



Energy Tax Savers'

EPAct and Tax Incentives Presentation

Las Vegas Convention Center



Energy Tax Savers

Save Energy, Save Taxes

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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
- Designers of government buildings

Lighting Tax Benefits - Very Achievable

At this juncture, every commercial building in the country should have achieved or such be planning into a lighting tax deduction.

Typical Low Wattage Technologies That Qualify:

1. Fluorescent lighting
2. Induction lighting
3. LEDs

In the lighting area, our Federal government is doing two things:

- Obsolescing prior mainstream lighting technologies
- Providing a major tax incentive to upgrade

Who's using EPAAct?

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

The Commercial EPC Act Process Has Substantially Evolved

- 2006 – primarily lighting for large footprint retail
- 2007 – primarily lighting for large footprint retail, supermarket, industrial, warehouse
- 2008 – lighting for all the above plus parking garages & some HVAC & LEED buildings
- 2009 – lighting for all the above and offices, substantial HVAC & LEED buildings
- 2010 – lighting for all the above plus LEDs for small footprint retail chains, major increase in HVAC, roofs, & LEED buildings

The Commercial EPAct Process Has Substantially Evolved (Continued)

- Huge increase in \$1.20 and \$1.80 business solutions, particularly lighting/heater combinations for warehouses, industrial, truck distributor, car dealers, and self storage
- 2011 – 2013: Prediction is all of the above and huge volumes of LED lighting and office building chillers

Primary Designers of Govt. Buildings EAct Deduction

- 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.

What's it Worth?

Sample Square Footage	Lighting		HVAC Maximum Deduction	Building Envelope Maximum Deduction	Total
	Minimum Deduction	Maximum Deduction			
50,000	\$ 15,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 90,000
100,000	\$ 30,000	\$ 60,000	\$ 60,000	\$ 60,000	\$ 180,000
250,000	\$ 75,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 450,000
500,000	\$ 150,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 900,000
750,000	\$ 225,000	\$ 450,000	\$ 450,000	\$ 450,000	\$ 1,350,000
1,000,000	\$ 300,000	\$ 600,000	\$ 600,000	\$ 600,000	\$ 1,800,000

8 Ways to Capture Tax Deduction

- (1) Whole Building (\$1.80/ft²)
 - 50% Energy Cost Reduction below standard
- Permanent Rules partial deduction (\$0.60/ft²)

	Building Envelope	Lighting	HVAC
Alternative 1	(2) 16 ² / ₃ %	(3) 16 ² / ₃ %	(4) 16 ² / ₃ %
Alternative 2	(5) 10%	(6) 20%	(7) 20%

- (8) Interim Lighting Rules (\$0.30/ft²-\$0.60/ft²)
 - 25% to 40% prescribed Light Power Density (LPD) reduction below standard

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

Interim Lighting Rules

- Meet W/ft² targets
- Add'l Requirements
 - Bilevel Switching
 - Meet ASHRAE 90.1 Requirements
 - Meet IESNA minimum light levels

	2001 Standard LPD, W/ft ²	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

Benefiting from ASHRAE 2004 & 2003 IECC

	2001 Std. (W/ft ²)	25% Over 2001	40% Over 2001	2004 Std. (W/ft ²)	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 ²)	25% Over 2001	40% Over 2001	2004 Std. (W/ft ²)	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%	

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

Major Lighting Bans

Lighting Type	Date Effective	
Most Probe Start Metal Halides	January 1, 2009	Manufacturing banned
T-12s ¹	July 1, 2010	Manufacturing banned Distribution now limited to ten per pack
Incandescents ²	Beginning 2012-2014	Ban on current efficiency levels beginning 2012

¹ Residential is excluded from the ban, provided power factor is less than 0.90.

² Permissible replacements for incandescents include:

- 1) High efficiency incandescents
- 2) CFLs
- 3) LEDs

Common Lighting Retrofits

Industrial/Manufacturing/Warehouse



Metal Halide
458 Watts



T5 HiBay Fluorescent
234 Watts

Office & Retail



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



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

Or



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

What Tends to Qualify on the HVAC side?

1. Geothermal (Ground Source Heat Pumps)
2. Thermal Storage
3. High Efficiency PTAC units in Rental Apartments
4. Centralized HVAC in Rental Apartment Buildings
5. Energy Recovery Ventilation
6. Demand Control Ventilation
7. Chillers in buildings < 150,000 sq ft
8. Direct fired heaters in no AC Industrial Spaces
9. VAV (variable air volume devices) in buildings <75,000 sq ft
10. Chilled Beam
11. Magnetic Bearing Chillers
12. Gas fired chillers combined with electric chillers to peak shave

Warehouse Heater & Efficient Lighting

Location	Sq.Ft.	W/sq.ft.	Heaters	\$/sq.ft.	Tax Deduction
Jacksonville, FL	642,219	0.69	3(1,850 MBH ea)	\$1.20/sq.ft.	\$770,663
Irving, TX	701,250	0.40	20(400 MBH ea)	\$1.80/sq.ft.	\$1,262,250
S. Brunswick, NJ	200,000	0.75	4(1,200 MBH ea)	\$1.20/sq.ft.	\$240,000
Franklin, NJ	140,000	0.45	1(1,850 MBH) 1(1,600 MBH)	\$1.80/sq.ft.	\$252,000
Middleton, PA	61,067	0.61	2(1,200 MBH ea)	\$1.20/sq.ft.	\$73,280
Bristol, PA	273,080	0.72	2(2,200 MBH ea) 4(1,600 MBH ea) 1(800 MBH)	\$1.80/sq.ft.	\$491,544
Bristol, PA	60,000	0.76	1(1,600 MBH) 1(1,200 MBH)	\$1.20/sq.ft.	\$72,000
Edison, NJ	43,192	0.54	1(950 MBH)	\$1.20/sq.ft.	\$51,830
Oxford, MA	68,800	0.76	1(950 MBH) 1(800 MBH)	\$1.20/sq.ft.	\$82,560
Hauppauge, NY	80,324	0.63	1(3,200 MBH)	\$1.20/sq.ft.	\$96,389
Totals	2,269,932				\$3,392,516

Understanding The Large Warehouse HEPAct (Heater EPAct) Tax Deduction Combinations

- Example 1: Total Warehouse Energy HEPact tax Planning
 - Presume existing 200,000 square foot warehouse installs energy efficient lighting and Cambridge heater and qualifies for \$1.80
 - HEPAct tax deduction using a total project cost of \$1.20 per square foot.
 - The warehouse owner could use the remaining 60 cents per square foot tax deduction for a roof and insulation project

Understanding The Large Warehouse HEPAct (Heater EPAct) Tax Deduction Combinations

- Example 2: Lighting and Roof/Insulation Combination
 - Presume 200,000 square foot warehouse already has an energy efficient Cambridge heater.
 - Here the upgrade to energy efficient lighting could be used to generate a \$1.80 per square foot HEPAct tax deduction
 - The total \$1.80 HEPAct tax deduction could be used for both a new lighting and a new roof/insulation project.

Understanding The Large Warehouse HEPAct (Heater EPAct) Tax Deduction Combinations

- Example 3: Cambridge Heater and Roof/Insulation Combination
 - Presume 200,000 square foot warehouse already has existing low wattage lighting.
 - Here an upgrade to an energy efficient Cambridge heater could be used to generate a \$1.80 per square foot HEPAct tax deduction
 - This could be used for both a Cambridge heater and a roof insulation project.

Understanding The Large Warehouse HEPAct (Heater EPAct) Tax Deduction Combinations

- Example 4: Lighting HEPAct Tax Deduction Claw back
 - Presume a 200,000 square foot warehouse missed taking an EPAct lighting tax deduction
 - neglected to take it or
 - resulting wattage was between .6 and .8 watts per square foot.
 - Installation of a Cambridge heater will claw back the previously lost deduction as part of the energy simulation modeling process.
 - The "recouped" lighting HEPAct tax deduction can be utilized for the new heater and new roof insulation projects.

First focus on the large, simple spaces

- Great Candidates Include:
 - Manufacturers, warehouses, parking garages and self storage facilities for lighting
 - Manufacturers and warehouses for Cambridge Heaters
 - Multi-site retailers with lots of facilities including supermarkets
 - Low wattage lighting technologies: LED's and induction
 - Any of the 12 commonly qualifying HVAC technologies

American Recovery and Reinvestment Act of 2009 Tax Credits & Grants in Lieu of Tax Credits

Specified Energy Property	Credit Termination Date	Applicable Percentage of Eligible Cost Basis
Large Wind	Jan 1, 2013	30%
Closed-Loop Biomass Facility	Jan 1, 2014	30%
Open-loop Biomass Facility	Jan 1, 2014	30%
Geothermal under IRC sec. 45	Jan 1, 2014	30%
Landfill Gas Facility	Jan 1, 2014	30%
Trash Facility	Jan 1, 2014	30%
Qualified Hydropower Facility	Jan 1, 2014	30%
Marine & Hydrokinetic	Jan 1, 2014	30%
Solar	Jan 1, 2017	30%
Geothermal under IRC sec. 48	Jan 1, 2017	10%*
Fuel Cells	Jan 1, 2017	30%**
Microturbines	Jan 1, 2017	10%***
Combined Heat & Power	Jan 1, 2017	10%
Small Wind	Jan 1, 2017	30%
Geothermal Heat Pumps	Jan 1, 2017	10%

*Geothermal Property that meets the definitions of qualified property in both 45 and 48 is allowed either the 30% credit or the 10% credit but not both.

** For fuel cell property the maximum amount of the payment may not exceed an amount equal to \$1,500 for each 0.5 kilowatt of capacity.

*** For microturbine property the maximum amount of the payment may not exceed an amount equal to \$200 for each kilowatt of capacity.

Solar P.V.

- Year over year, U.S. installed volumes up 75%
- Installed price points have plunged
- Now often low \$4.00 per installed watt or even below \$4.00
- Lots of competition, including for labor & material
- Lots of financing in the market
- Seek advisors who understand system design, design performance, warranties, & REC market
- The devil is in the details

Roofs Need To Be Upgraded

- Major expenses often deferred in recent years
- Key is to use tax law incentives to facilitate the required roof improvements
- EAct Tax Deductions
 - Building owners of large non-conditioned spaces are using EAct tax deductions to upgrade roofs

Combined Solar/Roof 30% Tax Credit Opportunities

- Caution: use a tax advisor who understands the integrated performance requirements
- Possibilities
 - BIPV Building Integrated Solar
 - Solyndra with white roofs (understand IRS ruling)
 - Sanyo bifacial panels with white roofs

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