

Payback Model (Commercial):

With qualified commercial projects there is currently a 10% federal tax credit available on the cost of the entire system with no limit available. In addition to the tax credit, the systems also qualify for accelerated depreciation, with a 50% bonus depreciation in the first year, and a 5 year MACRS depreciation on the balance of the system (system must be installed between 1/2012-12/2012, if completed before 2012 an 100% bonus depreciation can be applied in the first year). This is all in addition to the benefits that geothermal systems can attribute towards getting up to \$1.80 per SF in tax deductions for energy efficient commercial buildings and potential property tax deductions combined with other qualified Section 179 items.

Below find an example of the potential tax savings for a new construction commercial geothermal installation project which costs \$750,000. The building is to be occupied during the year 2012 and qualifies for a 40% tax bracket when state income tax is included.

First the Tax Credits and Depreciation are determined:

10% Federal Tax Credit:	$\$750,000 \times 10\% \text{ credit}$	= \$75,000
Depreciable Basis:	$\$750,000 \times (\$75,000/2)$	= \$712,500
Apply 50% Bonus Tax Benefit:	$\$712,500 \times 50\% \text{ Bonus} \times 40\% \text{ tax rate}$	= \$142,500

Next apply the MACRS Tax Benefits:

Year 2012:	$\$71,250 \times 40\% \text{ tax rate}$	= \$28,500
Year 2013:	$\$114,000 \times 40\% \text{ tax rate}$	= \$45,600
Year 2014:	$\$68,400 \times 40\% \text{ tax rate}$	= \$27,360
Year 2015:	$\$41,040 \times 40\% \text{ tax rate}$	= \$16,416
Year 2016:	$\$41,040 \times 40\% \text{ tax rate}$	= \$16,416
Year 2017:	$\$20,520 \times 40\% \text{ tax rate}$	= \$8,208
Total Tax Savings w/ 10% federal credit and depreciation benefits:		= \$360,000

Now to work in the tax savings to give payback model is going to vary drastically between installations, as the projected utility savings are going to be unique on each individual building based off a number of parameters, such as hourly heating/cooling load profiles, usage of the building, building construction, utility rates, type of fuels available, etc.

Financial Details When Paying Cash for the System

Below a general scenario is modeled to give an idea of the potential savings for this theoretical site compared against a conventional natural gas system and conventional A/C roof units:

Financial Details When Paying Cash for the System						
Year	System Cost		Marginal Capital Cost Difference	Energy Savings	Tax Savings	Cumulative Cash Flow
	Conventional	Geothermal				
1	\$350,000	\$750,000	\$400,000	\$9,673	\$217,500	\$172,827
2	-	-	-	\$10,105	\$28,500	\$134,222
3	-	-	-	\$10,556	\$45,600	\$78,065
4	-	-	-	\$11,029	\$27,360	\$39,677
5	-	-	-	\$11,523	\$16,416	\$11,737
6	-	-	-	\$12,041	\$16,416	\$16,720
7	-	-	-	\$12,582	\$8,208	\$37,510
8	-	-	-	\$13,149	\$0	\$50,659
9	-	-	-	\$13,742	\$0	\$64,401
10	-	-	-	\$14,364	\$0	\$78,765
11	-	-	-	\$15,014	\$0	\$93,779
12	-	-	-	\$15,694	\$0	\$109,473
13	-	-	-	\$16,407	\$0	\$125,879
14	-	-	-	\$17,153	\$0	\$143,032
15	-	-	-	\$17,934	\$0	\$160,966
16	-	-	-	\$18,751	\$0	\$179,717
17	-	-	-	\$19,608	\$0	\$199,325
18	-	-	-	\$20,504	\$0	\$219,830
19	-	-	-	\$21,443	\$0	\$241,273
20	-	-	-	\$22,427	\$0	\$263,700
Totals	\$350,000	\$750,000	\$400,000	\$303,700	\$360,000	\$263,700
Model Assumptions						
Electricity Cost			\$0.17/kWh	Increases 3% every year		
Natural Gas Cost			\$1.30/therm	Increases 5% every year		

With this particular model it shows a positive cash flow between years 5 and 6, and also does not take into account the lower expected maintenance costs, and longer projected lifespan of the equipment over conventional units in the above projection.