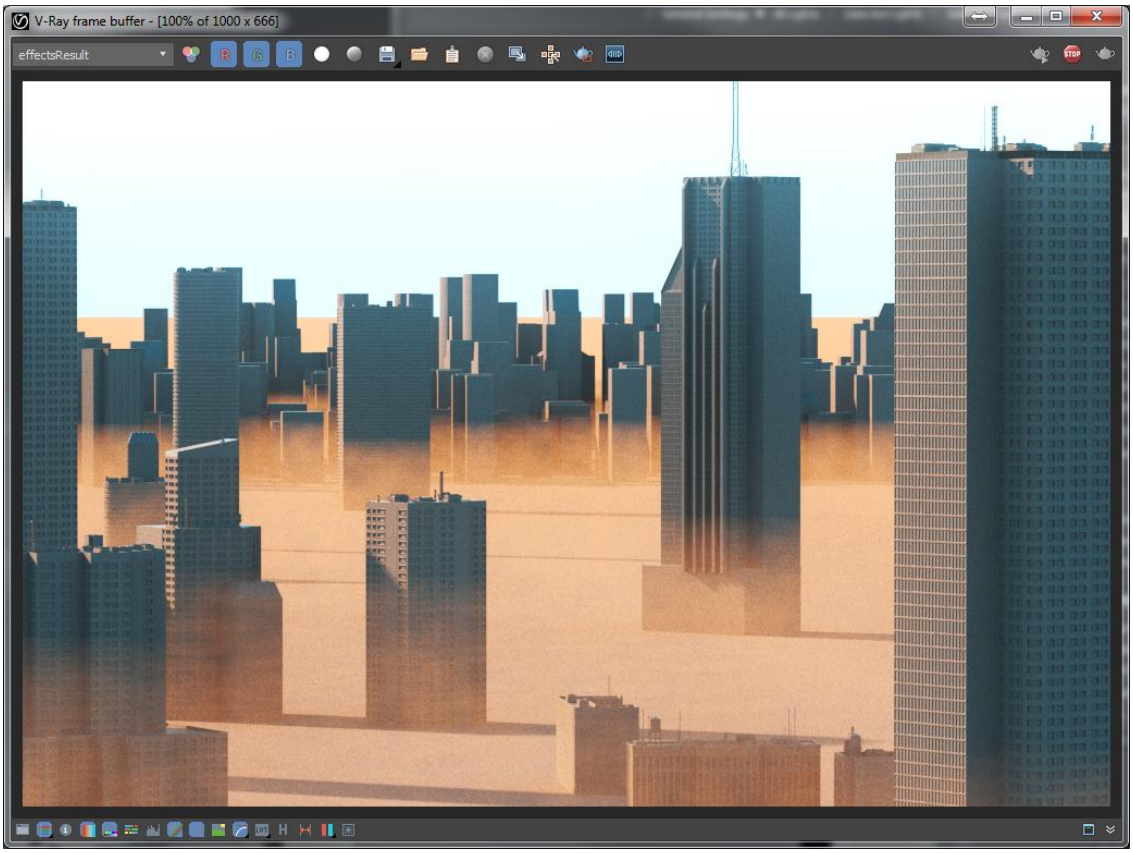




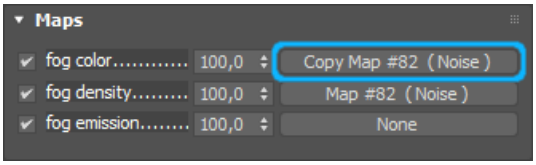
18. In the next few steps we are going to revert the settings of the V-Ray Environment Fog to create actual physically accurate, ray traced volumetric with global illumination.
19. Swap the colors of the **fog color** and **fog emission** parameters, set the **fog distance** parameter to 1200,0 m and the **steps size** parameter to 1000,0m



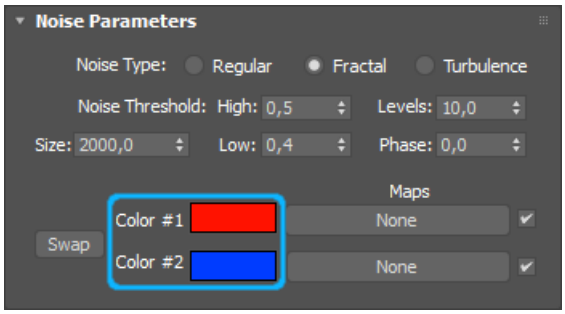
20. Enable the **affect reflections**, **affect refractions**, **affect shadows** and **affect GI** checkboxes that you disabled in Step 9
21. Enable the **Use all lights** checkbox that you disabled in Step 10

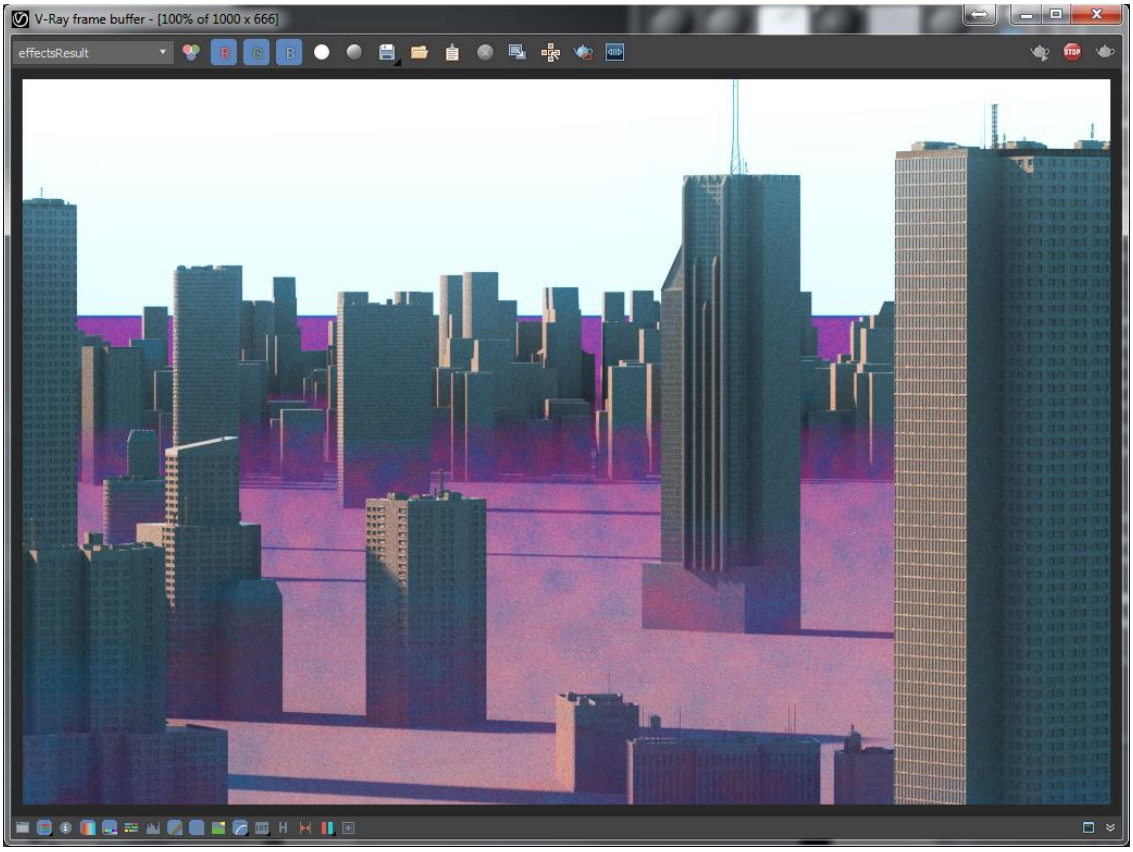


22. In the **Material Editor**, make a copy of the **Map #82 Noise** and connect it to the **fog color** map slot of the V-Ray Environment Fog



23. Change the colors of the map





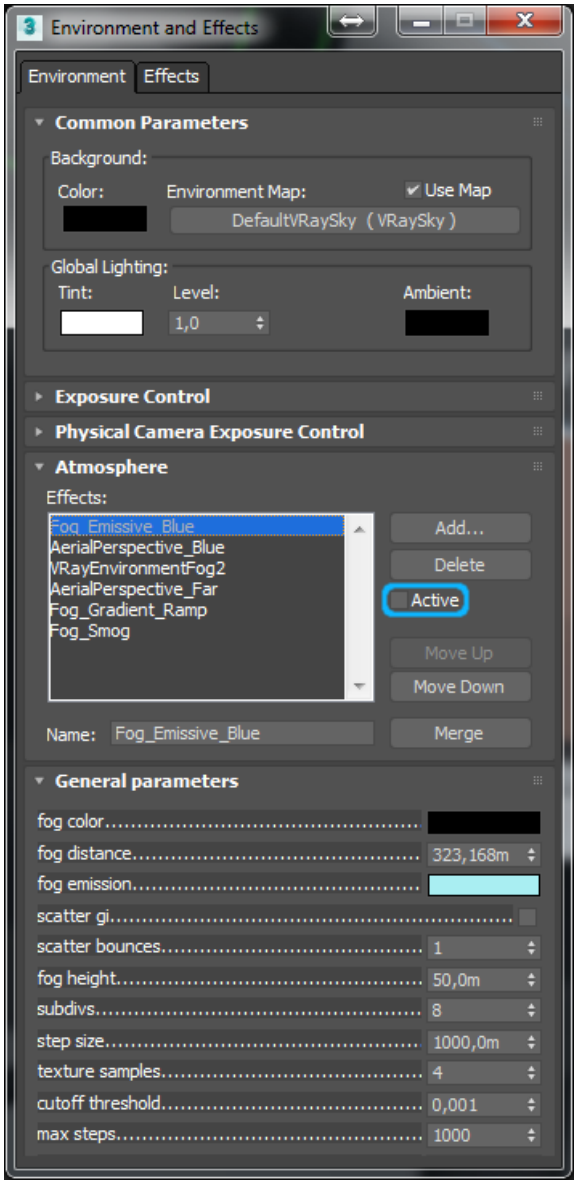
24. Break the map connection for the fog color map slot

oonix.io

V-RAY VOLUMETRICS EXAMPLES

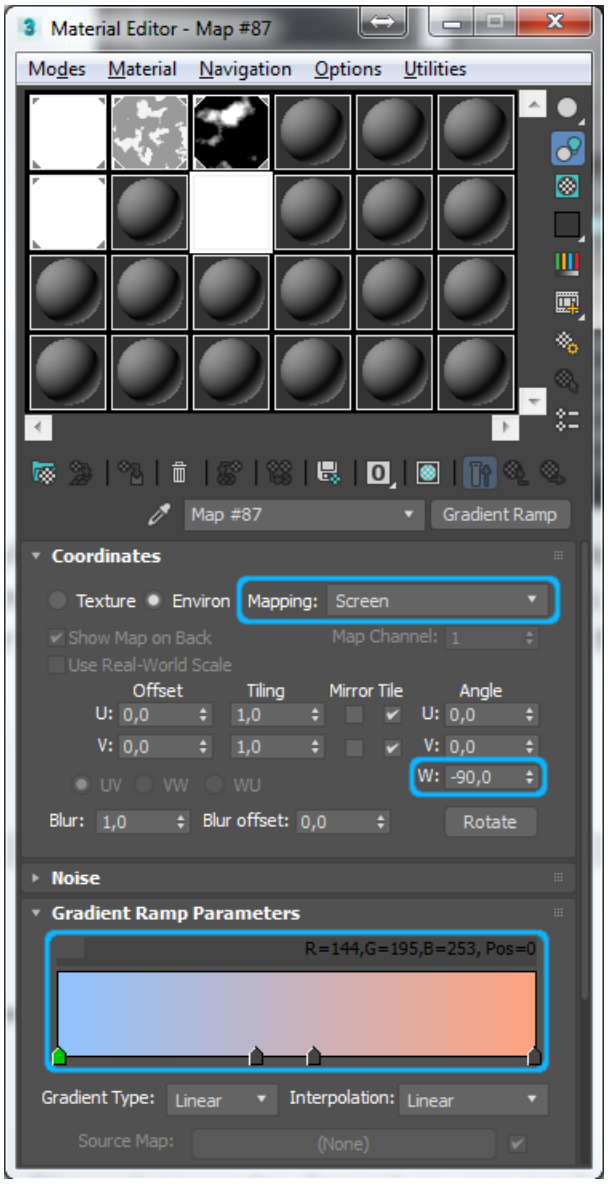
This document provides an overview of several preset V-Ray atmospheric effects in 3ds Max.

1. In the folder **10 City_Fog** open the scene named **Aerial_Fog_City.max**
2. Open the **Environment and Effects** window and in the **Atmosphere** rollout note that we have several predefined effects. Each of them can be activated by selecting it and enabling the **Active** checkbox

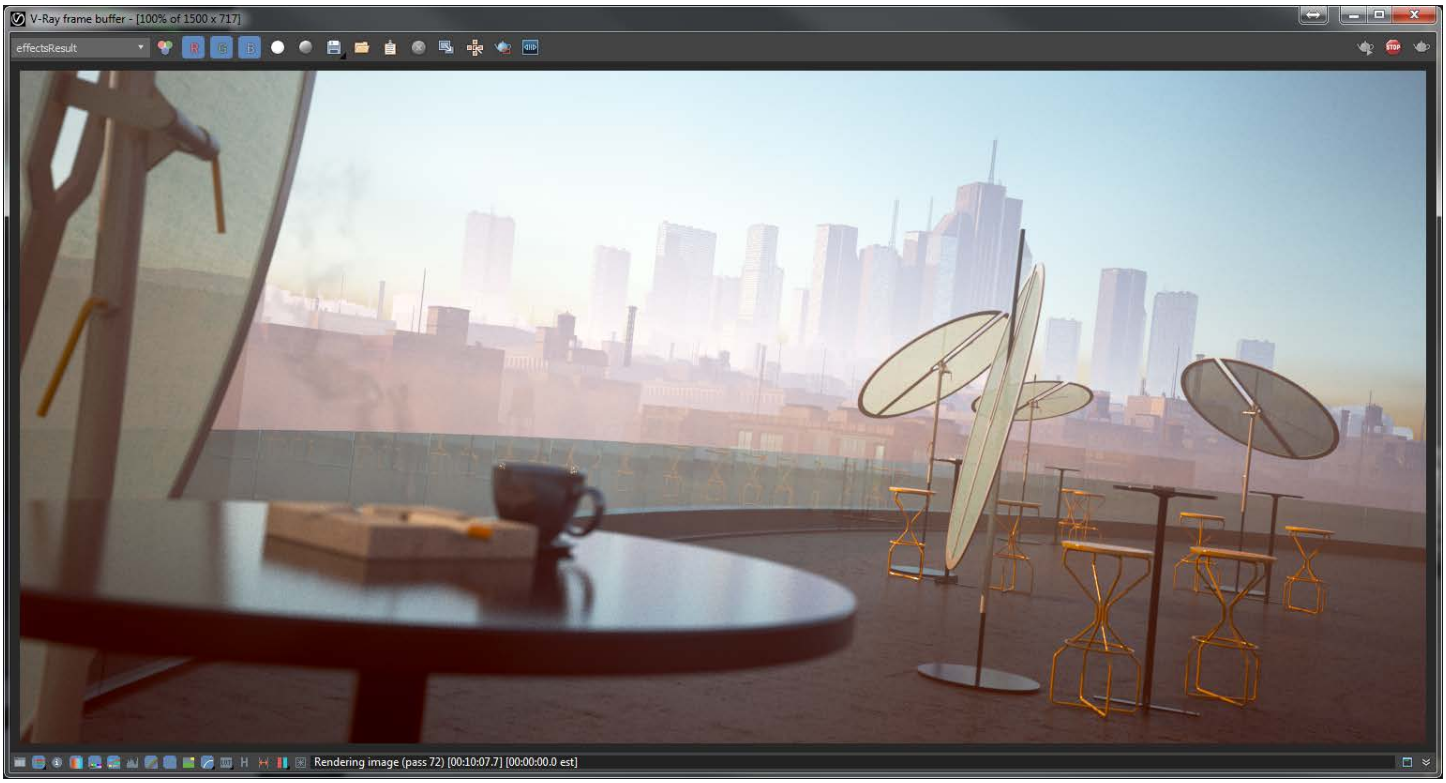


3. You can run **V-Ray RT** to be able to quickly see each effect. Note that you will need to change the **fog distance** parameter for the **V-Ray Environment Fog** effects and the **visibility range (in meters)** parameter for the **V-Ray Aerial Perspective** effects so that **V-Ray RT** can refresh the image.

4. Looking at the VRayAtmosphere render element you can see how the **V-Ray Aerial Perspective** and **V-Ray Environment Fog** effects act differently
5. **Fog_Emissive_Blue** has been set for quick rendering, it uses fog emission and is not affected by light or GI and doesn't affect reflections or shadows. You can look at the render elements to see that.
6. **AerialPerspective_Blue** has been set to create similar effect to the **Fog_Emissive_Blue**
7. **Fog Gradient Ramp** uses a **Gradient Ramp** texture set to **Screen Mapping** to control the **fog emission** parameter.



8. You can try combining two effects, for example **AerialPerspective_Far** and **Fog_Smog**

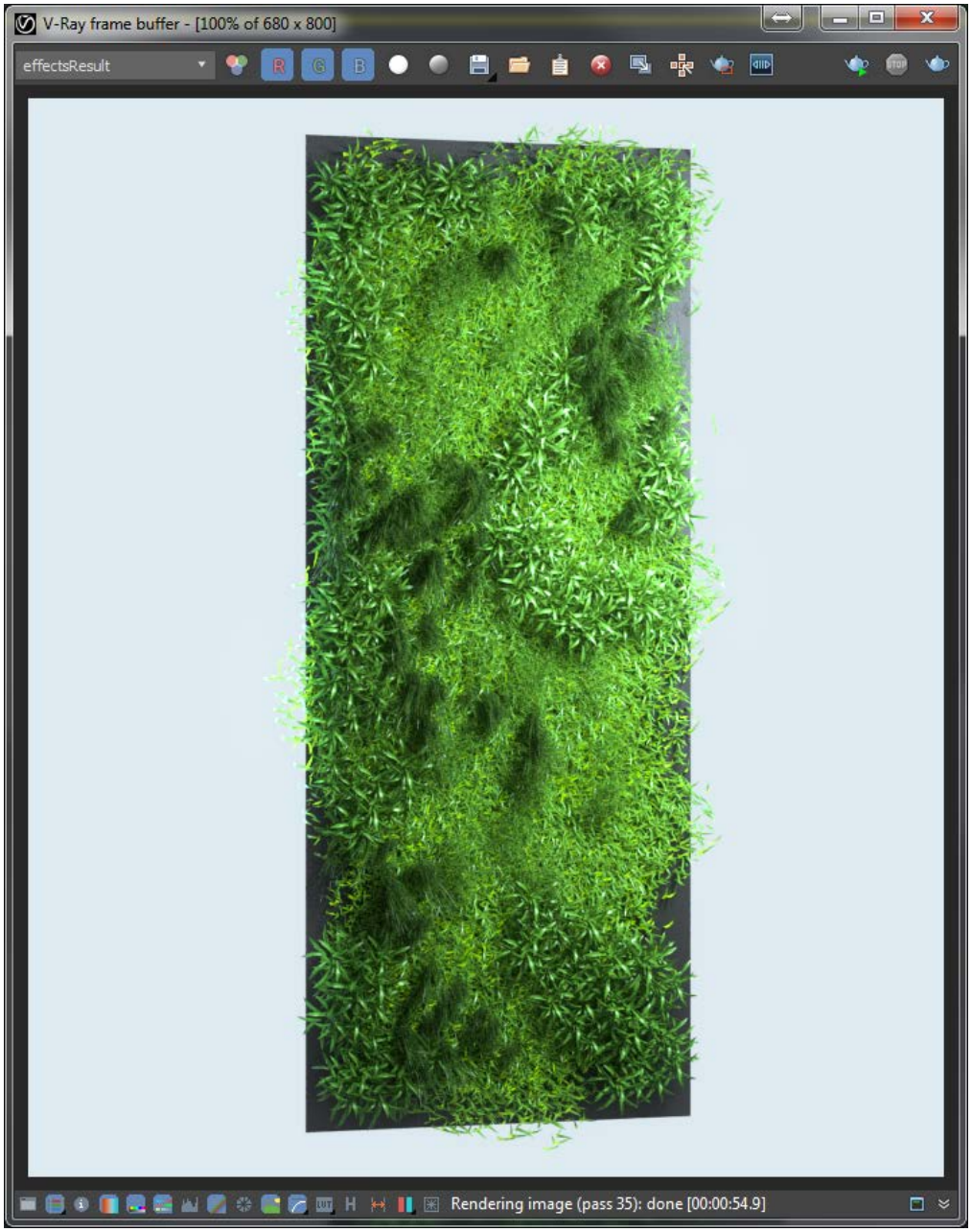

V-Ray frame buffer - [100% of 1500 x 717]
effectsResult
Rendering image (pass 72) [00:10:07.7] [00:00:00.0 est]

oonix.io

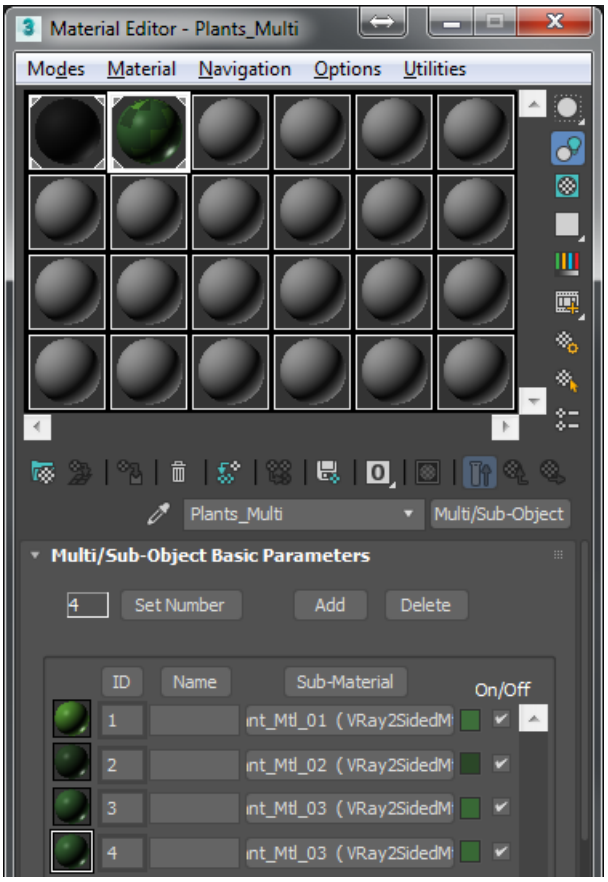
V-RAY PROXY

This demonstration covers the usage of the V-Ray Proxy in 3ds Max.

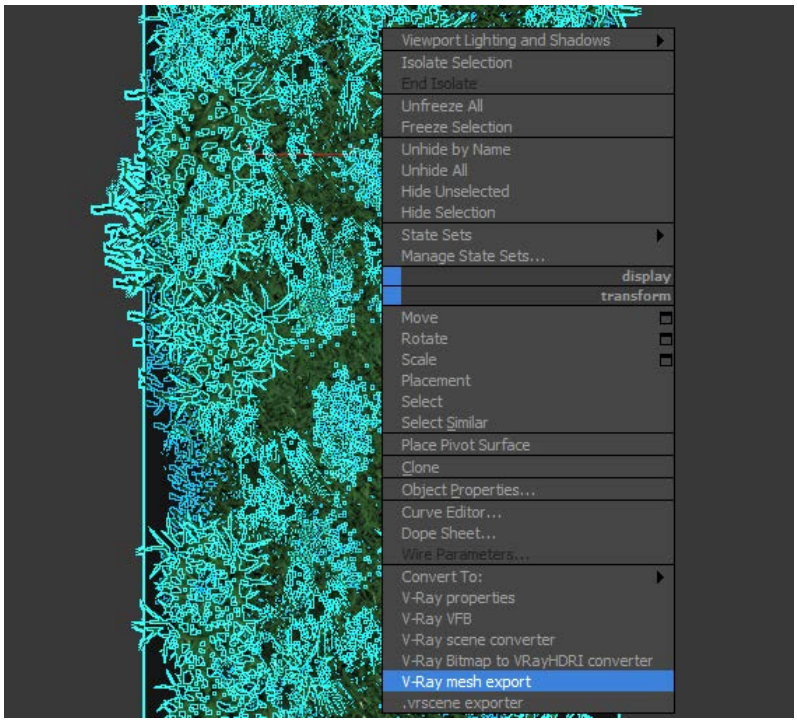
1. In the folder **11 The_Garden,** open the scene named **Proxy_Creation.max**
2. Hit Render:



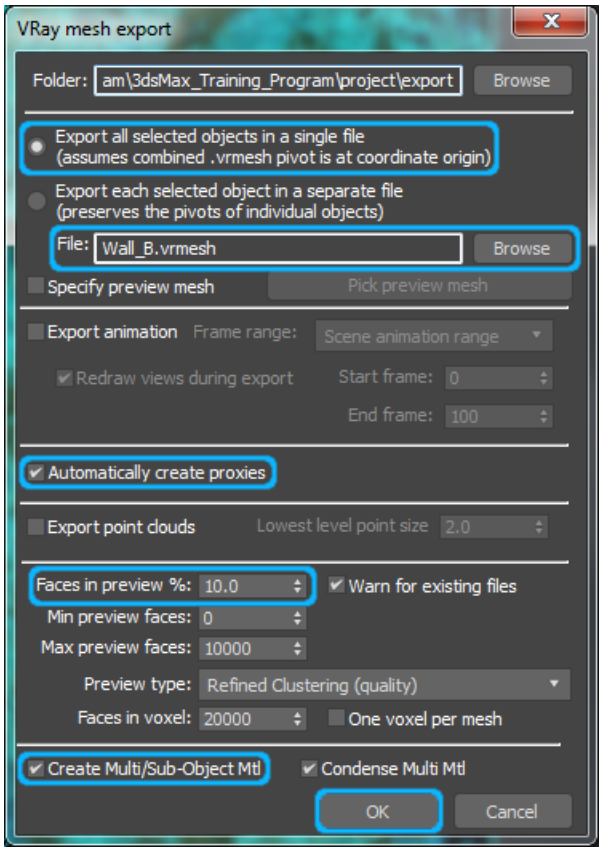
3. Open the **Material Editor** and note that we are using a **Multi/Sub-Object** material with four different materials in it, each used to shade each of the four types of vegetation on the wall.



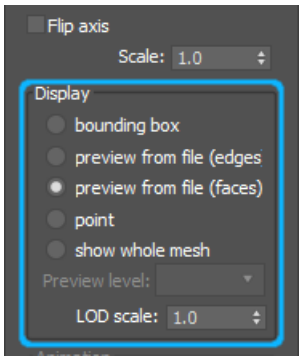
4. Select all the objects in the scene, right click and select **V-Ray mesh export**

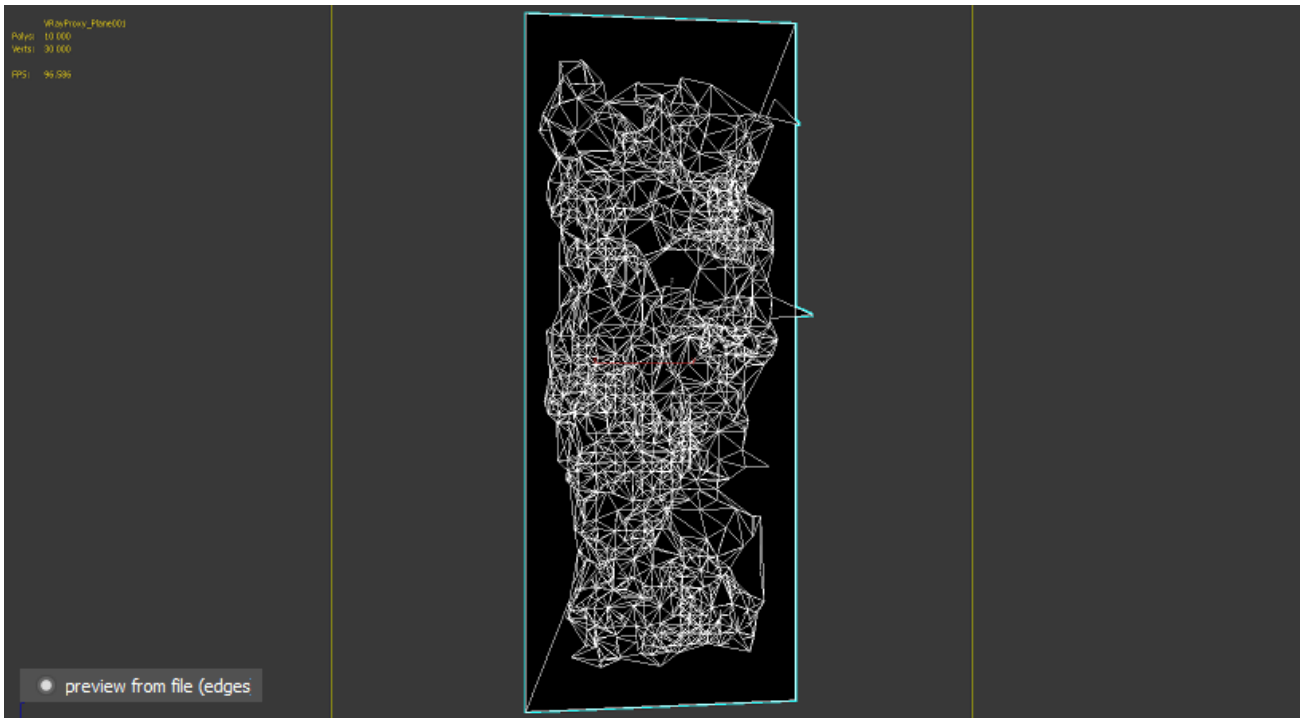


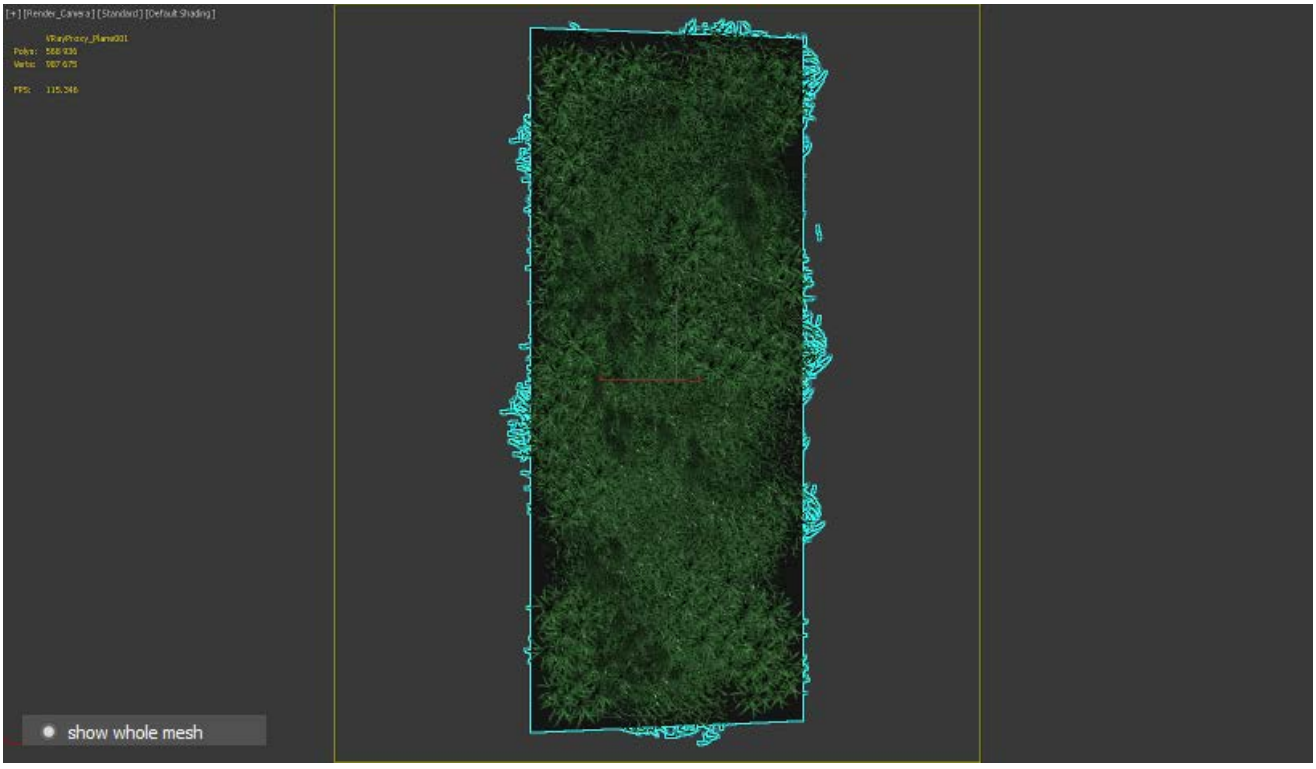
5. Select the **Export all selected objects in a single file** radio box and click **Browse** to specify a file name to save the .vrmesh to. Enable the **Automatically create proxies** checkbox. Set the **Faces in preview %**: parameter to 10.0. Enable the **Create Multi/Sub-Object Mtl** and click **OK**.



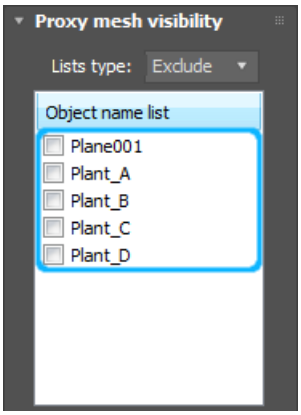
6. Once the export complete and the V-Ray Proxy appears at the place of the original geometry hit Render. Note that you get the same result.
7. Select the V-Ray Proxy and examine its settings
8. Try the different **Display** options:

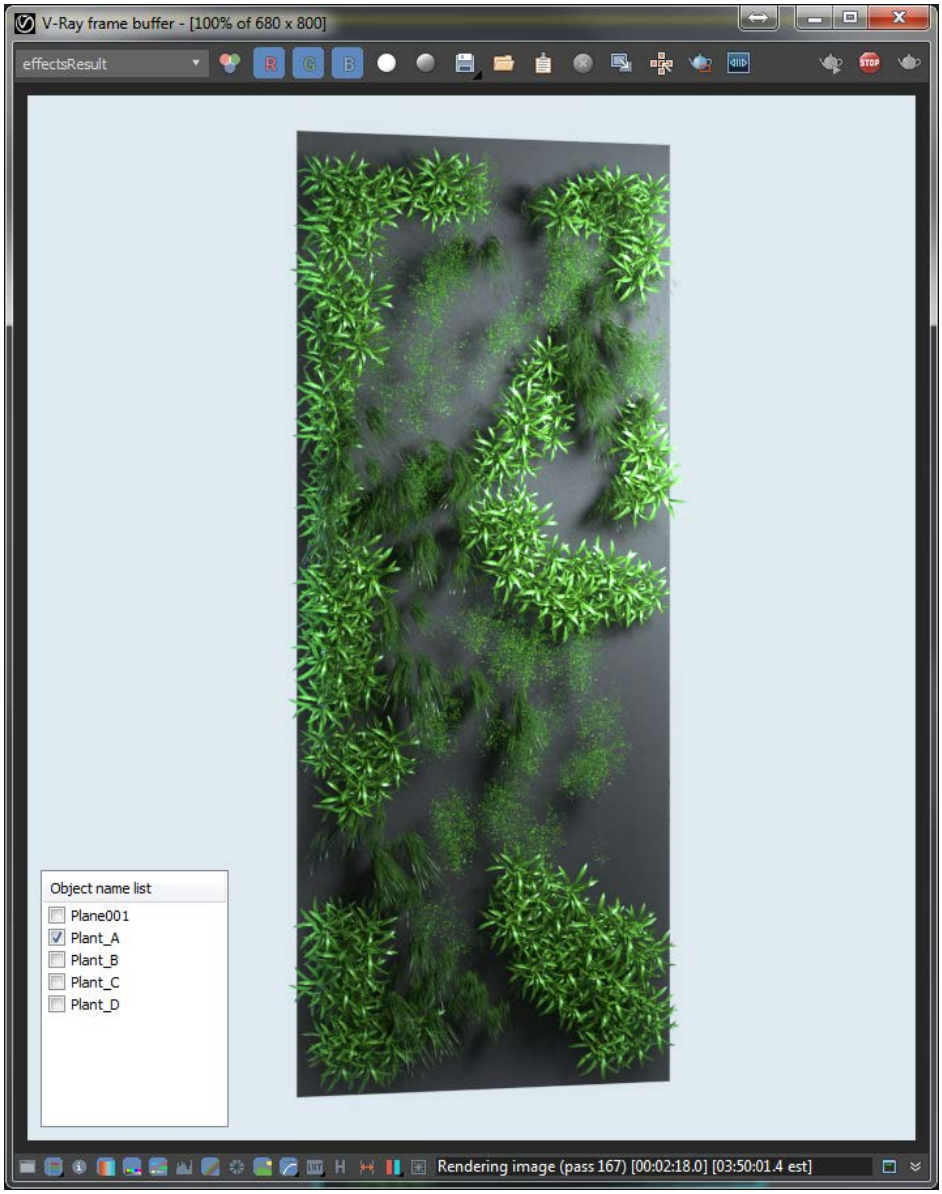


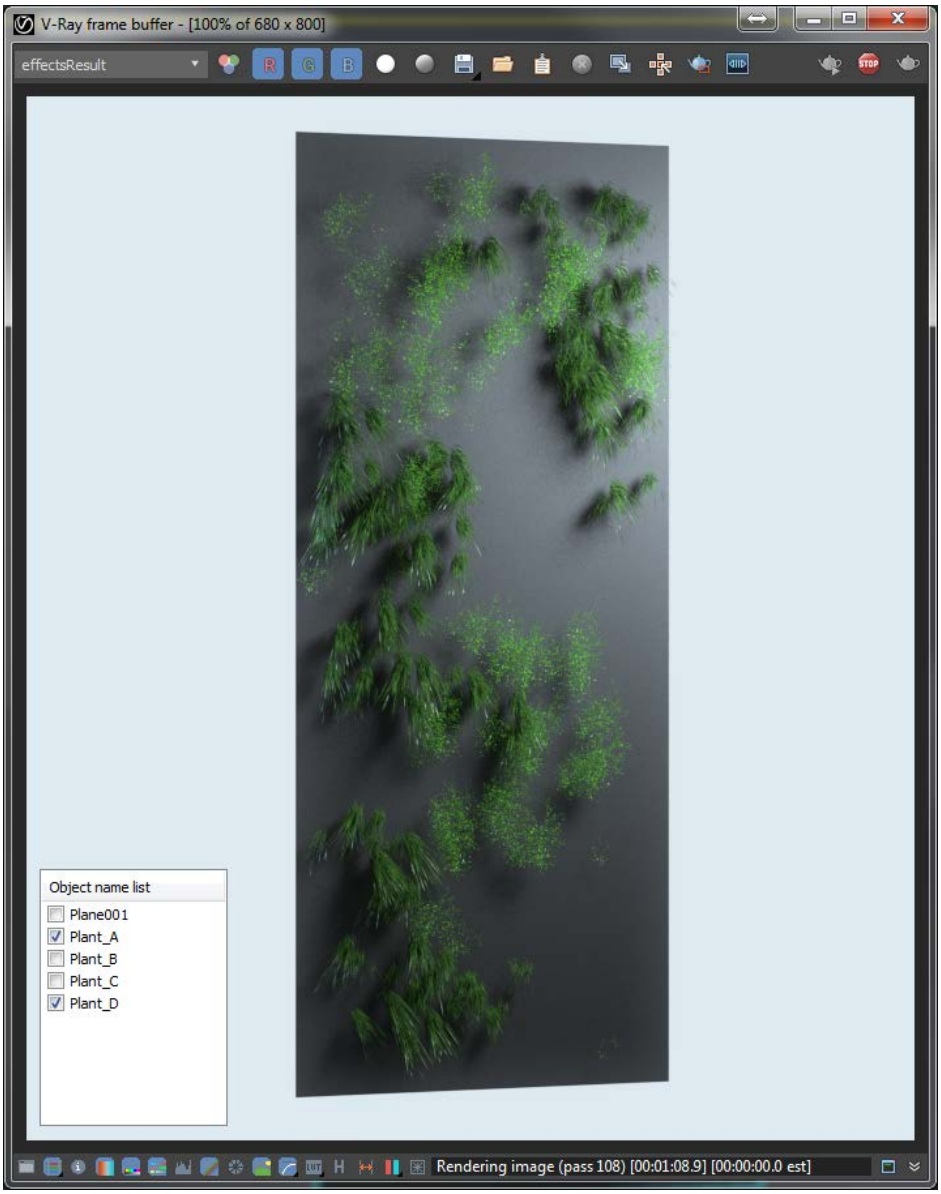




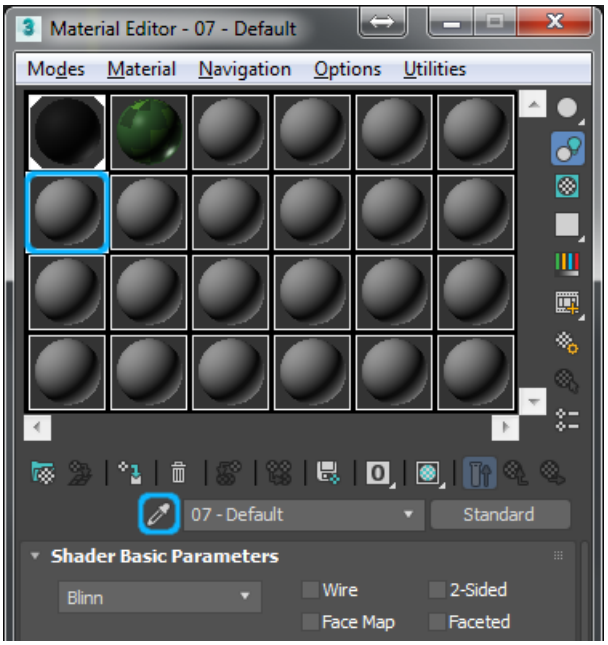
9. Scroll down to the **Proxy mesh visibility** rollout and enable/disable the visibility/rendering of some of the plants in the **Object name list**. Note that this affects both the viewport and the rendering:


Proxy mesh visibility
Lists type:
Exclude
Object name list
Plane001
Plant_A
Plant_B
Plant_C
Plant_D

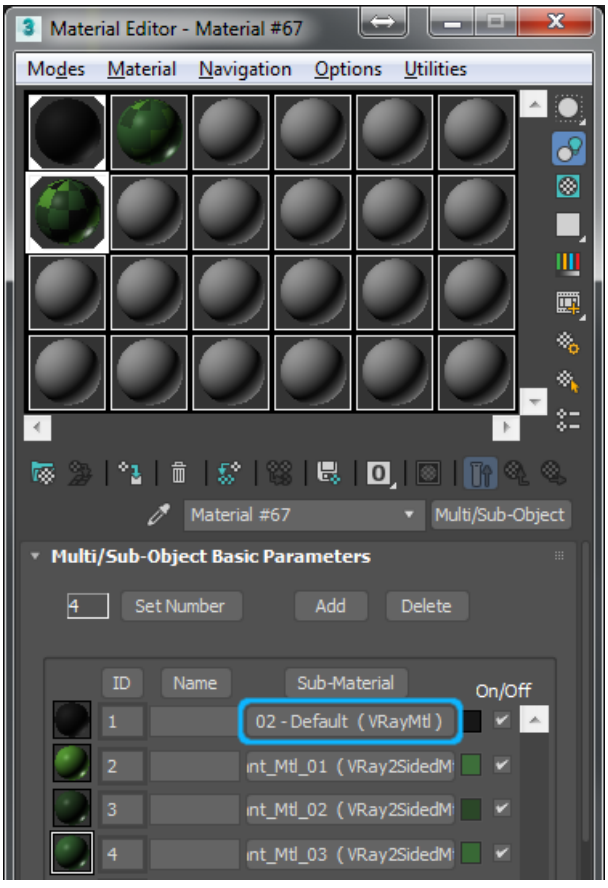

V-Ray frame buffer - [100% of 680 x 800]
effectsResult
Object name list
Plane001
Plant_A
Plant_B
Plant_C
Plant_D
Rendering image (pass 167) [00:02:18.0] [03:50:01.4 est]

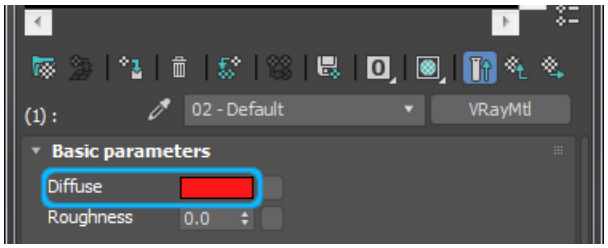


10. Disable all the checkboxes in the **Object name list** in the **Proxy mesh visibility** rollout:
11. Open the **Material Editor** and use the **Pick Material from Object** button to pick the material assigned to the V-Ray Proxy

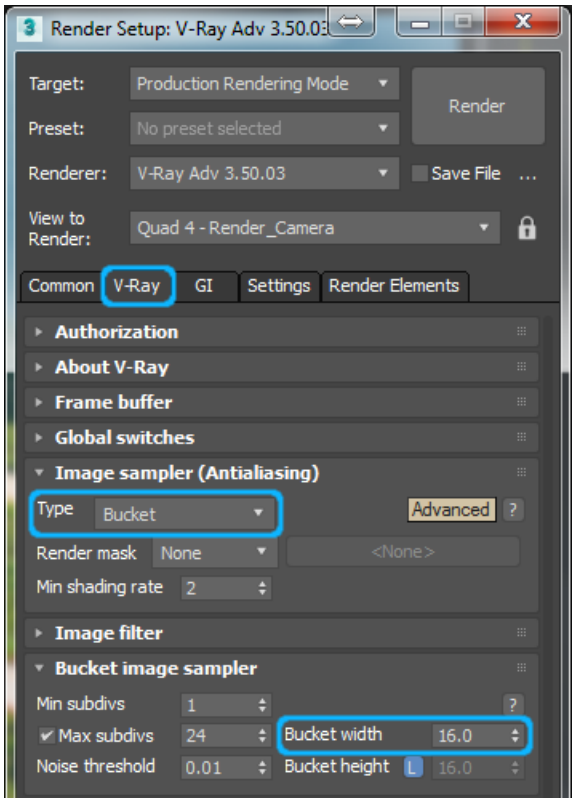


12. Select the first material and change the **Diffuse** color and Render

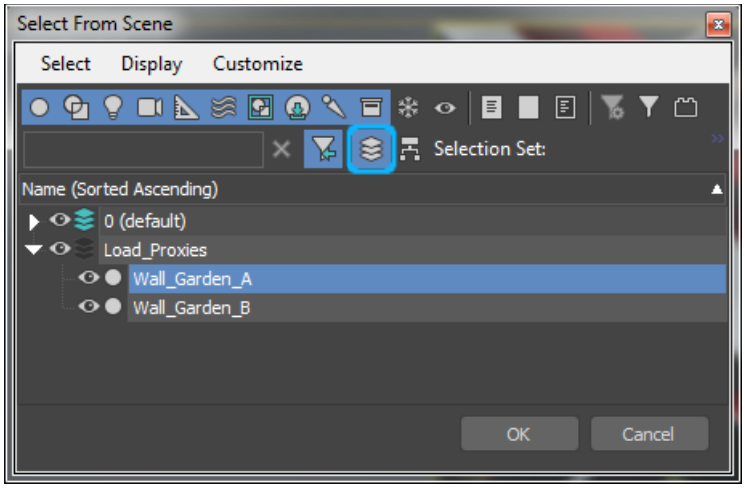




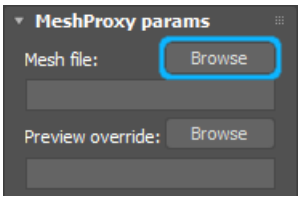
13. Stop the rendering and revert the **Diffuse** parameter to its original color
14. Open the **Render Setup** and in the **V-Ray** tab in the **Image sampler(Antialiasing)** rollout switch the **Type** parameter to **Bucket**. In the **Bucket image sampler** rollout set the **Bucket width** parameter to 16.0

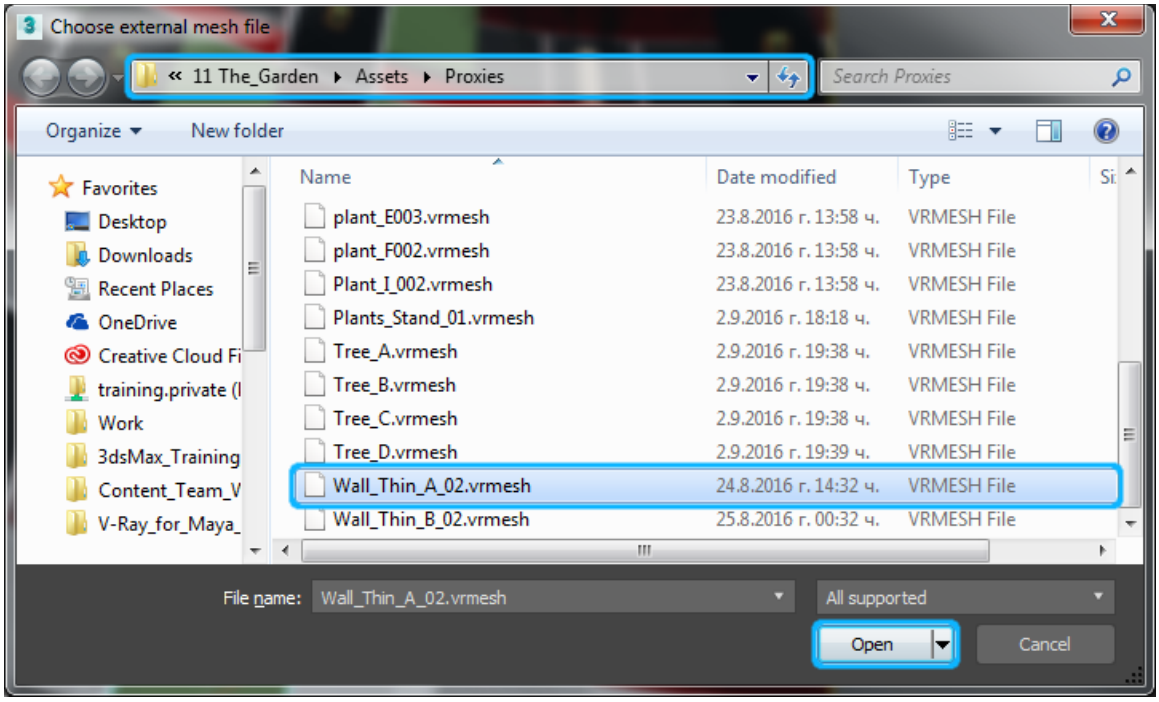


15. Render
16. In the folder **11 The_Garden,** open the scene named **Garden_Proxies.max**
17. Open the **Select From Scene** and window and select the **Wall_Garden_A** proxy



18. In the settings of the V-Ray Proxy click the **Browse** button, browse to the Project Folder\11 The_Garden\Assets\Proxies and load the **Wall_Thin_A_02.vrmesh**





19. Select the **Wall_Garden_B** proxy and load the **Wall_Thin_B_02.vrmesh** from the same folder
20. Hit Render


V-Ray frame buffer - [100% of 850 x 1000]
effectsResult
Rendering image (pass 1681): done [02:32:41.9]