

FAQs for NEMA Lamp Rulemaking Comments

1. What are the differences between the efficacy standards in DOE's proposed rule and the efficacy standards recommended by NEMA for fluorescent lamps?

A. First, NEMA recommends only very minor or no change to DOE's proposed efficacy standards for most fluorescent lamps, which are known as T8 and T12 lamps. The two principal reasons for the minor changes proposed by NEMA are (1) to reduce replacement burdens on consumers—particularly residential consumers who will want to have lamps available in the market that are compatible with the fixtures installed in their house; and (2) to reduce demand for critical rare earth phosphors used in fluorescent lamps that face a severe shortage.

Second, with respect to smaller fluorescent lamps, known as T5 lamps, NEMA found that DOE's proposed standards were based on a test procedure that no one uses or recommends. Further, the proposed standards do not support the objective of ensuring that less efficient lamps do not enter the market. NEMA's proposed standards for these lamps would apply the same test procedure used for all general service fluorescent lamps.

2. What are some of the impacts for residential consumers of fluorescent lamps posed by DOE's proposed rule?

A. One of DOE's objectives is to remove less efficient T12 fluorescent lamps from the market. T12 lamps are distinguished from T8 and T5 lamps by their larger tube diameter. At the efficacy standard proposed by DOE, virtually all T12 lamps will be banned by June 30, 2012.

Some T12 lamps have unique fixture requirements, and if these lamps are no longer produced residential consumers will be faced with a cost of not just replacing the lamp, but the cost of replacing the fixture as a well—a significant burden for consumers. Some of NEMA's proposed modifications in the efficiency levels—and we are talking about only a 1 or 2 lumens per watt difference from what DOE proposed—are intended to mitigate this burden for residential consumers. NEMA also suggested that DOE consider options that would allow manufacturers to sell T12 lamps for consumer applications for a few years after the new standards take effect.

3. Will commercial customers be impacted by DOE's proposed standard?

A. Yes. The same problem that residential consumers face will be faced by some commercial customers, although the burden may not be as great. Under DOE's current lamp ballast regulations, electronic T12 ballasts are still permitted, and commercial customers have been buying lighting systems in recent years with those electronic T12 ballasts. If the T12 lamps are removed from the market, both commercial and residential customers may not be able to enjoy the full useful life

of their investment in a T12 system. NEMA suggested that DOE consider coordinating a phase-out of T12 lamps with a new ballast rule that eliminates those ballasts so that these customers have ample notice to stop purchasing T12 systems.

4. Are higher standards for general service fluorescent lamps justifiable?
 - A. **No.** Fluorescent lamps achieve their energy saving benefits by a small amount of mercury vapor producing an ultraviolet light that causes phosphors in the lamp to fluoresce and produce visible light. There are five rare earth elements—part of a family of rare earth elements—that are critical in making phosphors for fluorescent lamps. Two of these five elements, Terbium and Europium, are soon going to be in very short supply with or without new lamp efficiency standards, and there is no known substantial new source of supply for these key elements. The standard proposed by DOE would exacerbate this problem by increasing the demand for the phosphors by about 230 percent, according to NEMA’s analysis. The higher standards that DOE considered would exacerbate the shortage even more. The primary source for rare earth elements at this time is China, and China has announced restrictive export policies on rare earth elements, which will likely force manufacturers of products that use these elements to make their finished goods in China.

Higher standards will also impair the availability of many T8 fluorescent lamps, leaving only a few T8 lamps in the market, many of which are not fully compatible with the lamp ballasts installed in commercial and residential fixtures.

5. What are the differences in the efficacy standards in DOE’s proposed rule and those proposed by NEMA for incandescent reflector lamps?
 - A. NEMA recommends some more significant changes to the proposed standard for incandescent reflector lamps. NEMA’s primary concern here is the impact on competition and on consumers that DOE’s proposed rule presents. DOE’s own analysis shows that between now and 2015 the demand for incandescent reflector lamps will fall by more than 60 percent because other more efficient lighting technologies, such as ceramic metal halide, LED, and compact fluorescent lamps, will take their place. To produce the incandescent reflector lamps that the DOE proposal envisions requires manufacturers to incur around \$166 million of capital costs to convert their production facilities. For a product line that is valued, according to Navigant Consulting, between \$206 million and \$276 million, this is an unfathomable burden. This fact, plus the fact that the market for this product is shrinking dramatically and will continue to shrink, makes the investment required uneconomic. One consequence of this scenario is that there may be fewer producers of incandescent reflector lamps.

DOE also mistakenly estimated that demand for existing Halogen PAR lamps would start to rise again in 2014 with even stronger growth occurring after 2024,

and DOE used this growth in sales by DOE to justify more benefits to the nation for their proposed standard. No one in the industry believes that there will be new growth for incandescent reflector lamps. Everyone understands that this is a declining business, and therefore the benefits that DOE estimated are not nearly as large as stated.

Finally, DOE's proposed standard will lead to more incandescent reflector lamps that can suffer what is known as the "hot shock" phenomenon, which will be a significant issue for residential consumers. To make lamps at the efficiency level proposed by DOE, the coiled strands have to be made as compact as possible and hence closer together. If the lamp is vibrated or subject to sharp movement while energized, these coils may touch and weld. In this event, the lamp may fail, resulting in higher energy usage, shorter life, and greater replacement costs that would be a significant issue for residential consumers.

NEMA also recommended that DOE drop its proposal for separate standards for 130V lamps and 120V lamps. The analysis that led to this proposal was faulty and would eliminate from the market the 130V lamp product that is used in high voltage applications.

6. Do firms now make incandescent reflector lamps at or above the standard level proposed by DOE?
 - A. **Yes**, although not all of them. For the highest standard considered by DOE, one company has a patent on the technology that would have to be used to achieve that level. DOE reasonably interprets the Energy Policy and Conservation Act (EPCA) in a way that does not force other manufacturers to adopt a proprietary technology. Pursuing alternative non-proprietary technologies would require a very high level of investment over a short product lifecycle, and because this is a product line that is looking at a shrinking market in both the short and long-term, this investment will not likely make sense. Additionally, the "hot shock" issue becomes more significant at these efficiency levels. Some of the alternative technologies that DOE examined involved special coatings to be applied to the reflector lamps, but no manufacturer has made a valid engineering judgment about the economic viability of making lamps with these coatings in actual production. DOE looked only at a "mock up" of the capsule coating technology and concluded that the economic burdens on manufacturers and consumers were too uncertain to justify making an informed decision, a decision that NEMA concurs with. For the standard selected by DOE, it will require a massive investment that may not be economically justifiable; another consequence for consumers is that more efficient incandescent reflector lamps may not have the same long-life that some reflector lamps now enjoy.

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