

# Guide to Federal Tax Incentives for Commercial Geothermal Heat Pumps



**February 23, 2009**

## Highlights

### Federal Income Tax Credit:

- 10% of total system cost
- No limit to total credit amount
- Can be used to offset AMT tax
- Can be used in more than one year
- 10% grant available in lieu of tax credit
- Can be combined with solar and wind tax credits
- Can be combined with energy-efficient building deduction

### Accelerated Depreciation:

- 5 year MACR depreciation on entire system
- Eligible for 50% first-year bonus depreciation for 2008 – 2009

### Eligibility:

- Building located in U.S.
- Original use begins with taxpayer
- Installed between 10/3/2008 and 12/31/2016



## Energy Credit

On October 3rd 2008, geothermal heat pumps were added to the definition of energy property under section 48(a) of the Internal Revenue Code, which provides a 10% tax credit for spending on property placed in service through the end of 2016.

Energy property is classified as 5-year depreciable property in section 168(e)(3)(B)(vi)(I) of the Internal Revenue Code, meaning the cost of the property can be deducted on an accelerated MACRS basis. For depreciation purposes, the basis must be reduced by one half of the tax credit. For a corporation in a 35% tax bracket, the MACRS depreciation provides additional tax savings equal to 33.25% of the energy property spending within the first 5 years, and this is largely front-loaded. By comparison, conventional heating and cooling systems are usually depreciated on a 39-year straight line basis, and would provide 4.5% in tax savings over the first 5 years.

## Eligible Geothermal Heat Pump Energy Property

The tax credit may be claimed for spending on equipment which uses the ground or ground water as a thermal energy source to heat a structure or as a thermal energy sink to cool a structure. The structure must be located in the United States. Spending includes costs of installation.

## Excluded Property

The credit cannot be claimed for spending on equipment used solely for a purpose other than heating or cooling a structure, on previously used equipment, or on equipment that is used by an entity not subject to U.S. income taxes. These entities include schools, government agencies, charities, and other tax-exempt organizations. This also precludes tax-exempt entities from leasing energy property. However, energy purchase contracts are a mechanism that has been used to provide financing to these groups by the solar industry.

## Placed in Service Requirement

The credit can only be claimed on spending for equipment that is "placed in service" during the period from October 4th, 2008 to December 31st, 2016. Equipment is considered to be placed in service when it has been fully installed and is capable of being used by the owner for its intended purpose. Minor tasks such as fixing punch list items may remain, but the taxpayer must have taken legal title of the equipment and have all necessary licenses and permits needed for its operation.

## Tax Credit Amount and Maximum Cap

A business can claim a tax credit equal to 10% of its spending on eligible geothermal heat pump property. The tax credit can be used to offset both regular income taxes and alternative minimum taxes (AMT). If the tax credit exceeds the income tax liability, the loss can be carried back one taxable year and any remaining balance can be carried forward into future years.

## Ownership Considerations

Geothermal heat pump tax credits and depreciation deductions can only be claimed by the owner of the eligible property. This includes regulated utilities that own energy property.

An owner that cannot use the tax credits can explore other options such as sale-leasebacks, partnership "flip" structures, or energy purchase contracts. However, passive loss and at-risk restrictions make it difficult for individuals, S corporations, or closely-held C corporations to act as sources for the required capital in these arrangements. Widely-held corporations are not subject to these restrictions, and are the most appropriate source of financing.

## Claiming the Credit

IRS Form 3468 is used to claim the Energy Credit. However, this form has not been updated to reflect the October 2008 changes yet.

## Bonus Depreciation and Section 179 Deduction

Energy property placed in service during 2008 and 2009 is eligible for a special first year "bonus" depreciation allowance of 50% of the basis. The remaining basis is then depreciated in accordance with the 5-year MACRS schedules. Energy property may also be eligible for the section 179 deduction, which allows small businesses to immediately write-off 100% of spending in lieu of depreciation, to a maximum of \$250,000 for 2009. Conventional heating and cooling systems are not usually eligible for bonus depreciation, and are not eligible for the section 179 deduction. IRS Publication 946 provides guidance on how to depreciate property and the section 179 deduction.

## Business Credit Examples

### New Construction Example

A corporation spends \$1,000,000 to install a geothermal heat pump system in its new office building. They moved into the building during the 4th quarter of 2009. The corporation is in a 40% tax bracket when state income tax is included.

2009 Tax Credit:	$\$1,000,000 \times 10\%$	= \$100,000
Depreciable Basis:	$\$1,000,000 - (\$100,000 / 2)$	= \$950,000
2009 Bonus Tax Benefit:	$\$950,000 \times 50\% \text{ bonus} \times 40\% \text{ tax rate}$	= \$190,000
2009 MACRS Tax Benefit:	$\$475,000 \times 5\% \text{ Q4 MACRS} \times 40\% \text{ tax rate}$	= \$9,500
2010	" " " $\$475,000 \times 38\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$72,200
2011	" " " $\$475,000 \times 22.80\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$43,320
2012	" " " $\$475,000 \times 13.68\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$25,992
2013	" " " $\$475,000 \times 10.94\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$20,786
2014	" " " $\$475,000 \times 9.58\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$18,202

Total Tax Savings over 5 Years: \$480,000

### Retrofit Example

A corporation has an existing building that uses a water-loop heat pump system with a boiler and cooling tower. They spend \$500,000 to remove the boilers, install a geothermal heat exchange loop, and upgrade their heat pumps to high-efficiency geothermal models. They started the project in 2009 and it became operational in the 1st quarter of 2010. The corporation is in a 40% tax bracket when state income tax is included.

2010 Tax Credit:	$\$500,000 \times 10\%$	= \$50,000
Depreciable Basis:	$\$500,000 - (\$50,000 / 2)$	= \$475,000
2010 Bonus Tax Benefit:	Bonus depreciation expires in 2009 (unless it is extended)	
2010 MACRS Tax Benefit:	$\$475,000 \times 35\% \text{ Q1 MACRS} \times 40\% \text{ tax rate}$	= \$66,500
2011	" " " $\$475,000 \times 26\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$49,400
2012	" " " $\$475,000 \times 15.60\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$29,640
2013	" " " $\$475,000 \times 11.01\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$20,919
2014	" " " $\$475,000 \times 11.01\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$20,919
2015	" " " $\$475,000 \times 1.38\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$2,622

Total Tax Savings over 5 Years: \$240,000

### Replacement Units Example

A corporation spends \$100,000 to install new geothermal heat pumps in its existing building. The geothermal heat pumps are replacing older geothermal heat pumps that were originally installed in 1992. The project is completed in the 3rd quarter of 2009. The corporation is in a 40% tax bracket when state income tax is included.

2009 Tax Credit:	$\$100,000 \times 10\%$	= \$10,000
Depreciable Basis:	$\$100,000 - (\$10,000 / 2)$	= \$95,000
2009 Bonus Tax Benefit:	$\$95,000 \times 50\% \text{ bonus} \times 40\% \text{ tax rate}$	= \$19,000
2009 MACRS Tax Benefit:	$\$47,500 \times 15\% \text{ Q3 MACRS} \times 40\% \text{ tax rate}$	= \$2,850
2010	" " " $\$47,500 \times 34\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$6,460
2011	" " " $\$47,500 \times 20.40\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$3,876
2012	" " " $\$47,500 \times 12.24\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$2,326
2013	" " " $\$47,500 \times 11.30\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$2,147
2014	" " " $\$47,500 \times 7.06\% \text{ MACRS} \times 40\% \text{ tax rate}$	= \$1,341

Total Tax Savings over 5 Years: \$48,000

## Additional Tax Incentives Available to Geothermal Heat Pump Purchasers

### Grants for Energy Property in Lieu of Tax Credits

Section 1603 of H.R. 1, the American Recovery and Reinvestment Act, provides for a 10% grant in lieu of the energy credit for eligible geothermal heat pump energy property placed in service during 2009 and 2010, or beyond 2010 for those projects that began during that time period. The grants are available upon request and will be paid within 60 days of the date of receipt of the application, or within 60 days of the date the energy property is placed in service, whichever comes later. The grant eligibility requirements are the same as those for the energy credit. The grant provides an option that can be taken in lieu of the energy credit to improve cash flow.

### Energy-Efficient Buildings Deduction

Section 179D of the Internal Revenue Code provides a tax deduction of up to \$1.80 per sq. ft. to owners, or if government-owned, designers, of new or existing commercial buildings that achieve a 50% annual energy cost savings compared to a reference building that meets the minimum requirements of ASHRAE Standard 90.1-2001. The savings are determined from the combined heating, cooling, hot water and lighting use. If the full savings is not achieved, a partial deduction of up to \$.60 per square foot can be taken for a heating, cooling, and hot water system that provides at least 1/3 of the required 50% annual savings. The energy savings is determined by a calculation using "qualified" software that is certified by a "qualified" individual. See IRS Notices 2006-56 and 2008-40 for details. The tax deduction is limited to the actual spending for the energy efficient commercial building property, or \$1.80 per sq. ft., whichever is less. The property must be placed in service from January 1, 2006 through December 31, 2013.

### Government Building Example

An architect designs an 80,000 sq. ft. state office building that uses a geothermal heat pump system and other measures to achieve a 50% savings in combined heating, cooling, hot water, and lighting energy use over a code-minimum reference building. The energy property utilized cost \$640,000 (\$8 per sq. ft) to install. The architect is in a 40% tax bracket when state income tax is included. The architect receives the following tax benefit:

2009 Tax Deduction:  $80,000 \times \$1.80 = \$144,000$

2009 Tax Benefit:  $\$144,000 \times 40\% \text{ tax rate} = \$57,600$



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