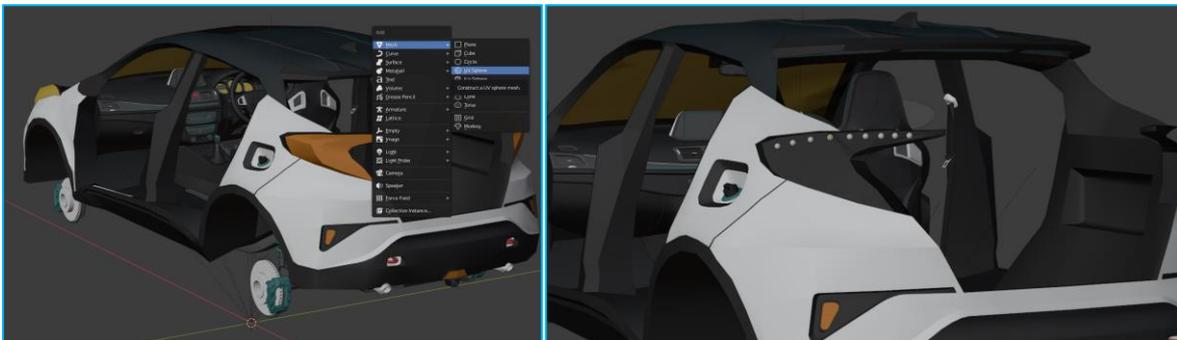# Adding lighting effects in Snowrunner:

Part 1: 3D model software (Blender)

Adding lighting flairs can be a difficult task for tweaks, but it a whole lot easier for custom models. In the 3D model, firstly add a mesh (I use UV spheres) where you want the lighting flair to be in game.

By doing this you can simply read off the positional information (make sure you have the origin set to geometry, and not origin for the guide meshes)

Adding lighting effects in Snowrunner:

Part 2: Setting up the XML structure

Within the main truck file at location:

My Games\SnowRunner\Media\Mods\MOD_NAME\classes\trucks

You will need to find the tags *<ModelAttachments> and </ModelAttachments>*. Within these tags should be the following further tags:

Running lights tag:	Reverse lights tag:
<Ignition>	<ReverseSignals>
</Ignition>	</ReverseSignals>
Stop lights tag:	**Headlights (main beam) tag:**
<StopSignals>	<HeadLight>
</StopSignals>	</HeadLight>

Outside of the *<ModelAttachments>* tags, you will need a further tag for the headlight. This is used to actually light up the map/terrain when the main beam is on

<HeadLight />

Part 3: Adding a lighting entity to the XML

Any type of light is described by one of three entities:

Flare – a point source of light that creates a glow around the particular point. Visually similar to the bright light of a bulb or the distant light from the headlights in the face.

Light – a light source that illuminates objects and surfaces in a cone of a light beam.

Model – an imitation of light rays. This imitation uses the semi-transparent model, which is highlighted by the Light source. This creates a visual effect of light rays.

All types of light require the following attributes:

Org="(-2.119; 1.453; 0)" The position of the origin of coordinates of the model.

Dir="(1; 0; -1)" Direction vector. Values between 1 and -1

ParentFrame="BoneChassis_cdt" A bone from the hierarchy of the physical model, which the Light is attached to. If the parameter is not specified, then this is a root bone.

The Model light type will require the following in addition to the above:

Mesh="env/light_ray" The path to the Fbx of the model from the .../meshes folder.

Adding lighting effects in Snowrunner:

```
<Light
  AttenEnd="4"
  Color="g(000; 179; 223) x 2"
  Dir="(1; -0.2; 0)"
  InnerCone="20"
  OuterCone="160"
  Pos="(1.961; 0.842; -0.531)"
  ParentFrame="BoneChassis_cdt"
/>
```

Ground lighting / pool lighting effect: (<Light> tag)

The Light tag (shown left) adds a 'glow' to the surrounding objects, for example the white pool of light on the floor at the front of the vehicle and the red pool of light at the rear of the vehicle.

You can add as many light tags as you want, but I would recommend one per main headlight area.

Each element inside the <Light> tag does the following:

Color="g(223; 050; 050) x 2" Light color and brightness multiplier. Default value of "(0; 0; 0)" and the x 2 is the brightness.
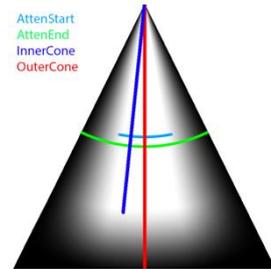
AttenStart="1" The start of attenuation, in meters

AttenEnd="5" Ray length, in meters. By default: 0.

InnerCone="20" Inner cone (light does not scatter). By default: 360.

OuterCone="100" Outer cone. By default: 0.

The effect in game looks like this:

Adding lighting effects in Snowrunner:

```
<Flare
  AspectRatio="1.4"
  Color="g(000; 179; 223) x 0.5"
  ColorMultAtDay="0.6"
  Dir="(1; 0; 0)"
  DirAngle="90"
  Size="0.1"
  Pos="(1.961; 0.842; -0.531)"
  ParentFrame="BoneChassis_cdt"
/>
```

Individual lightbulb glow: (<Flair> tag)

For each lightbulb you have in your model, you will want to have a single flare. This allows you to see the lightbulb as a light source.

You can add as many light tags as you want, but I would recommend one per main headlight area.

Each element inside the <Flare> tag does the following:

AspectRatio="1.4" Aspect ratio. By default: 1, Values: [-1000000; 1000000].

Color="g(223; 050; 050) x 2" Light color and brightness multiplier. Default value of "(0; 0; 0)" and the x 2 is the brightness.

ColorMultAtDay="0.5" A coefficient of the light brightness during daytime. By default: 1, Values: [0; 1000].

Size="0.2" Size of the flare. By default: 1, Values: [0.0001; 1000000].

DirAngle="90" The angle of visibility of the flare, in degrees.

Reflections="true" Reflections

Texture="sfx/flare_simple__s_d.tga" Path to the texture file of the shape of the flare. Default value: "sfx/flare_simple__s_d.tga".

The effect in game looks like this:

Adding lighting effects in Snowrunner:

```
<Model
  Dir="(1; -0.1; 0)"
  Mesh="env/light_ray"
  Org="(1.961; 0.842; -0.531)"
  ParentFrame="BoneChassis_cdt"
/>
```

Light stream: (<Model> tag)

For each lightbulb you have in your model, you will want to have a single flare. This allows you to see the lightbulb as a light source.

You can add as many light tags as you want, but I would recommend one per headlight pair.

The effect in game looks like this:

Part 4a: Adding the running lights to the XML file

The running lights are any lights you want to be on when the engine turns on. For example, daytime headlights, rear lights or side lights. You add the running lights code in between the **<Ignition>** and **</Ignition>** tags.

For lights that are on when the engine is turned on you will want to have both a <Flare> for each of the bulbs in your model and a <Light> tag for each of the bulb pairs in your model.

Part 4b: Adding the reverse lights to the XML file

The reverse lights are any lights you want to be on when reverse gear is selected. You add the reverse lights code in between the **<ReverseSignals>** and **</ReverseSignals>** tags.

For reverse lights on you will want to have both a <Flare> and a <Light> tag for each of the bulbs in your model.

Part 4c: Adding the stop lights to the XML file

The stop lights are any lights you want to be on when the breaks are engaged. You add the stop lights code in between the **< StopSignals>** and **</ StopSignals>** tags.

Adding lighting effects in Snowrunner:

For stop lights you will want to have both a <Flare> and a <Light> tag for each of the bulbs in your model.

Part 4d: Adding the headlights to the XML file *(part 1)*

The headlights are any lights you want to be on when the main beam is activated. You add the headlights lights code in between the **< HeadLight>** and **</ HeadLight>** tags. These should be inside the ModelAttachments tags

For headlights that are on when the main beam is activated you will want to have a <Flare> a <Light> and a <model> tag for each of the bulbs in your model.

Part 4d: Adding the headlights to the XML file *(part 2)*

```
<HeadLight
  AttenEnd="55"
  AttenStart="-20"
  Color="g(090; 179; 223) x 7"
  Dir="(1; 0.3; 0)"
  InnerCone="27"
  OuterCone="127"
  Pos="(1.961; 0.842; 0.000)"
  ParentFrame="BoneChassis_cdt"
/>
```

The headlights are also how we define the environment light up effect. You add this headlights code inside the **< HeadLight>** tag. This one should be outside the ModelAttachments tags.

This tag should eb set up as shown on the left