

Economic and Environmental Analysis by Palace Geothermal

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Geothermal Heat Pump Life Expectancy is 23 Years	
Estimated Heat Pump Cost Less tax credit Less conventional system Estimated cost for this analysis	27549 2300 6500 18749
interest rate	6.00%
Inflation rate Propane Escalator Electric Escalator	
2%	7%
3%	5%
With inflation Pollution factor	
9%	1.3400
5%	12.0500

Electric use Geothermal HP	15402 kWh	1.3400
Electric Use A/C & Boiler	1911 kWh	1.3400
Boiler & Water Heater Gas Use	2033 Therms	12.0500

Conventional Boiler System

Years of operation	Annual Propane Boiler Cost	Annual Propane Water Heating	Annual Electric Cooling	Total Annual Energy Cost
1	\$3,810	\$830	\$143	\$4,783
2	\$4,153	\$905	\$150	\$5,208
3	\$4,527	\$986	\$158	\$5,670
4	\$4,934	\$1,075	\$166	\$6,174
5	\$5,378	\$1,172	\$174	\$6,724
6	\$5,862	\$1,277	\$183	\$7,322
7	\$6,390	\$1,392	\$192	\$7,973
8	\$6,965	\$1,517	\$201	\$8,683
9	\$7,592	\$1,654	\$211	\$9,457
10	\$8,275	\$1,803	\$222	\$10,299
11	\$9,020	\$1,965	\$233	\$11,217
12	\$9,831	\$2,142	\$245	\$12,218
13	\$10,716	\$2,335	\$257	\$13,308
14	\$11,681	\$2,545	\$270	\$14,495
15	\$12,732	\$2,774	\$283	\$15,789
16	\$13,878	\$3,023	\$297	\$17,198
17	\$15,127	\$3,295	\$312	\$18,734
18	\$16,488	\$3,592	\$328	\$20,408
19	\$17,972	\$3,915	\$344	\$22,232
20	\$19,590	\$4,268	\$361	\$24,219
21	\$21,353	\$4,652	\$379	\$26,384
22	\$23,275	\$5,070	\$398	\$28,743
23	\$25,369	\$5,527	\$418	\$31,314
	\$264,917	\$57,712	\$5,925	\$328,553

Geothermal Heat Pump System

Annual Propane Water Heating	Annual Water Heating	Annual Cooling Cost	Annual Heating Cost	Total Annual Energy Cost	Annual Heat Pump Savings
\$246	\$57	\$112	\$626	\$1,041	\$3,742
\$258	\$60	\$118	\$657	\$1,093	\$4,115
\$271	\$63	\$123	\$690	\$1,148	\$4,523
\$285	\$66	\$130	\$725	\$1,205	\$4,969
\$299	\$69	\$136	\$761	\$1,265	\$5,458
\$314	\$73	\$143	\$799	\$1,329	\$5,993
\$330	\$76	\$150	\$839	\$1,395	\$6,578
\$346	\$80	\$158	\$881	\$1,465	\$7,219
\$363	\$84	\$165	\$925	\$1,538	\$7,919
\$382	\$88	\$174	\$971	\$1,615	\$8,684
\$401	\$93	\$182	\$1,020	\$1,696	\$9,522
\$421	\$97	\$192	\$1,071	\$1,780	\$10,437
\$442	\$102	\$201	\$1,124	\$1,869	\$11,438
\$464	\$107	\$211	\$1,180	\$1,963	\$12,532
\$487	\$113	\$222	\$1,239	\$2,061	\$13,728
\$511	\$118	\$233	\$1,301	\$2,164	\$15,034
\$537	\$124	\$244	\$1,366	\$2,272	\$16,462
\$564	\$131	\$257	\$1,435	\$2,386	\$18,022
\$592	\$137	\$270	\$1,507	\$2,505	\$19,726
\$622	\$144	\$283	\$1,582	\$2,631	\$21,588
\$653	\$151	\$297	\$1,661	\$2,762	\$23,622
\$685	\$159	\$312	\$1,744	\$2,900	\$25,843
\$720	\$167	\$328	\$1,831	\$3,045	\$28,269
\$10,192	\$2,362	\$4,640	\$25,935	\$32,937	\$285,424
					(\$30,871.45)
					\$254,552

Payback of Heat Pump	Total lbs CO ₂ per year saved cumulative	If cost is added to mortgage annual pmt
-\$15,007	6,420	(\$1,342.24)
-\$10,893	12,839	(\$1,342.24)
-\$6,370	19,259	(\$1,342.24)
-\$1,401	25,679	(\$1,342.24)
\$4,058	32,099	(\$1,342.24)
\$10,051	38,518	(\$1,342.24)
\$16,629	44,938	(\$1,342.24)
\$23,848	51,358	(\$1,342.24)
\$31,766	57,777	(\$1,342.24)
\$40,451	64,197	(\$1,342.24)
\$49,973	70,617	(\$1,342.24)
\$60,410	77,037	(\$1,342.24)
\$71,848	83,456	(\$1,342.24)
\$84,380	89,876	(\$1,342.24)
\$98,108	96,296	(\$1,342.24)
\$113,142	102,715	(\$1,342.24)
\$129,604	109,135	(\$1,342.24)
\$147,626	115,555	(\$1,342.24)
\$167,352	121,974	(\$1,342.24)
\$188,940	128,394	(\$1,342.24)
\$212,562	134,814	(\$1,342.24)
\$238,405	141,234	(\$1,342.24)
\$266,674	147,653	(\$1,342.24)
		(\$30,871.45)