

Energy Tax Savers'  
EPAct Presentation  
To  
Texas Fluorescents

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# Energy Tax Savers, Inc.

## EPAct Presentation

Energy Tax Savers  
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## Energy Policy Act of 2005 (EPAct)

- Extended through 12/31/13
- Benefits available from 1/1/06 thru 12/31/13
- Incentivized areas:
  - Lighting
  - HVAC
  - Building envelope
- Available for New Construction and Existing Buildings
- Also available for:
  - Tenant owned lease-hold improvements
  - Primary Designers of Government Buildings

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## Who's using EAct?

First Movers	Reasons
Retailers	<ul style="list-style-type: none"> <li>• Energy is a major operating cost</li> <li>• Centralized facilities' management</li> </ul>
Distribution Centers	<ul style="list-style-type: none"> <li>• Major growth market</li> <li>• High economic return</li> </ul>
Hotels	<ul style="list-style-type: none"> <li>• Meet ASHRAE 2004 = Full EAct</li> <li>• Bi-level not required in guest rooms</li> </ul>
Parking Garages	<ul style="list-style-type: none"> <li>• Large facilities drive large EAct benefits</li> </ul>
Industrial Facilities	<ul style="list-style-type: none"> <li>• Large facilities drive large EAct benefits</li> <li>• Existing lighting is being phased out by law</li> </ul>
Office Buildings	<ul style="list-style-type: none"> <li>• More states enact ASHRAE 2004 or higher building energy codes</li> </ul>

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## What's it Worth?

### Potential Tax Savings for 300,000 sq. ft.

	Immediate Tax Deduction
Whole Building	<b>\$540,000</b>
Individual System Approach	
Lighting	<b>\$180,000</b>
HVAC	<b>\$180,000</b>
Building Envelope	<b>\$180,000</b>

Assumptions: 300,000 sq.ft. of facilities, Qualifying Energy Efficient improvements for entire space

**With Government Buildings these benefits go to the Primary Designer**

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## Commercial Building Immediate Deductions

- Stimulus Package emphasizes Energy Efficiency in Government Buildings
- Architects/Engineers/Lighting Designers
  - DOE goal to incentivize green design in **government** building sector
    - Benefits passed through to the primary designer of:
      - Federal
        - offices, military bases, court houses, post office, labs etc.
      - State
        - offices, transportation facilities, state universities, court houses etc.
      - County, city, town, village etc
        - offices, schools, town halls, police, fire, libraries etc.

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## What's in it for Architects/Engineers/Lighting Designers?

- Growth in this EPC area for government building designers is exploding
- Successful Design Niches:
  - K-12 Public Schools
  - State Universities and Colleges
  - Military Bases
  - Parking Garages
  - Airports

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## How do you Qualify?

- Mechanics
  - Deductions based on improvements over ASHRAE 90.1 2001
  - Energy efficient improvements must be depreciable assets
    - Converts 39 year depreciation to current deduction
  - Available for installations completed between 1/1/06 & 12/31/13
    - Can begin in prior years
  - Deduction amounts:
    - Lesser of total cost or:
      - \$1.80/sq.ft. Whole Building
      - \$0.60/sq.ft. Individual Systems
        - a. Lighting
        - b. HVAC
        - c. Building Envelope

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ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers)  
HVAC (Heating, Ventilation & Air Conditioning)

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## 8 Ways to Capture Tax Deduction

- Whole Building (\$1.80/ft<sup>2</sup>)
  - 50% Energy Cost Reduction below standard
- Permanent Rules partial deduction (\$0.60/ft<sup>2</sup>)

	Building Envelope	Lighting	HVAC
Alternative 1	16 <sup>2</sup> / <sub>3</sub> %	16 <sup>2</sup> / <sub>3</sub> %	16 <sup>2</sup> / <sub>3</sub> %
Alternative 2	10%	20%	20%

- Interim Lighting Rules (\$0.30/ft<sup>2</sup>-\$0.60/ft<sup>2</sup>)
  - 25% to 40% prescribed Light Power Density (LPD) reduction below standard

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## Where are the Benefits

- Lighting, Lighting, Lighting
- Lighting Controls
- Specific Types of HVAC
  - Geothermal
  - Thermal Storage
  - Central Chiller plants with small buildings(<150,000sq.ft.) in Campus
- LEED Buildings

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## Interim Lighting Rules

- Meet W/ft<sup>2</sup> targets
- Add'l Requirements
  - Bilevel Switching
  - Meet ASHRAE 90.1 Requirements
  - Meet IESNA minimum light levels

	2001 Standard LPD, W/ft <sup>2</sup>	25% Improvement	40% Improvement
Office	1.3	0.975	0.78
Manufacturing	2.2	1.65	1.32
School/Library	1.5	1.125	0.90
Retail	1.9	1.425	1.14
Warehouse	1.2	50% required, 0.60	

% Improvement	25%	26%	27%	28%	29%	30%	31%	32%	33%	34%	35%	36%	37%	38%	39%	40%
Tax Deduction \$/sq.ft.	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

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LPD (Light Power Density)

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## Definition of Bi-Level Switching

- *A room, as defined by floor to ceiling walls, must have at least two light levels other than off.*
- This can be met in a number of different ways:
  - Dimming ballasts create an infinite number of light levels
  - 50% of lights in a room on one switch, 50% on another or 60/40, 70/30...
  - Occupancy controls on separate lighting circuits
  - Even lights on at least 2 separate circuit breakers would technically qualify
- Exceptions
  - Storerooms, Restrooms, Lobbies, Hotel & Motel Guestrooms, and Garages

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## Benefiting from ASHRAE 2004 & 2003 IECC

	2001 Std. (W/ft <sup>2</sup> )	25% Over 2001	40% Over 2001	2004 Std. (W/ft <sup>2</sup> )	2004 % over 2001	
Automotive Facility	1.5	1.125	0.9	0.9	40%	X
Convention Center	1.4	1.05	0.84	1.2	14%	
Court House	1.4	1.05	0.84	1.2	14%	
Bar Lounge/Leisure	1.5	1.125	0.9	1.3	13%	
Cafeteria/Fast Food	1.8	1.35	1.08	1.4	22%	
Family Dining	1.9	1.425	1.14	1.6	16%	
Exercise Center	1.4	1.05	0.84	1	29%	X
Gymnasium	1.7	1.275	1.02	1.1	35%	X
Health Care Clinic	1.6	1.2	0.96	1	38%	X
Hospital	1.6	1.2	0.96	1.2	25%	X
Hotel	1.7	1.275	1.02	1	41%	X
Library	1.5	1.125	0.9	1.3	13%	
Manufacturing	2.2	1.65	1.32	1.3	41%	X
Motel	2	1.5	1.2	1	50%	X

	2001 Std. (W/ft <sup>2</sup> )	25% Over 2001	40% Over 2001	2004 Std. (W/ft <sup>2</sup> )	2004 % over 2001	
Movie Theater	1.6	1.2	0.96	1.2	25%	X
Museum	1.6	1.2	0.96	1.1	31%	X
Office	1.3	0.975	0.78	1	23%	
Parking Garage	0.3	0.225	0.18	0.3	0%	
Theater	1.5	1.125	0.9	1.6	-7%	
Police/Fire Station	1.3	0.975	0.78	1	23%	
Post Office	1.6	1.2	0.96	1.1	31%	X
Retail	1.9	1.425	1.14	1.5	21%	
School/University	1.5	1.125	0.9	1.2	20%	
Sports Arena	1.5	1.125	0.9	1.1	27%	X
Town Hall	1.4	1.05	0.84	1.1	21%	
Transportation	1.2	0.9	0.72	1	17%	
Warehouse	1.2			0.8		
Workshop	1.7	1.275	1.02	1.4	18%	

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## Energy Codes & Code Compliance

- 35 states are now at codes stricter than ASHRAE 2001
- Title 20 appliance standards and equivalent are eliminating the use of probe start metal halides (CA, OR, WA) others pending
- We see many designs that miss EPart and miss Building Codes
- Download COMcheck at:

[http://www.energycodes.gov/comcheck/ez\\_download.stm](http://www.energycodes.gov/comcheck/ez_download.stm)

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## States with Stricter Lighting Standards than ASHRAE 90.1 2001

<b>2003 IECC</b>	
Arkansas	New York
Colorado	Montana
Connecticut	Nebraska
West Virginia	
<b>2004/2006 IECC</b>	
Illinois	New Hampshire
Rhode Island	Pennsylvania
Maryland	Kentucky
South Carolina	Georgia
Wisconsin	Kansas
Oklahoma	New Mexico
Utah	Idaho
Iowa	
<b>ASHRAE 90.1</b>	
Virginia	Louisiana
Maine	New Jersey
Ohio	Nevada
<b>State Specific</b>	
California	Oregon
Florida	Vermont
North Carolina	Washington
Massachusetts	

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## Advanced Lighting Systems Tax planning

- Free Riding
  - Two items required for EAct eligibility
    1. Meet a performance target
    2. Have a Capital Lighting Project in an EAct year
  - Potential Free Riding projects
    - Lighting controls—Automation systems
    - Lighting portion of Building Management Systems
    - Daylighting design and systems

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## Lighting Retrofit Economics

- Energy Savings is usually the main driver
- In some states, Utilities offer Rebates for energy efficient lighting Installations
- Tax Savings is the newest opportunity
- Demand Response is another potential income stream
- Capitalizing on all the incentives can bring payback for projects to below 2 years and in some cases less than 1 year

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## Common Lighting Retrofits

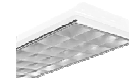
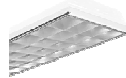
### Industrial/Manufacturing/Warehouse



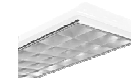
Metal Halide  
458 Watts

T5 HiBay Fluorescent  
234 Watts

### Office & Retail



Or



4 Lamp 4' T12  
Mag. Ballast  
144→164 Watts

3 Lamp 4' Super T-8  
Elec. Ballast  
72 Watts

2 Lamp 4' Super T-8  
Elec. Ballast  
67 Watts

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## Space-by-Space for Office

Description	25% Improvement as compared to 2001 Standard \$0.30/sq.ft. Deduction Watts/sq.ft.	40% Improvement as compared to 2001 Standard \$0.60/sq.ft. Deduction Watts/sq.ft.
Enclosed Office	1.125	0.90
Open Office	0.975	0.78
Training Room	1.200	0.96
Conference Room	1.125	0.90
Lobby	1.350	1.08
Restrooms	0.750	0.60
Food Prep	1.650	1.32
Dining	1.050	0.84
Electrical/Mechanical	0.975	0.78
Storage	0.825	0.66
Corridors	0.525	0.42

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## What data does EAct require?

Room	Sq.Ft.	Fixture	Count	Watts/ Fixture	Total Watts	New?	Bi-Level	Average Foot Candles
Office 201	400	F43SSILL	4	72	288	New	x	39
		F42SSILL	2	48	96	Retained	x	
				Total	384			
Office 202	100	F42SSILL	2	48	96	New	x	42
Office 203	100	F42SSILL	2	48	96	New	x	42
Office 204	100	F42SSILL	2	48	96	New	x	41
2 <sup>nd</sup> Floor Men's Room	130	FU1LL	3	32	96	New		14
2 <sup>nd</sup> Floor Lady's Room	175	FU1LL	4	32	128	New		13

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## Commercial Building Immediate Deduction

- Permanent Rules
  - 16 ⅔% overall cost improvement below standard generated by each system (Lighting, HVAC, Building Envelope)
  - Energy models confirm savings
  - Daylighting systems particularly well suited
  - HVAC may qualify with as little as a 25% improvement over standard

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## Techniques for Achieving HVAC Tax Savings

1. More Efficient than Reference Equipment
  - Put in Highly efficient equipment and add
    - VFD's
    - Economizers
    - Demand Ventilation
    - Energy Recovery Ventilation
    - Etc.
2. Different Equipment than Reference Equipment
  - Chillers where Packaged Units are in the Reference Building
  - Central Plant
  - Geothermal
3. Take advantage of Time of Day Energy Pricing
  - Thermal Storage

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## Understanding Energy Models

- IRS has approved ten types of modeling software
  - Trane Trace 700, Energy Plus, Carrier HAP, VisualDOE, EnergyGauge, DOE2.1E & 2.1E-JJH, Owens Corning Commercial Energy Calculator, Green Building Studio, EnerSim
  - other submissions are in process
- Important modern Energy management tool.
- Currently required for all HVAC and building envelope deductions and for whole building lighting alternative.
- In many jurisdictions, rebates are provided for all or substantial portions of modeling costs.

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## What does Energy Tax Savers Deliver?

- Pre-project EAct Marketing Material
- Complimentary Design Analysis
- Complimentary Tax Benefit Assessment
- Comprehensive EAct Tax Package
  - Energy Reduction Plan (ETSI Software)
  - Building Energy Model (ETSI Reviewed)
  - Tax Deduction Calculation (ETSI Software)
  - Owners Manual, highlighting energy savings
  - Design Certification (ETSI Document Creation and Review)
  - Post-Implementation Inspection (ETSI Document Creation and Review)
  - Audit Assistance

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# Energy Tax Savers, Inc

## Required Data Points for EPC Act Lighting Projects

### **Required Data Points:**

Project Address (Street, City, State, Zip)

Property Contact (Name, Telephone, E-Mail)

Certifying Contractor's Contact (Name, Company, Address(Street, City, State, Zip), Telephone, E-mail)

Project Square Feet

Project Invoice (Both Materials and Labor)

If on a Room-by-Room Basis because Bi-level is not met everywhere:

Room Number

Room Description

Fixture Descriptions (Model#, Lamp count, etc.)(both New and Retained)

Count of Fixtures (both New and Retained)

Input Wattage of Fixture (both New and Retained)

Square Feet of Room

Foot Candle of Rooms

Indication that Bi-level switching was met (Dimming, Two switches, Bi-level at the Breakers etc.)

If Bi-level is met throughout than:

ASHRAE category for Building (Manufacturing, Healthcare, office etc)

Fixture Descriptions (Model#, Lamp count, etc.)(both New and Retained)

Count of Fixtures (both New and Retained)

Input Wattage of Fixture (both New and Retained)

Foot Candle of Rooms

Building Square Feet

Indication that Bi-level switching was met throughout the building (Dimming, Two switches, Bi-level at the Breakers etc.)

### **For Government Buildings placed in service after March, 2008**

Authorized Representative of Government Building (Name, Government Entity, Address(Street, City, State, Zip), Telephone, E-mail)

# Energy Tax Savers, Inc

## Required Data Points for EPAct Lighting Projects

### **If submittal is in spreadsheet form ideal column headings are as follows:**

1. Line Item/Reference Key - A unique number for each line. If more than one building is on the spreadsheet each number should still be completely unique.
2. Building Name
3. Building Activity Description - The more descriptive the better. We will utilize this to decide on the most advantageous Building Area category.
4. Floor/Level#
5. Area/Room#
6. Area/Room Description - The more descriptive the better. We will utilize this to decide on the most advantageous Space category.(ie. Chemistry Lab allows us to use the more favorable "Laboratory" category as opposed to just using "Classroom"). This description also allows us to check the Bi-Level category, "Not Required")
7. Square Feet - If a room has multiple fixtures(multiple line items) the Square Feet should be placed in the Line Item with the lowest number. All other Line Items for this Area/Room# should be directly sequential and should show 0 square feet.
8. Retrofit Description - Some indication that something or nothing happened between the old fixture and the new fixture. If there was no retrofit for this Line Item it may still be relevant if other fixtures in the room were retrofitted(All fixtures in a space must be counted, New, Retrofitted as well as Retained)
9. Post Project Fixture Type - Some designation of the New, Retrofitted or Retained Fixture that exists in the space after the project
10. Post Project Fixture Description - Some description of the New, Retrofitted or Retained Fixture that exists in the space after the project. Ideally this would be Manufacturer and Model#.
11. Post Project Fixture Quantity
12. Post Project Fixture Input Watts
13. Bi-level Switching- A designation on whether this Area/Room# has Bi-level switching(Qualified(Q), Not Required(NR), Does Not Qualify(DNQ)). The same designation should appear for all Line Items in a given Area/Room#.
14. Area/Room Average Foot Candles
15. Line Item Client Invoice Costs

# Retail Location Federal Tax Deduction Lighting Design Guidance

As part of the Energy Policy Act, the Federal government has provided substantial federal tax savings for upgrading to today's energy efficient Lighting and Lighting controls products effective January 1, 2006. To achieve tax deductions the watts per square foot in facilities have to be reduced by between 25% to 40% as compared to 2001 lighting standards.

Energy Tax Savers, Inc. has provided the following chart which you can use when discussing Lighting and lighting controls projects with outside architects, engineering firms and Lighting specifiers. The chart is designed to show when tax savings is applicable for typical spaces in a retail location.

## **Typical Spaces in a Retail Location**

Description	25% Improvement as compared to 2001 Standard \$0.30/sq.ft. Deduction Watts/sq.ft.	40% Improvement as compared to 2001 Standard \$0.60/sq.ft. Deduction Watts/sq.ft.
Retail Sales Area	1.575	1.26
Restaurant-Dining	1.650	1.32
Mall Concourse	1.350	1.08
Corridors	0.525	0.42
Restrooms	0.750	0.60
Food Prep	1.650	1.32
Enclosed Office	1.125	0.90
Electrical/Mechanical	0.975	0.78
Storage	0.825	0.66
Stairways	0.675	0.54

Note that these are tax deduction standards and you may have specific customer or operational needs that override the benefits of these tax deductions.

However, in most cases, adhering to the 2004 ASHRAE building code standards that are applicable in approximately 50% of the United States will trigger these tax deductions.

Please direct any questions you have on the new tax law standards to Energy Tax Savers at [www.Energytaxsavers.com](http://www.Energytaxsavers.com), [charles.goulding@energytaxsavers.com](mailto:charles.goulding@energytaxsavers.com), or 516 364 2630

# Office Facility Federal Tax Deduction Lighting Design Guidance

As part of the Energy Policy Act, the Federal government has provided substantial federal tax savings for upgrading to today's energy efficient Lighting and Lighting controls products effective January 1, 2006. To achieve tax deductions the watts per square foot in facilities have to be reduced by between 25% to 40% as compared to 2001 lighting standards.

Energy Tax Savers, Inc. has provided the following chart which you can use when discussing Lighting and lighting controls projects with outside architects, engineering firms and Lighting specifiers. The chart is designed to show when tax savings is applicable for typical spaces in an office facility.

## **Typical Spaces in a Office**

Description	25% Improvement as compared to 2001 Standard \$0.30/sq.ft. Deduction Watts/sq.ft.	40% Improvement as compared to 2001 Standard \$0.60/sq.ft. Deduction Watts/sq.ft.
Enclosed Office	1.125	0.90
Open Office	0.975	0.78
Training Room	1.200	0.96
Conference Room	1.125	0.90
Lobby	1.350	1.08
Restrooms	0.750	0.60
Food Prep	1.650	1.32
Dining	1.050	0.84
Electrical/Mechanical	0.975	0.78
Storage	0.825	0.66
Corridors	0.525	0.42

Note that these are tax deduction standards and you may have specific customer or operational needs that override the benefits of these tax deductions.

However, in most cases, adhering to the 2004 ASHRAE building code standards that are applicable in approximately 50% of the United States will trigger these tax deductions.

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# Industrial Facilities Federal Tax Deduction Lighting Design Guidance

As part of the Energy Policy Act, the Federal government has provided substantial federal tax savings for upgrading to today's energy efficient Lighting and Lighting controls products effective January 1, 2006. To achieve tax deductions the watts per square foot in facilities have to be reduced by between 25% to 40% as compared to 2001 lighting standards.

Energy Tax Savers, Inc. has provided the following chart which you can use when discussing Lighting and lighting controls projects with outside architects, engineering firms and Lighting specifiers. The chart is designed to show when tax savings is applicable for typical spaces in an industrial facility.

## **Typical Spaces in an Industrial Facility**

Description	25% Improvement as compared to 2001 Standard \$0.30/sq.ft. Deduction Watts/sq.ft.	40% Improvement as compared to 2001 Standard \$0.60/sq.ft. Deduction Watts/sq.ft.
Manufacturing- High Bay	2.25	1.8
Manufacturing-Low Bay	1.575	1.26
Fine Material Storage	Warehouse 50% improvement equal to 0.80	
Med/Bulky Mat. Storage	Warehouse 50% improvement equal to 0.55	
Detailed Manufacturing	4.65	3.72
Control Room	0.375	0.3
Locker Room	0.6	0.48
Office-Enclosed	1.125	0.9
Rest Rooms	0.75	0.6
Stairs	0.675	0.54
Laboratory	1.35	1.08

Note that these are tax deduction standards and you may have specific customer or operational needs that override the benefits of these tax deductions.

However, in most cases, adhering to the 2004 ASHRAE building code standards that are applicable in approximately 50% of the United States will trigger these tax deductions.

Please direct any questions you have on the new tax law standards to Energy Tax Savers at [www.Energytaxsavers.com](http://www.Energytaxsavers.com), [charles.goulding@energytaxsavers.com](mailto:charles.goulding@energytaxsavers.com), or 516 364 2630

# Schools

## Federal Tax Deduction

### Lighting Design Guidance

As part of the Energy Policy Act, the Federal government has provided substantial federal tax savings for upgrading to today's energy efficient Lighting and Lighting controls products effective January 1, 2006. To achieve tax deductions the watts per square foot in facilities have to be reduced by between 25% to 40% as compared to 2001 lighting standards.

Energy Tax Savers, Inc. has provided the following chart which you can use when discussing lighting and lighting controls projects with outside architects, engineering firms and lighting specifiers. The chart is designed to show when tax savings is applicable for typical spaces in a school.

#### **Typical Spaces in a School**

Description	25% Improvement as compared to 2001 Standard Watts/sq.ft. \$0.30/sq.ft. Deduction	40% Improvement as compared to 2001 Standard Watts/sq.ft. \$0.60/sq.ft. Deduction
Classroom	1.2	0.96
Corridor	0.525	0.42
Gymnasium	1.425	1.14
Locker Room	0.6	0.48
Cafeteria	1.05	0.84
Food Preparation	1.65	1.32
Office-Enclosed	1.125	0.90
Rest Rooms	0.75	0.60
Stairs	0.675	0.54
Laboratory	1.35	1.08

Note that these are tax deduction standards and schools may have specific operational needs that override the benefits of these tax deductions.

However, in most cases, adhering to 2004 ASHRAE building code standards that are applicable in approximately 50% of the United States will trigger these tax deductions.

Please direct any questions you have on the new tax law standards to Energy Tax Savers at [www.Energytaxsavers.com](http://www.Energytaxsavers.com) 516 364 2630

# SHOWCASE LIGHTING

## Tax Deductions Brighten Return on Lighting Upgrades

BY CHARLES GOULDING, JACOB GOLDMAN  
AND SIDDHARTH SHETH

By all accounts, the Energy Policy Act of 2005 (EPAAct) got off to a slow start. Along with many other provisions, the much-hyped law provides tax incentives to encourage more energy-efficient buildings. But there were delays in promulgating the Internal Revenue Service regulations to implement the law. And it's taken a while for facility executives to understand the complex legislation.

Today, however, a growing number of facility executives are coming to see how EPAAct may offer significant financial benefits, especially for lighting systems.

Effective Jan. 1, 2006, EPAAct provided new tax deductions for specific investments that improve the energy efficiency of either the entire building or one of three building systems: lighting, HVAC or the building envelope. To qualify for those deductions, a project — whether an entire building or one of the three subsystems — must cut energy use compared to the limits specified in ASHRAE 90.1-2001.

The amount of the deduction depends on how efficient the system is. The deductions are available for both new construction and improvements to existing buildings. The project must be placed in service between Jan. 1, 2006 and Dec. 31, 2008. Congress is currently weighing a measure to expand the tax deduction amounts and extend EPAAct through the 2012 tax year and through 2014 for projects certified as of 2012.

To date, lighting systems have been by far the biggest beneficiaries of EPAAct

deductions. One important factor has been tremendous improvements in lighting product efficiency — many of today's lighting products meet the EPAAct energy target. Combine those factors with the substantial economic benefits provided by EPAAct, and there may well be a solid economic case for installation of high efficiency lighting.

What's more, the process of qualifying for lighting deductions is easier than for HVAC or the building envelope. For those two areas, energy modeling is required. For lighting, two methods are available for obtaining tax deductions. The simpler of the two is the prescriptive method, which is based on watts per square foot and does not require modeling. The second method is modeling to show a 16.67 per cent energy cost reduction compared to ASHRAE 90.1-2001. Modeling is the only way to obtain the benefits of

watt per square foot power allowance adjustments for lighting controls.

### The Opportunity

EPAAct tax deductions for lighting start at 30 cents per square foot for a 25 percent reduction in light power density compared to ASHRAE 90.1-2001 requirements. The deduction can be as great as 60 cents per square foot for a 40

### VENTURE LIGHTING INTERNATIONAL

Uni-Form MP 575 pulse-start metal halide lamp and ballast system replaces 1,000-watt MH lamps. Product produces 60,000 initial lumens and twice the mean lumens of a standard 400-watt metal halide lamp. Arc tube shape improves thermal characteristics and light output. Tipless design eliminates cold spots for more uniform light output and longer lamp life.

**CIRCLE #250**

### ADVANCE TRANSFORMER

Mark 10 Powerline electronic dimming ballast for use with 24-watt T5 high output and 24-watt long twin tube fluorescent lamps has low-profile design. Ballast requires no additional control wiring and is compatible with controls from many manufacturers. **CIRCLE #260**

### UNIVERSAL LIGHTING TECHNOLOGIES

Ballastar light-level switching ballast for T8 lamps provides light level control by switching from full light to 50 percent power using standard wall switches or relays. Ballast is designed to operate either one or two F32T8, F25T8, or F17T8 lamps. Product can be connected to any voltage from 120 to 277 volts.

**CIRCLE #262**

### COOPER LIGHTING

The Fail-Safe LED series of architectural vandal-resistant luminaires features seven face plate choices in six base colors plus custom capabilities for signage and wayfinding. LED modules use 11 Lumileds 3W white LEDs offering 50,000 standard life hours at 70 percent lumen maintenance. The one-piece injection molded lens is designed to obscure lamp image while maintaining efficiency. UL 1598 listed for wet locations. **CIRCLE #253**

### ORION ENERGY

The Compact Modular T8 Series high-bay lighting fixtures are available in 2-, 4-, 6-, and 8-lamp configurations. Quick-change ballast pack and modular design enable upgrades or advanced controls to be added. Aluminum "I" frame dissipates heat more quickly than steel, lowering temperature surrounding the ballast.

**CIRCLE #273**

For links to supplier  
Web sites go to

[WWW.FACILITIESNET.COM/BOM](http://WWW.FACILITIESNET.COM/BOM)



# SHOWCASE LIGHTING

percent reduction.

To illustrate the economic benefit, a 100,000-square-foot building that qualifies for the maximum incentive will generate a \$60,000 Federal income tax deduction and, in most states, a corresponding \$60,000 state income tax deduction.

To qualify for these deductions, a facility has to meet not only the specified EPCa light power density requirements for that type of space, but also comply with some additional mandates. Under the current legislation, in effect until 2008, these additional requirements include bi-level switching and minimum IESNA light levels. Bi-level switching means having at least two levels of light other than off in all spaces. A space is defined as an area surrounded by floor-to-ceiling walls. A dimmer, for example, meets the requirements because it provides multiple levels of light. Two or more switches controlling different fixtures in a space would also meet this bi-level requirement. Occupancy sensors do not, on their own, meet this

bi-level requirement because they do not provide two levels of light.

To get a deduction for a lighting EPCa project, facility executives need to know the square footage of the spaces subject to the project, the watts per square foot for all rooms — including new and retained wired lighting — and how the bi-level switching requirement has been met. Documentation for the lighting tax deduction includes a watts-per-square-foot spreadsheet for all wired lighting, a written energy plan, a certification and an inspection document.

## Maximizing Benefits

Many lighting projects just miss qualifying for EPCa tax incentives because the lighting systems designer wasn't aware how close the design was to meeting EPCa requirements. There are cases where design needs will trump EPCa qualification but those occasions should represent conscious decisions. In many situations, merely changing one item in

**Facility executives have a range of economic drivers for lighting projects. Five economic areas can be explored to increase the percentage of lighting and other energy efficiency projects that are approved.**

- **ENERGY SAVINGS.** Many of today's lighting and HVAC products can reduce current energy consumption in the range of 25 to 50 percent compared to older products, in some cases products installed as little as five years ago.
- **REBATES.** Many states and local jurisdictions offer substantial rebates for energy improvements. Rebates are particularly lucrative in certain states in the Northeast and in California, where energy supply is limited and costs are high. Some rebates are called prescriptive, meaning that a particular product category gets a prescribed rebate, such as \$80 per lighting fixture or \$1,000 per air conditioning unit. Some rebates are kilowatt based, meaning that the more a project reduces electricity use, the greater the rebate. Facility executives can now access national electronic rebate databases and, for a fee, have all of the rebate paperwork completed in virtually every jurisdiction where a company has facilities.
- **EPCa DEDUCTIONS.** For projects that meet EPCa requirements, significant tax deductions are available.
- **DEMAND-RESPONSE PROGRAMS.** Many states offer demand-response and demand-management programs where companies can get substantial economic payments for using lighting controls and HVAC controls to reduce electricity use when called upon during demand events or to earn additional revenues for making lighting and HVAC investments that permanently reduce electrical demand.
- **MAINTENANCE COST REDUCTION.**

## ALANOD ALUMINUM

Miro-Micro Matt for fluorescent high-bay applications has 93 percent total reflectivity and produces up to 20 percent more light than the same luminaire with a white painted reflector. Product is abrasion-resistant, inorganic to avoid yellowing or darkening, anti-static and dust resistant.

**CIRCLE #254**

## LEVITON

Z-MAX lighting-control relay systems include stand-alone and network-ready models. Service life is 10,000,000 switching cycles. Astronomical clock allows system's location to be programmed to time-of-day settings or a time offset from sunrise or sunset. Relays offer keypad programming with bright LCD panels and on-screen instructions. **CIRCLE #255**

## LUMISYS

Maxiom Series controls high voltage lighting circuits via a two-wire RS-485 network, occupancy sensors, light level sensors, momentary override switches, and other input devices. LX5 technology features native BACnet and a range of other protocols. Panels have on-board DDN (Digital Device Network) communication to Digi-Touch addressable switches. UL listed. **CIRCLE #256**

## FULL SPECTRUM SOLUTIONS

The EverLast line of fixtures features electrodeless fluorescent technology that has a rated life of up to 100,000 hours and is resistant to EMC interference. The company has seventeen different combinations of lamp wattages in three different styles and offers dimmable options on many models. **CIRCLE #257**

## HOLOPHANE

ROAM photocontrols communicate via a wireless transceiver, creating a self-configuring, self-healing wireless network that exchanges data between photocontrols on an event-driven basis. The system monitors itself, reporting outages as they occur. Photocontrol is backward-compatible with light fixtures that have a locking-type receptacle. **CIRCLE #258**

## LAMINA

The SoL MR16 LED is designed as a direct, ready-to-plug-in retrofit for 20-watt MR-16 halogen and comparable CFL lamps. This design produces as much light as the 20-watt halogen bulb, but consumes less than 8 watts. Color temperatures of 3,050 K and 4,700 K. **CIRCLE #267**

## INTERNATIONAL ENGINEERING PRODUCTS AND CONSULTING CORP.

Lighting control uses solid state electronics with on-site, remote and aggregate Web-based controls for HID lighting. The VB400 contains an electronic ballast and features microprocessors to regulate current flow for metal halide, high-pressure sodium and pulse start lamps.

**CIRCLE #259**

## FOSTER TRANSFORMERS

LED power supply features short circuit and overload protection and can be dimmed with a standard dimmer. The power supply is encapsulated in epoxy and housed in a 304 stainless steel enclosure. Power supply can withstand a direct short in excess of 15 days, with no external fusing required. Product accepts multiple input voltages with output configurable for 12 VDC or 24 VDC up to 60 W. **CIRCLE #251**

## JUNO LIGHTING GROUP

Elate specification-grade luminaires offer open and lensed downlights, wall wash and adjustables with CFL, induction, HID, incandescent and low-voltage sources. The line also features pull-down and multiple lamp-aiming adjustables for display lighting. **CIRCLE #268**

## LITHONIA

The I-BEAM fluorescent high bay lighting system features T5HO cool running technology that is UL/C-UL listed to operate in environments up to 65 degrees C. I-BEAM delivers up to 50 percent in energy savings over 400 watt metal halide lamps, according to the company, and maintains designed light levels over the life of the system. **CIRCLE #269**

## OSRAM SYLVANIA

The DURA-One A19 electrodeless compact fluorescent lamp features a rated life of up to 15,000 hours. Offers instant brightness, a starting temperature of -20 degrees F and unlimited switching cycles. Compared to a 75-watt incandescent A19, the product provides energy cost savings of up to \$82 over the life of the lamp, according to the company.

**CIRCLE #274**

## NEXLIGHT

The WRT4244 dimmer controls fluorescent ballasts that accept a 0-10 volt DC control voltage. The unit is used in conjunction with the WR6161-84 20 amp relay to provide on/off control. Dimmer controls up to 50 ballasts. Dimming groups can be made that contain up to 60 dimmers. **CIRCLE #271**

## SQUARE D

Occupancy sensors employing passive infrared (PIR) and ultrasonic technologies are available for wall switches and ceiling-mount applications. PIR wall switch replacement sensors are both 120/277 VAC and cover a 180-degree area with a 300-square foot range. Ceiling sensors offer 360-degree coverage and have a coverage area of up to 2,000 square feet. **CIRCLE #261**

## GE

VIO white LED converts violet wavelength to white light, producing less than a 100 degree Kelvin color shift over a 50,000-hour rated life. Product is offered in 3,500K and 4,100K color temperatures. High-power, 4-watt LEDs feature 70-percent lumen maintenance and chip-on-board package that improves thermal management. RoHS compliant. **CIRCLE #252**

## ROBERTSON WORLDWIDE

Electra series high temperature ballasts meet ENERGY STAR 4.0 requirements and have a 90 degree C maximum case temperature. Ballasts available with side leads, bottom leads or bottom leads with studs for one 7- through 42-watt and two 13- through 26-watt CFLs. **CIRCLE #275**

## SENSOR SWITCH

nLight lighting offers system-level-control while enabling zones of nLight devices to self-commission and function independently. System provides local control via LCD Gateways, as well as remote, global control through SensorView Web-based software. **CIRCLE #276**

## LUTRON

EcoSystem allows workers to control one or more fixtures from their desks using a personal computer. Quantum software control package monitors individual lighting fixtures and power usage, operating hours, monitor lamp and ballast performance. The system allows users to make changes to as many as 100 EcoSystem networks at the same time.

**CIRCLE #270**

a design — such as high wattage display cases — or changing out a few more fixtures than originally anticipated makes the difference between no tax deduction and a large tax deduction.

On a national facility project for a large retirement organization, for example, a slight design change increased the EAct tax deductions from \$2,000 per facility to \$40,000 per facility.

The first step to obtaining EAct deductions is hiring a lighting designer who is familiar with EAct requirements or is willing to learn them. If a facility executive hires an architect or lighting designer who has no familiarity with EAct, it may well be worth allowing some additional time to learn the standards. It would also be important to ask the designer to explain the rationale for designs involving large building spaces that don't qualify for EAct tax deductions.

Good design incorporates many different — and sometimes conflicting — considerations. However, it's clear that energy-efficient design is now being given more weight than in the past. There has also been a quantum leap in the energy efficiency of lighting products, which makes it possible to achieve both good lighting quality and energy efficiency. Facility executives should look for a designer who is familiar with today's products and is not merely recycling outdated, inefficient design solutions.

It is also important to keep accurate records of which properties have qualified for EAct tax deductions and for how much per square foot. For example, a building that in 2007 qualifies for deduction of 37 cents per square foot will have the opportunity to achieve a second deduction of 38 cents per square foot if a proposal to increase the deduction from the current 60 cents to 75 cents becomes law.

## Getting a "Free Ride"

Organizations that installed energy-efficient lighting before Jan. 1, 2006 — that is, before the beginning of the EAct qualifying period — have the potential to get what is known as a "free ride" under the law. That's true if the organization has already achieved the EAct light power density targets. The reason: Lighting projects undertaken after Jan.

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#### WATT STOPPER

DW-200 wall switch occupancy sensors combine passive infrared and ultrasonic technologies. Sensors contain two relays for controlling two independent lighting loads or circuits. Products have high sensitivity and dense coverage and include selectable walk-through, test and presentation modes. **CIRCLE #263**

#### PHILIPS LIGHTING

Luxeon Rebel power LEDs are engineered for operation between 350 mA and 1000 mA, and can exceed 70 lumens per watt at 350 mA. Product can deliver more than 160 lumens at higher drive currents. Product has a 3mm by 4.5mm footprint. Ceramic-based package is designed to withstand high heat with a maximum junction temperature of 150 degrees C. Available in warm, neutral and cool-white with correlated color temperatures (CCTs) of 3,000K, 4,100K and 6,500K respectively. **CIRCLE #264**

#### NOVITAS

SuperSwitch 2 occupancy switches adjust sensitivity and time delay automatically and immediately in response to occupant behavior, eliminating the need to "learn" behavior patterns over time. Switch fits into a designer-style wallplate. With manual on mode, lights are not switched on until touchplate is pressed. **CIRCLE #265**

#### ACCULITE

Exeter E3 Series luminaires feature an extended range of decorative trims and lenses for commercial and retail environments. Based on the company's glass, acrylic and aluminum optical assemblies. **CIRCLE #266**

#### NORTH AMERICAN ENERGY GROUP

LED wall packs are designed for security, accent and perimeter lighting applications. Packs are rated at 100,000 hours of operation, feature 80 percent energy savings over HID, and require virtually no maintenance. Available in 150w or 250w equivalent and in 120/277v.

**CIRCLE #272**

Council's Leadership in Energy and Environmental Design (LEED) green building rating system. LEED requires computer modeling to document target levels of energy efficiency; EAct also requires computer modeling for HVAC, building envelope, whole-building and some lighting deductions. More importantly, LEED generally requires adherence to ASHRAE 90.1-2004 energy-efficiency requirements, meaning that LEED projects will generally either qualify for EAct tax deduction or come very close. What's more, 90.1-2004 is the basis for code in some states.

For example, office buildings qualify for EAct at the .975 watts per square foot level and ASHRAE 90.1-2004 sets a maximum of 1 watt per square foot for office buildings. So a building planned to meet 90.1-2004 only needs to reduce lighting energy use by .025 watts per square foot to qualify for an EAct deduction. Accordingly, leading office building developers are increasingly setting their office building lighting requirements at less than .975 watts per square foot so that they both meet the requirements of ASHRAE 90.1-2004 and qualify for EAct. It seems likely that the LEED-qualified professionals will begin to realize that EAct provides meaningful economic incentives to support their LEED initiatives.

The modeling required to qualify for a whole-building deduction under EAct is very similar to LEED modeling. However, for separate systems modeling relating to lighting, HVAC and the building envelope, EAct building modeling requires taking a different approach, one that most engineers are not familiar with. Facility executives should be sure that their engineers understand, in-depth, the computer modeling requirements of EAct.

#### EAct Lighting Success Stories

EAct has made it possible for many warehouses, distribution centers and industrial property owners to realize substantial tax deductions. For example, the Genlyte supply division facility in Union, N.J., replaced older metal halide lighting with energy-efficient fluorescent lighting. In the assembly/parts facility, 240 metal halide fixtures with a rating of 455 watts per fixture were changed over to four-lamp T5 fixtures with a rating of 236 watts per fixture. In the warehouse, approximately 40 metal halide fixtures were replaced with more energy-efficient six-lamp T5 fixtures as well.

With these changes, lighting energy use for the assembly/parts facility fell from 1.33 to .84 watts per square foot. For the warehouse, lighting energy use

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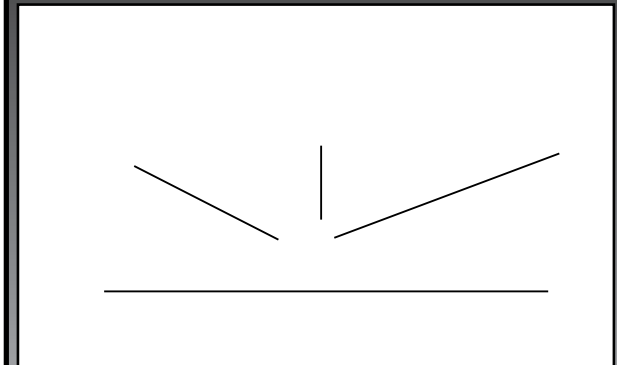
## SHOWCASE LIGHTING

dropped from .56 to .48 watts per square foot. The result was a 35 percent reduction in lighting energy cost and an EPCIA tax deduction exceeding \$100,500.

The building industry is increasingly recognizing the substantial value of EPCIA-related lighting upgrades for both energy savings and tax deductions. For the first time, national property owners have a national lighting standard energy target that provides national economic benefits. If the EPCIA extension bill is enacted, as expected, virtually every US commercial and government building will have the opportunity to benefit from this legislation. **ECM**

*Charles Goulding, an attorney and certified public accountant, is president of Energy Tax Savers, Inc. Jacob Goldman is a tax consultant and Siddharth Sheth is an engineer with the firm. The firm has developed complimentary EPCIA designer guides for major building categories including distribution centers, offices, pharmaceutical facilities, hotels and schools.*

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# LEED Building Tax Opportunities

*By Charles Goulding, Jacob Goldman and Nicole DiMarino*

Charles Goulding, Jacob Goldman, and Nicole DeMarino explain the accelerating pace of energy efficient building certification and the tax savings incentives associated with this important environmental effort.

**L** EED building certification is quickly becoming the Marquee standard for best of breed buildings. LEED buildings are typically entitled to substantial tax benefits, and tax professionals should recognize LEED building proposals as tax planning opportunities. LEED is administered by the U.S. Green Buildings Council and stands for Leadership in Energy and Environmental Design. The LEED ratings system establishes 69 rating points and four categories of accomplishment, with the highest being LEED Platinum, followed by LEED Gold, LEED Silver and LEED certified.

**Figure 1**

Certification Level	Rating Points
LEED Certified	26-32
LEED Silver	33-38
LEED Gold	39-51
LEED Platinum	52-69

On June 8, 2007, Yudelson Associates, an organization that monitors LEED data, announced that there are now 6,300 buildings in LEED registration and that to date 820 completed building projects have become LEED certified. A November 13, 2007, Wall Street Journal article noted that in a recent seven month period 2.2 billion square feet of commercial construction space was registered for LEED, which is much less time than the seven

years it took to register the first 1 billion in square footage.<sup>1</sup> Achieving the coveted LEED certification level has impacted an ever expanding category of buildings. In addition to LEED industrial buildings, LEED office buildings, and LEED retail stores, we now have LEED schools, LEED bank branches, and our first LEED car dealership, which is a Toyota dealership in McKinney, Texas.<sup>2</sup>

The tax opportunities with LEED buildings relate to the large number of LEED ratings points involving energy cost reduction. Out of the 69 total LEED rating points, over 20 points relate to energy criteria, with 10 points specifically designated for energy optimization. The Energy Policy Act of 2005 (EPAAct) provides for up to a \$1.80 per square foot immediate tax deduction for achieving specified energy cost reductions above ASHRAE 2001 building energy code performance standards. The \$1.80 per square foot tax deduction is the maximum tax deduction, but within the \$1.80 deduction amount there are three building sub system tax deductions up to 60 cents per square foot for lighting, HVAC (Heating, Ventilation and Air Conditioning) and the Building Envelope (the building's exterior shell). ASHRAE stands for the American Society of Heating Refrigeration and Air Conditioning engineers. LEED certification requires compliance with the more rigorous ASHRAE 2004 building code standards. This means that achieving LEED status should put a building owner well on its way to simultaneously obtaining EPAAct tax benefits. EPAAct tax deductions are currently available for projects completed between January 1, 2006, and December 31, 2008. There are bills currently before Congress to extend EPAAct through December 31, 2013.

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**Figure 2**

Potential EAct Tax Deductions Available for LEED Certified Buildings Currently in Registration:					
Total	Lighting		HVAC	Building Envelope	Total
Square Footage	Minimum Deduction	Maximum Deduction	Maximum Deduction	Maximum Deduction	
2,200,000,000	\$ 660,000,000	\$1,320,000,000	\$1,320,000,000	\$1,320,000,000	\$ 3,960,000,000

The 2.2 billion of commercial LEED projects have the potential to obtain almost 4 billion in EAct tax deductions as presented in Figure 2.

## LEED and EAct Modeling Requirements

Further facilitating EAct tax deductions for LEED buildings is the mutual requirement that both LEED building compliance and EAct tax compliance be documented by building energy computer simulation modeling (modeling). The modeling process requires that the energy performance characteristics of the Lighting, HVAC mechanical systems, and Building Envelope be inputted into specialized computer programs called models. Normally, highly skilled engineers perform the modeling task. It is particularly important to use a highly skilled engineer when modeling building energy solutions, since the engineer will often need to create a documented math algorithm to properly

**A November 13, 2007, Wall Street Journal article noted that in a recent seven month period 2.2 billion square feet of commercial construction space was registered for LEED, which is much less time than the seven years it took to register the first 1 billion in square footage.**

reflect the equipment’s energy performance. To obtain EAct tax benefits only an IRS approved modeling software can be used. To date IRS has approved eight modeling softwares in the following versions:

Additional modeling softwares are currently seeking IRS approval.

The EAct model technique is somewhat different than LEED modeling so the engineer/modeler should not commence a project where tax savings are desired without speaking to a tax expert familiar with the nuances of EAct tax modeling.

## LEED/EAct Strategy

### Lighting Strategies

When combining LEED and EAct tax planning strategies, a rigorous focus on energy efficient lighting including energy efficient lighting fixtures, lighting controls, and day lighting

concepts is one of the best ways to maximize LEED rating points and EAct tax deductions. The energy savings and tax deductions with day lighting systems are directly proportional to window to wall ratios and sky light to roof ratios. The more windows and skylights, the more daylight access and greater potential for energy savings and EAct tax deductions.

### Building Envelope/HVAC Strategies

To maximize building energy efficiency and tax deduction, the key is to start with a very energy efficient building envelope. An efficient building envelope will allow the building owner to right size the HVAC system, which for all practical purposes means downsize to the correct building size. Without a highly efficient building envelope and modeling data, historically the HVAC industry has often over sized the systems to avoid complaints. Because HVAC is the biggest building energy user, appropriately sizing the HVAC system can save tremendous energy costs.

**Figure 3**

IRS Approved EAct Building Energy Modeling Software	
TRACE 700	Version 6.0.2.1
TRACE 700	Version 6.1.0.0
TRACE 700	Version 6.1.1.0
EnergyPlus	Version 1.3.0.018
EnergyPlus	Version 1.4.0.025
EnergyPlus	Version 2.0.0.025
Hourly Analysis Program	Version 4.31
Hourly Analysis Program	Version 4.34
VisualDOE	Version 4.1 build 0002
EnergyGauge Summit	Version 3.1 build 2
EnergyGauge Summit	Version 3.11
DOE-2.1E	Version 119
Owens Corning Commercial Energy Calculator (OC-CEC)	Version 1.1
Green Building Studio	Version 3.0

## New Building Codes Requiring LEED

Increasingly we are seeing two types of local area LEED building code standards being enacted. Some jurisdictions are requiring that all government buildings meet prescribed LEED standards. For example:

Arizona: Requires all state funded buildings to achieve LEED Silver certification.

California: Requires the design, construction, and operation of all new and renovated state owned facilities to be LEED Silver.

Michigan: All state funded new construction and major renovation projects over \$1,000,000 must be LEED certified.

New Mexico: All public buildings over 15,000 square feet must be LEED Silver.

Note that with government buildings, the architect or engineer effectuating the energy efficient design is entitled to the EPAct tax deduction benefits.<sup>3</sup>

Other jurisdictions are going further and requiring that all new buildings meet specified LEED levels. For example:

Babylon, New York: Requires LEED certification for any new construction of commercial buildings, office buildings, industrial buildings, multiple residences, or senior citizen multiple residences over 4,000 square feet.

Calabasas, California: All nonresidential, city and privately owned buildings between 500 square feet and 5,000 square feet must meet the LEED Certified level. Buildings over 5,000 square feet must meet the LEED Silver level.

With the expansion of these building code requirements, virtually every building owner in the country with a national new building program is closely examining how to potentially achieve LEED status.

## LEED and Energy Related Grants and Rebates

Many jurisdictions are beginning to offer LEED specific grants and rebates. For example, for new LEED

buildings, LIPA, the electric utility in Long Island, New York, is offering major incentives up to:

1. \$500,000 in LEED project grants
2. \$100,000 in LEED building commissioning costs
3. \$50,000 in LEED/EPAct modeling costs
4. \$25,000 per LEED energy related rating point.

Most traditional utility rebates support the LEED energy optimization rating points, related to energy reduction particularly for lighting and lighting controls and multiple energy efficient HVAC projects.

## LEED Tax Planning

Designing a facility to achieve LEED status takes a lot of time and effort and requires participation by numerous parties, including the designers and intended occupants of a facility. As soon as the tax professional learns that a LEED building is being contemplated, they should begin getting involved in the LEED tax planning aspects of the project. The energy efficiency breakpoints for tax deductions at the whole building and building subsystems should be examined, along with the utility rebate breakpoints to help the LEED designer understand all the economic benefits available to support the LEED initiative.

## Conclusion

The widespread acceptance of the LEED rating point system by America's leading property owners, platforms substantial tax opportunities. The severity of the energy crisis is apparent to all Americans. Tax professionals who understand that LEED status embodies energy cost reduction can play an important part in helping to address one of our nation's biggest challenges.

### ENDNOTES

<sup>1</sup> Dana Mattioli, How Going Green Draws Talent, Cuts Costs, THE WALL STREET J., (November 13, 2007):B10.

<sup>2</sup> Jessie Bove, Taking the LEED: Pat Lobb Toyota of McKinney, Texas, Becomes the First Auto Dealership to Win LEED Certification, DISPLAY AND DESIGN IDEAS MAGAZINE (March 1, 2007) [www.ddimagazine.com/displayanddesignideas/search/article\\_display.jsp?vnu\\_content\\_id=1003552525](http://www.ddimagazine.com/displayanddesignideas/search/article_display.jsp?vnu_content_id=1003552525), accessed November 21, 2007.

<sup>3</sup> Code Sec. 179D (d)(4).

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