

# Complete Warehouse Tax-Enhanced Energy-Efficient Design

*By Charles Goulding, Jacob Goldman and Joseph Most*

Charles Goulding, Jacob Goldman and Joseph Most discuss how warehouse owners can save taxes and save energy by making qualifying energy-reducing investments under Code Sec. 179D.

Warehouses are becoming the breakout category for tax-enhanced energy-efficient design. Warehouses are taking the lead in energy-efficient design because they are large simple spaces where significant energy and tax savings are easily achievable by installing current generation lighting, heating and other energy efficient building products. Moreover, the largest concentrations of large warehouses are located near major population centers, where the supply of electricity is often constrained and expensive. This economic reality greatly increases the financial return from using energy efficiency measures.

## The EAct Tax Opportunity

Pursuant Internal Revenue Code Sec. 179D,<sup>1</sup> as enacted by the Energy Policy Act of 2005 (EAct),<sup>2</sup> warehouse owners or tenants making qualifying energy-reducing investments can obtain immediate tax deductions of up to \$1.80 per square foot.

If the building project doesn't qualify for the maximum \$1.80 per square foot immediate tax

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deduction, there are tax deductions of up to \$0.60 per square foot, for each of the three major building subsystems: lighting, HVAC (heating, ventilating, and air conditioning) and the building envelope. The building envelope is every item on the building's exterior perimeter that touches the outside, including the roof, walls, insulation, doors, windows and foundation.

Warehouses that combine energy-efficient lighting and heating have become, by far, the largest category of buildings qualifying for the \$1.20 to \$1.80 EAct tax deductions. Chart 1 illustrates the magnitude of potential EAct tax benefits available for warehouses of various sizes.

## Lighting

Building lighting comprises a large portion of warehouse energy use. Most warehouses that have not had a lighting upgrade to energy-efficient lighting, in the last 7 or 8 years, utilize prior generation metal halide or T-12 fluorescent lighting. It is important to realize that effective January 1, 2009, most probe-start metal halide lighting may no longer be manufactured or imported into the United States and, effective July 1, 2010, most T-12 lighting may no longer be manufactured or imported into the United States. This means that warehouses that still have older lighting technology will soon be subject to large price increases for replacement lamps and bulbs.

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This prior generation T12 and metal halide lighting is very energy inefficient, compared to today's T-8 and T-5 lighting, and a lighting retrofit can easily reduce lighting electricity costs by 40 to 60 percent. In addition to large energy cost reductions from upgrading basic building lighting, most warehouses undergoing lighting retrofits install sensors that completely shutoff lighting in portions of the warehouse that are not in use. Previously, many warehouse owners and lighting specialists were reluctant to install sensors because they reduced fluorescent lamp useful life. Today, with improved technology, sensors are available with warranties that protect against reduction in lamp useful life.

## Heating

New, improved commercial heating systems can provide energy cost savings of 8 percent, or more, over

Chart 1

Warehouse Properties Potential EPAct Tax Deductions		
Sample Square Footage	EPAct Deductions	
	\$1.20/sq. ft.	\$1.80/sq. ft.
50,000	\$ 60,000	\$ 90,000
100,000	\$ 120,000	\$ 180,000
250,000	\$ 300,000	\$ 450,000
500,000	\$ 600,000	\$ 900,000
750,000	\$ 900,000	\$ 1,350,000
1,000,000	\$ 1,200,000	\$ 1,800,000

Chart 2

100,000 Square Foot Warehouse \$1.20 per sq. ft. EPAct Tax Deduction			
	Lighting	Heater	Total
Project Cost	\$ 135,000	\$ 35,000	\$ 170,000
Utility Rebate	\$ (35,000)	\$ (15,000)	\$ (50,000)
Net Investment	\$ 100,000	\$ 20,000	\$ 120,000

Chart 3

100,000 Square Foot Warehouse \$1.80 per sq. ft. EPAct Tax Deduction				
	Lighting	Heater	Roof	Total
Project Cost	\$ 135,000	\$ 35,000	\$ 80,000	\$ 250,000
Utility Rebate	\$ (35,000)	\$ (15,000)	\$ (20,000)	\$ (70,000)
Net Investment	\$ 100,000	\$ 20,000	\$ 60,000	\$ 180,000

the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 2001 building code standards. There are multiple heater technologies suitable for the warehouse market, including Cambridge direct fired gas heaters, unit heaters, and infrared (e.g. radiant) heaters.

If feasible, the warehouse heater should be mounted on an exterior wall, to optimize the roof top space for a solar P.V. roof top system.

An example illustrating the maximum utilization of the \$1.20 EPAct tax deduction for a 100,000 square foot warehouse, with an energy-efficient heater, is shown in Chart 2.

With this example, the maximum \$120,000 (100,000 sq. ft. x \$1.20) EPAct tax deduction will be available, as long as the combined lighting and heater project reduces total energy costs by 33-1/3 percent, as compared to the ASHRAE 2001 standards.

## Building Envelope

If a warehouse requires re-roofing, the owner should consider installing a more energy-efficient white roof. Moreover, while re-roofing is the ideal time to add more building insulation. If the building already has an energy-efficient design and roof, the owner may want to consider upgrading to more energy-efficient truck bay doors and windows.

With this example the maximum \$180,000 EPAct tax deduction (100,000 sq. ft. x \$1.80) will be available, as long as the combined lighting, heater and roof project reduces total energy cost by at least 50 percent, as compared to the ASHRAE 2001 standards.

## Solar P.V. Rooftop Systems

Solar P.V. rooftop systems are used to generate electricity at warehouses. Warehouses typically make ideal solar installation candidates since they often have large, unobstructed flat roofs. Large roofs can accommodate large solar P.V. systems, to generate more electricity. Solar P.V. installations are entitled to a 30 percent tax credit, or now, for the first time, a 30 percent grant. When using either the credit or the grant, the five year Modified Accelerated Cost Recovery System (MACRS) depreciation method is available. Often, a building's owners will be willing to make the investment for a rooftop warehouse solar installation, if the warehouse tenant will

agree to enter into a power purchase agreement to purchase its electricity from the building at a set price for a fixed period of time, usually 15 to 20 years. The building's owner will use a combination of the power purchase agreement annual revenue, the tax credit or grant, utility rebates, if available, green tag emission payments and net metering electricity payments for selling the excess power back to the grid, to generate an acceptable economic return. With a power purchase agreement, a warehouse owner is essentially renting the roof as an alternate energy electrical generator.

## Warehouse Tax Incentivized Energy-Efficient Design Process Steps

1. Assemble team including warehouse experts for EAct tax incentives, utility rebates, lighting, heater, building envelope and solar energy.
2. See if roof is compatible for solar and heater. Obtain proposals for installations of solar installations and any other needed roof/insulation projects.
3. Obtain lighting design that replaces all inefficient lighting. Compare and contrast costs of fluorescent, induction and LED lighting alternatives.
4. Obtain Cambridge heater or alternative heater proposals, taking into account possible roof designs.
5. Determine utility rebate based on all proposed separate and combined energy-efficient measures. Efficient lighting will reduce electrical use. Roof, insulation and heater will reduce "therms."
6. Determine tax incentives including EAct tax deduction benefit and solar credit tax deductions. EAct will be based on total project square footage, including mezzanines and pick and

pack modules. The 30-percent solar tax credit will be based on the combined solar material and installation costs.

7. Prepare project proposal detailing project costs, energy savings, utility rebates and tax incentives.
8. Get project approved by building owner.
9. Hire contractors and execute project.
10. Have EAct tax expert prepare model and tax documentation using IRS approved software.
11. Process utility rebates.
12. Reduce federal and state estimated tax payments, to account for expected large EAct tax deductions and credits.
13. Celebrate tax-enhanced energy-efficient warehouse achievement!

## Conclusion

As described above, there are multiple compelling reasons, including energy and substantial tax savings, why warehouses are becoming the breakout energy efficiency project building category. This is such a widespread phenomenon that market forces will require warehouse owners to upgrade, just to remain competitive. Once the overwhelming majority of warehouses are upgraded, America's building products community will undoubtedly turn their attention to the next major building category requiring improvement, which may very well be the office building you are sitting in.

## ENDNOTES

- <sup>1</sup> Unless otherwise indicated, all references to "Code Sec." and "Reg. §" are to the Internal Revenue Code of 1986, as amended, and the Treasury regulations promulgated thereunder.
- <sup>2</sup> Energy Policy Act of 2005 (P.L. 109-58) ("EAct").

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