

1 - CONTENT TYPE

- Content includes smooth skies, sunsets, or underwater scenes *banding shows up here first*
- Content has dark scenes with shadow detail (cinema, drama, thriller) *8-bit produces visible banding in shadows*
- Content has slow fades, dissolves, or long colour transitions *fades band noticeably at 8-bit*
- Content is HDR (Dolby Vision, HDR10, HDR10+, HLG) *10-bit is mandatory*
- Content is mostly talking heads, indoor surveillance, or screen-share *8-bit is sufficient*

2 - SOURCE MATERIAL

- Source recorded in 10-bit or higher (ARRI, Sony Venice, recent iPhone ProRes) *preserve 10-bit through pipeline*
- Source is 8-bit (most consumer phones, older cameras) *10-bit transcode adds little quality*
- Source colour space is BT.2020 or DCI-P3 *wider gamuts need 10-bit minimum*

3 - CODEC CHOICE

- Using HEVC Main10 for 10-bit delivery *the workhorse for HDR streaming*
- Using AV1 Main 10-bit for newer pipelines *Netflix primary HDR codec 2026*
- NOT using H.264 High10 for delivery *no consumer hardware decoder*
- Using VP9 Profile 2 only if YouTube is the platform *limited device coverage elsewhere*

4 - TARGET DEVICES

- Target devices have hardware decoder for chosen codec *verify on real devices, not specs*
- Tested on 2019+ iPhone, recent Android flagship, 2020+ smart TV *10-bit overhead invisible on modern silicon*
- Avoided 10-bit on older mobile hardware *battery drain and thermal throttling risk*
- Display claims 10-bit (or 8-bit + FRC) for HDR content *most consumer panels are 8-bit + dither*

5 - PIPELINE COST

- Encoder benchmark shows $\leq 15\%$ bitrate overhead for 10-bit *if higher, encoder settings need tuning*
- Storage budget can absorb 25% raw size increase if uncompressed *raw scaling is linear in bits*
- Decoder CPU / battery impact tested on the lowest-tier target device *where 10-bit will hurt first*

MOST COMMON BIT-DEPTH MISTAKES IN PRODUCTION

- * Shipping HDR in 8-bit by mistake - guaranteed banding in shadows and skies. Always verify codec profile.
- * Using H.264 High10 for delivery - works on encoder, fails on consumer hardware decode. Switch to HEVC Main10.
- * Down-converting 10-bit source to 8-bit mid-pipeline, then back up - all the headroom is gone. Stay 10-bit end-to-end.