

Hangars Generate the Largest EAct Opportunity

By Kenneth Wood, Jennifer Pariente and Andrea Albanese

Kenneth Wood, Jennifer Pariente and Andrea Albanese describe how airplane hangars represent a largely untapped opportunity for energy savings through retrofits and tax savings by taking advantage of the Code Sec. 179D deductions.

Airports and the predicted future Aerotropolises (cities currently being designed and built around air commerce and transport) need and will continue to need large storage and maintenance facilities for the airplanes that are the backbone of the international transport trade.¹ Airplane hangars represent a large untapped opportunity for EAct tax incentives, as they are very similar in building type to warehouses,² car repair bays,³ industrial⁴ and self-storage facilities⁵ in terms of building energy usage and their ability to drive large tax deductions due to their large square footage. In fact, some of the largest buildings (per square foot) in the United States are hangars, including Boeing's Everett Factory at over 13 million sq. ft., which would also, if efficient enough, generate the largest EAct deduction.

Hangars are ripe for taking the lead in energy efficiency because they are large, simple spaces where large energy and tax savings are easily achievable by installing current generation energy-efficient building products. Similar to warehouses, the largest hangars use electricity that also goes to support nearby major population centers where electricity is often supply-

constrained and expensive, which greatly increase the economic return from energy-efficiency measures.

The EAct Tax Opportunity

Pursuant to Code Sec. 179D, as enacted by the Energy Policy Act of 2005 (EAct),⁶ 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 does not qualify for the maximum \$1.80 per square foot immediate tax deduction, there are tax deductions of up to 60 cents per square foot for each of the three major building subsystems: lighting; heating, ventilation and air conditioning (HVAC); and the building envelope. The building envelope is every item on the building's exterior perimeter that touches the outside world including roof, walls, insulation, doors, windows and foundation.⁷

Commercial Hangar Operators

In conjunction with the growth of airports, the production and support facilities that are used to produce and maintain these aircraft will need to be retrofitted and upgraded to current generation technology.

Examples of how large buildings and airport hangars can generate large EAct tax deductions are presented in Table 1.

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Table 1. Commercial Hangars

Potential Code Sec. 179D Tax Deductions Available for Energy-Efficient Building Improvements						
Property	Total Square Footage	Lighting		HVAC Maximum Deduction	Building Envelope Maximum Deduction	Total
		Minimum Deduction	Maximum Deduction			
Boeing Everett Factory Building	4,300,000	\$1,290,000	\$2,580,000	\$2,580,000	\$2,580,000	\$7,740,000
Henderson Quail Commercial Aviation Center	135,000	\$40,500	\$81,000	\$81,000	\$81,000	\$243,000
Talon Air, Farmingdale, NY	100,000	\$30,000	\$60,000	\$60,000	\$60,000	\$180,000
Totals:	4,535,000	\$1,360,500	\$2,721,000	\$2,721,000	\$2,721,000	\$8,163,000

LEED (Leadership in Energy and Environmental Design) buildings are typically platformed for large EAct tax deductions.⁸ Examples of LEED hangars are included in Table 2.

Table 3 is a sample of some of Cessna’s larger aircraft hangar service buildings.

Lighting

Lighting is generally the largest portion of hangar energy use. Standard prior-generation lighting for hangars was T-12 or metal halide lighting. T-12 and metal halide lighting are some of the least energy-efficient types of lighting as compared to today’s T-8, T-5, induction and LED lighting. A lighting retrofit can easily reduce lighting electricity costs by 40 to 80 percent.⁹ LEDs and induction lighting in hangars that are heated only will kick in \$1.20 and \$1.80 per square foot tax deductions, where nonretrofitted hangars with metal halide and T-12 fixtures will not qualify for EAct.

Watts per Square Foot Targets to Receive \$1.20 and \$1.80 per Square Foot

Code Sec. 179D utilizes building energy simulation models to confirm EAct tax deductions.

This software compares actual building systems to simulated reference building’s systems. When a building models for just one system, HVAC for example, the actual project building would have reference lighting, reference envelope and actual project building HVAC. This would be compared to all reference systems in the simulated reference building. If this model, which holds all else constant, except for the HVAC that can show a 15-percent overall building energy cost improvement *versus* the simulated reference building, the owner of the actual project building would receive \$0.60 per square foot for the HVAC section.

Multiple systems can be combined to generate \$1.20 and \$1.80 per square foot EAct deductions. To receive the full \$1.80 per square foot, buildings must show a 50-percent overall energy cost reduction in all three systems *versus* the simulated reference building. This model, however does not discriminate as to which system (lighting, HVAC or envelope) that the 50-percent savings comes from. All of the savings could be in one system or spread out amongst the three. In the case of nonconditioned hangars, since most of the energy use is in the lighting, if the watts can be lowered enough the 50 percent can be reached just by retrofitting the lighting. The targets to hit are .75 watts per square foot or less for \$1.20 and .45 watts per square foot or less for \$1.80.

Table 2. LEED Hangars

Potential Code Sec. 179D Tax Deductions Available for Energy-Efficient Building Improvements						
Property	Total Square Footage	Lighting		HVAC Maximum Deduction	Building Envelope Maximum Deduction	Total
		Minimum Deduction	Maximum Deduction			
Hanger 511—LEED Silver—Jacksonville, FL	137,000	\$41,100	\$82,200	\$82,200	\$82,200	\$246,600
Hanger 25 LEED Platinum	62,000	\$18,600	\$37,200	\$37,200	\$37,200	\$111,600
Totals:	199,000	\$59,700	\$119,400	\$119,400	\$119,400	\$358,200

Table 3. Cessna National Hangar Facilities

Property	Total Square Footage	Lighting		HVAC Maximum Deduction	Envelope Maximum Deduction	Total
		Minimum Deduction	Maximum Deduction			
Wichita Citation Service Center	477,000	\$143,100	\$286,200	\$286,200	\$286,200	\$858,600
Independence, Kansas Facility	400,000	\$120,000	\$240,000	\$240,000	\$240,000	\$720,000
Columbus, Georgia Facility	340,000	\$102,000	\$204,000	\$204,000	\$204,000	\$612,000
Orlando Citation Service Center	187,000	\$56,100	\$112,200	\$112,200	\$112,200	\$336,600
Mesa Citation Service Center	101,000	\$30,300	\$60,600	\$60,600	\$60,600	\$181,800
Sacramento Citation Service Center	62,575	\$18,773	\$37,545	\$37,545	\$37,545	\$112,635
San Antonio Citation Service Center	60,680	\$18,204	\$36,408	\$36,408	\$36,408	\$109,224
Milwaukee Citation Service Center	45,700	\$13,710	\$27,420	\$27,420	\$27,420	\$82,260
Greensboro Citation Service Center	45,000	\$13,500	\$27,000	\$27,000	\$27,000	\$81,000
New York Citation Service Center	41,660	\$12,498	\$24,996	\$24,996	\$24,996	\$74,988
Totals:	1,760,615	\$528,185	\$1,056,369	\$1,056,369	\$1,056,369	\$3,169,107

Roofs

EPAAct limits deductions to the lesser of what a project qualifies for, \$0.60, \$1.20 or \$1.80 per square foot or project cost. Most lighting retrofits, like the ones described in the previous paragraph, only cost around \$1.00 per square foot. In these cases, if the full \$1.80 is achieved, there is \$0.80 per square foot left over to apply to a roof EPAAct deduction. The building's underlying characteristics have already qualified for \$1.80 per square foot but did not have the project cost. Now with additional project cost in a roof improvement, the remaining \$0.80 per square foot tax incentive may be deducted.

Conclusion

The key to utilizing EPAAct for hangars most efficiently is to realize that retrofitting lighting alone is the key to qualify for large deductions. Once the efficiencies are achieved by qualifying for the full 50-percent-energy-cost reduction *versus* the simulated reference building,

just by retrofitting lighting, the remaining deduction above the project cost can be used to improve the envelope, in our example, the roof.

ENDNOTES

- ¹ Charles Goulding, available online at <http://energytaxsavers.wordpress.com/article/the-epact-tax-aspects-of-the-1xedf26uc9hpj-10/>, Apr. 2011.
- ² Charles Goulding, Jacob Goldman and Joseph Most, *Complete Tax Enhanced Warehouse Energy Efficient Design*, CORP. BUS. TAX'N MONTHLY, Aug. 2010, at 17.
- ³ Charles Goulding, Jacob Goldman and Raymond Kumar, *The Energy Tax Aspects of Car Dealerships*, CORP. BUS. TAX'N MONTHLY, July 2009, at 11.
- ⁴ Charles Goulding, Daniel Audette and Spencer Marr, *The EPAAct Tax Aspects of Resurgent U.S. Manufacturing Investments*, CORP. BUS. TAX'N MONTHLY, July 2011, at 17.
- ⁵ Charles Goulding, Daniel Audette and Spencer Marr, *Energy and Tax Savings Opportunities for Self-Storage Facilities*, CORP. BUS. TAX'N MONTHLY, July 2010, at 13.
- ⁶ Energy Policy Act of 2005 (P.L. 109-58) ("EPAAct").
- ⁷ Charles R. Goulding, Spencer Marr and Charles G. Goulding, *Utility Tax Planning for Coal Power Plant Closures*, CORP. BUS. TAX'N MONTHLY, Jun. 2012, at 11.
- ⁸ Charles Goulding, Jacob Goldman and Daniel Audette, *Advanced LEED Building Energy Tax Planning*, CORP. BUS. TAX'N MONTHLY, Dec. 2011, at 9.
- ⁹ Charles Goulding, Jacob Goldman and Joseph Most, *Complete Tax Enhanced Warehouse Energy Efficient Design*, CORP. BUS. TAX'N MONTHLY, Aug. 2010, at 17.

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