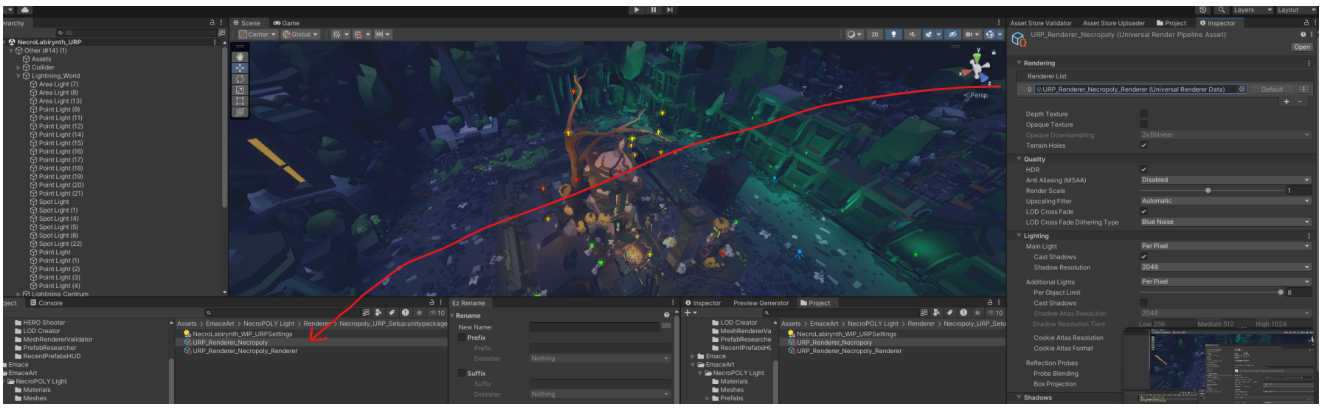
URP Light Limits and Vanishing Lights

How to stop lights from disappearing in Unity URP (Forward/Deferred) and where to change the limits.

Version: 2026-01-03 | Target: Unity 2022.3 (URP 14.x) | Author: EmacEArt



Example project scene (URP). When many Point/Spot lights overlap, URP may cull some of them - this guide shows what to change.

1. What you are seeing (symptoms)

• When you change one light (color/intensity/range), another light on the scene disappears.

• A light shows a very high value in the Inspector, but does not affect the scene.

• Console warnings and Missing (Mono Script) components appear on lights after migration from Built-in/Standard.

Root cause (most common): URP has a per-object limit for Additional Lights in Forward rendering. If more lights overlap on the same object, URP picks a subset (usually the strongest/closest) and ignores the rest.

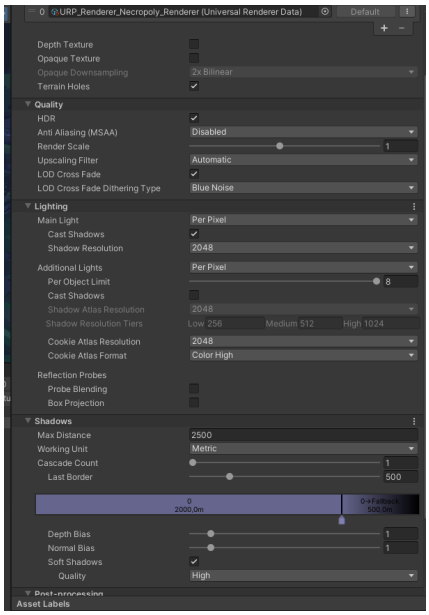
2. Where the limits are configured (Pipeline Asset vs Renderer Data)

You typically edit two assets. Both are valid, but they control different layers:

• **Universal Render Pipeline Asset** (Project Settings → Graphics/Quality): global URP lighting limits, including Additional Lights and Per Object Limit.

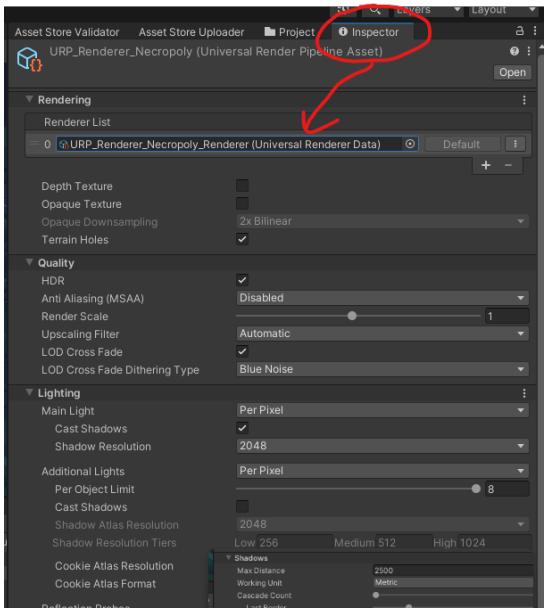
• **Universal Renderer Data** (Renderer List entry): the actual renderer configuration (Forward/Deferred, render features, etc.).

Pipeline Asset - Lighting limits



In the URP Pipeline Asset, set Additional Lights to Per Pixel and raise Per Object Limit (typical max is 8 in Forward).

Pipeline Asset - Renderer List (points to Renderer Data)



The Pipeline Asset references a Universal Renderer Data asset via the Renderer List. This is where you choose Forward vs Deferred.

3. Recommended fix order (fast and deterministic)

Step A - Ensure the correct URP asset is active

Check both: **Project Settings** → **Graphics** and **Project Settings** → **Quality**. If Quality levels override the pipeline asset, you may be editing the wrong one.

Step B - Increase Additional Lights budget

In the **URP Pipeline Asset** (Lighting section):

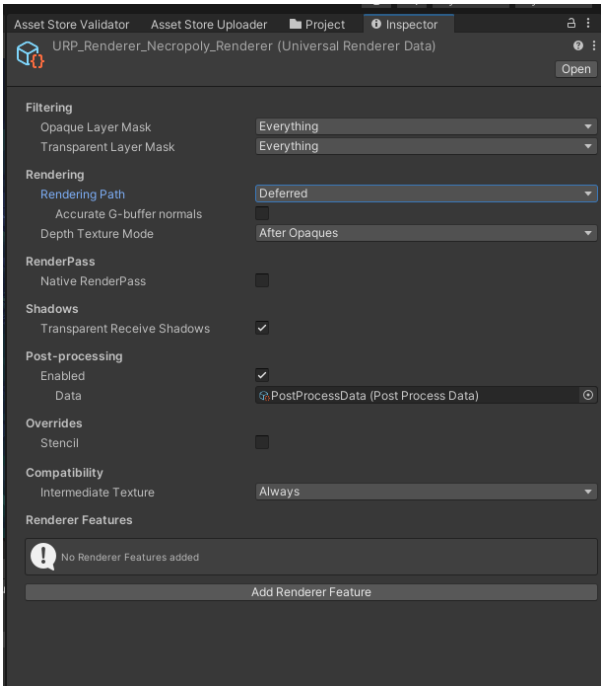
• Additional Lights: set to **Per Pixel** (not Off, not Per Vertex).

• Per Object Limit: set to **8** (Forward rendering cap in many URP setups).

• If available: raise any global cap such as Max Additional Lights (if your URP version exposes it).

Step C - Switch to Deferred when you need many overlapping lights

In **Universal Renderer Data** set **Rendering Path = Deferred**. Deferred generally reduces the 'lights disappear' problem in dense areas because lighting is evaluated differently than Forward. It is usually the correct choice for scenes with lots of Point/Spot lights.



Universal Renderer Data with Rendering Path set to Deferred.

Performance note: Deferred is heavier and may require different anti-aliasing choices (often no MSAA). Use it for desktop/console-style targets or when the scene relies on many dynamic lights.

4. Common gotchas that look like 'lights are broken'

Kelvin (Temperature) is not brightness

A very large **Temperature** value (Kelvin) only changes the light color (towards cold/blue). Brightness comes from **Intensity**. If Intensity is ~10-20 and the scene is large/dark, the effect can be subtle.

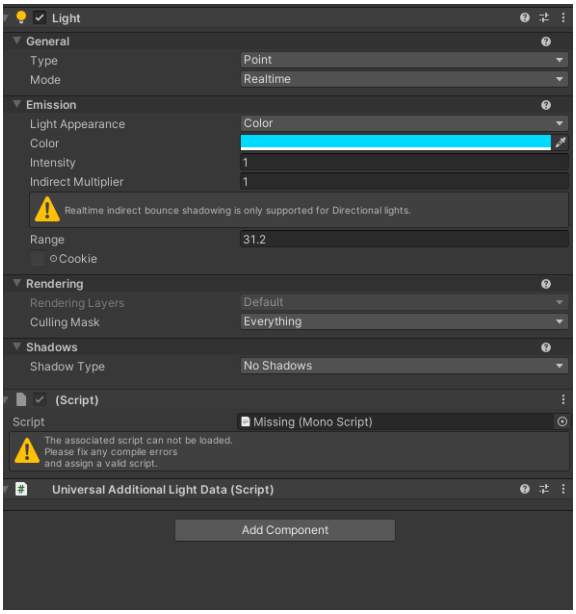
Materials must support URP lighting

If objects use **Unlit** shaders (URP/Unlit or legacy shaders after migration), real-time lights will not affect them. For lighting to work, use **URP/Lit** (or a lit custom shader).

Scene View lighting toggle

In Scene View, ensure **Use Scene Lighting** is enabled. Otherwise the editor view can ignore scene lights and confuse debugging.

Missing (Mono Script) on lights



Missing (Mono Script) means a script component is present but the script cannot be loaded (deleted file, compile errors, assembly changes). Remove the component if not needed, or restore the script.

Important: Fix any C# compile errors in Console first. As long as the project does not compile, Unity may show scripts as Missing.

5. Practical strategies for asset packs (to avoid light culling)

If your pack includes many decorative lights, consider these production-friendly options:

• **Use fewer real-time lights:** keep only the lights that must cast/affect geometry.

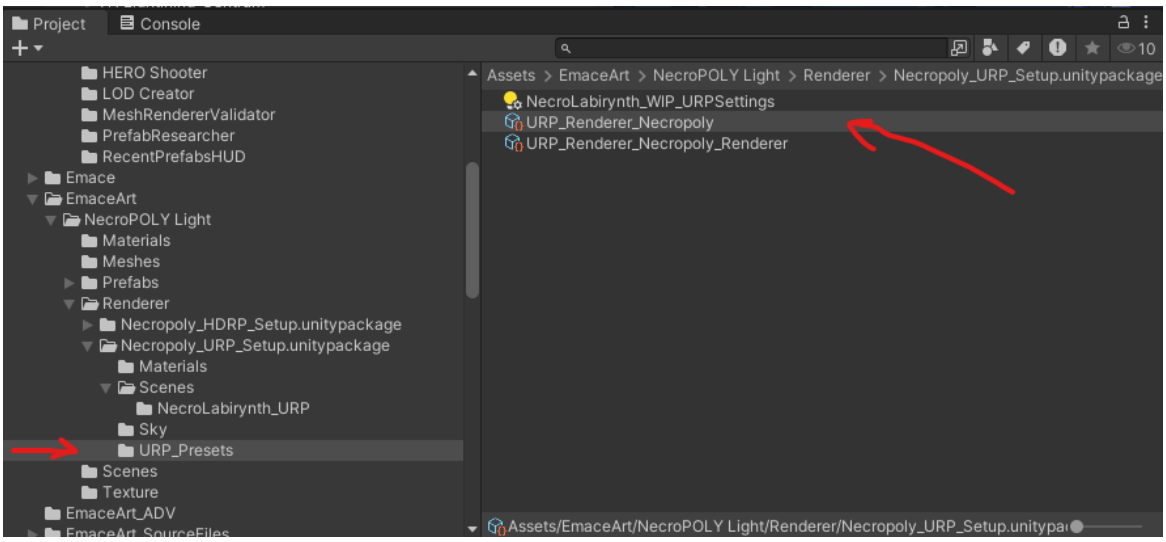
• **Use Emission + Bloom:** emissive materials can make lamps 'look lit' without consuming real-time light slots.

• **Reduce overlap:** lower Range on lights so fewer of them hit the same meshes.

• **Split large meshes:** the per-object limit applies per renderer; splitting huge combined meshes can reduce contention.

• **Bake for static scenes:** for demo/preview scenes, baked GI/lightmaps provide stable results with many lights.

Example - project folder structure with URP presets



Keep URP presets and pipeline assets in a clear folder so users can quickly find and swap them.

Quick checklist

• Pipeline Asset set in Graphics AND Quality.

• Additional Lights = Per Pixel.

• Per Object Limit = 8 (Forward).

• Renderer Data set to Deferred if the scene uses many overlapping Point/Spot lights.

• Objects use URP/Lit (not Unlit).

• No compile errors; remove Missing (Mono Script) components or restore scripts.