

IREM Tri-State Conference Expanding and Improving with EPAct and Solar Energy Tax Savings



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Energy Tax Savers' EPAct and Tax Incentives Presentation



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
- ASHRAE rule set (ie. Rental Apartment Buildings 4 stories and above)
- Also available for:
 - Tenant owned lease-hold improvements

Where are the Benefits

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

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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/R ²	25% Improvement	40% Improvement
Multifamily	1.0	0.75	0.60
Office	1.3	0.975	0.78
Manufacturing	2.2	1.65	1.32
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)

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

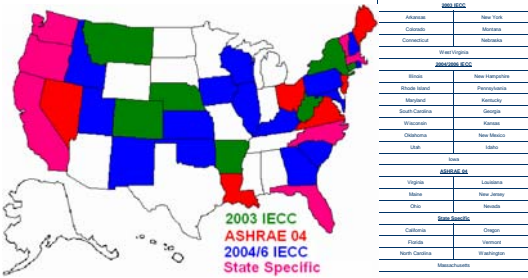
¹ Residential is excluded from the ban, provided power factor is less than 0.90.

² Permissible replacements for incandescents include:

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

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States with Stricter Lighting Standards than ASHRAE 90.1 2001



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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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What Tends to Qualify on the HVAC side?

1. Geothermal (Ground Source Heat Pumps)
2. Thermal Storage
3. High Efficiency Mitsubishi 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. Cambridge 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

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.

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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.

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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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Solar Investment in NJ & PA

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Agenda

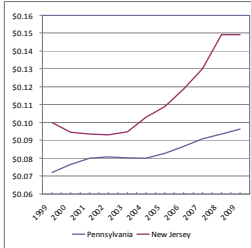
- I. Solar Today
- II. Solar as an Investment Vehicle
- III. Federal Incentives
- IV. New Jersey Case Study
- V. Pennsylvania Case Study
- VI. Summary

I. Solar Today

- What is Solar?
- Commercialized Retail Products
- High-growth sector

II. Solar as an Investment Vehicle

Electrical Costs by State (per kWh)



- Reduced energy costs
- Investability
- Return on investment

Ten Year Electrical Increase*
New Jersey – 49.4%
Pennsylvania – 33.8%

*Source - <http://www.eia.doe.gov/>

II. Solar as an Investment Vehicle (cont.)

Stability

- Continuing decline in material costs
- States have long-term rebate programs, but plan to phase these out over time
- Federal incentive programs are constant
- Ongoing increase in energy costs
- Potential for a future carbon tax program (impact unknown)

II. Solar as an Investment Vehicle (cont.)

Transparency

- Output monitoring
- REC tracking
- Process transparency, up to the point of how you use the tax credits

II. Solar as an Investment Vehicle (cont.)

Predictability

- Production is understood, historical climate data
- 1 year variability around 12%
- 10 year variability is non-existent

Reliability

- 25 year standard warranties, 40+ year expected life

III. Federal Incentives

Federal Investment Tax Credit (ITC)

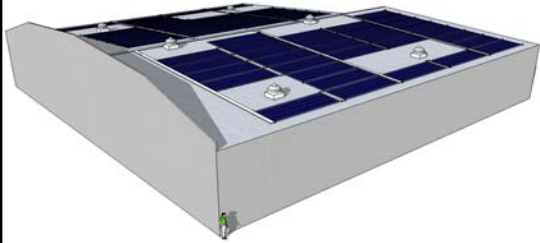
- 30% of project cost
 - Often taken after a state rebate package is deducted
 - No maximum credit
- This acts generally as a business tax credit
- Due to ARRA, can be taken as a straight rebate
 - Unclear the timeline on this extension
- Available through December 31, 2016

III. Federal Incentives (cont.)

Modified Accelerated Cost Recovery System (MACRS)

- Accelerated depreciation schedule
- Taken as the following depreciation schedule: 20%, 32%, 19.20%, 11.52%, 11.52%, 5.76%
- This is depreciated at the same rate as an office computer
- Depreciable basis: Project cost - state incentives - 50% of Federal ITC

IV. New Jersey Case Study



System Size: 32.8 kW
Region: PSE&G Territory
Business: Prefabricated Steel Athletic Building
Consideration: Roof Loading

IV. New Jersey Case Study (cont.)

Customer-Sited Rebate

- Standard non-residential: \$0.90 per watt
- 100% production cap vs. building needs
- 50kW maximum system

IV. New Jersey Case Study (cont.)

Solar Renewable Energy Certificates (SRECs)

- Sometimes called green chips
- Generate tradable goods
- 1,000 kWh Generated = 1 SREC
- Currently can trade at over \$650
- Through aggregators or brokers, can contract
- Tradable Shelf Life of 3 Years

IV. New Jersey Case Study (cont.)

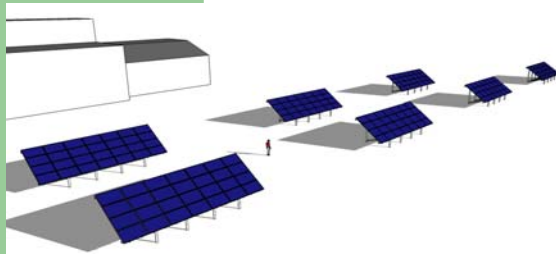
Solar Renewable Energy Certificates (SRECs)

- Qualify for generation for 15 years from interconnection
- Price regulated through Solar Alternative Compliance Payment (SACP), which is an alternate payment price for credits that steps down on a yearly basis

IV. New Jersey Case Study (cont.)

FINANCIAL OVERVIEW		
System Size - Peak Power Output	32.83	kW DC STC
SYSTEM PRODUCTION		
Estimated Utility Savings (1st Year)	\$ 4,600	\$0.14 / kWh
Estimated Utility Savings (10 Years)	\$ 57,000	
SREC Annualized Revenues	\$ 11,600	50/50 split contract
SYSTEM PRICE		
Initial Cost	\$ 246,000	
Price per DC Watt	\$ 7.50	
UP-FRONT INCENTIVES		
NI Customer-Sited Rebate	\$ 32,800	
Federal Investment Tax Credit/Grant	\$ 73,800	
TOTAL UP-FRONT INCENTIVES	\$ 106,600	-43.3%
ONGOING INCENTIVES		
MACRS Accelerated Depreciation (5 Years)	\$ 60,000	Tax revenue, dependant on filing
TOTAL ONGOING INCENTIVES	\$ 60,000	-24.4%
FINANCIAL PERFORMANCE		
System Payback	4.4 Years	
Annualized Net (First 10 Years)	\$ 11,400	

V. Pennsylvania Case Study



System Size: 45.3 kW
 Region: PPL Territory
 Business: Medical Device Manufacture
 Consideration: Limited Roof Space

V. Pennsylvania Case Study (cont.)

PA Sunshine Solar Rebate Program

- Small Business PV:
 - \$1.25/W: 3 – 10 kW
 - \$1.00/W: Next 90 kW
 - \$0.75/W: Next 100 kW
- Sweet spot: 800 – 10,000 sqft of rooftop / ground
- Incentives capped at 200 kW

V. Pennsylvania Case Study (cont.)

PA Sunshine Solar Rebate Program

- Commercial PV financial cap
 - lesser of \$177,500 or 35% of installed costs
- Must be applied for by installer
- Only by program-approved installers
- System owner retains REC's

V. Pennsylvania Case Study (cont.)

Alternative Energy Credit Program (AEC)

- Same as SRECs, just different program name
- Like SREC's, can be purchased by energy services companies, energy producers, brokers, aggregators, private businesses, etc.
- No limit on the years that credits can be generated, as long as they maintain compliance
- Current pricing \$225 - \$690 for PV only

V. Pennsylvania Case Study (cont.)

OVERVIEW		
System Size - Peak Power Output	45.08	KW DC STC
SYSTEM PRODUCTION		
Estimated Utility Savings (1st Year)	\$ 5,700	
Estimated Utility Savings (10 Years)	\$ 69,700	
SREC Contract Revenues (1st Year)	\$ 11,400	Estimated \$200 / AEC
SYSTEM PRICE		
Initial Cost	\$ 292,500	
Price per DC Watt	\$ 6.50	Cost p/ Watt
UP-FRONT INCENTIVES		
Federal Investment Tax Credit/Grant	\$ 73,500	
PA Sunshine Solar Rebate	\$ 47,500	
TOTAL UP-FRONT INCENTIVES	\$ 121,000	-41.4%
ONGOING INCENTIVES		
MACRS Accelerated Depreciation (5 Years)	\$ 70,800	Tax revenue, dependent on filing
TOTAL ONGOING INCENTIVES	\$ 70,800	+24.2%
FINANCIAL PERFORMANCE		
System Payback	4.7 Years	
Annualized Net (First 10 Years)	\$ 6,500	



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