

**United States Department of Energy
Office of Hearings and Appeals**

In the Matter of:)	
)	
Philips Lighting Company;)	Case Nos.: EXC-12-0001
GE Lighting; and)	EXC-12-0002
OSRAM SYLVANIA, Inc.)	EXC-12-0003
)	
Filing Date: February 22, 2012)	
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Issued: April 16, 2012

Decision and Order

This Decision and Order considers Applications for Exception filed by Philips Lighting Company (Philips), GE Lighting (GE) and OSRAM SYLVANIA, Inc. (OSI) (collectively, “the Applicants”), seeking exception relief from the applicable provisions of 10 C.F.R. Part 430, pertaining to Energy Conservation Program: Energy Conservation Standards and Test Procedures for General Service Fluorescent Lamps and Incandescent Reflector Lamps (Lighting Efficiency Standards). In their exception requests, the Applicants assert that they face a serious hardship, gross inequity, and an unfair distribution of burdens if required to adhere to the Lighting Efficiency Standards, codified at 10 C.F.R. § 430.32(n)(3), with respect to 700 series T8 General Service Fluorescent Lamps (GSFLs) manufactured by the Applicants.¹ If their Applications for Exception were granted, each firm would receive exception relief from the energy conservation standards applicable to 700 series T8 GSFLs manufactured by the firms for a period of two years, from July 14, 2012, until July 14, 2014. As set forth in this Decision and Order, we have concluded that the Applications for Exception filed by Philips, GE and OSI should be granted.

I. Background

A. Lighting Efficiency Standards

Title III of the Energy Policy and Conservation Act of 1975 (42 U.S.C. 6291 *et seq.*) (EPCA or the Act) established the Energy Conservation Program for Consumer Products Other Than

¹ Because the exception requests of the Applicants, as well as their arguments in support of relief, are virtually identical, we have consolidated our consideration of their Applications in the present Decision and Order.

Automobiles, designed to improve energy efficiency of covered major household appliances. The consumer and commercial products subject to the program include GSFLs. Amendments to Title III of the EPCA in the Energy Policy Act of 1992, P.L. 102-486, established energy conservation standards for certain types of GSFLs based upon minimum average lumens-per-watt (lm/W) efficacy and color rendering index (CRI) levels, as follows:

Lamp type	Nominal lamp wattage	Minimum CRI	Minimum average lamp efficacy (lm/W)
4-foot medium bipin	>35W	69	75
	≤35W	45	75
2-foot U-shaped	>35W	69	68
	≤35W	45	64
8-foot slimline	>65W	69	80
	≤65W	45	80
8-foot high output	>100W	69	80
	≤100W	45	80

42 U.S.C. § 6295(i)(1); 10 C.F.R. § 430.32(n)(1); *see* 74 Fed. Reg. 34080, 34082-83 (July 14, 2009).

The amendments to Title III of the EPCA also direct the U.S. Department of Energy (DOE) to conduct two cycles of rulemakings to determine whether to amend these standards. 42 U.S.C. §6295(i)(3)-(4). After completing the first cycle of review, DOE determined that the standards needed to be updated in accordance with legal requirements, and initiated a rulemaking process that culminated with the issuance of the Lighting Efficiency Standards, published in the *Federal Register* as a final rule by DOE on July 14, 2009. 74 Fed. Reg. 34080 (2009 Final Rule).

The EPCA provides that any new or amended energy conservation standard that DOE prescribes must be designed to “achieve the maximum improvement in energy efficiency . . . which the Secretary determines is technologically feasible and economically justified.” 42 U.S.C. § 6295(o)(2)(A). Under the Lighting Efficiency Standards adopted by DOE, GSFLs must satisfy the following minimum average lumens-per-watt (lm/W) lamp efficacy, starting on the compliance date of July 14, 2012, for the specified correlated color temperature (CCT) range:

Lamp/Tube type	Correlated color temperature (CCT)	Minimum average lamp efficacy (lm/W)
4-foot medium bipin	≤4,500K	89
	>4,500K and ≤7,000K	88
2-foot U-shaped	≤4,500K	84
	>4,500K and ≤7,000K	81
8-foot slimline	≤4,500K	97
	>4,500K and ≤7,000K	93
8-foot high output	≤4,500K	92
	>4,500K and ≤7,000K	88
4-foot miniature bipin standard output	≤4,500K	86
	>4,500K and ≤7,000K	81
4-foot miniature bipin high output	≤4,500K	76
	>4,500K and ≤7,000K	72

See 74 Fed. Reg. 34080, 34082 (July 14, 2009); 10 C.F.R. § 430.32(n)(3).

During the rulemaking process leading to the adoption of the Lighting Efficiency Standards, the agency noted, *inter alia*, the GSFL industry’s concern that the higher GSFL efficiency standards proposed by DOE would necessitate increased quantities of “rare earth” oxides used to produce phosphor coating for GSFLs, and that the industry was potentially facing significant supply constraints imposed by China, the primary source of rare earth oxides. See Notice of Proposed Rulemaking (NOPR), 74 Fed. Reg. 16920, 16973-74 (April 13, 2009). This concern was addressed in the Technical Support Document (TSD) issued by DOE in support of the NOPR. The TSD acknowledged that the higher GSFL efficiency standards proposed by the agency would result in an increased demand for indispensable rare earth phosphors, particularly yttrium, europium, and terbium.² The agency concluded in the TSD, however, that “[w]hile higher-

² In the TSD, the agency stated:

“Rare earth phosphors” are a key component of general service fluorescent lamp (GSFL) performance. Within GSFLs, cathodes seal the inside of each lamp and emit a flow of electrons that react with mercury vapor already present in the lamp. The reaction results in the emission of invisible ultraviolet (UV) radiation. To convert the UV radiation into visible light, manufacturers coat the inside of the lamp’s glass with powdered phosphors. Phosphors are elements that fluoresce when struck by UV rays, generating visible light.

For some less efficacious GSFLs, manufacturers coat the lamp with “halophosphors.” Halophosphors are more abundant and much less costly than rare earth phosphors, but also less efficient and produce a lower quality of light. Coating a lamp with a layer of rare earth phosphors in addition to or instead of halophosphors can increase efficacy, while dramatically improving

efficacy standards on GSFL may require more rare earth phosphors, [DOE's] analysis indicates that there would be sufficient supply to meet the increased demand. Large deposits of rare earths exist outside of China, notably in Canada and Australia, which could make up for any supply shortage induced by amended GSFL energy conservation standards. . . . If prices continue to climb, DOE expects the economics of mining rare earths to encourage more projects, and make less concentrated rare earth deposits economically viable, which will increase supply.” TSD at 3C-7.

Subsequently, the industry trade association, the National Electrical Manufacturers Association (NEMA), expressed concerns in its NOPR comments, discussed in the 2009 Final Rule, that DOE had underestimated the increase in triphosphor demand as well as the supply problems the industry was likely to face. *See* 74 Fed. Reg. 34080, 34139 (July 14, 2009). DOE acknowledged these concerns regarding potential shortages of rare earths as a result of Chinese policy, noting that China currently supplies some 95 percent of the rare earth market and had taken steps to restrict the exportation of rare earth resources. *Id.* at 34140. Notwithstanding, the agency concluded that the higher GSFL efficiency standards adopted by the 2009 Final Rule were technologically feasible and economically justified in view of the projected life-cycle cost savings for consumers, even with higher triphosphor prices, finding that supplemental supplies of the required rare earth triphosphors (e.g., from mining operations outside of China and reclamation) could reasonably be anticipated. *See id.* at 34141-42. The agency further observed that the major factors affecting rare earth availability and prices are largely independent of the rulemaking. *Id.* at 34142.

B. Applications for Exception

The Applicants (Philips, GE, and OSI) are major domestic producers of GSFLs,³ and contend that they will suffer a serious hardship, gross inequity, and an unfair distribution of burdens if required to meet the Lighting Efficiency Standards, particularly for their current 700 series T-8 GSFLs (4-foot, 8-foot, and U-shaped). According to the Applicants, their 700 series T-8 lamps use a mix of halophosphor and triphosphor coatings; however, to meet the new GSFL standards

color quality and lumen maintenance. The blend of phosphors used by the manufacturer determines, in part, the color correlated temperature (CCT) and the color rendition index (CRI). Generally, in high-performance GSFL, manufacturers employ a blend of three rare earth phosphors: Yttrium (Y), Europium (Eu), and Terbium (Tb). Such “triband” or “triphosphor” lamps have become common practice in high performance GSFL technology.

TSD, Appendix 3C (Rare Earth Phosphor Availability and Pricing), January 2009, at 3C-1. Red phosphors are produced from yttrium and europium phosphors; green phosphors contain terbium oxides; and blue phosphors contain europium phosphors. Typically, GSFL triphosphors are comprised of 55% red phosphors, 35% green phosphors, and 10% blue phosphors. *See id.* at 3C-2.

³ Philips states in its Application that it manufactures nearly all of the T-8 GSFLs marketed by the firm at its facility located in Salina, Kansas. Philips Application at 4. GE states in its Application that it manufactures and markets various lighting products globally but, relevant here, manufactures T-8 GSFLs at its facilities in Bucyrus and Circleville, Ohio. GE Application at 1. OSI states in its Application that its GSFL manufacturing operations are centered in its production facility in Versailles, Kentucky. OSI Application at 16.

on the compliance date of July 14, 2012, the 700 series GSFLs must be replaced with more energy efficient 800 series T8 GSFLs, which utilize substantially higher amounts of rare earth element oxides to produce triphosphor coatings.⁴ In the latter regard, the Applicants cite a DOE report issued in December 2011, which found that 700 series T-8 lamps contain, on average, only 30% of the rare earth content that 800 series T-8 lamps require. *See, e.g.*, OSI Application at 3, n. 5, *citing* U.S. Department of Energy, *Critical Materials Strategy*, December 2011 ("*DOE Strategy Report*").⁵ In addition, each of the Applicants has attached, with its respective Application, a December 2011 report submitted to DOE by NEMA, describing the present state of rare earth oxide availability to U.S. lighting manufacturers. Report of the National Electrical Manufacturers Association, *Recent Developments Affecting United States Manufacturers of General Service Fluorescent Lamps and the Impact of Energy Conservation Standards* (Dec. 5, 2011) ("*NEMA Report*"). Philips Application, Attachment B; GE Application, Exhibit A; OSI Application, Attachment A.⁶ Relying substantially on the data presented in these reports, the Applicants maintain that they will be unable to secure sufficient quantities of the required rare earth oxides to produce GSFLs meeting the Lighting Efficiency Standards, as explained in greater detail below.

The Applicants assert that at the time DOE promulgated the 2009 Final Rule, the agency did not foresee the supply shortages or price increases that overshadow today's market for rare earth elements. According to the Applicants, what has demonstrably changed since 2009, and only recently become observable in published data, are the binding effects of restrictive trade policies enforced by China. China now controls approximately 97% of the world-wide supply of rare earth elements and rare earth oxides,⁷ and has adopted policies that have drastically reduced the volumes of rare earth elements and oxides that can be exported to U.S. lighting

⁴ The GSFLs are available in different lengths and configurations, including 4-foot, 8-foot, 2-foot, and U-shaped. GSFLs are also available in different diameters: T-12 (1.5 inch diameter), T-8 (1 inch diameter) and T-5 (5/8 inch diameter). At present, approximately 550 million GSFLs are sold in the U.S. each year; in 2011, about half the domestic GSFL sales were T-12s and most of the remainder were T-8s. *See* Philips Application at 5. The new Lighting Efficiency Standards, with a compliance date of on July 14, 2012, effectively preclude the manufacture of T-12 GSFLs and the less-efficient models of T-8 GSFLs (which may be made with more abundant, and less expensive, halophosphors). By contrast, all T-5 GSFLs meet the new standards, and more efficient T-8 GSFLs (the 800 series T-8s) would also be compliant due to the exclusive use of tri-band phosphors in these lamps. However, the less-efficient 700 series T-8 GSFLs, which are made with substantially less tri-band phosphor than is used in the manufacture of the 800 series T-8s, would not comply. *See* Philips Application at 5-6. In essence, "[t]he DOE energy conservation standards will prohibit the manufacture of less efficient T-12 GSFL that rely on halophosphors and require the production of lamps containing tri-band phosphors." GE Application at 4.

⁵ Available at: http://www.doe.gov/sites/prod/files/DOE_CMS2011_FINAL_Full.pdf. By OSI's estimate, "[h]igher efficiency T-8 (800 series) lamps use between 3 and 4 times as much rare earth triphosphors as T-8 (700 series) lamps." OSI Application at 7.

⁶ According to OSI, the NEMA Report is based upon an extensive compilation of published sources on rare earth elements and on confidential data submitted to NEMA by individual manufacturers. *See* OSI Application at 4, note 10. OSI maintains that the NEMA Report's findings and analysis are accurately reflective of OSI's own experience in the world-wide rare earth market. *Id.*

⁷ *NEMA Report* at 2.

manufacturers. Recognizing the importance of these materials to a variety of industries, China has implemented stringent controls on production and export of rare earth oxides in order to confer a competitive advantage on its own manufacturers.⁸ Chinese industrial policy now includes setting significantly reduced production quotas for rare earth oxides. In 2011, for example, China established a rare earth production quota of 93,800 tons. This 2011 quota was 21% lower than the estimated 2010 production level.⁹ At the same time, China has implemented dramatic reductions in export quotas and steep tariffs on exports of rare earth oxides, which are designed to increase costs to manufacturers located outside of China. From 2005 to 2009, China gradually reduced its export quota on rare earth oxides by a magnitude of roughly 5-6% per year. In 2010, however, China reduced the export quota by nearly 40% relative to its 2009 level. In May 2011, China also expanded the scope of the export quota by announcing that ferroalloys containing 10% or more of rare earth minerals would be counted in the quota for the first time; this action effectively reduced the export quota by an additional 7%. Cumulatively, these changes in the export quota have reduced the amount of rare earth available for export from China by almost half since the Final Rule was adopted in 2009.¹⁰ Accordingly, in its more recently released *DOE Strategy Report*, DOE altered its analysis of the rare earth market, and now agrees that there is substantial evidence of a "critical" supply-demand imbalance in the world market for rare earth elements and rare earth oxides upon which GSFL manufacturing is dependent. *See DOE Strategy Report* at 3. Thus, the Applicants maintain that domestic GSFL manufacturers face unmanageable uncertainty as to whether they can obtain assured and ample supplies of indispensable rare earth oxides to meet the scheduled, new energy conservation standards for GSFLs.

The Applicants assert that the supply constriction imposed by China has occurred at the same time as world-wide demand for rare earth oxides and triphosphors is spiking due, in large part, to the impending compliance date of the new GSFL standards. In addition, GSFL manufacturers are facing added competition for the shrinking supply of rare earth elements from other industries, such as computers, televisions, wind turbines, and motors, which also depend on rare earth oxide products. *See OSI Application* at 17. According to the Applicants, the combination of diminished supply and increased demand has resulted in rapid and volatile price increases for rare earth elements and oxides. For example, world prices for terbium and europium oxides increased in 2011 at an annual rate of more than 400% and 500%, respectively. *See NEMA Report* at 18.¹¹ The Applicants assert that they are highly exposed to this unprecedented price volatility, owing to their dependence on the world (*i.e.*, Chinese)

⁸ *See* GE Application at 5, *citing DOE Strategy Report* at 66.

⁹ Philips Application at 7, *citing* Gareth Hatch, *Critical Rare Earths, Global Supply and Demand Projections and the Leading Contenders for New Sources of Supply* (August 2011) (*Hatch*), at 16.

¹⁰ Philips Application at 7, *citing DOE Strategy Report* at 68.

¹¹ NEMA also found that the impact of China's rare earth pricing policy, apparently by design, is to give its Chinese manufacturers of energy-efficient lighting a substantial cost advantage. Chinese producers of energy-efficient lighting have not been affected by the dramatic price increases, and now enjoy a cost advantage of 74% with respect to terbium, a 72% advantage with respect to europium, and a 36% advantage with respect to yttrium. GE Application at 17, *citing NEMA Report* at 18-19; *see also* OSI Application at 13; Philips Application at 9.

spot price for rare earth elements and rare earth oxides. *See* OSI Application at 6; GE Application at 12-14; Philips Application at 9.¹² Thus, OSI submits that the convergence of destabilizing world-wide market forces affecting rare earth availability has created a “perfect storm” not foreseen during DOE's Final Rule rulemaking. OSI Application at 6.

Moreover, the Applicants contend that, contrary to the agency’s prediction in the 2009 Final Rule, alternative supplies of rare earth elements and rare earth oxides, whether from non-Chinese mines, or reclamation and recycling, are not materializing at a rate consistent with the timeline DOE expected. In its Application, Philips states:

Over time, it is expected that rare earth mining will be developed outside of China. However, these new sources of rare earths are not expected to augment supply of the critical "heavy" rare earths (yttrium, europium, and terbium) in the near to medium term. For instance, mines at Mountain Pass, California (Molycorp) and at Mount Weld, Australia (Lynas) are expected to begin larger scale production in 2012. However, neither mine contains the key rare earth element yttrium, and both mines contain only marginal quantities of europium and terbium. A new facility in Steenkampskraal, South Africa, to be operated by Great Western Mineral Group, contains more yttrium and some europium and terbium, but production is not expected to begin until 2013 at the earliest. A recent report identified a number of potential projects for new mining of critical rare earth oxides and evaluated a range of possible startup dates. Most of the projects are not expected to begin production until 2014 or later, even under optimistic scenarios.

Philips Application at 8 (footnotes omitted); *see* GE Application at 17; OSI Application at 14-15. OSI states in its Application that while the 2009 Final Rule considered the availability of reclamation and recycling as potential sources, there are virtually no assured supplies of reclaimed or recycled rare earth oxides and lighting phosphors in the near term. Citing the *NEMA Report*, OSI asserts that while there are pilot projects underway, there are considerable obstacles yet to be overcome, and it is projected that commercial-scale reclamation and recycling will be unable to yield significant quantities of recycled phosphors until as late as 2020. OSI Application at 15, *citing NEMA Report* at 22.

For the foregoing reasons, the Applicants contend that they will suffer a serious hardship, gross inequity, and an unfair distribution of burdens unless exception relief is granted. Specifically, the Applicants request an exception from those requirements of 10 C.F.R. § 430.32(n)(3) applicable to 700 series T-8 GSFLs (4-foot medium bipin, 2-foot U-shaped, and 8-foot slimline and high output), for a period of two years, until July 14, 2014. *See* Philips Application at 15; GE Application at 19; OSI Application at 31. The 700 series T-8 GSFLs covered by the exception relief would continue to be subject to the currently applicable efficiency standards,

¹² These precipitous price increases have substantially impacted GSFL product costs. Philips notes in its Application that, “[a]s of August 2011, phosphor accounts for approximately 50% of the cost to manufacture a fluorescent lamp, and the costs of some tri-band phosphors can greatly exceed 50% of the cost to manufacture a GSFL.” Philips Application at 9 (citation omitted).

contained in 10 C.F.R. § 430.32(n)(1) (see above). The Applicants submit that because 700 series T-8 GSFLs are manufactured using considerably less tri-band phosphor than the 800 series T-8s that comply with the new standards, the proposed exception relief will reduce their immediate needs for rare earth triphosphors considerably and thereby alleviate the uncertainty regarding rare earth availability. Correspondingly, the Applicants claim that the two-year relief period will allow improvements in the rare earth market.¹³ The Applicants assert that granting relief will allow additional time for potential development of additional supplies outside of China, for realization of technology advancements and development of alternative technologies that use lesser amounts of rare earth material, and for expansion of recycling and reclamation initiatives.

Moreover, the Applicants claim that the requested exception relief will not substantially diminish the energy savings anticipated to result from the revised GSFL energy conservation standards. According to the Applicants, granting exception relief for 700 Series T-8 lamps will not increase energy consumption. The revised energy efficiency standards increase the required lumens-per-watt (lm/W) of 700 Series T-8 lamps, which is a measure of energy efficiency and not of energy consumption. The Applicants maintain that the energy consumption of a GSFL is determined by the wattage of the lamp and, both before and after the energy conservation standards take effect, T-8 lamps will continue to operate at the same wattage. The Applicants assert that the bulk of the energy efficiency benefit of the 2009 Final Rule will instead be derived from the elimination of inefficient T-12 GSFLs from the market, which will occur despite any exception approved for T-8 lamps. *See* GE Application at 22; OSI Application at 3, note 6; Philips Application at 15.¹⁴

Finally, the Applicants argue that the approval of exception relief in this case is consistent with prior OHA decisions citing, *inter alia*, our decisions in *Amana Appliances*, OHA Case No. VEE-0054 (1999), *Viking Range Corp.*, OHA Case No. VEE-0075 (2000), and *Diversified Refrigeration, Inc.*, OHA Case No. VEE-0079 (2001).¹⁵ *See* Philips Application at 11-12; GE Application at 24-25; OSI Application at 30. The Applicants argue that, in those cases, OHA determined that exception relief was appropriate where, for reasons beyond the control of the applicant, an impending energy standard would cause a substantial harm both to the

¹³ GE states in its Application: “Supplies of europium oxide and yttrium oxide are expected to be only 50-74% of demand through 2013, while the supply of terbium oxide is expected to be 74-94% of demand. The situation for europium oxide begins to improve in 2014, and by 2015, the data shows that supplies of both europium and terbium oxides should equal 96-106% of estimated demand. The supply outlook for yttrium oxide also improves in 2015, reaching 76-94% of demand.” GE Application at 19, *citing Hatch* at 4.

¹⁴ Philips asserts in its Application that due to the elimination of T-12 GSFLs from the market, the requested exception relief, if applied to all manufacturers of 700 series T-8s, would preserve nearly 90% of the energy savings of the Final Rule over the 2-year period of the exception, and over 99% of the DOE-projected energy savings over 30 years. Philips Application at 15.

¹⁵ Decisions issued by the DOE Office of Hearings and Appeals (OHA) are available on the OHA website at: <http://www.oha.doe.gov/eccases.asp>.

manufacturer, consumers, and the domestic economy,¹⁶ in disproportion to the energy conservation goals of the agency.¹⁷

C. Comments

Several groups of interested parties filed comments to the Applications for Exceptions filed by Philips, GE, and OSI, including:

- 1) a consortium including American Council for an Energy-Efficient Economy (ACEEE), Appliance Standards Awareness Project, Alliance to Save Energy, Natural Resources Defense Council, and Northeast Energy Efficiency Partnerships (collectively “ACEE, *et al.*”), filed March 6, 2012;
- 2) a consortium including Earthjustice, Northwest Energy Efficiency Alliance, and Northwest Power and Conservation Council (collectively “Earthjustice, *et al.*”), filed March 6, 2012;
- 3) National Electrical Manufacturers Association (NEMA), filed March 6, 2012;
- 4) Satco Products, Inc. (Satco), filed March 7, 2012;
- 5) DOE Office of Policy and International Affairs, and DOE Office of Energy Efficiency and Renewable Energy (PI/EERE), filed March 8, 2012; and
- 6) a consortium of California investor-owned utilities (CA/IOU), including Pacific Gas and Electric Company, Southern California Gas Company, San Diego Gas and Electric, and Southern California Edison; filed March 9, 2012.

These comments generally support the exception relief requested by the Applicants, with some preconditions, as summarized below.

In their comments, ACEEE, *et al.*, agree that exception relief is warranted in view of the “extraordinary and unforeseen” supply shortages for rare earth phosphors, and price increases, caused by Chinese export quotas, that will “make it difficult to produce T8 lamps in the U.S. that meet the standards that DOE promulgated in 2009.” ACEEE, *et al.*, Comments at 1. However, ACEEE, *et al.*, assert that exception relief should be approved only upon conditions that relief: (1) will be ended, with an appropriate transition period if, within the two-year period, the situation changes and the necessary rare earth phosphors become more widely available; and (2) be limited to GSFLs produced in factories that can demonstrate that they cannot obtain adequate phosphors at reasonable prices (*i.e.*, should exclude overseas factories not subject to rare phosphor restrictions). *Id.* at 2.

¹⁶ According to the Applicants, the supply/cost advantage for rare earth oxides given to Chinese lighting manufacturers by the Chinese government (*see* note 11, *supra*) has resulted in a situation where U.S. manufacturers have been forced to consider the possibility of relocating their manufacturing operations overseas. *See* OSI Application at 13-14; GE Application at 20-21. The Applicants assert that the consequence of such a decision would be a loss of employment that would detrimentally impact the U.S. economy. *Id.*

¹⁷ On March 30, 2012, OHA convened a conference, 10 C.F.R. § 1003.24(b), at the request of the Applicants, to receive oral presentations in further support of their claim for exception relief.

Earthjustice, *et al.*, essentially reiterate the comments of ACEEE, *et al.*, including the two suggested conditions for the approval of exception relief. However, Earthjustice, *et al.*, expand upon the second condition for exception relief. Citing the *NEMA Report*, Earthjustice, *et al.*, emphasizes that while domestic GSFL manufacturers are facing substantial rare earth phosphor supply difficulties, this is not true with respect to Chinese GSFL manufacturing operations. Earthjustice, *et al.*, Comments at 2. In this regard, they assert that while the Applicants discuss their GSFL manufacturing operations in the U.S., the Applicants “do not discuss whether they could supply the U.S. market for 700 series T8 GSFLs from production at factories that do not face the rare earth phosphor supply constraints discussed in the waiver applications.” *Id.* Earthjustice, *et al.*, express the concern that “granting waivers that apply to all 700 series T8 GSFLs produced by the applicants regardless of their location of manufacture would allow manufacturers to abuse the exemption by shifting production to factories that do not experience the phosphor supply constraints that are the basis for the requested waivers.” *Id.* at 3.

In its comments, NEMA emphasizes two matters: the source of the *NEMA Report* cited extensively by the Applicants, and its concurrence with the Applicants’ position that the requested exception relief will have no significant impact on the energy conservation savings anticipated by the 2009 Final Rule. Regarding the first matter, NEMA asserts that it relied upon “publicly available information, including the DOE’s own 2010 Critical Materials Strategy Report, which documented that critical shortages of the heavy rare earth elements used in fluorescent lamp phosphors were real and that expected new supplies were not going to materialize as the experts relied upon by DOE in the Final Rule had projected.” NEMA Comments at 3 (footnotes omitted). With respect to energy savings, NEMA reiterates the Applicants’ argument that, even if the requested exception relief were approved, the least efficient T-12 GSFLs would be eliminated from the market upon the compliance date of July 14, 2012, and “[b]y tailoring their requested relief to the T-8 700 lamps, the applicants would not impair significant energy savings.” NEMA Comments at 6.

Satco, which identifies itself as a U.S corporation in the business of selling lighting products, supports the exception request of the Applicants “insofar as it asks for relief for a two to three year period pending the development of alternative sources of rare earth phosphate, or even development of more energy efficient, alternative products.” Satco Comments at 2.

PI/EERE identify themselves as the primary source of the *DOE Strategy Report* data relied upon by the Applicants. In their comments, PI/EERE state that “our offices take no issue with the data presented or the conclusions drawn” by the Applicants in their respective Applications, and further that “our offices believe that the requests support the energy conservation goals of DOE’s rulemaking while meeting the legitimate needs of the manufacturers.” PI/EERE Comments at 3.

Finally, CA/IOU assert that the Applicants’ requests for exception relief “represent a very significant loss of national energy savings and energy cost savings to American rate payers, as well as a decrease in greenhouse gas emissions reductions that were forecasted to result from the 2009 Final Rule.” CA/IOU Comments at 1. Notwithstanding, CA/IOU concur with the approval of exception relief with the following conditions: (1) relief be limited to GSFLs manufactured in factories for which clear and compelling evidence of restricted access to rare earth elements has

been demonstrated, and (2) DOE reserve the right to prematurely end exception relief in the event of a significant increase in the worldwide supply (outside of China) of the pertinent rare earth elements, or a significant decrease in worldwide demand. *See* CA/IOU Comments at 2-3.

II. Analysis

Section 504 of the Department of Energy Organization Act, 42 U.S.C. § 7194(a), authorizes the Secretary of Energy to make "such adjustments to any rule, regulation, or order" issued under the EPCA, consistent with the other purposes of the Act, as "may be necessary to prevent special hardship, inequity, or unfair distribution of burdens." The Secretary has delegated this authority to the DOE Office of Hearings and Appeals (OHA), which administers exception relief pursuant to procedural regulations codified at 10 C.F.R. Part 1003, Subpart B. Under these provisions, persons subject to the various product efficiency standards of Part 430 may apply to OHA for exception relief. *See, e.g., Amana Appliances*, OHA Case No. VEE-0054 (1999); *Midtown Development, L.L.C.*, OHA Case No. VEE-0073 (2000); *Diversified Refrigeration, Inc.*, OHA Case No. VEE-0073 (2001).

We have carefully considered the Applications for Exception filed by Philips, GE, and OSI, and have determined that the requested exception relief should be granted. Based upon the verifiable information presented in the record, we find that the agency's assumptions and projections in the 2009 Final Rule, regarding the availability of sufficient rare earth elements to meet the revised GSFL standards, have been overtaken by unforeseen circumstances and are no longer valid. The Applicants have presented compelling evidence that, at the present time, they do not have stable access to sufficient quantities of the necessary triphosphor elements to produce T-8 GSFLs at the efficiency levels established under the revised Lighting Efficiency Standards starting on the compliance date of July 14, 2012. The present supply shortages of crucial rare earth oxides are beyond the control of the Applicants, but have been largely produced by policies of the Chinese government to significantly limit the exportation of these materials. In any event, we are persuaded, as discussed below, that the Applicants will experience a gross inequity and unfair distribution of burdens in the absence of exception relief.

First, we have determined that requiring the Applicants to meet the revised GSFL standards starting on the compliance date of July 14, 2012, under circumstances where there are insufficient quantities of triphosphor elements available to produce complying T-8 GSFLs, would constitute a gross inequity unintended by the agency. In the *DOE Strategy Report* issued in 2011, cited extensively by the Applicants, the agency confirms the dire situation now confronting domestic manufacturers in various industries that are dependent upon rare earth elements. In making its assessment, DOE examined the role of rare earth elements in the lighting industry and in clean energy technologies targeted by domestic policies for high growth in the coming years. The *DOE Strategy Report* concludes that important clean energy technologies, including wind turbines, electric vehicles, photovoltaic solar systems, and fluorescent lighting are "at risk of supply shortages," and that the supply risks of five important rare earth elements, including terbium, europium, and yttrium "were found to be *critical* in the

short term (present-2015)." *DOE Strategy Report* at 3 (emphasis added).¹⁸ Similarly, the 2011 *NEMA Report* confirms that there is now a critical and unmanageable shortage of rare earth oxides available to U.S. lighting manufacturers facing the new energy conservation standards. These reports present conclusive data verifying that the magnitude and intractability of these shortages have created extreme uncertainty for U.S. lighting manufacturers in securing reliable and reasonably priced supplies of rare earth oxides and colored phosphors, essential to produce GSFLs compliant with the new energy conservation standards. These reports further corroborate the Applicants' contentions that there is no reasonable certainty of alternative sources of supply, from mines outside of China, recycling/reclamation, or alternative technologies, in the foreseeable future.

In addition, we are persuaded that, under the present market conditions, the Applicants will sustain an unfair distribution of burdens if required to adhere to the new GSFL standards by July 14, 2012, the compliance date of the 2009 Final Rule. Apart from its export policies which have substantially diminished available supply, China's rare earth pricing policies have given Chinese manufacturers of energy-efficient lighting a substantial cost advantage over the Applicants. In addition to having ample supply, Chinese producers of energy-efficient lighting have not been affected by the dramatic price increases, and now enjoy a cost advantage of 74% with respect to terbium, a 72% advantage with respect to europium, and a 36% advantage with respect to yttrium. *See* note 11, *supra*. Thus, the Applicants have effectively been prevented from competing on a level playing field in relation to their Chinese counterparts. While this unfair distribution of burdens was not caused by the Lighting Efficiency Standards themselves, we must observe that the agency premised its adoption of the higher GSFL efficiency standards on the expected availability of sufficient quantities of the required triphosphor elements at economically feasible prices. *See* 74 Fed. Reg. at 34139-42.

Moreover, we believe that other factors favor the granting of exception relief in this case. In prior decisions of this Office, we determined that the same factors considered by the agency in promulgating energy conservation standards are useful in evaluating claims for exception relief. *See, e.g., Viking Range Corp.*, OHA Case No. VEE-0075 (2000); *SpacePak/Unico Inc.*, OHA Case Nos. TEE-0010, TEE-0011 (2004). These factors are specified in section 325 of the EPCA and include the economic impact on the manufacturers and consumers, net consumer savings, energy savings, impact on product utility, impact on competition, need for energy conservation, and other relevant factors. EPCA § 325(o)(2)(B)(i), 42 U.S.C. § 6295(o)(2)(B)(i). In the present case, we find that the failure to provide exception relief will result in a substantial adverse economic impact upon the Applicants, as well as domestic consumers. The Applicants have explained persuasively in their Applications and supplemental affidavits that the failure to provide relief may well require the firms to relocate their GSFL manufacturing operations to China, with a concomitant loss of domestic employment, in order to establish secure and reliable access to sufficient quantities of rare earth phosphors to produce compliant T-8 GSFLs. *See* OSI Application at 13-14, 18; GE Application at 20. In addition, we find that the approval of

¹⁸ As noted above, the DOE Office of Policy and International Affairs and the DOE Office of Energy Efficiency and Renewable Energy filed comments in which they identify themselves as "the source of much of the information" presented in the *DOE Strategy Report* and "take no issue with the data presented or the conclusions drawn" by the Applicants.

exception relief in this case will benefit consumers by stabilizing GSFL prices which have increased dramatically within the past year as a result of the burgeoning cost of rare earth triphosphor elements.¹⁹

Further, since the Applicants account for a substantial majority of all U.S sales of GSFLs, we do not believe that the approval of exception relief in this case will have a detrimental impact on competition, but instead will preserve competition between domestic and Chinese GSFL manufacturers. Also, we remain mindful of the important energy conservation goals of the EPCA. However, in that regard, we concur with the observation of the Applicants that the bulk of the energy savings anticipated by the 2009 Final Rule will be accomplished by the elimination of T-12 GSFLs from the market (*see* note 4, *supra*), irrespective of the exception relief approved for T-8 GSFLs approved in this case.

Finally, in approving exception relief in this case, we have given due consideration to the reservations expressed in certain comments filed in the proceeding. While they support the approval of exception relief, ACEEE, *et al.*, and Earthjustice, *et al.*, and CA/IOU, all urge that we impose a condition that exception relief will be immediately terminated, with an appropriate transition period if, within the two-year period of exception relief, the situation changes and the necessary phosphors become much more widely available. In addition, they recommend that any exception relief granted to the Applicants be limited to GSFLs produced in factories for which they can demonstrate that they cannot obtain adequate quantities of rare earth triphosphor elements, at reasonable prices, to meet the revised GSFL efficiency standard.

Regarding the first matter, we have concluded that a full two-year period of exception relief, without interruption, has been adequately justified in this case. As indicated above, the DOE has projected in the *DOE Strategy Report* that the conditions that have strained available supplies of the necessary rare earth materials will not abate until as late as 2015. *See DOE Strategy Report* at 3. Further, even if the Chinese government were to begin easing its rare earth export and pricing policies in the near term, the Applicants have made a convincing showing that a full two-year period of exception relief would nonetheless be necessary to restore reliable stability to the rare earth market. We further believe a full two-year deferral of the revised efficiency standard applicable to T-8 GSFLs produced by the Applicants will not only allow adequate time for the supply situation in China to stabilize, but will permit development of other supply sources outside of China, realization of GSFL technology advancements and emerging alternative technologies that utilize less rare earth material, and larger scale deployment of recycling initiatives.²⁰

With regard to the final matter raised by the commenters, we agree that in order to receive the requested exception relief, the Applicants must carry their burden to show that they are unable to

¹⁹ Philips states in its application that the firm “has been forced to increase the price to consumers of its GSFLs made with tri-band phosphor by approximately 55% in 2011 alone.” Philips Application at 10 (footnote omitted).

²⁰ We note that ACEEE, *et al.*, and CA/IOU state in their comments that “[the Applicants] have agreed to work with us to explore recycling options for these phosphors. Recycling is one option that could help address the current shortage.” ACEEE, *et al.*, Comments at 2; CA/IOU Comments at 3.

secure sufficient quantities of the required rare earth triphosphors, at stable and feasible price levels, to manufacture T-8 GSFLs meeting the revised efficiency standard. Indeed, our determination above, that the Applicants will incur a gross inequity and an unfair distribution of burdens in the absence of exception relief, is based upon these critical findings. The Applicants have met their burden in this case. Information provided by the Applicants, in their Applications and in supporting confidential affidavits, confirms that the T-8 GSFLs covered by the present exception relief are produced by the Applicants at GSFL manufacturing facilities located outside of China that are facing the severe rare earth supply and pricing constraints described in this Decision and Order.

It Is Therefore Ordered That:

(1) The Applications for Exception filed by Philips Lighting Company (Philips), GE Lighting (GE), and OSRAM SYLVANIA, Inc. (OSI), on February 22, 2012, are hereby granted as set forth in paragraph (2) below.

(2) Notwithstanding the requirements of 10 C.F.R. §430.32(n)(3), which sets a compliance date of July 14, 2012, applicable to T-8 general service fluorescent lamps (GSFLs), Philips, GE, and OSI, are hereby authorized to continue to manufacture 700 series T-8 GSFLs (4-foot medium bipin, 2-foot U-shaped, and 8-foot slimline and high output) subject to the currently applicable efficiency standards, contained in 10 C.F.R. § 430.32(n)(1), for a period of two years, until July 14, 2014. The present exception relief is limited to T-8 GSFLs produced at manufacturing facilities facing critical shortages of rare earth elements required in the manufacture of higher efficiency T-8 GSFLs, as described in the foregoing decision.

(3) Any person aggrieved by this grant of exception relief may file an appeal with the Office of Hearings and Appeals in accordance with 10 C.F.R. Part 1003, Subpart C.

Poli A. Marmolejos
Director
Office of Hearings and Appeals

Date: April 16, 2012