



# **Building on the Eco-design Directive, EuP Group Analysis (I), Lot 3: Sound & Imaging Equipment**

**2<sup>nd</sup> Stakeholder Meeting**

Task 5 Projectors

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## Task 5 Projectors: *Best Available Technology, BAT*

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- **BAT for Projectors can be rationalised to four key areas providing an on-mode efficiency of 0.09 Watt / Lumen**

### 1/ **Lamp/ Light Module:**

- Principal lamp technology is still metal halide or halogen discharge lamp
- Lamp life 5000 hours
- Lamp half-life (half light output) increased from 1500 hours to over 2500 hours.

### 2/ **Lens System**

- Optimised light path interface with lens aperture
- Use of anamorphic lens configuration to maximise light source usage
- Interchangeable (re-usable) lens assembly

### 3/ **Light Path Beam Splitting and Combining Optics**

- Light loss contained to 30%

### 4/ **Power Management**

- Auto power down to passive standby (0.5w – 1.0 W) with no input signal

# Barriers to Take Up of BAT in Projectors.

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## Primary barrier, impact on cost.

- Long lamp life at penalty of almost doubling of lamp cost . This barrier is offset in markets where projector usage is intensive with high lamp replacement rate (Schools projectors)
- Anamorphic and interchangeable lens assemblies are comparatively expensive.
- High quality low loss dichroic coatings in light path have a cost penalty
- Auto power down to 1Watt or less will be demanding and require re-design of power management architecture and standby power supply arrangements, particularly for projectors in network configurations (wired and wireless)

## Task 5 Projectors: *Best Nearly Available Technology* BNAT

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### High efficiency LED or LED + Laser light sources providing the following eco-design benefits:

- Improved efficiency (0.05 Watt/ Lumen) with commensurate reduction in heat generation in light source.
- Very efficient cooling system interfaces promoting smaller projector form factor (reduction in casing materials) and low noise, lower power, fan systems.
- Primary colour, light sources, allowing simplified and more efficient light path optics
- Efficient light source and light path can allow removal of lead from lens glass ( loss in lens glass transmission efficiency at blue end of spectrum through removal of lead can be readily and efficiently offset by boost in blue light source)

# Task 5 Projectors: BNAT Definition

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## High specification BNAT Projector:

- High efficiency LED / LED + Laser light source allowing the reduction or potential elimination of RHOS banned substances in light path.
- Typical on –mode efficiency of 0.05W /Lumen
- Light source life equivalent to projector electronic and electromechanical component life.
- Passive standby of 0.5W or less with full wired or wireless network connectivity for fast wake up and full brightness start.
- Auto power down to passive standby power level with no input data or defined period of user inactivity.

# Projector BNAT Barriers

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- Development timeline of high light output primary colour LED or LED + Laser light sources for mid to large light output projectors may be protracted.
- High R&D cost implications for new light sources (possibly mitigated by requirement for development of such sources for other products)
- Efficient, low cost, high light output, large area, self-emissive display technology (e.g. printable OLED) may displace projector requirements in principle markets (e.g. offices and schools)