



§179D EPA Act Tax Deductions

Presented by:
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&
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Topics

□ EPAct(Section 179D)

- Available for Energy Efficient Building Projects:
 - Lighting
 - HVAC
 - Building Envelope

□ Alternative Energy Tax Incentives

- Solar, Geothermal, CHP



The Technology Behind EPAct

- Today's lighting and HVAC products
 - use 20% to 60% **less** energy than prior generation products
 - This is particularly the case with lighting where 40% to 60% cost savings is readily achievable.
- Special purpose HVAC technologies
 - also achieve 20% to 50% energy cost savings
 - See 12 HVAC Technologies

Energy Policy Act of 2005 (EPAct)

- Incentivized areas:
 - Lighting
 - HVAC
 - Building envelope

- Available for New Construction and Existing Buildings

- Also available for:
 - Tenant owned lease-hold improvements
 - Rental Apartment Buildings 4 stories or above
 - Primary Designers of Government Buildings

Chat Questions

- ❑ Wal*Mart leases a space from Landlord. After 5 years in the space, Wal*Mart decides to upgrade to energy efficient lighting. Wal*Mart pays an electric installer to do the upgrade. Who gets the 179D tax deduction?
- ❑ Avalon builds the nations most energy efficient 1000 unit garden apartment complex. Can they qualify for Section 179D?
- ❑ Green Depot puts Solar Panels on their 1950's(never been updated) warehouse. The panels reduce the buildings outside electrical needs to Zero. Can Green Depot take a Section 179D deduction?
- ❑ General Motors installs energy efficient lighting in one of its manufacturing facilities. Can GM take advantage of Section 179D?

The Utilization of EPAct

- ❑ Has shifted from single deductions for lighting to multiple tax deductions for:
 1. Lighting/HVAC combinations
 2. LEED buildings

- ❑ For combinations, biggest categories are:
 1. Lighting and heater combinations in warehouses, industrial buildings, self storage centers, and auto truck service areas
 2. Lighting/HVAC combinations with one of 12 HVAC technologies

- ❑ For LEED buildings, the biggest large tax deduction category is LEED office buildings

Why Existing Building Retrofit Market is Strong

- ❑ New construction is dead, so focus is on existing building retrofit.
- ❑ Lots of electrical and mechanical labor available.
- ❑ Architects and engineers need work.
- ❑ Large utility rebates.
- ❑ Lots of new vendor finance available in the market.
- ❑ Many financed projects are no money down/entirely energy savings cash flow positive.
- ❑ Many large companies are cash laden and these projects have great economic return.

Property Types

First Movers	Reasons
Retailers	▪Energy is a major cost ▪Centralized facilities' management
Distribution Centers	▪Major growth market ▪High economic return
Hotels	▪Meet ASHRAE 2004=Full EPCa ▪Bi-level not required in guest rooms
Parking Garages	▪Large facilities drive large EPCa benefits
Industrial Facilities	▪Large facilities drive large EPCa benefits ▪Existing lighting is being phased out by law
Office Buildings	▪More states enact ASHRAE 2004 or higher building energy codes
Apartments	▪Must be at least 4 stories
Car Dealerships	▪ Large deductions for lighting & service bay heaters

What's it Worth?

Square Footage	Lighting Minimum Deduction \$.30/sq. ft.	Lighting Maximum Deduction \$.60/sq. ft.	HVAC Maximum Deduction \$.60/sq. ft.	Building Envelope Maximum Deduction \$.60/sq. ft.	Total Maximum \$1.80/sq. ft.
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

Note: For government buildings, these deductions go to the primary designer.

Chat Questions

- ❑ How much did the Primary Designer pay for the new lighting system for a new public High School?
- ❑ What was the Income Tax Liability for our Primary Designer Client that only designs K-12 schools in:
 - ❑ 2006?
 - ❑ 2007?
 - ❑ 2008?
 - ❑ 2009?
 - ❑ 2010-13?
- ❑ Do you have any A & E clients that might be interested?

Commercial Building Immediate Deductions

- 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.

Commercial Building Immediate Deductions

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

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 1/1/2006 through 12/31/2013
 - 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

Cost Segregation Example-

100,000 sq. ft. warehouse

	No Cost Seg.	Traditional Cost Seg.	Cost Seg. With EAct
39 Year Property	\$7,000,000	\$5,950,000	\$5,890,000
15 Year Property		\$560,000	\$560,000
7 Year Property		\$490,000	\$490,000
1 Year EAct Property		-	\$60,000
After tax present value (40% Tax, 8% Discount)	\$852,821	\$1,013,764	\$1,030,454
Increase in PV		\$160,943	\$177,633
% improvement over cost seg alone			10%

8 Ways to Capture Tax Deduction

- ❑ Whole building (\$1.80/ft²)
 - 50% energy cost reduction below standard
- ❑ Permanent rules deduction (\$.60/ft²)

	Building Envelope	Lighting	HVAC
Alternative 1	16 ² / ₃ %	16 ² / ₃ %	16 ² / ₃ %
Alternative 2	10%	20%	20%

- ❑ Interim lighting rules (\$.30/ft²-\$.60/ft²)
 - 25% to 40% prescribed Light Power Density (LPD) reduction below standard

Chat Questions

- ❑ What is the maximum potential tax deduction for:
 - ❑ 100,000 sq.ft. lighting project for a new casino?
 - ❑ 100,000 sq.ft. lighting project for a commercial office building?
 - ❑ 100,000 sq.ft. lighting project for an IRS office building?
 - ❑ Who gets the Tax Deduction?
 - ❑ 100,000 sq.ft. lighting project for a Red Cross office building?
 - ❑ 100,000 sq.ft. lighting project for a commercial warehouse?

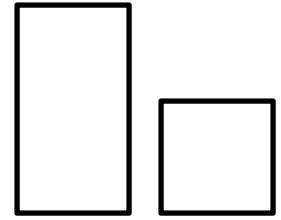
Interim Lighting Rules

- Meet W/ft² targets
- Additional 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.	.30	.32	.34	.36	.38	.40	.42	.44	.46	.48	.50	.52	.54	.56	.58	.60

Chat Questions



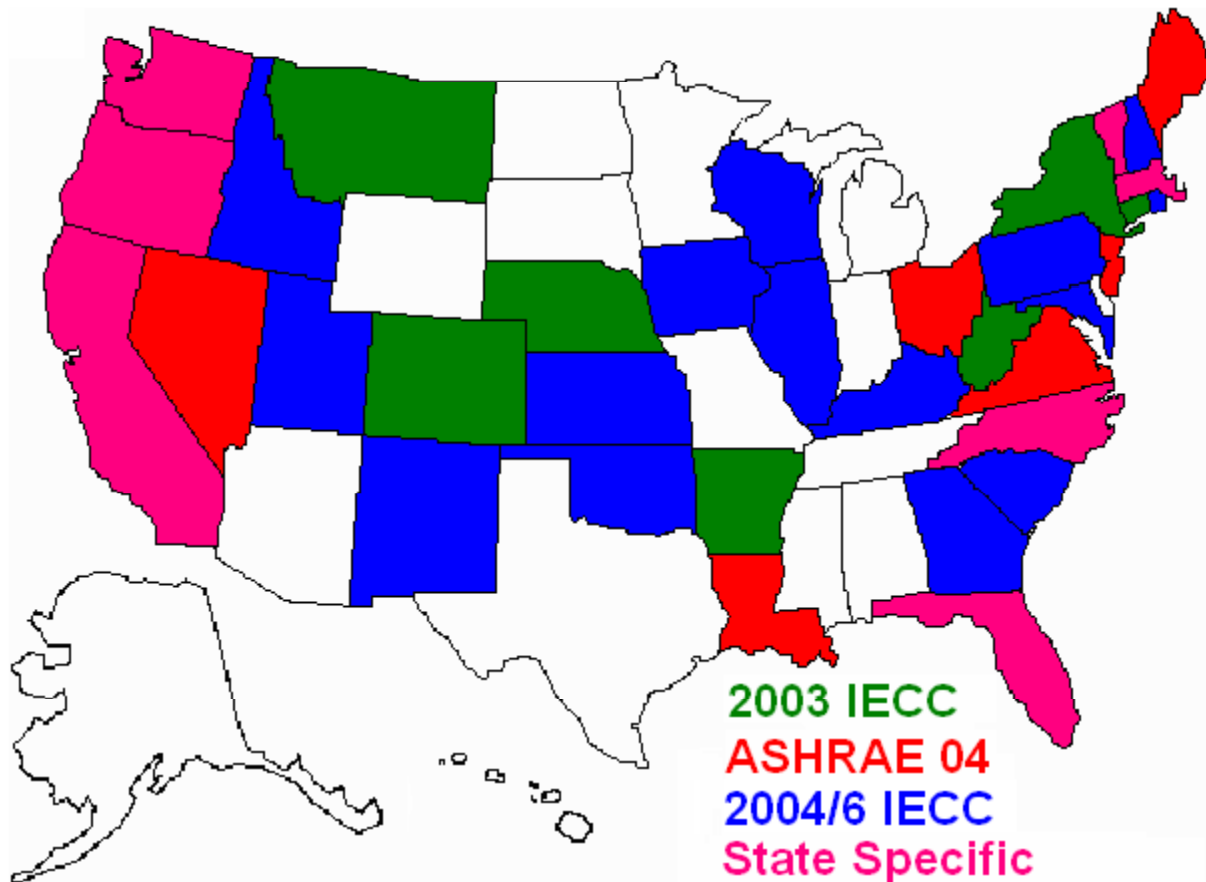
- ❑ Does the room your sitting in have Bi-level Switching?
 - ❑ How?
- ❑ What is the Watts/Sq.ft. of your Room?
 - ❑ If you are lit by 4 ft. fluorescent tubes assume 28 watts for each tube in your space. Some fixtures have two tubes, others 3 or 4.
 - ❑ How many tubes(lamps) are in your fixtures?
 - ❑ To measure sq.ft. count the ceiling tiles
 - ❑ Do you have 2' x 4' ceiling tiles or 2' x 2' ceiling tiles?

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%	

Commercial Energy Codes



2003 IECC	
Arkansas	New York
Colorado	Montana
Connecticut	Nebraska
West Virginia	
2004/2006 IECC	
Illinois	New Hampshire
Rhode Island	Pennsylvania
Maryland	Kentucky
South Carolina	Georgia
Wisconsin	Kansas
Oklahoma	New Mexico
Utah	Idaho
Iowa	
ASHRAE 04	
Virginia	Louisiana
Maine	New Jersey
Ohio	Nevada
State Specific	
California	Oregon
Florida	Vermont
North Carolina	Washington
Massachusetts	

Chat Questions

- ❑ Do you reside in one of the 35 states?
- ❑ Do you have clients doing any new construction?
 - ❑ What type of Building?
 - ❑ Is it in a category where the building code automatically put them in the Watts/sq.ft. zone for tax deductions?

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
Incandescent 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 incandescent include:

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

Biggest EPAct Growth Area

LED's

LED's

LED's

Lighting Retrofit Economics

(For Existing Buildings)

- ❑ 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

Retrofit Math

100,000 sq.ft. Warehouse

250 Metal Halides replaced with HiBay Fluorescents

□ Cost of Project = \$75,000 (Assumes \$300/fixture installed)

■ Annual Energy Savings = \$24,461/yr

□ $250 \times (0.458 \text{ kW} - 0.234 \text{ kW}) \times 12 \text{ hrs/day} \times 7 \text{ day/wk} \times 52 \text{ wk/yr} \times \$0.10/\text{kWh}$

■ Rebate = \$24,600

□ This is a sample rebate, using LIPA's rebates. Some areas have no rebate system others have larger rebates.

■ Added PV of Tax Deduction = \$13,461

□ 40% combined tax rate, 8% discount rate, compared to 39 yr depreciation removed(expensed) in year 15

□ Payback = 1.5 Years

□ IRR = 58%

Without rebate, Payback = 2.5 yrs, IRR = 37%

Chat Questions

- ❑ Do you have clients doing Lighting retrofits?
- ❑ If no, Do you have clients with lighting like this?



- ❑ Should they be retrofitting?

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/Hotels/Dorms
4. Centralized HVAC in Rental Apartments/Hotels/Dorms
5. Energy Recovery Ventilation
6. Demand Control Ventilation
7. Chillers in buildings < 150,000 sq ft
8. Blow through 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

Chiller Tax Planning

- ❑ Chillers are expensive
- ❑ Use EPCAct for:
 - A. High performance including gas/electric hybrid chillers and magnetic bearing chillers
 - B. Apartment buildings
- ❑ Use FedEx repair expense treatment with qualifying one-for-one replacements. (The key is to have documentation study)

Why are Companies Moving Quickly to Install Energy Efficient Natural Gas Heaters?

- ❑ Huge new natural gas finds in U.S. assure constant supply at reasonable prices.
- ❑ Direct fired heaters are very energy efficient.
- ❑ Clean fuel source.
- ❑ Many utilities offer large rebates.
- ❑ Very large EPCAct tax deductions when combined with energy efficient lighting
- ❑ Great for warehouses, industrial buildings, truck distributors, and self storage facilities.

Warehouse Example - Heating

□ Lighting & Heating Combined

100,000 Square Foot Warehouse \$1.20 per sq ft EAct Tax Deduction			
	Lighting	Heater	Total
Project Cost	\$75,000	\$40,000	\$115,000
Utility Rebate	\$24,600	\$10,000	\$34,600
Net Investment	\$50,400	\$30,000	\$80,400

□ Lesser of:

- **\$80,400** (Net of Rebate Cost)
- or \$120,000 (100,000 sq ft x \$1.20)

□ Combined lighting heater project must reduce total energy cost by 33 1/3% as compared to ASHRAE 2001.

Warehouse Example – Building Envelope

□ Lighting, Heating & New White Roof

(if roof is in good shape, could consider insulation or truck bay doors)

100,000 Square Foot Warehouse \$1.80 per sq ft EAct Tax Deduction				
	Lighting	Heater	White Roof	Total
Project Cost	\$75,000	\$40,000	\$350,000	\$465,000
Utility Rebate	\$24,600	\$10,000	\$20,000	\$54,600
Net Investment	\$50,400	\$30,000	\$330,000	\$410,400

□ Lesser of:

- \$410,400 (Net of Rebate Cost)
- or **\$180,000** (100,000 sq ft x \$1.80)

□ Combined lighting, heater & white roof project must reduce total energy cost by 50% as compared to ASHRAE 2001.

New Construction Data Requirements

- ❑ Project general information
- ❑ Square footage
- ❑ Lighting projects
 - CAD drawings (.dwg or .dxf), Architectural & Electrical sets
 - Fixture schedule



Retrofit Lighting Data Requirements

- ❑ Project general information
- ❑ Square footage of each space
- ❑ Bi-level lighting confirmation
- ❑ Invoices (both material & labor)
- ❑ Fixture descriptions (model number, Lamp count, ballast type)
- ❑ Fixture count (new and retained)
- ❑ Foot candle of rooms

* most efficient for Energy Team to work with contractor



Energy “Modeling” required for HVAC & Envelope

- ❑ HVAC and Building Envelope
 - Modeling required (IRS Approved)
 - No partial deductions
 - Almost exclusively new construction and
 - ❑ Geothermal
 - ❑ Thermal Storage
 - LEED (Leadership in Energy & Environmental Design) certified



Chat Questions

- ▣ Do you have clients building LEED buildings?
 - ▣ Putting in Geothermal?
 - ▣ Putting in Thermal Storage?

Understanding Energy Models

- ❑ IRS has approved thirteen types of modeling software
 - eQUEST, Trane Trace 700, Energy Plus, Carrier HAP, VisualDOE, EnergyGauge, DOE2.2, DOE2.1E & 2.1E-JJH, Owens Corning Commercial Energy Calculator, Green Building Studio, EnerSim, IES <Virtual Environments>
 - 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.

Best Opportunities

- ❑ Architect & Engineering firms doing Government Projects
- ❑ Large spaces - tax deduction is based on square footage
- ❑ Cost segregation projects for new and/or retrofit construction (post 1/1/2006)
- ❑ LEED Buildings (gold & platinum)
- ❑ Owners of buildings > 50,000 sq. ft. investing in energy efficient lighting



CPA firms can Expand Service Offerings

Commercial Building Owners

- Retailers
- Industrial Buildings
- Warehouses
- Office Buildings

Primary Designers of Government Buildings

- Architects
- Engineers
- Lighting Designers
- Design & Build Firms

Credit/Grants

Specified Energy Property	Credit Termination Date	Applicable Percentage of Eligible Cost Basis
Geothermal Heat Pumps	Jan 1, 2017	10%
Fuel Cells	Jan 1, 2017	30%**
Microturbines	Jan 1, 2017	10%***
Combined Heat & Power	Jan 1, 2017	10%
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%*
Small Wind	Jan 1, 2017	30%

*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.

Additional Benefits of Credits/Grants

- ❑ 5 year Accelerated Depreciation
- ❑ Bonus Depreciation (in Bonus Years)
- ❑ Additional Depreciation for 50% of the Credit/Grant Amount

Grant in Lieu of Tax Credit

- ❑ Great for companies who don't pay taxes
- ❑ Forms have been released
- ❑ Applications now being Accepted
 - For projects placed in service after:
 - ❑ 1/1/2009
 - or projects started before:
 - ❑ 12/31/2010
- ❑ Applications accepted through 10/1/2011
- ❑ Marketing the Grant
 - Get the word out
 - Include Grant in Proposals
- ❑ Cash Received Within 60 Days

Geothermal Heat Pumps

- Tremendous Opportunity
 - Benefits
 - Energy Savings
 - 10% Grant/Tax Credit
 - 5 Year Depreciation
 - Bonus Depreciation (In Bonus Years)
 - Depreciation of 50% of Grant/Tax Credit amount
 - Building will likely qualify for \$1.80/sq.ft. EAct Tax Deduction

Commercial Solar P.V. Market is Very Strong

Why?

- ❑ Material costs at all time lows.
- ❑ We are seeing installed costs at low to mid \$4 per watt.
- ❑ Strong utility rebates and REC's in many places.
- ❑ Lots of vendor financing in the market.
- ❑ Certainty of 30% credit or cash grant.

Reviewing Solar Proposals

- ❑ Make sure the tax and depreciation calculations are correct
- ❑ Make sure the REC economic assumptions are reasonable
- ❑ Choose finance structure based on property owners fact pattern
 - Cash purchase,
 - Loan,
 - Off Balance Sheet Lease,
 - Power Purchase Agreement(PPA)
- ❑ Advise the client to get the building in physical and fiscal (energy efficient) shape
 - Putting solar on an inefficient building is counter productive

Solar P.V. Tax Preparation

- Use tax incentives to get the pre-solar building into physical and fiscal shape.

- **Physical shape**

- Upgrade the roof and insulation
- Replace inefficient roof top HVAC, preferably relocate off the roof

- **Fiscal shape**

- Install energy electricity efficient lighting
 - allows excess solar electricity to sell back into the grid

Chat Questions

- ▣ What two states have the most Solar Installs?
 - ▣ Why?

E&M~Energy Tax Savers

Experience

- Over 7,000 studies completed
- Assisted with writing of the legislation
- Synergy between cost segregation and energy studies
- Authored numerous articles on Energy – CCH's Energy Tax Author



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