

**APPENDIX 3A. LIGHTING DEFINITIONS IN THE UNITED STATES CODE AND
CODE OF FEDERAL REGULATIONS**

TABLE OF CONTENTS

3A.1	INTRODUCTION	3A-1
3A.1.1	General Service Fluorescent Lamps	3A-1
	3A.1.1.1 United States Code Definitions.....	3A-1
	3A.1.1.2 Code of Federal Regulations Definitions in 10 CFR 430.2.....	3A-2
3A.1.2	Incandescent Reflector Lamps.....	3A-4
	3A.1.2.1 United States Code Definitions.....	3A-4
	3A.1.2.2 Code of Federal Regulations Definitions in 10 CFR 430.2.....	3A-7
3A.1.3	All Covered Lamps	3A-8

APPENDIX 3A. USER INSTRUCTIONS FOR SHIPMENTS AND NIA SPREADSHEETS

3A.1 INTRODUCTION

Appendix 3A provides definitions from the United States Code (USC) and Code of Federal Regulations (CFR) for the lamp products covered under this rulemaking. (42 U.S.C. 6291(30); 10 CFR section 430.2) These definitions do not include fluorescent lamp definitions associated with fluorescent ballast standards. In addition, recent amendments by the Energy Independence and Security Act of 2007 have been incorporated into the following USC definitions, and outdated definitions in the CFR pertaining to general service fluorescent and incandescent reflector lamps have been omitted.

3A.1.1 General Service Fluorescent Lamps

3A.1.1.1 United States Code Definitions

42 U.S.C. 6291(30)(A)

Except as provided in subparagraph (E), the term “fluorescent lamp” means a low pressure mercury electric-discharge source in which a fluorescing coating transforms some of the ultraviolet energy generated by the mercury discharge into light, including only the following:

- (i) Any straight-shaped lamp (commonly referred to as 4-foot medium bi-pin lamps) with medium bi-pin bases of nominal overall length of 48 inches and rated wattage of 28 or more.*
- (ii) Any U-shaped lamp (commonly referred to as 2-foot U-shaped lamps) with medium bi-pin bases of nominal overall length between 22 and 25 inches and rated wattage of 28 or more.*
- (iii) Any rapid start lamp (commonly referred to as 8-foot high output lamps) with recessed double contact bases of nominal overall length of 96 inches and 0.800 nominal amperes, as defined in ANSI C78.1-1978 and related supplements.*
- (iv) Any instant start lamp (commonly referred to as 8-foot slimline lamps) with single pin bases of nominal overall length of 96 inches and rated wattage of 52 or more, as defined in ANSI C78.3-1978 (R1984) and related supplement ANSI C78.3a-1985.*

42 U.S.C. 6291(30)(B)

The term “general service fluorescent lamp” means fluorescent lamps which can be used to satisfy the majority of fluorescent applications, but does not include any lamp designed and marketed for the following non-general lighting applications:

- (i) Fluorescent lamps designed to promote plant growth.*
- (ii) Fluorescent lamps specifically designed for cold temperature installations.*
- (iii) Colored fluorescent lamps.*

- (iv) *Impact-resistant fluorescent lamps.*
- (v) *Reflectorized or aperture lamps.*
- (vi) *Fluorescent lamps designed for use in reprographic equipment.*
- (vii) *Lamps primarily designed to produce radiation in the ultra-violet region of the spectrum.*
- (viii) *Lamps with a color rendering index of 87 or greater.*

3A.1.1.2 Code of Federal Regulations Definitions in 10 CFR 430.2

Basic model means all units of a given type of covered product (or class thereof) manufactured by one manufacturer and—

* * * * *

- (15) *with respect to general service fluorescent lamps, means lamps that have essentially identical light output and electrical characteristics – including lumens per watt and color rendering index (CRI) – and that do not have any differing physical or functional characteristics that affect energy consumption or efficacy.*

Cold temperature fluorescent lamp means a fluorescent lamp specifically designed to start at –20 [deg]F when used with a ballast conforming to the requirements of ANSI Standard C78.1–1991, and is expressly designated as a cold temperature lamp both in markings on the lamp and in marketing materials, including but not limited to catalogs, sales literature, and promotional material.

Colored fluorescent lamp means a fluorescent lamp designated and marketed as a colored lamp, and with either of the following characteristics: a CRI less than 40, as determined according to the method given in CIE Publication 13.2 (see 10 CFR 430.22), or a lamp correlated color temperature less than 2,500K or greater than 6,600K.

Fluorescent lamp means a low pressure mercury electric-discharge source in which a fluorescing coating transforms some of the ultraviolet energy generated by the mercury discharge into light, including only the following:

- (1) *Any straight-shaped lamp (commonly referred to as 4-foot medium bi-pin lamps) with medium bi-pin bases of nominal overall length of 48 inches and rated wattage of 28 or more.*
- (2) *Any U-shaped lamp (commonly referred to as 2-foot U-shaped lamps) with medium bi-pin bases of nominal overall length between 22 and 25 inches and rated wattage of 28 or more.*
- (3) *Any rapid start lamp (commonly referred to as 8-foot high output lamps) with recessed double contact bases of nominal overall length of 96 inches and 0.800 nominal amperes, as defined in ANSI C78.1-1991.*

- (4) *Any instant start lamp (commonly referred to as 8-foot slimline lamps) with single pin bases of nominal overall length of 96 inches and rated wattage of 52 or more, as defined in ANSI C78.3-1991.*

Residential straight-shaped lamp means a low pressure mercury electric-discharge source in which a fluorescing coating transforms some of the ultraviolet energy generated by the mercury discharge into light, including a straight-shaped fluorescent lamp with medium bi-pin bases of nominal overall length of 48 inches and is either designed exclusively for residential applications; or designed primarily and marketed exclusively for residential applications.

- (1) *A lamp is designed exclusively for residential applications if it will not function for more than 100 hours with a commercial high-power-factor ballast.*
- (2) *A lamp is designed primarily and marketed exclusively for residential applications if it:*
 - (i) *Is permanently and clearly marked as being for residential use only;*
 - (ii) *Has a life of 6,000 hours or less when used with a commercial high-power-factor ballast;*
 - (iii) *Is not labeled or represented as a replacement for a fluorescent lamp that is a covered product; and*
 - (iv) *Is marketed and distributed in a manner designed to minimize use of the lamp with commercial high-power-factor ballasts.*
- (3) *A manufacturer may market and distribute a lamp in a manner designed to minimize use of the lamp with commercial high-power-factor ballasts by:*
 - (i) *Packaging and labeling the lamp in a manner that clearly indicates the lamp is for residential use only and includes appropriate instructions concerning proper and improper use; if the lamp is included in a catalog or price list that also includes commercial/industrial lamps, listing the lamp in a separate residential section accompanied by notes about proper use on the same page; and providing as part of any express warranty accompanying the lamp that improper use voids such warranty; or*
 - (ii) *Using other comparably effective measures to minimize use with commercial high-power-factor ballasts.*

Rated wattage, with respect to 4-foot medium bi-pin T8, T10 or T12 lamps, means:

- (1) *If the lamp is listed in ANSI C78.1-1991, the nominal wattage of a lamp determined by the lamp designation in Annex A.2 of ANSI C78.1-1991; or*
- (2) *If the lamp is a residential straight-shaped lamp, the wattage a lamp consumes when operated on a reference ballast for which the lamp is designed; or*
- (3) *If the lamp is neither listed in ANSI C78.1-1991 nor a residential straight-shaped lamp, the wattage a lamp consumes when using reference ballast characteristics of 236 volts, 0.43 amps and 439 ohms for T10 or T12 lamps or reference ballast characteristics of 300 volts, 0.265 amps and 910 ohms for T8 lamps.*

3A.1.2 Incandescent Reflector Lamps

3A.1.2.1 United States Code Definitions

42 U.S.C. 6291(30)(C)

Except as provided in subparagraph (E), the term “incandescent lamp” means a lamp in which light is produced by a filament heated to incandescence by an electric current, including only the following:

- (i) Any lamp (commonly referred to as lower wattage nonreflector general service lamps, including any tungsten-halogen lamp) that has a rated wattage between 30 and 199 watts, has an E26 medium screw base, has a rated voltage or voltage range that lies at least partially within 115 and 130 volts, and is not a reflector lamp.*
- (ii) Any lamp (commonly referred to as a reflector lamp) which is not colored or designed for rough or vibration service applications, that contains an inner reflective coating on the outer bulb to direct the light, an R, PAR, ER, BR, BPAR or similar bulb shapes with E26 medium screw bases, a rated voltage or voltage range that lies at least partially within 115 and 130 volts, a diameter which exceeds 2.25 inches, and has a rated wattage that is 40 watts or higher.*
- (iii) Any general service incandescent lamp (commonly referred to as a high- or higher-wattage lamp) that has a rated wattage above 199 watts (above 205 watts for a high wattage reflector lamp).*

42 U.S.C. 6291(30)(F)

The term ““incandescent reflector lamp” means a lamp described in subparagraph (C)(ii).

42 U.S.C. 6291(30)(I)

The term “bulb shape” means the shape of lamp, especially the glass bulb with designations for bulb shapes found in ANSI C79.1-1980 (R1984).

42 U.S.C. 6291(30)(R)

The term “tungsten-halogen lamp” means a gas-filled tungsten filament incandescent lamp containing a certain proportion of halogens in an inert gas.

42 U.S.C. 6291(30)(W)

The term “modified spectrum” means, with respect to an incandescent lamp, an incandescent lamp that--

- (i) is not a colored incandescent lamp; and*
- (ii) when operated at the rated voltage and wattage of the incandescent lamp--
 - (I) has a color point with (x,y) chromaticity coordinates on the Commission Internationale de l’Eclairage (C.I.E.) 1931 chromaticity diagram that lies below the black-body locus; and**

- (II) *has a color point with (x,y) chromaticity coordinates on the C.I.E. 1931 chromaticity diagram that lies at least 4 MacAdam steps (as referenced in IESNA LM16) distant from the color point of a clear lamp with the same filament and bulb shape, operated at the same rated voltage and wattage.*

42 U.S.C. 6291(30)(X)

The term “rough service lamp” means a lamp that--

- (i) *has a minimum of 5 supports with filament configurations that are C-7A, C-11, C-17, and C-22 as listed in Figure 6-12 of the 9th edition of the IESNA Lighting handbook, or similar configurations where lead wires are not counted as supports; and*
- (ii) *is designated and marketed specifically for “rough service” applications, with--*
 - (III) *the designation appearing on the lamp packaging; and*
 - (IV) *marketing materials that identify the lamp as being for rough service.*

42 U.S.C. 6291(30)(AA)

The term “vibration service lamp” means a lamp that--

- (i) *has filament configurations that are C-5, C-7A, or C-9, as listed in Figure 6-12 of the 9th Edition of the IESNA Lighting Handbook or similar configurations;*
- (ii) *has a maximum wattage of 60 watts;*
- (iii) *is sold at retail in packages of 2 lamps or less; and*
- (iv) *is designated and marketed specifically for vibration service or vibration-resistant applications, with--*
 - (I) *the designation appearing on the lamp packaging; and*
 - (II) *marketing materials that identify the lamp as being vibration service only.*

42 U.S.C. 6291(30)(AA)

The term “colored incandescent lamp” means an incandescent lamp designated and marketed as a colored lamp that has--

- (i) *a color rendering index of less than 50, as determined according to the test method given in C.I.E. publication 13.3-1995; or*
- (ii) *a correlated color temperature of less than 2,500K, or greater than 4,600K, where correlated temperature is computed according to the Journal of Optical Society of America, Vol. 58, pages 1528-1595 (1986).”*

42 U.S.C. 6291(51)

The term “medium screw base” means an Edison screw base identified with the prefix E-26 in the “American National Standard for Electric Lamp Bases”, ANSI-IEC C81.61-2003, published by the American National Standards Institute

42 U.S.C. 6291(54)

The term “BPAR incandescent reflector lamp” means a reflector lamp as shown in figure C78.21-278 on page 32 of ANSI C78.21-2003.

42 U.S.C. 6291(55)(A)

The term “BR incandescent reflector lamp” means a reflector lamp that has--

- (i) a bulged section below the major diameter of the bulb and above the approximate baseline of the bulb, as shown in figure 1 (RB) on page 7 of ANSI C79.1-1994, incorporated by reference in section 430.22 of title 10, Code of Federal Regulations (as in effect on the date of enactment of this paragraph); and*
- (ii) a finished size and shape shown in ANSI C78.21-1989, including the referenced reflective characteristics in part 7 of ANSI C78.21-1989, incorporated by reference in section 430.22 of title 10, Code of Federal Regulations (as in effect on the date of enactment of this paragraph).*

42 U.S.C. 6291(55)(B)

The term “BR30” means a BR incandescent reflector lamp with a diameter of 30/8ths of an inch.

42 U.S.C. 6291(55)(C)

BR40- The term “BR40” means a BR incandescent reflector lamp with a diameter of 40/8ths of an inch.

42 U.S.C. 6291(56)(A)

The term “ER incandescent reflector lamp” means a reflector lamp that has--

- (i) an elliptical section below the major diameter of the bulb and above the approximate baseline of the bulb, as shown in figure 1 (RE) on page 7 of ANSI C79.1-1994, incorporated by reference in section 430.22 of title 10, Code of Federal Regulations (as in effect on the date of enactment of this paragraph); and*
- (ii) a finished size and shape shown in ANSI C78.21-1989, incorporated by reference in section 430.22 of title 10, Code of Federal Regulations (as in effect on the date of enactment of this paragraph).*

42 U.S.C. 6291(56)(B)

The term “ER30” means an ER incandescent reflector lamp with a diameter of 30/8ths of an inch.

42 U.S.C. 6291(56)(C)

The term “ER40” means an ER incandescent reflector lamp with a diameter of 40/8ths of an inch.”

42 U.S.C. 6291(57)

The term “R20 incandescent reflector lamp” means a reflector lamp that has a face diameter of approximately 2.5 inches, as shown in figure 1(R) on page 7 of ANSI C79.1-1994.

3A.1.2.2 Code of Federal Regulations Definitions in 10 CFR 430.2

Basic model means all units of a given type of covered product (or class thereof) manufactured by one manufacturer and—

* * * * *

(16) *With respect to incandescent reflector lamps, means lamps that have essentially identical light output and electrical characteristics – including lumens per watt – and that do not have any differing physical or functional characteristics that affect energy consumption or efficacy.*

Design voltage with respect to an incandescent lamp means:

- (1) *The voltage marked as the intended operating voltage;*
- (2) *The mid-point of the voltage range if the lamp is marked with a voltage range; or*
- (3) *120V if the lamp is not marked with a voltage or voltage range.*

Incandescent lamp means a lamp in which light is produced by a filament heated to incandescence by an electric current, including only the following:

- (1) *Any lamp (commonly referred to as lower wattage non-reflector general service lamps, including any tungsten halogen lamp) that has a rated wattage between 30 and 199, has an E26 medium screw base, has a rated voltage or voltage range that lies at least partially in the range of 115 and 130 volts, and is not a reflector lamp.*
- (2) *Any incandescent reflector lamp.*
- (3) *Any general service incandescent lamp (commonly referred to as a high-or higher-wattage lamp) that has a rated wattage above 199 (above 205 for a high wattage reflector lamp).*

Incandescent reflector lamp (commonly referred to as a reflector lamp) means any lamp in which light is produced by a filament heated to incandescence by an electric current, which: is not colored or designed for rough or vibration service applications that contains an inner reflective coating on the outer bulb to direct the light; has an R, PAR or similar bulb shape (excluding ER or BR) with an E26 medium screw base; has a rated voltage or voltage range that lies at least partially in the range of 115 and 130 volts; has a diameter that exceeds 2.75 inches; and is either a low(er)-wattage reflector lamp that has a rated wattage between 40 and 205; or a high(er)-wattage reflector lamp that has a rated wattage above 205.

Rated voltage with respect to incandescent lamps means:

- (1) *The design voltage if the design voltage is 115V, 130V or between 115V and 130V:*

- (2) 115V if the design voltage is less than 115V and greater than or equal to 100V and the lamp can operate at 115V; and
- (3) 130V if the design voltage is greater than 130 V and less than or equal to 150 V and the lamp can operate at 130V.

Voltage range means a band of operating voltages as marked on an incandescent lamp, indicating that the lamp is designed to operate at any voltage within the band.

3A.1.3 All Covered Lamps

42 U.S.C. 6291(30)(G)

The term “average lamp efficacy” means the lamp efficacy readings taken over a statistically significant period of manufacture with the readings averaged over that period.

42 U.S.C. 6291(30)(H)

The term “base” means the portion of the lamp which connects with the socket as described in ANSI C81.61-1990.

42 U.S.C. 6291(30)(J)

The term “color rendering index” or “CRI” means the measure of the degree of color shift objects undergo when illuminated by a light source as compared with the color of those same objects when illuminated by a reference source of comparable color temperature.

42 U.S.C. 6291(30)(K)

The term “correlated color temperature” means the absolute temperature of a blackbody whose chromaticity most nearly resembles that of the light source.

42 U.S.C. 6291(30)(M)

The term “lamp efficacy” means the lumen output of a lamp divided by its wattage, expressed in lumens per watt (LPW).

10 CFR 430.2

Lamp Efficacy (LE) means the measured lumen output of a lamp in lumens divided by the measured lamp electrical power input in watts expressed in units of lumens per watt (LPW).

42 U.S.C. 6291(30)(N)

The term “lamp type” means all lamps designated as having the same electrical and lighting characteristics and made by one manufacturer.

42 U.S.C. 6291(30)(O)

The term “lamp wattage” means the total electrical power consumed by a lamp in watts, after the initial seasoning period referenced in the appropriate IES standard test procedure and including, for fluorescent, arc watts plus cathode watts.

42 U.S.C. 6291(30)(P)

The terms “life” and “lifetime” mean length of operating time of a statistically large group of lamps between first use and failure of 50 percent of the group in accordance with test procedures described in the IES Lighting Handbook-Reference Volume.

42 U.S.C. 6291(30)(Q)

The terms “lumen output” means total luminous flux (power) of a lamp in lumens, as measured in accordance with applicable IES standards as determined by the Secretary.