



Michaels Engineering Energy Brief

FED GIVES \$0.60 DEDUCTION PER SQUARE FOOT OF BUILDING - DELICIOUS!

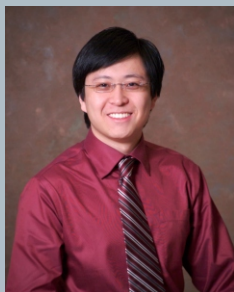
SUGGESTIONS...

Do you have certain Energy Efficiency topics you'd like to know more about? Send an email with your suggestion to the author listed below and your topic might become a future Energy Brief!

DID YOU KNOW...

...End users can receive a \$0.60 per building square foot tax deductions for (1) a 10% energy and demand cost reduction in shell improvements; and/or (2) a 20% reduction in HVAC and domestic hot water; and/or (3) a 20% reduction in lighting.

MEET THE AUTHOR



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→ NOT FRUIT

Washington D.C. is buzzing about this -- free money for new construction or retrofit buildings with efficient HVAC and domestic hot water, shell, or lighting. "Posh!" Mother says, "Money doesn't grow on trees." True, money doesn't; fruit does, but we're not talking about fruit. We're talking tax deductions. So how are we to pinch a piece of this palatable pecuniary pie?

→ NOT BAD

The federal government acknowledges, "A deserved tax deduction of \$0.60 per building square foot for each of three demands satisfied, up to a maximum of \$1.80 per building square foot." End users can receive either or all of three separate deductions for (1) a 10% energy and demand cost reduction in shell improvements; and/or (2) a 20% reduction in HVAC and domestic hot water; and/or (3) a 20% reduction in lighting -- all versus ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers) 90.1-2001 mandatory provisions. How easy for our congressmen to make these demands, squashing in their congressmen chairs.

The aristocrats need not perform building modeling/calibration for this project. They are not filing certification paperwork, or having the model verified by professional engineers -- that's work for us building owners; us readers - - the bourgeoisie. But, Mother tells me to look at the silver lining under these bureaucratic clouds: we do it right, and we reap the rewards.

→ NOT IMPOSSIBLE

First, focus on lighting. Any building size can achieve this lighting deduction. The program offers an interim rule, which sidesteps building modeling and allows qualification for the deduction by reducing lighting power density between 25 to 40 percent. Don't cheap out though: 25% reduction gives you no reward, while 40% gives you the full \$0.60 per square foot. Do your best!

For the efficient HVAC deduction, ~100,000 square foot buildings could see enough savings to qualify, remunerating ~\$60,000 in tax deduction for the building. The catch is that to safely obtain the deduction, existing operation must have dilapidated chillers and boilers, and new purchase invoices must show uber-efficient equipment, such as centrifugal chillers, condensing boilers, or dedicated outdoor air systems.

On a separate note, buildings that are smaller than 100,000 square foot may have difficulty achieving this deduction as 20% savings is a reach, even with very high efficiency chillers and condensing boilers. The table above shows building simulation results for different size buildings with properly sized equipment, following HVAC systems defined by the Performance Rating Method of Appendix G in ASHRAE 90.1-2004. The models utilize boiler efficiencies of 95%, and centrifugal chiller EER of 21.5 (0.56 kW/ton) for larger buildings and scroll chiller EER of 10.1 (1.19 kW/ton) for smaller buildings. This is for conventional system design with some of the most efficient equipment on the market. In some cases, the 20% savings can be achieved with efficient system design for new construction and system replacement for retrofit projects.

Lastly, shell deductions do not seem feasible for any size building, new construction or retrofit, as insulation must be compared to an ASHRAE 90.1-2001 building. In a building comparison between extreme, unrealistic, R-102 wall and R-49 roof insulation, and ASHRAE required insulation, savings struggle to reach 7%, let alone the 10% reduction required for qualification. See the table above for shell deduction results.

→ NOT SITTING

Those curious about the \$0.60, or \$1.80 tax deduction maximum, per building square foot can satisfy their inquisitiveness and gain further guidance at <http://www.nrel.gov/docs/fy07osti/40467.pdf> and on IRS Notice 2008-40. What's the best way to nab some financial pie? Consider lighting first, followed by HVAC, especially for system replacements, and throw insulation out the window. The Fed really is giving away free money. I shall go thank our congressmen -- shake their hands by the Capitol after they've done squashing.

HVAC deduction	Building square footage			
	200,000	100,000	40,000	20,000
Baseline Usage	\$ 286,000	\$ 150,000	\$ 62,000	\$ 30,000
Savings	\$ 49,000	\$ 31,000	\$ 3,000	\$ 2,000
Percent Savings	17.1%	20.7%	4.8%	6.7%

Shell deduction	Building square footage		
	100,000	40,000	20,000
Baseline Usage	\$ 150,000	\$ 60,000	\$ 29,000
Savings	\$ 8,000	\$ 3,000	\$ 2,000
Percent Savings	5.3%	5.0%	6.9%