

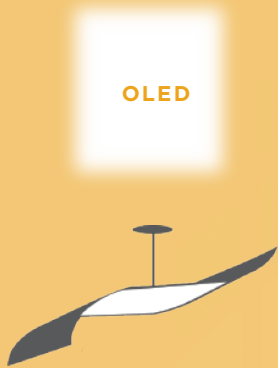
Future of OLEDs: The Promise and the Challenges

OLEDs are **organic** LEDs, meaning they consist of carbon-based building blocks. Although less mature than LED technology, OLED technology has similar energy-saving potential.

Here is what makes OLEDs special, and a look at the R&D challenges ahead.

OLED Characteristics ...

Open a World of Possibilities



Diffuse light source

Unlike LEDs, which are small-point sources, OLEDs provide diffuse light over large areas.

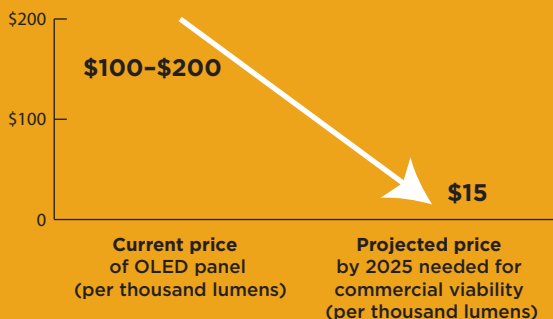
Thin, lightweight, and flexible

OLEDs can be made on very thin, light, flexible sheets of glass or plastic.



- ✓ **Soft, ambient light** with less need for shades, diffusers, lenses, louvers, or parabolic shells
- ✓ **Lighting very close to task surfaces** that doesn't create glare for users
- ✓ **Lighting in almost any shape**, including bent and curved, that can follow the contours of walls and ceilings

Yet high cost remains a barrier to OLED marketability.



INNOVATIONS ARE NEEDED TO:

Continue increasing the **efficiency, lifetime, and light output** of OLED devices.

Reduce costs through efficient manufacturing technologies (including roll-to-roll and printing processes) and improved yields.



With continued R&D, OLEDs can offer a value proposition that complements LED lighting.