



# technology

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The earliest days of commercial LED luminaires brought many questions regarding color quality, distribution of light, lifetime, and serviceability. After initial fears were mostly allayed, promises of longevity and energy savings (with incentives!) fueled the adoption of LED technology—and early generation products largely met those promises. Yet, a decade into widespread adoption, a new question emerges: What happens when LED products reach their end of life?

Various groups are asking this question. Homeowners may be living with a.7 (8)-8.9 (s r)6.7 (n)-3.7 (g)-8.9 (s r)6.7 ob qoep"

replacements? From a design perspective, helping to fix maintenance problems and address unmet needs is almost as much fun as new designs, and designers are often not paid for the time spent.

Recently, a law firm was unsure what to do because the downlights in its Class A office space started to fail a few months after the warranty period ended. Some failures were catastrophic, while others were parametric, including color shift that harkened back to the days of metal halide. The law firm reached out to the original lighting designer, and after plenty of discussion with the original manufacturers and their representatives, the law firm installed a new solution. When the cost to pay a designer, buy new products, and pay an electrician are added up, the total cost to maintain the system can be twice as expensive as that if the law office just relamped their downlights and 15 times more expensive if replacing linear LED cove lighting rather than fluorescent tubes—no designer or electrician needed, no new luminaires needed.

With energy efficiency incentives fading and original manufacturers potentially acquired or gone, the reality many face is that most end-of-life issues mean a completely new fixture—this time without any incentives or promises of a two-year payback. The new mode of swapping out luminaires instead of lamps raises questions of sustainability in every sense of

the word, from sustaining design intent to throwing away whole

fixtures. (p. 16) (p. 17) (p. 18) (p. 19) (p. 20) (p. 21) (p. 22) (p. 23) (p. 24) (p. 25) (p. 26) (p. 27) (p. 28) (p. 29) (p. 30) (p. 31) (p. 32) (p. 33) (p. 34) (p. 35) (p. 36) (p. 37) (p. 38) (p. 39) (p. 40) (p. 41) (p. 42) (p. 43) (p. 44) (p. 45) (p. 46) (p. 47) (p. 48) (p. 49) (p. 50) (p. 51) (p. 52) (p. 53) (p. 54) (p. 55) (p. 56) (p. 57) (p. 58) (p. 59) (p. 60) (p. 61) (p. 62) (p. 63) (p. 64) (p. 65) (p. 66) (p. 67) (p. 68) (p. 69) (p. 70) (p. 71) (p. 72) (p. 73) (p. 74) (p. 75) (p. 76) (p. 77) (p. 78) (p. 79) (p. 80) (p. 81) (p. 82) (p. 83) (p. 84) (p. 85) (p. 86) (p. 87) (p. 88) (p. 89) (p. 90) (p. 91) (p. 92) (p. 93) (p. 94) (p. 95) (p. 96) (p. 97) (p. 98) (p. 99) (p. 100)