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NEMA COMMENTS ON
CALIFORNIA ENERGY COMMISSION
NOTICE OF PROPOSED ACTION
AMENDMENT TO APPLIANCE EFFICIENCY REGULATIONS
CALIFORNIA CODE OF REGULATIONS, TITLE 20, SECTIONS 1601-1608

NEMA is the leading trade association in the United States representing the interests of electroindustry manufacturers. Founded in 1926 and headquartered near Washington, D.C., its 400 member companies manufacture products used in the generation, transmission and distribution, control, and end-use of electricity, including lighting products. Domestic shipments of electrical products within the NEMA scope exceed $100 billion. We request that the Commission consider NEMA's comments below in its standards development process at the full hearing of the Commission on November 3, 2004 any in any further proceeding on this matter.

General Comments

NEMA appreciates the opportunity to comment on the proposed regulations as described in the CEC's Notice of Proposed Action dated September 10, 2004 ("CEC Notice"). NEMA favors high efficiency products because they are good for the public and the economy. We note that many of the products under consideration are subject to current or future federal government actions on efficiency, testing, labeling and/or reporting requirements. As a policy matter, NEMA is opposed to state efforts to set mandatory standards that differ from federal standards and policy, as such efforts save little or no energy and add costs to manufacturers and consumers. NEMA has made its views on this policy matter abundantly clear before the Commission and in court. NEMA has also made its views known on these subjects in prior submissions to the Commission in Docket No. 03-AAER-1, and we incorporate those comments in this

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submission. *See* NEMA Comments on Proposed Additions/Revisions to Title 20 dated August 1, 2003 (Dkt. 03-AAER-1); NEMA Comments on Proposed Amendments to Appliance Efficiency Regulations (Preliminary Working Staff Draft) dated May 12, 2004 (Dkt. 03-AAER-1).

In Part I of these Comments, NEMA will first address the pre-emptive scope of federal statutes, regulations, and actions of the Department of Energy, which preclude the regulatory activity proposed in the CEC Notice. In Part II, and assuming without conceding that CEC has legal authority to consider mandatory standards for lighting systems' products, NEMA will comment on the merits of the proposed regulations, which NEMA submits are ill-advised, anti-consumer, impose unreasonable and unnecessary burdens on manufacturing and the economy and will not lead to energy savings.

Part I: Comments on Federal Preemption of State Energy Efficiency Regulation of Lighting Products

CEC's Rulemaking Proposal Is Pre-empted By Federal Law Which Requires CEC To Seek a Waiver From The Department of Energy

Federal law preempts state regulation of "covered products" and "covered equipment", and in certain cases, "consumer products" that the DOE has authority to classify as covered products. The following lighting products are recognized as "covered products" under federal law (National Appliance Energy Conservation Act, as amended by the Energy Policy Act of 1992, 42 USC §6291 *et seq* (the "Act")):

> Fluorescent lamp ballasts, 42 USC §6292(13)
> General service fluorescent lamps, 42 USC §6292(14)
> Incandescent reflector lamps, 42 USC §6292(14)
> General service incandescent lamps, 59 FR 49468 (September 28, 1994)(DOE Interim Final Rule) pursuant to authority under 42 USC §6292(19).

By virtue of these products being designated "covered products," States are preempted under 42 USC §6297(a) from enacting regulations with respect to a disclosure of information with respect to any measure of energy consumption of any covered product if such State regulation requires testing or the use of any measure of energy consumption or energy descriptor in any manner other than provided under 42 USC §6293, or if such State regulation requires disclosure of information with respect to energy use, energy efficiency of any covered product other than information required in 42 USC §6294. State regulation establishing efficiency standards is also preempted under 42 USC §6297(c) for fluorescent lamp ballasts, fluorescent lamps, and incandescent lamps, except to the extent that the fluorescent lamp ballast, the fluorescent lamp or the incandescent lamp is not a type to which 42 USC §6295(g)(5) or §6295(i) is applicable, in which case State efficacy regulations are effective only until DOE-prescribed standards are effective.

Regulation of the lighting products that CEC seeks to regulate under the Notice is expressly preempted in light of the Act and its regulatory implementation. Furthermore, CEC is ignoring Judge Shubb's June 11, 2003 ruling that "in light of the circumstances listed above and the EPACT statutory framework, the decision by the DOE to forego, for the time being, promulgating [standards] for most classes of covered equipment, implies a determination that the area is best left unregulated." *Air Conditioning and Refrigeration Institute v. Energy Resources Conservation and Development Commission*, slip opinion at 15 (E.D. Ca.), *appeal pending.*

In addition to express preemption under the Act, the CEC Proposed Regulations are implicitly preempted under well-established judicial doctrines of implied preemption. Over the last decade, DOE has taken comprehensive regulatory action under the Act with respect to the covered products listed above, luminaires, and lighting systems. DOE's actions with respect to lighting systems' products "fully occupy the field," precluding competing, individual state standards. The CEC's proposed regulations conflict with both the express provisions of the Act and the comprehensive scheme of federal regulation of lighting systems' products. Under the Act, therefore, the CEC lacks legal authority to promulgate the proposed regulations affecting lighting systems' products, absent the granting of a waiver by DOE, pursuant to Section 6297(d) of the Act.

Incandescent Reflector Lamps

Section 6295(i) is applicable to incandescent reflector lamps, which are defined in Section 6291(30)(C) to be those lamps, which are (i) referred to as reflector lamps which (ii) contain an inner reflective coating to on the outer bulb to direct the light, (iii) an R, PAR or similar shaped bulb, (iv) an E26 medium screw base, (iv) a rated voltage or voltage range that lies at least partially within 115 and 130 volts, (v) a diameter which exceeds 2.75 inches, and (vi) is either a lower wattage reflector lamp which has a rated wattage between 40 and 205 watts, or a higher wattage reflector lamp which has a rated wattage of above 205 watts. By this same definition, however, Congress expressly excluded and exempted from all energy conservation regulation reflector lamps that were (a) "colored," (b) designed for rough or vibration service applications, (c) used ER or BR shaped bulbs, or (d) had a diameter less than 2.75". The purpose of these exclusions represented a congressional determination that efficiency standards for such products would not result in significant energy savings because those lamps are designed for special applications or had special characteristics not available in reasonably substitutable lamp types and they would therefore be exempt from national regulation. As discussed below, the Department of Energy, which has responsibility for implementation and enforcement of the Act, has construed the Act in this manner.

With respect to incandescent reflector lamps, Congress, in 1992, expressly excluded and exempted (by definition) from all regulation reflector lamps with a BR or ER bulb shape. 42 USC §6291(30)(C)(ii). Congress did not define ER or BR bulbs, however. "BR" is a reference to "bulged reflector" lamps and "ER" is a reference to "elliptical reflector" lamps. Under subsection (30)(E) of this same section, Congress empowered the Department of Energy (DOE) to exclude from regulation by rule certain

fluorescent and incandescent lamps by determining that standards for such lamps would not result in significant energy savings because such lamps are designed for special applications or have special characteristics not available in reasonably substitutable lamp types. In 1996, DOE utilized its authority under subsection (30)(E) and solicited comments on a proposal to amend an Interim Final Rule applicable to incandescent lamps, "to define the exemption for the bulged reflector (BR) and the elliptical reflector (ER) incandescent lamp . . ." 61 F.R. 7431 (February 28, 1996)(DOE Notice reopening comment period). DOE expressed concern that ER and BR-shaped lamps, which enjoy a substantially lower cost than PAR-shaped lamps might be substituted by consumers for the higher cost PAR shaped lamps and reduce the energy savings potential of the law. DOE proposed a maximum wattage as a defining criterion for BR shaped reflector bulbs. A year later on May 29, 1997, following public comment, DOE issued its Final Rule on this subject. Applying the criteria spelled out by Congress for exclusion and exemption, DOE determined that no definition was needed for ER bulbs but limited the definition of BR incandescent reflector lamps to bulbs to (i) those BR30-shaped with a wattage of 85 watts or 65 watts and below and (ii) those BR40-shaped with a wattage of 120 watts and below. *See* 10 C.F.R. §430.2; 62 F.R. 29221, 29237 (May 29, 1997). This meant that higher wattage BR-shaped bulbs (above 85 watts in the case of BR30-shape and above 120 watts in the case of BR40-shape bulbs) would not be exempt from the energy efficiency regulations, and they are therefore subject to federal efficacy standards in the Act for incandescent reflector lamps.

DOE said this in their Comments on the Final Rule:

> Given the shape characteristics in ANSI C79.1-1994 and ANSI C78.21-1989, the Department is convinced that ER lamps are a specialty product which needs no further definition. The Department believes it is necessary to describe BR lamps by the shape characteristics given in Figure 1 on page 7 of ANSI C79.1-1994 and by wattage characteristics because the BR shape is not well defined in ANSI C79.1-1994 and it is easy for manufacturers to substitute BR lamps for R lamps. Since BR lamps are less expensive than the halogen lamps that meet the standards, the substitution of BR lamps for R lamps would severely reduce the energy savings potential of the law. NEMA, the efficiency advocates, and manufacturers agreed that maximum wattage limits should be included in the definition of BR lamps which have the largest market share. *Therefore BR30 and BR40 lamps are exempt if they comply with the DOE wattage limits.* Exempt BR 30 lamps include only lamps with rated wattages of 85 or less than 66, and exempt BR40 lamps will include only lamps with a maximum rated wattage of 120.

62 F.R. at 39228 (May 29, 1997). The Congressional exemption and DOE rulemaking for ER and certain BR-shaped incandescent reflector bulbs below specified wattage limits represent an express determination by both Congress and DOE that no energy efficiency measurement is appropriate for these lamp products. This federal determination preempts state efforts to set energy efficiency standards for these products. With respect to BR30 shaped lamps above 85 watts, they are subject to federal efficiency standards in 42 USC §6295(i)(1) and state regulations are preempted; with respect to BR40 shaped lamps

above 120 watts, they are subject to federal efficiency standards in 42 USC §6295(i)(1) and state regulations are also preempted. In effect, DOE has adopted an energy efficiency standard for the ER and BR bulbs. At the same time, DOE adopted definitions for "colored" and "rough or vibration service" applications to clarify the scope of the congressional exemption from nationwide regulation. *Id.*

Congress also excluded and exempted small reflector lamps from regulation for similar reasons. Today, these products with a 2.5" diameter are known as R20 and PAR20 lamps. In 1992, when the Act was amended, R20 and PAR20 represented a very small portion of the market. These products are still a small, niche product today. Congress excluded and exempted this product from regulation because there was no energy savings potential. In making this determination, Congress recognized not only the small volume of lamp sales represented by this product, but that by forcing consumers to shift from R20 lamps to PAR20 halogen lamps would result in a wattage increase with no energy savings. CEC's regulation expressly conflicts with the federal scheme.

General Service Incandescent Lamps

Although Congress did not designate "general service incandescent lamps" as "covered products," DOE, pursuant to its authority under 42 USC §6292(19), has made such a designation. 59 FR 49468 (September 28, 1994)(DOE Interim Final Rule). There are federal test requirements and information disclosure requirements for general service incandescent lamps. DOE has declined to adopt federal efficiency standards for general service incandescent lamps, most recently stating "the economic viability of more efficient technology has not been demonstrated." Furthermore, DOE noted that the "establishment of standards for [general service incandescent lamps] is more difficult." U.S. Dep't. of Energy, *FY 2005 Preliminary Priority Setting Summary and Report and Actions Proposed,* Appendix B at 35 (April 30, 2004).

Both Congress and DOE's implementation of its authority under the Act establish that regulation (including standard-setting) of general service incandescent lamps is preempted. 42 U.S.C. §6297(c) provides that "for any covered product [and general service incandescent lamps is a covered product], no State regulation concerning the energy efficiency, energy use . . . of such covered product shall be effective with respect to such product unless the regulation --- is a regulation described in paragraph (2) or (4) of subsection (b) [not relevant here], . . . except that a State regulation regulating . . . incandescent lamps *other than those for which [42 USC §6295(i)] is applicable* shall be effective only until the effective date of a standard that is prescribed by the Secretary and is applicable to such lamps." It is clear on the face of 42 USC §6295(i) that this Section of the Act is applicable to all general service incandescent lamps. *See* 42 USC §6295(i)(5).

In Section 6295(i)(5), Congress assigned exclusively to the Department of Energy the responsibility for determining whether or not there should be standards in effect for general service incandescent lamps. In considering whether to establish efficiency standards for general service incandescent lamps, the Department of Energy must

determine that the standard is technologically feasible and economically justified --- considering the economic impact of the standard on manufacturers and consumers of general service incandescent lamps, savings in operating costs, total projected amount of energy savings likely to result, the lessening of utility or performance of the covered products likely to result from the products, any impact on competition, and any other factors that DOE considers relevant. 42 U.S.C §6295(l, o(2)). The Department of Energy has not established an efficiency standard for general service incandescent lamps because, in light of these mandatory statutory considerations, it has not been able to justify an efficiency standard. Thus, not only is there express preemption under Section 6297 because Section 6295(i) is applicable to all types of general service incandescent lamps, but under Judge Shubb's 2003 ruling in *Air Conditioning and Refrigeration Institute v. Energy Resources Conservation and Development Commission*, slip opinion at 15 (E.D. Ca.), *appeal pending,* this is a classic example where the federal decision not to enact a regulation preempts State regulation.

Implied preemption analysis leads to the same result. While NEMA submits that energy conservation regulation of general service incandescent lamps is expressly preempted, if CEC takes a contrary position it "does not mean that the express clause entirely forecloses any possibility of implied preemption." *Freightliner Corporation v. Myrick*, 514 U.S. 280, 288 (1995). The CEC's regulation conflicts with federal law, because, like DOE, the CEC cannot show that an energy conservation standard for general service incandescent lamps is technologically feasible and economically justified considering all the factors that Congress has spelled out in 42 USC §6295(o)(2) for covered products such as general service incandescent lamps. Any State energy conservation standard for covered products that cannot be justified on this basis is in conflict with federal law, and certainly preempted by implication. The entire structure of the Act and its overriding purpose supports this conclusion. This is why a State must seek a waiver, in the case of covered products, from the Department of Energy, so that the Department will have an opportunity to consider these factors. It is significant that the Department of Energy may not give a waiver if the factors spelled out in 42 USC §6295(o)(2) for covered products such as general service incandescent lamps are established to significantly burden manufacturing, marketing, distribution, sale, or servicing of the covered product on a national basis. 42 USC §6297(d)(3). Nor may the Department of Energy grant a waiver if it is established that it will result in the unavailability in the State of any covered product type (or class), of performance characteristics (including reliability), features, sizes, capacities, and volumes. 42 USC §6297(d)(4). In Part II of this Comment, NEMA describes in light of these kinds of considerations, why the CEC proposal on general service incandescent lamps is ill-advised, anti-consumer, imposes unnecessary burdens on manufacturing and the economy and will not lead to energy savings --- in short, why the CEC proposal is in conflict with the federal scheme.

Finally, in the same manner and for the same types of reasons that Congress exempted certain incandescent reflector lamps (colored, vibration service, ER and BR lamps, and lamps with a diameter of 2.75" or less) from regulation, Congress also exempted and excluded from regulation general service incandescent lamps designed for

certain specific applications. 42 USC §6291(3)(D)(i-xvii).[1] By this exemption, State regulation of general service incandescent lamps for these applications is expressly preempted. NEMA observes that CEC, in conflict with the federal scheme, has not adopted a definition of general service incandescent lamps.

Fluorescent Lamp Ballasts

A fluorescent lamp ballast is defined broadly in 42 USC §6291(29A) as "a device that is used to start and operate fluorescent lamps by providing a starting voltage and current and limiting the current during normal operation." As stated above, Congress designated fluorescent lamp ballasts as a covered product, and State regulation of this product is preempted in the manner described above. In 42 USC §6295(g)(5), Congress specified an energy efficiency standard for fluorescent lamp ballasts that were designed (i) to operate at nominal input voltages of 120 or 277 volts, (ii) to operate with an input current frequency of 60 Hertz, and (iii) used in connection with three types of T12 fluorescent lamps (F40T12, F96T12, or F96T12HO). Congress and DOE have exempted from regulation certain lamp ballasts designed for use in ambient temperature of 0 degrees F. or less, and those which have a power factor of less than 0.90 and are designed for use only in residential buildings.

While the congressional energy conservation standard is applicable only to ballasts with certain T12 lamps, DOE has, however, specifically considered efficacy standards for fluorescent lamp ballasts used with T-8 lamps and DOE decided not to impose standards. In DOE's 2000 fluorescent lamp ballast rulemaking, DOE noted:

> An issue of utility that was considered was the possibility of interference with certain equipment, such as medical monitoring equipment, caused by high frequency of electronic ballasts. To prevent any interference that cannot be solved by electronic ballast designers, *the Department is not establishing a standard for T8 ballasts*, thereby allowing magnetic T8 ballasts for such applications.[2]

65 F.R. 14127, 14132 (March 15, 2000). This is an affirmative decision by DOE not to establish a standard for ballasts used with T8 lamps, thereby allowing magnetic ballasts to be used with T8 lamps. This decision has preemptive effect, because as previously

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[1] Traffic signal or street lighting service; airway, airport, aircraft or other aviation service; [illegible] signal service; photo, projection, sound reproduction, or film viewer service; stage, studio or television service; mill, saw mill or other industrial process service; mine service; headlight, locomotive, street railway, or other transportation service; code beacon, marine signal, lighthouse, reprographic, or other communication service; medical or dental service; microscope, map, microfilm, or other specialized equipment service; swimming pool or underwater service; producing colored light; shatter resistance which has an external protective coating; appliance service.

[2] In Part II of this Comment, NEMA notes that industry data collected by NEMA shows that over 98% of T8 lamps already use an electronic ballast. The remaining 1+% that continue to use magnetic ballasts serve special applications where there is a concern that the electronic ballast interferes with medical monitoring equipment and sensors in security devices. California is trying to eliminate magnetic ballasts with T8 lamps in all circumstances, and such a regulation clearly conflicts with federal policy that serves to preserve a role for magnetic ballasts where it is more appropriate.

discussed a decision not to regulate has as much preemptive effect as a decision to regulate. It establishes a standard by saying that there will be no standard.

A study of the federal ballast rulemaking activity by DOE, *see* 65 F.R. 14127 (March 15, 2000), establishes beyond doubt that the Department of Energy looked at the entire fluorescent lighting system (fluorescent lamps, ballasts, and luminaires), and conducted the complete analysis prescribed by Congress considering the technological and economic factors set forth in 42 USC §6295(o)(2). DOE balanced the impact on each component of the fluorescent lighting system --- ballast manufacturers, lamp manufacturers, luminaire manufacturers, and suppliers to ballast manufacturers --- and DOE considered possible changes in demand for different types (T12, T8, etc) of fluorescent lamps, *see* 65 FR 14127. This analysis establishes that DOE, through its fluorescent ballast rulemaking has set an energy conservation standard for all variations of the fluorescent lighting system, deciding which part of the system should be subject to energy conservation standards and which part should not, and has thereby acted to preempt all State regulatory action with respect to the fluorescent lighting system. DOE's consideration and decision with respect to T8 lamps noted above confirms this.

Luminaires

The Act defines a luminaire as "a complete lighting unit consisting of a fluorescent lamp or lamps, together with parts designed to distribute the light, to position and protect such lamps, and to connect such lamps to the power supply through the ballast." 42 USC §6291(E). Section 126 of Public Law 102-486 directs the DOE to support a national testing and information program for luminaires, and, if a voluntary national testing and information program has not been sufficiently developed, DOE is charged with developing test procedures and labeling rules for luminaires, except for luminaires or classes thereof for which DOE makes a determination that testing and labeling requirements are not technologically feasible, economically justified, or likely to assist consumers. DOE has actively monitored luminaires and their component products in fashioning regulations of ballasts and lamps and in furthering the national testing and information program for luminaires.[3]

Application of These Principles to CEC Notice of Proposed Action dated September 10, 2004 regarding Lighting Products

In the CEC Notice, CEC proposes to impose California energy conservation standards on "State-regulated incandescent reflector lamps," which are distinguished from "Federally-regulated incandescent reflector lamps" by virtue of the fact that (i) they have ER or BR-shaped bulbs, or (ii) they have R or PAR-shaped bulbs with a diameter of

[3] The assertion of CEC staff that the "proposed California standards regulate luminaires, not lamps" is not credible. On their face, the proposed "luminaire" standards impose efficacy standards on lamps and ballasts. A luminaire is essentially a fixture box that is designed to distribute light, and to position and protect the components of a lighting system contained in the box --- lamp, ballast, and wiring means to connect to a power source. Energy conservation standards based on a measure of energy consumption cannot be applied to the fixture box, but only to the components such as the lamp or the ballast.

2.75" or less. (CEC Notice, pages 28, 119 and Table K-4). As discussed above, all incandescent reflector lamps, including those with ER and BR-shaped bulbs of any kind and small reflector lamps are unambiguously "Federally-regulated incandescent reflector lamps" and the CEC's attempt to impose State efficacy standards with respect to these lamps is preempted.

CEC proposes to establish energy conservation standards for three categories of general service incandescent lamps: frost or clear, soft white, and vibration service lamps (CEC Notice, pages 27-28, 119 and Table K-3). For the reasons articulated above, CEC's proposal to establish energy conservations standards for general service incandescent lamps is expressly preempted and it is in conflict with the federal scheme regulating such lamps. For the reasons articulated below, this conflict is shown in the fact that it hurts consumers, imposes unnecessary burdens on manufacturing and the economy, is not technologically viable, and will not lead to energy savings

CEC proposes to regulate two types of luminaires: (1) luminaires containing metal halide lamps and (2) undercabinet fluorescent lamp ballasts. While the proposed regulation is nominally aimed at the luminare, as a practical matter, the regulation directly regulates the lamp and ballast components of the luminaire. As such, the proposed standards for specific types of luminaires are preempted as unauthorized state regulation of covered products and of lighting systems' products for which DOE has comprehensively determined not to establish standards.

For example, part of the proposed regulation relating to luminaires containing metal halide lamps (CEC Notice, page 122 and Table N-1) aims to specify a type of ballast for this product by eliminating use of the probe-start metal halide ballast. Specifically, the proposed regulation for luminaires containing metal halide lamps would require a lamp/ballast system to meet certain energy efficiency standards by January 1, 2008, which could not be met with the use of probe-start metal halide ballasts. Such "indirect" prohibition of a type of covered product is plainly preempted by the Act and DOE's comprehensive federal regulatory scheme.

The CEC's proposed standard for Under-Cabinet Fluorescent Luminaire Ballasts (CEC Notice, page 122 and Table N-2) is an efficacy standard applicable to fluorescent lamp ballasts, which are a covered product. The fact that the proposed regulation would be limited to fluorescent lamp ballasts with T8 lamps does not escape the effect of federal preemption, because as we noted above, DOE has made an affirmative decision not to set standards for that type of ballast.

Part II: Comments on the Merits of the CEC's Proposed Efficacy Standards

As Title 20 is structured, the proposed regulations set "date of sale" mandates. NEMA reiterates what it has said to the CEC previously, a date of sale mandate is impractical, and in light of the enormous scope of what CEC is now proposing the impact

on product in the distribution channel for these products will be devastating and impractical.

Incandescent Reflector Lamps (with ER and BR shaped bulbs, with R and PAR shaped bulbs with diameter from 2.25" to 2.75")

Both American and Canadian federal regulators have researched this product category in depth and they have elected to regulate these products via wattage limits on specific bulb shapes as opposed to regulating these products with efficiency limits. Canada's subsequent detailed review of this category confirmed the U.S. Department of Energy's regulatory approach for this category with minor adjustments. Per California's own cited studies, 17% of residential Downlights contain high wattage A-line bulbs instead of lower wattage reflector lamps.[4] Canadian analysis of this product area indicated that regulating BR30 and ER lamps to Halogen PAR levels would essentially eliminate BR and ER lamps from the marketplace and would lead to a negative consumer behavior.[5] Many more consumers, well above the existing 17% cited by California in its study, will choose to replace a $2-$3 reflector lamp with a .25-.50 cent, higher-wattage, A-line lamp vs. a $5- $10 Halogen PAR lamp. This proposed regulation would greatly increase energy use in this area and this effect is not reflected in the California analysis.

Federal regulations cover small reflector lamps by precluding them from Halogen PAR efficiency levels requirements. This is a small niche product category with essentially no energy saving opportunities. Small R20 reflector lamps can only be replaced with small PAR20 Halogen lamps due to space limitations. R20 lamps are primarily made with wattages of 27W, 30W, 45W, and 50W. PAR20 Halogen lamps are primarily designed at 50 watts, although some are available in 35 watts. Eliminating all 27W, 30W, 45W and 50W R20 lamps so that they can be replaced primarily with 50W Par Halogen lamps will increase overall energy use in this area.

General Service Incandescent Lamps (frost or clear, soft white, and vibration service)

California's technical analysis for "general service incandescent lamps" is overly simplistic and flawed.[6] There is certainty that California's approach will greatly decrease the utility of incandescent lamps. It is also a certainty that this approach will significantly increase the cost and frequency of lamp purchases, negatively affecting nearly every homeowner and business owner in the state of California.

Although there was no market behavior analysis performed by California, it is extremely unlikely that the market will behave in a way that will ultimately lead to

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[4] Analysis of Standards Options for BR, ER, and R20 Lamps at 15 (ACEEE, April 28, 2004).

[5] James Love, Reflector Lamp Market Trends and Implications for Regulation of Energy Efficiency (1998).

[6] Analysis of Standards Options for General Service Incandescent Lamps (Ecos Consulting, September 13, 2004).

energy savings. There is no certainty that there will be any energy savings in the State from this regulation.

The State's proposed regulation for incandescent lamps is poorly defined. When the federal government regulated the class of incandescent lamp technology under the Energy Policy Act of 1992, they clearly defined this category by base, bulb shape, wattage range, voltage, exempted categories, colored lamp definitions, filament types, and several unique application types. The federal government also preempted States from creating duplicate regulations in this area. The only definition found in California's "Express Terms of Proposed Regulations (45 Day language)" for "general service incandescent lamps" is not a definition at all: it is a breakdown of four classes of incandescent lamps describing clear, frosted, or soft white glass or glass coatings and vibration service. Without defining what California expects to regulate, the proposed regulation would essentially cover every filament lamp technology ever made, covering thousands of different lamps types and millions of applications. This regulation could eventually lead to the elimination of most specialty and miniature products used in the motion picture industry, television, marine, train, auto, airline, airport, entertainment, and many more unique lighting applications.

Incandescent technology, a complicated and extensive lamp category, containing thousands of different lamp types, is used in millions of homes and businesses. This proposal shows that little or no research has been undertaken on expected market behavior following such an extreme proposal. By not defining what it intends to regulate, and then suddenly regulating and eliminating all of these filament products from the California marketplace would have drastic consequences, as millions of applications would be left with no ability to replace the lamp. This would cause massive economic damage to California, as millions of businesses would be affected. Other report documents seem to indicate that California's intent is to regulate a much smaller selection of incandescent lamp technology, however, further definitions are lacking in the express terms language. Given the undefined flaw in California's proposed regulation, it is not possible for a lamp manufacturer to clearly determine what products are being regulated. Therefore, it is not possible to provide meaningful technical comments without guessing at the true intent of the regulations.

Although it is not stated anywhere in express terms, it is vaguely implied in a technical report that California's intent is to regulate incandescent A-line lamps between 25 and 150 watts, having a rated voltage of 120 volts, with a medium screw base and a bulb shape of A19 or A21.[7] If we make this assumption, the commercial experience of NEMA's members leads to these conclusions:

CLEAR, INSIDE FROST, AND SOFT WHITE A-LINE LAMPS

The proposed 2006 energy conservation requirements for Clear, Inside Frost, or Soft White incandescent lamps would continue to allow most of the current incandescent

[7] Analysis of Standards Options for General Service Incandescent Lamps at 4-5 (Ecos Consulting, September 13, 2004).

lamp types on the market to be sold. This includes the standard A-line products, along with the reduced wattage Energy Saving versions, and even most long life versions, but the 2006 requirements will remove some long life versions from the market.

In stark contrast, the proposed 2007 energy conservation requirements would drastically eliminate nearly all incandescent A-line products from the market. This includes standard A-line products, Energy Saving incandescent products, and long life products without any discrimination or explanation. As the products will still be in great demand, this will cause great confusion and hardships for nearly every California homeowner and business.

The foregoing conclusions contradict Figure 14 of the California study,[8] which is inaccurate, and had the lamp manufacturers ever been consulted on this data would have never made its way into the report. Figure 14 suggests a drastic reduction in the number of lamps qualifying for the proposed 2006 (Tier I) standard. As stated above, most current products will still qualify in 2006, so the bar graphs will be much higher than represented on Figure 14. Missing from this analysis is a graphical analysis showing the impact of the Tier II standard effective in 2007, and had such a graph been prepared there would essentially be no bars on the chart because there would be virtually no qualifying product to represent: the graph would be nearly blank.

The big question is how will the market react to such drastic and unjustified regulations. California's proposal and accompanying reports provide no answer. Regulating a very inexpensive and small product sold in the millions at thousands of locations by hundreds of manufacturers and importers and used by nearly every home and building in the state is radically different than any other energy regulation ever attempted by California. California should never move forward with such a politically disastrous proposal, until they have carefully studied and evaluated the following issues and recognize the full complexity of the products, consumer choices and needs, and economic impact.

1) **Economic Impact on Manufacturers and expected reactions.** What will manufacturers do to satisfy market demand? Will their reactions actually save any energy? What products will they offer? Will the products actually operate at lower energy use? Will products be redesigned to meet the standard?
2) **Economic Impact on Consumers and expected reactions to fewer lamp choices.** What will consumers do to satisfy demand? Will they purchase lamps from out-of-state, from the Internet, or have out-of-state friends or family send lamps? Of the remaining lamps available, will they select lower wattage or higher wattage products? A significant problem with lamps today is misapplication. How much will misapplications increase? Will these lead to higher wattage use? Will consumers add lighting fixtures to their homes out of frustration? Will these new fixtures simply add to the existing power load?

[8] Analysis of Standards Options for General Service Incandescent Lamps, page 23, Table 14 (Ecos Consulting, September 13, 2004).

3) **Economic and Environmental Impact to the State of California.** Will the state be forced to purchase redesigned shorter life products greatly increasing lamp costs and replacement costs? Will these products use more or less energy than existing products? What will be the impact on the cost of labor to install more shorter life lamps sold into State buildings from the State lamp contract? What will be the cost, and the environmental impact, of introducing more shorter life lamps into the solid waste stream?
4) **State Enforcement.** How will the state enforce the regulations on thousands of small retailers and hundreds of importers that are difficult to find?
5) **Savings in operating costs compared to price increase of newly introduced lamps.** Will the consumer select a new bulb that has a higher or a lower wattage rating? If the consumer selects a bulb with the same or higher wattage, will there be any savings in operating costs to the consumer? If the consumer selects a bulb with a redesigned shorter life will there be any net savings?
6) **Economic Impact on Retailers and expected behavior?** How will retailers respond to customers demand for products that are no longer available in the state? Will smaller retailers simple continue to get products from out-of-state distributors and grow market share? If so, how will big retailers react? How will the state enforce regulations on thousands of small stores, some very close to the border of other states?
7) **Expected Lamp Importer Behavior.** There are potentially hundreds of off shore importers willing to provide products to fill the void with noncompliant product and gain market share. Will any of the importers comply with the regulations? Can the State enforce regulations on millions of imported products bound for other states but going through California? How much of this product will actually make it out of California if there is a robust market for products no longer available from major retailers or manufacturers?
8) **Expected Distributor behavior.** If the major manufacturers are forced to stop shipping products into California, will second tier and third tier distributors cease to sell products into California? Is there any way to enforce regulations on small out-of-state distributors with thousands of truck shipments per day entering the state?
9) **Lessening of competition.** What effect will the regulations have on competition? Will smaller noncompliant manufacturers and importers take over the California market with potentially poor quality products?
10) **What effect will this regulation have on USA factories?** Will USA jobs move to noncompliant importing factories?

There is only a very superficial attempt to address a small number of these questions in the CEC's Initial Statement of Reasons[9] and the study of general service incandescent lamps cited by the CEC.[10] The study makes the following conclusion for which there is no analytical support:

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[9] CEC, Initial Statement of Reasons, Amendments to Appliance Efficiency Regulations, California Code of Regulations, Title 20, Sections 1601-1608 (September 10, 2004).
[10] Analysis of Standards Options for General Service Incandescent Lamps (Ecos Consulting, September 13, 2004).

> Given that there is a wide range of efficacies for general service incandescent lamps producing the same light output, it is appropriate as part of a comprehensive to lower energy consumption statewide, to limit the low efficacy lamps from entering the California market. This can be done without unnecessarily limiting the choice of incandescent lighting products or their utility.[11]

The last sentence is without justification or support, because the proposed regulation will limit the choice of incandescent lighting products and their utility. As noted above, the Tier II 2007 proposed standards would eliminate virtually all existing A-line lamps from the California market. Other incandescent lamps (PS, BT, and CP) may not be effective substitutes for the A-line products, and no claim of energy savings can be made if there was substitution. The study suggests that manufacturers and consumers might respond to the regulation in the following ways:[12]

1) that manufacturers will modify the design of A-line lamps creating (a) a shorter-life incandescent product to reduce wattage or (b) a krypton gas-filled product to reduce wattage; and
2) that consumers will be forced to purchase more A-line lamps more frequently thereby increasing consumer cost, and to avoid that cost consumers will use incandescent lamps only in locations with limited hours of use, or shift their purchases from incandescent lamps to compact fluorescent lamps.

This scenario is not only speculative, but highly unlikely. California is not a large enough market to support a unique design for A-line lamps, so it is not likely that manufacturers will modify their product to make shorter-life lamps for California. Producing lamps specifically for California cannot achieve economies of scale in production, therefore a California design will have significantly higher cost. Furthermore, such a product is not what consumers in California or any other geographic location want: the commercial experience of NEMA members is that consumers want long-life lamps and they want them at low cost; furthermore, regardless of the lamp efficacy, consumers will continue to substitute 60W, 75W, and 100W lamps with 60W, 75W, and 100W lamps. The suggestion that manufacturers will start manufacturing a krypton gas-filled product has no bearing in reality. Krypton is often in short supply. It is produced by distilling air, and the process of creating krypton gas consumes a large amount of energy. If incandescent lamp manufacturers were to start making the krypton gas-filled product in greater volume, greater demand for the gas will lead to a price increase for this limited raw material thereby leading to considerably more expensive incandescent lamps. The study suggests that the "price [of krypton gas-filled lamps] could be significantly reduced if the lamps were produced in greater volume," but this statement ignores the fact that there are no economies of scale in *purchasing a raw*

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[11] *Id.* at page 3.
[12] *Id.* at pages 11-13.

material such as krypton gas. Prices of the gas-filled product will go up, not down. Consumers will not be attracted to this product.

The study's speculation that California consumers will either purchase more costly shorter-life A-line incandescent lamps (assuming they are available) or purchase even more costly compact fluorescent lamps is not supported by any research into consumer behavior with respect to lighting products. There is a wide price variation between incandescent lamps currently on the market and either of these products. As just noted, consumers in fact want longer-life products, and there is a ready supply for California consumers who will be looking to satisfy their consumer preference for very low-cost, longer-life product for lighting. That supply is available on the Internet for out-of-state online purchasing, and that supply will be available at retail stores across the State's borders. Furthermore, it is not unreasonable to conclude that black market distribution channel will be found in California for product that is lawful everywhere else in the world, thereby presenting law enforcement problems for California.

The cost assumptions and annual unit energy savings assumptions in the Initial Statement of Reasons are unclear, but are, at best, unrealistic.[13] The product lifetimes, for example, in tables 13A and 13B, are longer than those in the study cited by the CEC. The study says that Tier 1 standards would be most likely met by increasing efficacy at the expense of product life. A typical product for the lamps considered would be 750-1000 hours (the study says 1000 hours, or about one year in service). If the lifetime reduction of 22% in the study is applied to one year the product life would be about 9 months, for a 750-hour product about 7 months. In contrast, the Initial Statement of Reasons Tables 13A and 13B describe a lifetime of 1.1 years, obviously inconsistent with the study. The payback is provided as 0.5 years (6 months) in the Statement of Reasons. Obviously, a small reduction in the assumed lamp efficacy would result in a zero or negative cost benefit from the standard. In the Tier 2 case the study says the product would have about the same lifetime as the current 1000-hour product and therefore the 1.4 year life in the statement of reasons is invalid, as well. For Tier 2, for a 750-hour lifetime product the payback period of 0.72 years is very close to the product life, so again, CEC is very close to proposing a standard with no economic benefit over its life. As already stated, the commercial experience of NEMA's members indicates that there will be essentially no annual unit energy savings, because consumers will replace 60-watt lamps with 60-watt lamps regardless of the efficiency. The incremental cost will be significantly higher than shown. This is because if any unique lamps were to be made for California, they will have very short production runs, creating very high manufacturing costs coupled with very expensive technology. However, given the short production run and high cost outcome, there is no assurance that such lamps will be produced or purchased because such lamps would have to compete with a massive and unenforceable out-of-state "grey market" that will exist for standard incandescent lamps. If created, very few types will be created, dramatically reducing consumer choice and utility. These

[13] CEC, *Initial Statement of Reasons, Amendments to Appliance Efficiency Regulations, California Code of Regulations, Title 20, Sections 1601-1608*, Tables 13A, 13B, 14A, and 14B at pages 21-22 (September 10, 2004).

products will be designed at the same consumer wattages that retailers and consumers will demand, producing no energy savings in the state, while greatly increasing costs for every homeowner and business in the State.

The speculative scenario of manufacturer and consumer behavioral response to the proposed regulation for general service incandescent lamps assumed by the CEC and the study it cites is transparently the least likely to occur. Similarly, the cost assumptions are unrealistic. Consequently, the energy savings anticipated by the regulation will not likely materialize. **The proposed regulations for general service incandescent lamp cannot be adopted on the record before the CEC because there is no substantial evidence to support them. Furthermore, this analysis confirms why Congress recognized in 1992 that energy conservation standards for lighting products requires a national solution.**

VIBRATION SERVICE LAMPS

California's proposed 2006 energy conservation requirements for vibration service lamps would eliminate nearly all vibration-service lamps from the market. If rough-service types were included in this general category then nearly all of those would be eliminated as well. This leaves users of vibration service products with few options other than to switch to standard products of the same wattage. In vibration applications, these standard products will fail quickly, greatly increasing lamp purchase and replacement costs. The user can be expected to select the same wattage lamp, saving no energy. This will simply increase costs, greatly aggravate users, and produce no energy savings or electric bill savings. This requirement cannot be justified under the provisions of Title 20.

California's proposed 2007 energy conservation requirements for vibration service lamps would eliminate any remaining products, leaving the consumer with no options other than purchasing products out of state for this application. It is unclear why the CEC is proposing regulations for these products. No explanation is provided. These are expensive niche products with very low sales. Eliminating this product from the market saves no energy, as lamps will be replaced with standard technology of the same wattage. This regulation will serve only to gravely aggravate users who have vibration applications and significantly drive up their replacement costs.

Nor is it a realistic expectation to assume that manufacturers will design a new vibration service incandescent lamp. Because this is a small niche product nationally, no producer is likely to invest in designing an even smaller niche California version for this product.

Luminaires designed for Metal Halide Lamps

Tier 1 of the proposed regulation would require pulse start ballasts in this product by January 1, 2006. Pulse start lamp technology is not currently available in all wattage and burning positions. For example, there are a substantial number of 175W horizontal position lamps sold in commerce, and pulse start technology is simply not available for this product. California is therefore seeking to impose a requirement where there is no available technology. The proposed Title 20 rulemaking requiring pulse start lamps would create a void in certain applications where these lamps do not meet the needs of the requirements.

As recognized in the study cited by the CEC, the Tier 2 pulse start electronic ballast is an emerging market technology[14] and CEC is "betting on the come". CEC is not permitted to base efficiency standards on speculative technology. In the fluorescent lamp ballast arena it took about 15 years to get from initial products on the market to commercial technology with industry consensus standards. Indeed, the first ANSI standards on compatibility of metal halide lamps operated on electronic ballasts are just now being completed and initial discussions on the matters that need to be addressed in electronic ballasts standards are in early draft stages. Clearly, CEC is in no position to require electronic ballasts for HID lamps by January 1, 2008, and the industry is in no position to meet such a standard.

The economic analysis in the study cited by the CEC fails to point out that all the comparisons are at mean lumens, not initial.[15] For those that base lighting design on mean lumens, the analysis has merit. However, for applications that rely on initial lumen calculations, the comparisons are not valid. Another section of the study points out the high cost of electronic ballasts,[16] but the analysis that follows relies on a projected cost for an as-yet non-available product. For the total analysis to hold together, the lowest possible price for the ballast must be combined with the best possible lamp performance. Although this may be accomplished sometime in the future, to impose a time frame on such a perfect combination is unrealistic and should not be the basis for a proposed regulation.

The study cited by the CEC contains design life estimates that are exaggerated for electronic ballasts, which being an emerging product have actual lifetimes undetermined by long term experience, and understated for magnetic systems. Magnetic ballasts are claimed in the analysis to have a service life of 60,000 hours[17] while many, if not most, magnetic ballasts have life expectancies of 100,000 hours or more at their maximum rated temperature. It is too early to know the electronic ballasts life expectancies, but problems will surface in service that must be solved to achieve long lifetimes, especially at many of the higher ambients into which magnetic ballast have been applied over the years. The authors of the study cited by CEC state electronic ballast life is the same as magnetic, while current analysis of critical components show a rated life of 40,000 hours may be optimistic. Even if life is assumed to be 50,000 hours, the electronic ballasts will need to be changed twice as many times than a magnetic system. This dramatic increase

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[14] Analysis of Standards Options for Metal Halide Lamps and Fixtures at 13 (ACEEE, August 10, 2004).
[15] *Id.* at page 10, Section 4.5.
[16] *Id.* at page 12, Section 5.1.

in cost is not reflected correctly in the life cycle savings calculations on this page, overstating the benefits of electronically ballasted systems.

Under-Cabinet Fluorescent Luminaire Lamp Ballasts

Title 24 2005, besides including area LPD requirements, specifically addresses how to treat "lighting that is integral with modular furniture" [Section 146(a)]. The lighting power of all permanent and portable lighting systems is to be included in the calculation of actual lighting power density. If the actual portable lighting power is not known at the time of permitting, allowable assumptions are specified. However, the building official may require resubmittal of compliance documentation using installed lighting data. Therefore, the installation is assured of meeting the Title 24 LPD and specifying T-8 electronic ballasts is not needed.

In its assessment of energy savings, economic benefits, and environmental benefits of the Ballast Rule cited above, DOE analyzed in detail the impacts of its ballast efficiency standards. A key consideration in the analysis was the large shift from T-12 technology to T-8 electronic ballasts expected to result from the DOE standards effective in 2005.

In addition, the February 4, 2003 workshop draft version of Title 24, among other things, included such a product standard (Table 146-A) and in response to NEMA comments (February 5, 2003 Docket #01-BSTD-1) CEC agreed to remove such a standard from Title 24. Bringing back such a standard in Title 20 amounts to a "bait and switch", which as discussed creates potential customer problems with no energy savings.

The matter of increasing energy efficiency in existing buildings is the whole reason for AB 549 *Increasing Energy Efficiency in Existing Buildings*. NEMA supports the intent of AB 549 (increasing building energy efficiency standards at appropriate milestones in a building's lifetime) and has provided numerous comments on CEC's AB 549 program, including our dismay at the delays in that program. NEMA is opposed to using the Title 20 product approach for piecemeal retrofit product improvement rather than Title 24 building approaches.

The anecdotal information in the study relied upon by CEC assumes that 20% of the ballasts used with these furniture products currently in use are magnetic.[18] The energy savings summary results are presented based on some assumed turnover of existing product. [19] There is insufficient information provided to critically review the analysis. There must have been some assumed product mix by age that was to be replaced in the 15-year furniture life, but this is not presented.

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[17] *Id.* at page 12, Section 5.2.

[18] *Analysis of Standard Options For Under Cabinet Fluorescent Fixtures Attached to Office Furniture*, dated May 5, 2004.

[19] *Id.* at page 8, Table 3.

The ballast performance data used to calculate wattage savings per fixture, and Life Cycle Cost comparisons are based on magnetic and electronic ballasts that are not commonly used in office furniture luminaries. The ballasts for which the data is shown in Appendix A are not identified, but review of the listed manufacturers published performance data clearly indicates that the ballasts referenced are those typically used in general lighting, not those typically used in office furniture lighting. This makes the energy savings data and the Life Cycle Cost analysis extremely suspect.

Currently, over 98% of luminaires with T8 fluorescent lamps utilize an electronic ballast. The remaining 1+% that continue to utilize a magnetic ballast service special needs where an electronic ballast presents a health and safety or security concern with respect to medical monitoring equipment and security sensor equipment. The fact that over 98% of luminaires with T8 fluorescent lamps utilize an electronic ballast indicates that there is absolutely no opportunity for energy savings created by the CEC proposal, and by ignoring serious health and safety utility considerations for the limited role in the marketplace for magnetic ballasts with these products, the CEC harms California citizens and injures California businesses.

NEMA notes that CEC has conducted no analysis justifying regulation of this product, and for the reasons described in the preceding paragraph such an analysis would be futile.

CONCLUSION

CEC's proposed energy conservation standards for various lighting systems products are preempted by the comprehensive national regulation of these products by the Department of Energy under the National Appliance Energy Conservation Act, as amended by the Energy Policy Act of 1992, 42 USC §6291 *et seq*. CEC is without legal authority to promulgate the proposed regulations for these products.

The record in this proceeding lacks substantial evidence to support the rulemaking proposals for the lighting systems products and CEC should take no action based on that inadequate record. The proposed regulation of these lighting products is ill-advised, anti-consumer, imposes unreasonable and unnecessary burdens on manufacturing and distributors of lighting products, injures the California economy as well as the national economy and will not lead to energy savings

Respectfully submitted,

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