## The Energy Policy Act of 2005 (EPAct 2005): Regulations and Tax Deduction Opportunities and Energy Independence and Security Act of 2007

(EISA 2007)

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# History: Energy Policy Act 1992

#### Lighting Elements

- Labeling incandescent A-line and screw-based CFLs with energy cost info
- Minimum efficacies for incandescent R 30 & 40, plus incandescent PAR lamps, effective 10/31/95
- Minimum efficacies and color rendering standards (CRI) for straight and U-bend fluorescent, effective for 4-ft and 8-ft lamps 10/31/95

#### Intents

- Encourage use of more energyefficient screw-based lamps
- Encourage use of more energy efficient halogen reflector lamps
- Eliminate availability of full wattage T12 "halo" fluorescent lamps and encourage use of reduced wattage ES types <u>or</u> use of more efficient rare earth types, like T8s



## EPAct 2005 for the Commercial Building Tax Deduction Provisions

**A Brief Overview** 



## **Overview ASHRAE/IESNA Standard 90.1**

#### DOE uses it as State baseline for energy codes

- 1989 was the first standard
- 1999, 2001 & 2004 are used in some jurisdictions
- 2001 used as the baseline for EPAct 2005 tax provisions
- 2004 standard published in December 2004
- Uses lighting power density (W/sf) to limit energy use
- Applies to all buildings except low-rise residential
  - Similar to Title 24 energy code in California
- IRS Notice 2008-40 expanded the definition of a building to include
  - Enclosed space affording shelter to persons, animals or property within exterior walls and a roof
  - Is not a single-family house, a multi-family structure of 3 stories or fewer above ground, a manufactured home (mobile home), or a manufactured house (modular)
    Is unconditioned attached or detached garage space

  - Separate limits for exterior and interior
- EPACT 2005 is only concerned with interior lighting



## Interior Lighting Power Allowance

ASHRAE/IESNA Standard 90.1 1999 and later

- Two methods to determine your allowance:
  - Building Area Method
    - Usually more restrictive than the space by space method
  - Space by Space Method
    - Usually more liberal than the Building Area Method, and more complex

Sample Lighting Power Densities allowed for building area types:

- Hospital/Health Care 1.6 W/sf
- 2.2 W/sf Manufacturing
- Office 1.3 W/sf
- Religious building 2.2 W/sf

Sample Lighting Power Densities allowed for space types:

- Emergency Room 2.8 W/sf
- Manuf. (High Bay) 3.0 W/sf 1.5 W/sf
- Private Office
- Church Pulpit Area 5.2 W/sf
- Bottom line: EPACT tax deduction provisions are based on the idea that a new or renovated building will "beat" a watts per square foot standard by some percentage



### **EPAct 2005:**

# Tax Deduction Provisions and Opportunities





## The Energy Policy Act of 2005: Tax Deductions

- 2005 EPAct Tax Deduction Provisions for Commercial Buildings ("commercial" means non-residential, and includes industrial, retail, office, etc.)
  - "Complete" Deduction, <u>new or retrofit</u>
    - Must include 3 sets of building systems: 1) building envelope, 2) interior lighting, and 3) HVAC and hot water systems
    - One-time tax deduction based on <u>up to \$1.80/sq.ft</u>. for buildings that beat ASHRAE/IESNA 90.1-2001 by 50% or more
    - Difficult to achieve.....
  - "Partial" Deduction, <u>new or retrofit</u>
    - One-time tax deduction based on <u>up to \$0.60/sq.ft</u>. for one of the building systems that beat ASHRAE/IESNA 90.1-2001 by some percentage
    - Likely the best opportunity for <u>interior lighting</u> systems
  - Deduction <u>cannot exceed cost</u> of the measure (design, labor, and material)



### **EPAct 2005 Partial Tax Deduction, Interim Rules**

Interim Rules for Commercial Building Interior Lighting Systems

- Energy-efficient lighting can be used to achieve up to 1/3 of the tax deduction
  - From \$0.30/sq.ft for beating 90.1-2001 by 25%
  - Up to \$0.60/sq.ft for beating 90.1-2001 by 40%
  - A "sliding scale" approach is used for savings between 25% and 40%
  - Exception: warehouses can get \$0.60 but the interior lighting must beat 90.1-2001 by 50% -- all or nothing
  - Note: all of these lighting solutions must be capital expenditures; therefore simple lamp replacements do not qualify

% of LPD reduction beyond ASHRAE/IES 90.1 2001	<25%	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	36%	37%	38%	39%	40%	>40%
Amount of Eligible Tax Deduction /sq.ft.	\$0.00	\$0.30	\$0.32	\$0.34	\$0.36	\$0.38	\$0.40	\$0.42	\$0.44	\$0.46	\$0.48	\$0.50	\$0.52	\$0.54	\$0.56	\$0.58	\$0.60	\$0.60

e.g., Beat by 33%, get \$0.46/sf



## What is the window of opportunity?

- Building must be placed into service between Jan 1, 2006- Dec 31, 2008 to claim the deduction
  - EXTENDED to Dec 31,2008 effective 12/20/06!
- Still hope to get another extension during 2008 legislative session
  - Pending legislation:

Clean Energy Tax Stimulus Act of 2008





## Who gets the deduction?

Asset owner gets the deduction for depreciable property
BUT if the owner is a public entity (e.g. schools), the designer of the system can claim the tax deduction

The details of this provision have been clarified by the IRS

Tenants may get this deduction, if, for tax purposes, they are considered to be the asset owner; EPAct 2005 did not change the tax laws.... Whoever carries the lighting fixtures as an asset on their books is most likely to be considered the "owner" for tax purposes.



## Is this a deduction or a credit?

- This is a tax <u>deduction</u> provision, <u>not a tax credit</u>
  - Deductions are taken prior to calculating the final tax amount owed
  - Credits are subtracted from the amount of the tax
- The deduction is for depreciable property and therefore has the net effect of rapidly accelerating the depreciation applied to the new lighting system
- No specific IRS claim form
  - Option 1
    - IRS form 4562, Depreciation & Amortization
    - Part 2, Special Depreciation Allowance & Other Depreciation
    - Attach item list of all deductions
  - Option 2
    - Form 1120 for corporations, Form 1120-S for S corporation, Form 1065 for partnerships
    - Include the deduction in the amount entered in the "Other deductions" line
    - Attach item list of all deductions included in the "Other deductions" line



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## **EPAct 2005 Commercial Building Tax Deduction**

- Building improvements are normally subject to depreciation over 39 years
- Tax deductions reduce taxable income
- Schaedler Yesco Project Cost: \$120,000
- EPAct Commercial Building Tax Deduction: \$58,346
  - Based on \$0.60/square foot
  - Warehouse @ 66,663 sq. ft  $\rightarrow$  \$40,000
  - Office @ 30,588 sq. ft. → \$18,346

Project balance depreciated over 39 years: \$61,654



## **Tax Return Form 1120-S**

	Do not file this form unless the corporation has filed Form 2553     to elect to be an S corporation.     See separate instructions.					2006		
For a	calendar ye	ar 2006 or tax	year beginning , 2006, ending			, 20		
	ective date of 8 ction	Use IRS	Name		C Employ	rer identification number		
B Business activity code number (see instructions)		Other- wise,	Number, street, and room or suite no. If a P.O. box, see instructions.		D Date in	corporated		
		print or type.	City or town, state, and ZIP code		E Total as	sets (see instructions)		
					\$			
F Ch	neck if: (1)	Initial return	(2) Final return (3) Name change (4) Addres	s change	(5)	Amended return		
G En	ter the num	ber of sharehol	ders in the corporation at the end of the tax year					
H Ch	neck if Sche	dule M-3 is req	uired (attach Schedule M-3)					
			usiness income and expenses on lines 1a through 21. See the instr					
	1a Gross re-	eipts or sales	b Less returns and allowances	c Bal ►	1c			
e	2 Cost of	goods sold (S	chedule A, line 8)		2			
ncome	3 Gross	profit. Subtract	line 2 from line 1 c		3			
ĕ	4 Net ga	n (loss) from Fo	mm 4797, Part II, line 17 (attach Form 4797)		4			
-	5 Other i	ncome (loss) (se	e instructions-attach statement)		5			
	6 Total i	ncome (loss). /	dd lines 3 through 5	►	6			
ŝ	7 Compe	nsation of offic	ers		7			
limitations)	8 Salarie	and wages (le	ss employment credits)		8			
불	9 Repairs	and maintenar			9			
ler.	10 Bad de	bts			10			
	11 Rents				11			
instructions	12 Taxes	and licenses .			12			
21	13 Interes				13			
nst-	14 Depred	iation not claim	ed on Schedule A or elsewhere on return (attach Form 4562).		14			
	15 Depleti	on (Do not ded	uct oil and gas depletion.)		15			
\$ ·	16 Adverti	sing			16			
Suo	17 Pensio	n, profit-sharing	,etc.,plans		17			
ы В	18 Employ	ee benefit prog	rams	· A -	18			lina 10
			rams	HAUT	19		+	– Line 19
	20 Total o	eductions. Add	Dines 7 through 19	►	20			
	21 Ordina				21			

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## Form 1120S Line 19 Other Deductions

#### Itemized list of "other deductions" attached to Form 1120-S

SCHAEDLER/YESCO DISTRIBUTION, INC.

23-1486799

FORM 1120S, PAGE 1 DETAIL

LINE 19 - OTHER DEDUCTIONS

AMORTIZATION COMMISIONS AUTO EXPENSES PROFESSIONAL FEES POSTAGE TELEPHONE UTILITIES TRAINING OUTSIDE SERVICES INSURANCE TRUCKS - OPERATING COSTS MISCELLANEOUS SUPPLIES TRAVEL & ENTERTAINMENT 50% TRAVEL & ENTERTAINMENT SELLING EXPENSES DUES & SUBSCRIPTIONS DIRECTOR'S FEES TRASH REMOVAL LOSS ON ABANDONMENT DEMO EXPENSE CUSTODIAL SERVICES BANK CHARGES POSTAGE AND SUPPLIES EPACT ENERGY DEDUCTION

58,346.



TOTAL

### What other lighting requirements must be met?

- Must meet IESNA recommended minimum design light levels (e.g., offices are 30-50 fc)
- Must follow luminaire wattage rules (e.g., if a downlight is labeled as 150W, you must count it as 150W even if you put a lower wattage in it)
  - If a luminaire can be labeled for a specific wattage lamp, that lamp wattage can be used to determine the luminaire wattage
- Line voltage track: 30W per linear foot
- Low voltage track: maximum wattage of the transformer



# For fluorescent systems, how do I count the wattage?

- Lamp/ballast system input wattage must be used
- If energy-saving lamps are selected and installed, use the data for those lamps when calculating the system wattage
  - For example, if you choose and install 3 28W lamps on a 0.78BF 3-lamp electronic ballast, input power is 63W
    - Document lamp/ballast combination in job material document
    - Identify the 28W lamp on label in fixture
- If specifications are not clear or it is unknown what will ultimately be installed, use the maximum wattage on the fixture label
  - For T8 lamps, this translates to assuming that 32W lamps will be installed



### What other lighting requirements must be met?

- Must follow all <u>applicable</u> ASHRAE/IESNA Standard 90.1-2001 control requirements
- Must have "bi-level switching" in all occupancies, except in hotel/motel guest rooms, store rooms, restrooms, public lobbies and garages\* (this is not part of 90.1 – it is in addition to it) – more on this later.....
  - \*Garages appear in IRS Notice 2008-40



# What controls requirements must be met, per ASHRAE/IESNA Standard 90.1 - 2001?

#### "Building Control"

- All new buildings larger than 5000 square feet must have automatic shut-off of lighting in all spaces, per Section 9 of the standard, as well as having lighting controls readily accessible in the space; however...
  - In retrofits, <u>if you do not do anything with the existing controls</u>, you do not need to meet the new building controls requirements from 90.1
  - In retrofits, <u>If you do modify the existing controls</u>, or <u>if you replace more than 50% of</u> <u>the luminaires</u>, then you have to meet the "space control" requirements for new buildings
- "Space Control"
  - For a space  $\leq$  10,000 ft<sup>2</sup>, 1 control per 2,500 ft<sup>2</sup>
  - For a space > 10,000 ft<sup>2</sup>, 1 control per 10,000 ft<sup>2</sup>
  - Tandem wiring for 1 or 3 lamp linear fluorescents with magnetic ballasts
  - Must be able to see the lighting from the control, unless there is a safety or security issue



## How is bi-level switching defined?

- "<u>Bi-level switching</u> is defined as manual or automatic control (or a combination thereof) that provides two levels of lighting power in a space (not including off). A space is defined as an area enclosed by four or more floor to ceiling walls. Dimming or switching would satisfy this definition."\*\*
  - Large spaces are easy to do, because zone switching qualifies as bi-level switching -- provided you have at least 2 zones!
  - Smaller spaces with one switch controlling all lights to either "on" or "off" must be re-wired or dimmed
  - Use of an occupancy sensor to turn all lights in a space either "on" or "off" together is not enough to qualify as bi-level switching
- Check state and local codes for definitions of bi-level switching

\*\* Per FAQ section of <u>www.efficientbuildings.org</u>, recognized as an authoritative source on this issue by NEMA and by the Tax Incentives Assistance Project

## What about local or state energy codes?

- All existing building codes and product regulations applicable to the building construction must be met
   ASHRAE / IESNA 90.1-2001 is simply the baseline to determine the
  - power density necessary to claim the commercial buildings tax deduction
    - For renovations, there are no requirements to verify existing power density or to improve the energy efficiency by a specific amount
      - Adopted code meets or exceeds 2006 IECC / ASHRAE 90.1-2004 or equivalent
      - Meets 2003 IECC / ASHRAE 90.1-2001 or equivalent
      - Meets 2001 IECC / ASHRAE 90.1-1999 or equivalent (meets EPCA)
      - Precedes ASHRAE 90.1-1999 or equivalent (does not meet EPCA)
      - No statewide code
      - New code soon to be effective
      - Significant adoptions in jurisdictions



http://www.bcap-energy.org/node/21



# Can you give an example?



- Assume a 100,000 square foot office building achieving a lighting power density 40% lower than the minimum standards of ASHRAE/IESNA 90.1-2001-- and all illuminance & controls requirements are met
- Maximum possible tax deduction based on \$0.60 per square foot
  - Not to exceed actual cost
- Results (for this example):
  - Building owner earns a maximum gross tax deduction of \$0.60 per square foot during the year the building is commissioned... or \$60,000.
    - If the owner pays \$60,000 or more in design, material, and labor to do this retrofit, then \$60,000 can be written off in the year the building was commissioned and the balance would be depreciated in the normal fashion
    - If the owner pays less than \$60,000 for the retrofit—let's say \$50,000----then the deduction is capped at \$50,000....but the benefit is that the \$50,000 can be written off in one year instead of having to depreciate it over time
- Net tax deduction based on taxpayer's tax rate



### What are the best websites for new information?

- Clarifications are now routinely posted to FAQ sections of several websites:
  - www.efficientbuildings.org
  - www.energytaxincentives.org
  - www.lightingtaxdeduction.org
  - All are very good, and all have had expert input from industry, advocates, and technical organizations



# Further clarifications from IRS



- June 2, 2006, the Internal Revenue Service (IRS) issued 24 pages of Guidelines, Notice 2006-52, the first step of having a set of "permanent rules"
  - http://www.irs.gov/pub/irs-drop/n-06-52.pdf
- In March, 2008, the IRS issued 17 pages of additional Guidelines, Notice 2008-40
  - http://www.irs.gov/pub/irs-drop/n-08-40.pdf
- Lighting systems were affected in several significant ways



## IRS described "Permanent" Rules for Lighting we call them "New Partial Deduction Rules"

- Permanent Rules/Partial Deduction Rules are different from Interim Rules, as follows:
  - Entire building (new or renovated) has to be compared to a Reference Building of the same type in the same climate, using <u>"approved" software</u>
  - The whole building has to be modeled and baseline energy usage calculated as if it were following ASHRAE/IESNA Standard 90.1-2001 power densities; total power usage includes these systems: Lighting, heating, cooling, ventilation, and hot water
  - Determine the power density and reduce by 50%
  - If one system, must save 1/3<sup>rd</sup> of 50% (16-2/3%)
  - Proposed new lighting systems power must then be lowered to the point where the delta is 16-2/3% or more of the total building power allowance
    - Then 60 cents per square foot tax deduction is allowed for new lighting
  - Bi-level switching requirement appears to be dropped from the "partial deduction" rules
- Bottom Line: there are now two options for taking a partial deduction for lighting -- "new partial deduction rules" and "interim rules" – take your pick



# Which set of rules should building owners follow for lighting?

- We recommend following the Interim Rules
  - For most installations, the lighting power densities will be easier to comply with than the new IRS Partial Deduction rules or the Complete Deduction Rules
  - The sliding scale allows for a range of deductions, not just all or nothing
  - No approved software is required for compliance
    - May be computed using a spreadsheet or other similar software
  - NOTE: The only area of potential "difficulty" is with bi-level switching, but try to treat it as an opportunity rather than a problem



## Key points about the IRS Guidelines

- Interim rules will be set aside when the "final" Guidelines are published to the Federal Register -- BUT, per the IRS, this will not happen before late in 2008
  - Net effect is that there are two sets of permanent rules for lighting systems interim rules are the easiest
- The "designer" has now been defined for public buildings
  - The "designer" may take the tax deduction
- Other clarifications were made, including the answers to the following questions....



## The "Designer" for Government Property

- Qualifying Property: property owned by a Federal, State, or local government or political subdivision
- The owner of the government property may allocate the deduction to the person primarily responsible for designing the property
- A designer is a person that creates the technical specifications
- The designer may be the architect, engineer, contractor, environmental consultant or energy services provider
- There can be more than one "designer"
  - If so, the owner allocates among the designers
- A person that installs, repairs or maintains the property is <u>not</u> a designer



# The "Designer" for Government Property

- The owner must allocate the tax deduction in writing
   The allocation document must include
  - The name, address and phone # of the authorized rep of the owner
  - The name, address and phone # of an authorized rep of the designer
  - The address of the government-owner building
  - The cost of the qualifying property (ex. cost of the new lighting system)
  - The date the property was placed into service
  - The amount of the deduction allocated to the designer
  - Signatures of both the owner and designer's reps
  - Prescribed declaration statement
    - "Under penalties of perjury, I declare that I have examined this allocation, including accompanying documents, and to the best of my knowledge and belief, the facts presented in support of this allocation are correct and complete
- The designer does not submit the allocation document when taxes are filed, but holds the allocation document should it be needed in the future
- The maximum amount of the deduction is the amount of the costs incurred by the owner
- Notice 2008-40
  - http://www.irs.gov/pub/irs-drop/n-08-40.pdf



## Every project must be certified. Who is qualified to certify compliance?

#### "A qualified individual

- (1) is not related to the taxpayer claiming the deduction...;
- (2) is an engineer or contractor that is properly licensed as a professional engineer or contractor in the jurisdiction where the building is located; and
- (3) has represented in writing to the taxpayer that he or she has the requisite qualifications to provide the certification..."
- Certifications do not need to be sent in with the tax return, but must be held in the taxpayers' files in case of audit
- <u>http://www.irs.gov/pub/irs-drop/n-06-52.pdf</u>
   <u>www.nlb.org</u>



# What certification information should be included by the certifier?

- Name, address, & telephone number of the qualified person
   Address of the building
- Prescribed statement for energy efficient lighting property that satisfies the requirements of either the "permanent" rule or the interim rule
- Statement that reduced energy has been determined under the IRS rules
- Statement that field inspections were conducted and that the building has – or will – meet the energy saving targets contained in the plans and specifications
- Statement that the building owner has received an explanation of the energy efficiency features of the building and projected annual energy costs
- Statement that qualified computer software was used, if applicable
- List of components of the interior lighting system installed in the building
- Prescribed statement declaring the certifier believes the facts presented to be true, correct, and complete



## **Additional Guidance**

Provided by National Electrical Manufacturers Association (NEMA)

- "National Electrical Manufacturers Association Guidance on Energy Policy Act Commercial Building's Tax Deduction Certification Letters"
- http://www.nema.org/gov/efficientbuildings
- Provides specific text to be used by the certifier and a sample certification of compliance letter when using the interim lighting rule
- Provided by National Renewable Energy Laboratory (NREL)
  - "Energy Savings Modeling and Inspection Guidelines for Commercial Building Federal Tax Deductions"
  - http://www.nrel.gov/publications
  - Publication # NREL/TP-550-40228



## Where will approved software be posted ?

IF a building owner wants to go for the "Complete Deduction" (all 3) building systems) or use the IRS "New Partial Deduction Rules", they must use approved software for building modeling The approved software is posted on: http://www.eere.energy.gov/buildings/info/qualified\_software/ **To date, these programs are listed:** TRACE 700 from TRANE, versions 6.0.2.1, 6.1.0.0, 6.1.1.0 & 6.1.2.0 Energy Plus from DOE, versions 1.3.0.018, 1.4.0.025, 2.0.0.025 & 2.1.0.023 Hourly Analysis Program version 4.31 & 4.34 VisualDOE version 4.1 build 0002 Energy Gauge Summit versions 3.1, 3.11, 3.13, 3.14 ■ EnerSim, version 07.11.30 Green Building Studio, versions 3.0 DOE-2.1E version 119 DOE-2.1E-JJH, version 130 Owens Corning Commercial Energy Calculator (OC-CEC) version 1.1 Software can be removed from the approved list SYLVANIA

# Some lighting product types that work well in the tax deduction scenario...

- High efficiency fluorescent ballasts
- Programmed start fluorescent ballasts with high lumen T8 lamps
- Fluorescent dimming systems (bi-level)
- T5 fluorescent systems
- Pin-based compact fluorescent lamps
- Ceramic and pulse start metal halide lamps

This is a huge opportunity. Knowledge of ASHRAE/IESNA Standard 90.1 and of the EPACT 2005 tax deduction provisions will be necessary.

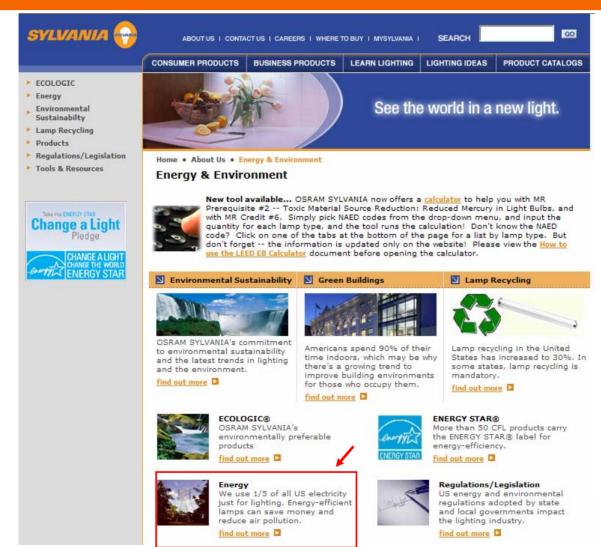


## www.sylvania.com

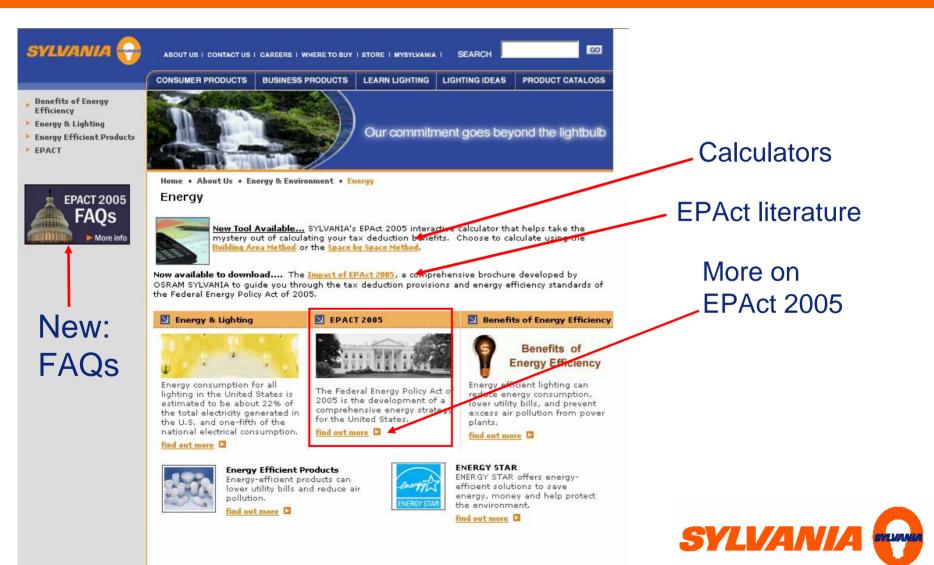


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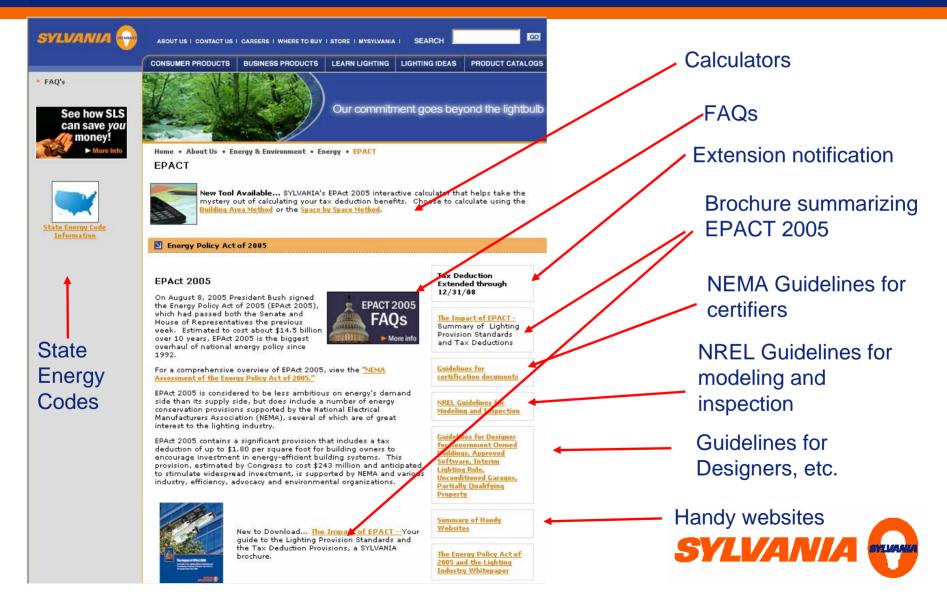
## www.sylvania.com



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# <u>www.sylvania.com</u>



### **SYLVANIA EPAct 2005 Calculators....**

EPAct 2005	SYLVANIA 🔂
Commercial Building Tax Deduction (	Calculator
Building Area Method	
Total Square Footage of Building (sq.ft)	Enter Value
Total Installed Lighting Load (kW)	Enter Value
Your Actual Lighting Power Density (W/sq.ft)	
Building Area Type	Select Building Type
ASHRAE/IES 90.1 2001 LPD Value (W/sq.ft)	
Does system beat ASHRAE/IESNA Standard 90.1-2001	
If Yes, by what percentage?	
Do I qualify for a possible Tax Deduction?	
If Yes, what Tax Deduction rate might I expect?	
What is my Gross Tax Deduction?	
My current tax rate is: (%)	Enter Value
What is my net tax benefit?	
-	Reset Refresh/Calculate



### **SYLVANIA EPAct 2005 Calculators....**

Space by Space Calculator

**EPAct 2005** 

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#### **Commercial Building Tax Deduction Calculator**

Space by Space Method

Total Square Footage of Building (sq.ft) Total Installed Lighting Load (kW)

Your Actual Lighting Power Density (W/sq.ft)

Building Type

Sub Building Type

Space Type

ASHRAE/IES 90.1 2001 LPD Value (W/sq.ft)

Does system beat ASHRAE/IESNA Standard 90.1-2001

If Yes, by what percentage?

Do I qualify for a possible Tax Deduction?

If Yes, what Tax Deduction rate might I expect?

What is my Gross Tax Deduction?

My current tax rate is: (%)

What is my net tax benefit?

	Enter Value
	Enter Value
	Select Building Type
	~
	<b>~</b>
?	
	Enter Value
	Reset Refresh/Calculate Print



### **EPAct 2005:**

### **Covered Lighting Products**



### The Energy Policy Act of 2005: Lighting Products

- Effective January 1, 2006....
  - Exit Signs must meet Energy Star V2.0
  - Torchieres are limited to 190W max



- Medium Based CFLs (bare and covered bulbs, not reflector types) must meet Energy Star V2.0 Requirements\*\* for:
  - Initial LPW
  - Lumen maintenance at 1000 hours and at 40% rated life
  - Rapid cycle stress testing
  - Lamp life
- Medium based CFLs <u>may</u> have future minimum regulations for:
  - CRI
  - Power factor
  - Operating frequency
  - Start-up time
- \*\* This essentially sets a performance "floor" for all integrally ballasted CFLs sold in the U.S, while recognizing that any current Energy Star requirements will be more stringent





### The Energy Policy Act of 2005: Lighting Products

### Effective January 1, 2008...

- Mercury Vapor Lamp Ballasts for general illumination applications may not be manufactured or imported
  - Late in 2005, a notice in the Federal Register clarified that this also includes luminaires containing such ballasts
  - 2007 legislation provides for continued use in specialty applications provided the ballast is marked "Not for general illumination" and identifies the specialty application

### And beginning July 1, 2009...

- New efficiency requirements for ballasts operating Energy Saver-type T12 fluorescent lamps go into effect
- By 2010, ballast manufacturers cannot manufacture replacement ballasts that do not pass the new BEF requirements.



# The Energy Policy Act of 2005: Products

2005 EPAct Ballast Regulations, added to 2000 Federal Ballast Rule

Action	Per 2000 Ballast Rule: BEF Standards for operation of <u>full-</u> <u>wattage</u> T12 Lamps	Per 2005 EPAct: BEF Standards for operation of <u>energy- saving</u> T12 Lamps
Ballast manufacturers can no longer make ballasts that do not pass the new requirements for use in new fixtures.	April 1, 2005	July 1, 2009
Ballast manufacturers cannot sell ballasts that do not pass the new requirements to U.S. fixture manufacturers.	July 1, 2005	October 1, 2009
Fixture manufacturers cannot sell fixtures that include ballasts that do not pass the new requirements.	April 1, 2006	July 1, 2010
Ballast manufacturers cannot manufacture replacement ballasts that do not pass the new requirements.	July 1, 2010	July 1, 2010

### **Most Recent Federal Legislation**

# Energy Independence and Security Act of 2007 (ESIA 2007)

Signed into law on 12/19/07



Incandescent Reflector Lamps and General Service Incandescent Lamps



# **Incandescent Reflector Lamps**

### LPW standards

 Same as established in 1992 for lamps >2.75 inches in diameter

### EISA Added

- BR, ER and BPAR (OPAR) lamps and
- Reflector lamps between 2.25 (18/8) and 2.75 (22/8) inches in diameter

### EISA Exempted

- BR30, BR40 & ER40 lamps rated at 65W
- ER30, BR30, BR40 & ER40 lamps rated at  $\leq$  50W
- R20 lamps rated at ≤ 45W

### Effective dates

- Lamps between 2.25-2.75 inches: 180 days after enactment – June 16, 2008
- BR, ER & BPAR(OPAR): 1/1/2008, but have requested an extension to June 16, 2008
- State laws with earlier effective dates will remain in effect until the Federal standards become effective (CA, MA, OR, RI, VT & WA)

Wattage Range	Minimum LPW
40-50W	10.5
51-66W	11.0
67-85W	12.5
86-115W	14.0
116-155W	14.5
156-205W	15.0



### **Incandescent Reflector Lamps**

Effect of this is to allow the continued sale of 65BR30 lamps as well as reduced wattage R20, BR40 and ER40 lamps

- All wattages K19: replace with Halogen PAR16 or PAR20
- **50W R20 lamps:** replace with new 45W R20 or any wattage Halogen PAR20
- BR40 lamps > 65W and < 205W: replace with 65W BR40 or Halogen PAR38</p>
- Sale of all non-colored OPAR (one-piece) lamps will end

#### 45W R20

15670 45R20/RP 14997 45R20/RP/2/12 15698 45R20/DL/RP 15676 45R20/CVP 15677 45R20/DAY/1/6 15480 45R20/XTRA/RP

#### 65W BR40

15678 65BR40/FL/RP 15332 65BR40/DL/FL/RP 15679 65BR40/CVP 15487 65BR40/FL/DAY/1/6/RP 15472 65BR40/XTRA/FL/RP

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# **General Service Incandescent Lamps**

### Covers

- Incandescent or halogen lamps
- Intended for general service applications
- Medium screw bases
- Lumen range of 310-2600 (40-100W in today's wattages)
- Capable of operating in range of 110-130V
- Establishes maximum wattages for 4 specific lumen ranges, minimum rated life and CRI (see next slide)
  - Caps candelabra based lamps at 60W
- Caps intermediate base lamps at 40W
- Identifies types not covered
  - Appliance, bug, colored, infrared, marine, mine, reflector, rough service, shatterresistant, sign, 3-way, traffic, vibration service, etc.
- Establish a watch list of lamps types that may be regulated in the future
  - Rough service, vibration service, 3-way, shatter-resistant and 2601-3300 lumen lamps (150W)



# **General Service Incandescent Lamps**

Current Wattage	Rated Lumen Ranges	Maximum Rated Wattage	Minimum Rated Lifetime	Effective Date (Manufactured on or after)
100	1490-2600	72	1,000 hours	1/1/2012
75	1050-1489	53	1,000 hours	1/1/2013
60	750-1049	43	1,000 hours	1/1/2014
40	310-749	29	1,000 hours	1/1/2014

Modified spectrum (*Daylight*<sup>™</sup>) lamp lumen ranges are 25% lower
 Minimum of 80 CRI except for modified spectrum which have a minimum of 75 CRI



# **General Service Incandescent Lamps**

- State Preemption for General Service Lamps
- California and Nevada
  - California's Title 20 standards effective 1/1/2008 remain in effect until the Federal standards become effective
    - $40 \rightarrow 38; 60 \rightarrow 57; 75 \rightarrow 71; 100 \rightarrow 95$  (5% energy savings)
  - Nevada adopted legislation that called for <u>all</u> "general purpose lights" sold in the state to be 25 LPW by 1/1/2012
  - California and Nevada may adopt the Federal standards no more than one year earlier than the Federal effective dates
    - Phase-in schedule must be maintained starts in 2011 and ends in 2013 instead of starting in 2012 and ending in 2014
  - All other states are preempted



# 2008 Incandescent Reflector and General Service Lamp Legislation Summary

	Coverage	Timing	Main Impacts
General <u>Purpose</u>	California Only	January 1, 2008 Manufacturing Date	Reduced Wattage Versions ex. 60W A19 becomes 57W Maximum Double Life Not Possible, use XTRA Life
	Federal	Beginning 1/1/2012	Eliminates popular wattages of 100, 75, 60 & 40
<u>Reflector</u>	CA, OR, WA, MA RI, VT	January 1, 2008 All are Manufacturing Date	Reduced Wattage Versions ex. 75W BR40 becomes 65W BR40 ex. 50W R20 becomes 45W R20
	Federal	January 1, 2008 for BR30, BR40, ER30 & ER40 & June 16, 2008 for 2.25-2.75" diameter lamps	100/120W BR40 and OPAR Replace with Halogen 65W BR30 No Change

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### **Metal Halide Fixtures**



# **Metal Halide Fixtures**

### Covers

- Metal halide lamp fixtures operated with lamps  $\leq$  150W but  $\leq$  500W shall contain
  - A pulse-start metal halide ballast with a minimum ballast efficiency of 88%
  - A magnetic probe-start ballast with a minimum ballast efficiency of 94%
  - A non-pulse-start electronic ballasts with
    - A minimum ballast efficiency of 92% for wattages > 250W
    - A minimum ballast efficiency of 90% for wattages ≤ 250W

### Exclusions

- Fixture with regulated lag ballasts
- Fixtures with electronic ballasts to operate at 480V
- Fixtures that
  - Are only rated for 150W lamps and
  - Are rated for use in wet locations and
  - Contain a ballast that is rated to operate at ambient air temperatures above 50°C

### Effective Date

- Applies to fixtures manufactured on or after 1/1/2009
- State laws with earlier effective dates will remain in effect until the Federal standards become effective (AZ, CA, NY, OR, RI, WA)



### **Other Provisions**



# **High-Performance Commercial Buildings**

Section 421 Commercial High-Performance Green Buildings

 Establishes an Office of Commercial High-Performance Green Buildings within DOE and an industry Green Building Partnership Consortium

Section 422 Zero-Net-Energy Commercial Buildings Initiative

- Authorizes this initiative to be run by the DOE Commercial High-Performance Green Buildings along with the industry consortium with goal of developing and disseminating technologies, practices and policies for net-zero-energy commercial buildings
  - All new buildings by 2030
  - Half of commercial building stock by 2040
  - All commercial buildings by 2050



# What is a Net-Zero-Energy Building?

- As defined by the DOE, a net zero energy building produces as much energy as it uses over the course of a year. Net zero energy buildings are designed to be extremely energy efficient and have low energy requirements. To meet the remaining energy needs, net zero energy buildings typically use renewable energy generated on site.
- The DOE also provides other definitions and example of buildings that are net zero energy buildings at this site:

http://www.eere.energy.gov/buildings/highperformance/zero\_energy\_buildings.h tml



### When you need information...

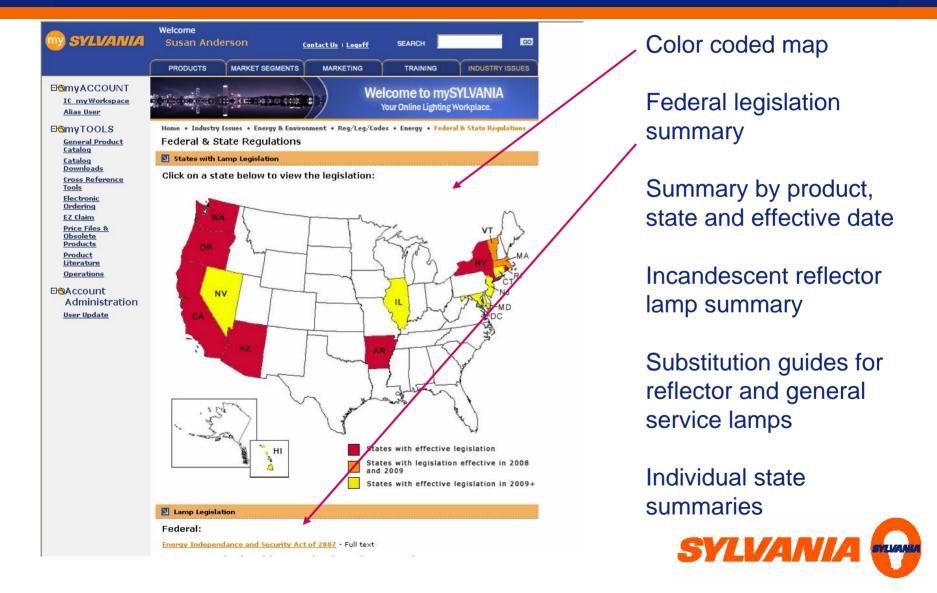


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# Questions???

