



Calculating Incentives for Commercial GSHP Projects

*Presented Live at the
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Conference
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Geothermal HVAC Systems Commercial IRA Economics

*Presented by Daniel Ellis
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INFLATION REDUCTION ACT OF 2022

Calculating IRA Benefits for Commercial GHP Systems

Commercial geothermal projects qualify for IRA tax credits up to 30%-50% of cost basis



Inflation Reduction Act - Section 48

Geothermal GHP Tax Credits

- ✓ Base ITC rate for GHP system of 6%
- ✓ Base Domestic Content rate of 2%
- ✓ Base Energy Community rate of 2%

Bonus Rate of 5x Base for Qualifying Energy Projects

- ✓ Maximum net output < 1MW of thermal energy
or
- ✓ Meet prevailing wage rate and apprenticeship requirements
or
- ✓ Construction commenced prior to January 29, 2023

GEOTHERMAL TAX CREDITS

GHP ITC	6% / 30%
DOMESTIC CONTENT	2% / 10%
ENERGY COMMUNITY	2% / 10%
MAXIMUM CREDIT	10% / 50%

Inflation Reduction Act - Section 48

Domestic Content Bonus

ADD 10%

- ✓ Up to 10% adder for domestic content
- ✓ Based on the use of US iron/steel and % of cost of US manufactured products
- ✓ Manufactured products US content requirements: project commenced before 2025 = 40%, in 2025 = 45%, in 2026 = 50%, after 2026 = 55%

Energy Communities

ADD 10%

- ✓ Up to 10% adder for energy communities
- ✓ Census tract or adjoining tract with coal mine closed since 2000, or
- ✓ Census tract or adjoining tract with coal plant closed since 2010, or
- ✓ Defined as "a brownfield site" by the EPA, or
- ✓ Area with 0.17% employment related to coal, oil or natural gas with higher-than-average unemployment, or
- ✓ Area with 25% tax revenue related to coal, oil, or natural gas with higher-than-average unemployment

US DOE Coal Closures / Fossil Fuel Employment

Coal Closure Energy Communities

Symbol

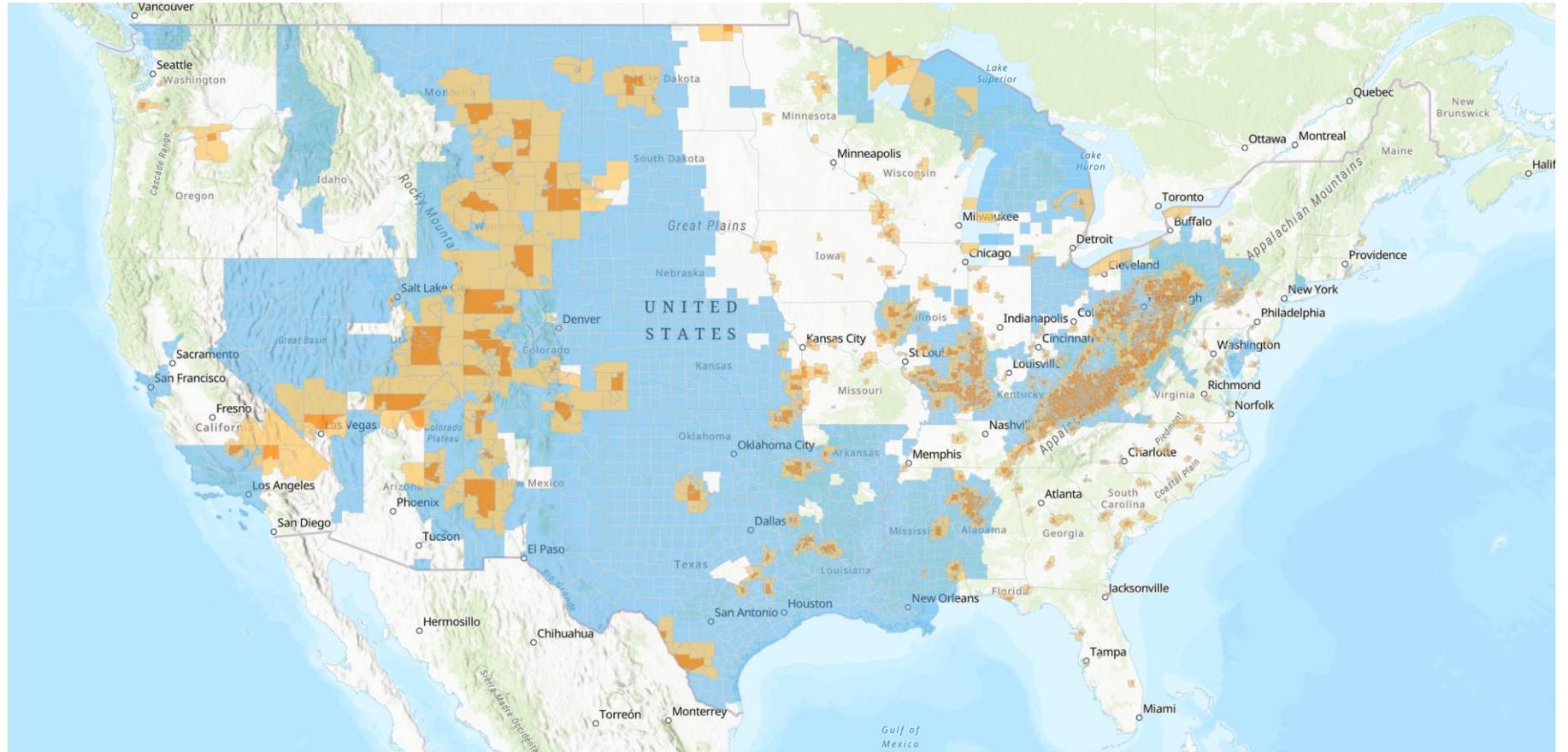
-  Census tract with a coal closure
-  Directly adjoins a tract with a coal closure

MSA/Non-MSAs that meet the Fossil Fuel Employment 0.17% Threshold

-  MSAs/non-MSAs that meet Fossil Fuel Employment (FFE) threshold of 0.17 percent

MSAs/non-MSAs that meet both the FFE threshold and the unemployment rate requirement (NOT YET DETERMINED)

-  MSAs/non-MSAs that meet both the FFE threshold and the unemployment rate requirement (NOT YET DETERMINED)



Awaiting overlay of unemployment rates on MSAs...

Inflation Reduction Act - Section 48

A green icon depicting a hand holding a person, symbolizing support or assistance.

NON-TAXBLE ENTITIES REBATES AND TRANSFERS

Non-Taxable Entity Rebates

- ✓ Direct rebate equal to credit for non-taxable entities
- ✓ Non-profits, state and local government, schools, tribes, electric cooperatives

Transfer or Sale of the Rebate

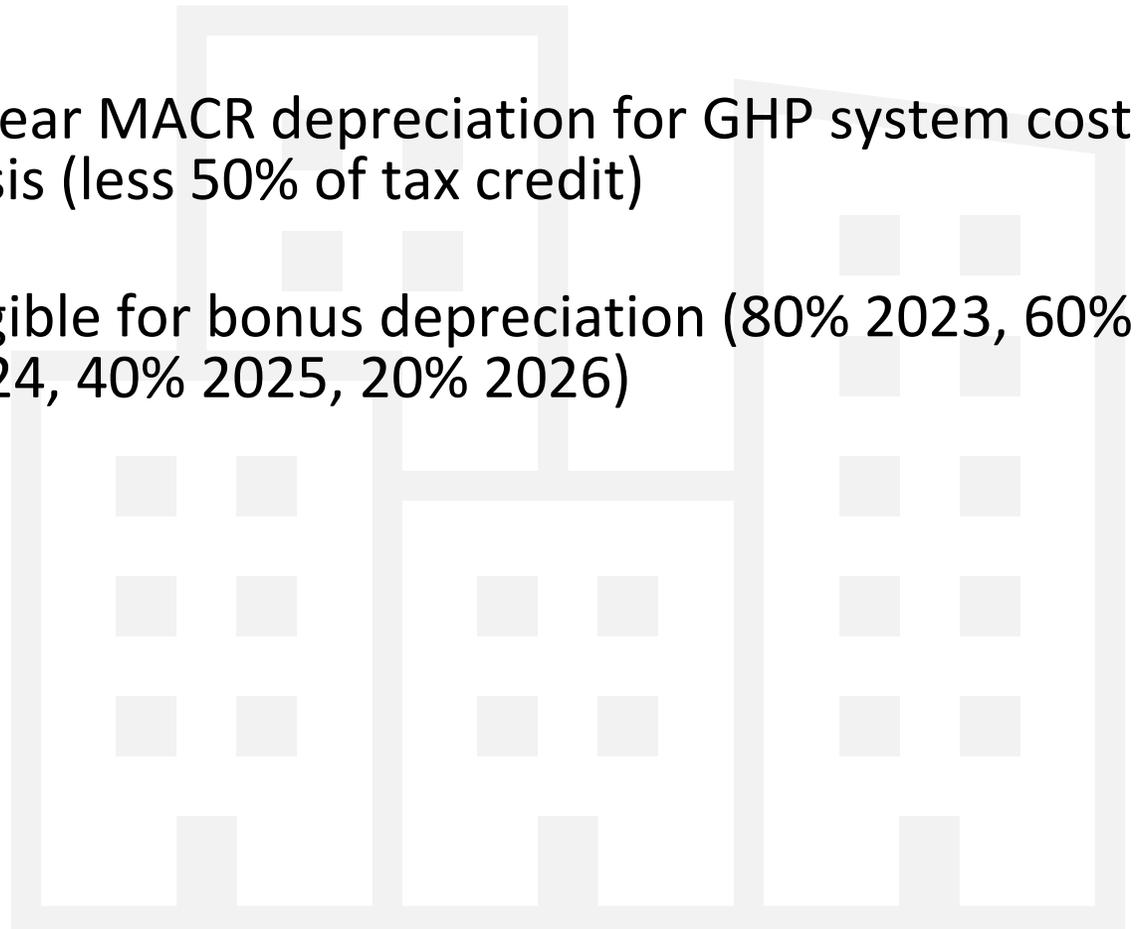
- ✓ Can be transferred or sold
- ✓ The IRA added a provision to permit project owners (other than tax-exempt entities) to make an election to transfer the ITC to an unrelated third party.

Inflation Reduction Act - Section 48



ACCELERATED
DEPRECIATION

- ✓ 5-year MACR depreciation for GHP system cost basis (less 50% of tax credit)
- ✓ Eligible for bonus depreciation (80% 2023, 60% 2024, 40% 2025, 20% 2026)



REAL ECONOMICS

NON-TAXABLE ENTITY



PRE-IRA REAL ECONOMICS



Non-Taxable Entity

Project:	Catholic Charities					
Conditioned Area (sq ft):	34,000		2 Story			
HVAC tons:	113	300	sq ft per ton			
Geothermal HVAC Cost:	\$ 737,200	\$21.68	per sq ft	\$6,524	per ton	30 EER geothermal heat pumps
Conventional HVAC Cost:	\$ 508,500	\$14.96	per sq ft	\$4,500	per ton	rooftop single-duct VAV with electric terminal reheat
Additional Cost:	\$ 228,700					
Utility Rebate*	\$ (16,950)	\$150	per ton estimate of utility geo rebate			
Net Additional Cost:	\$ 211,750					
Other Installation Costs**:	\$ -		portion of electrical, plumbing and GC fees related to HVAC system (for either system)			
Income Tax Rate:	0%		total of federal and state	non-taxable entity		
Energy Credit:	0%					
Annual Cost Savings:	\$ 34,000	\$1.00	per sq ft in energy and maintenance			
Energy Inflation:	3%					
Completion Year	2015					
Completion Quarter	2					

Year	Geo Deprec Allowance		Geo Deprec Deduction		Geo Tax Benefits		Geo Cash Flow				Conv Cash Flow		Geo Net Cash Flow	
	Special	5 Yr MACRS	Special	5 Yr MACRS	Energy Crd	Deprec Ded	Addtl Cost	Tax Savings	O&M Savings	Total	Depr Ded	Tax Savings	Annual	Cumulative
2015	0%		\$ -		\$ -	\$ -	\$ (211,750)	\$ -	\$ 17,000	\$ (194,750)	\$ 13,038	\$ -	\$ (194,750)	\$ (194,750)
2016									\$ 35,020	\$ 35,020	\$ 13,038	\$ -	\$ 35,020	\$ (159,730)
2017									\$ 36,071	\$ 36,071	\$ 13,038	\$ -	\$ 36,071	\$ (123,660)
2018									\$ 37,153	\$ 37,153	\$ 13,038	\$ -	\$ 37,153	\$ (86,507)
2019									\$ 38,267	\$ 38,267	\$ 13,038	\$ -	\$ 38,267	\$ (48,240)
2020									\$ 39,415	\$ 39,415	\$ 13,038	\$ -	\$ 39,415	\$ (8,824)
2021									\$ 40,598	\$ 40,598	\$ 13,038	\$ -	\$ 40,598	\$ 31,773
2022									\$ 41,816	\$ 41,816	\$ 13,038	\$ -	\$ 41,816	\$ 73,589
2023									\$ 43,070	\$ 43,070	\$ 13,038	\$ -	\$ 43,070	\$ 116,659
2024									\$ 44,362	\$ 44,362	\$ 13,038	\$ -	\$ 44,362	\$ 161,022
2025									\$ 45,693	\$ 45,693	\$ 13,038	\$ -	\$ 45,693	\$ 206,715

Simple Payback Years: 5.2
Internal Rate of Return: 15%

IRA ECONOMICS

Non-Taxable Entity



Project:	Catholic Charities				
Conditioned Area (sq ft):	34,000		2 Story		
HVAC tons:	113	300	sq ft per ton		
Geothermal HVAC Cost:	\$ 737,200	\$21.68	per sq ft	\$6,524	per ton 30 EER geothermal heat pumps
Conventional HVAC Cost:	\$ 508,500	\$14.96	per sq ft	\$4,500	per ton Rooftop single-duct VAV with electric terminal reheat
Additional Cost:	\$ 228,700				
Utility Rebate*	\$ (16,950)	\$150	per ton estimate of utility geo rebate		
Net Additional Cost:	\$ 211,750				
Other Installation Costs**:	\$ 125,000		portion of electrical, plumbing and GC fees related to HVAC system (for either system)		
Income Tax Rate:	0%		total of federal and state	direct pay non taxable entity	
Energy Credit:	30%		30% bonus under IRA		
Domestic Content Credit:	10%		10% bonus under IRA (if qualified)		
Annual Cost Savings:	\$ 34,000	\$1.00	per sq ft in energy and maintenance		
Energy Inflation:	5%				
Completion Year	2023				
Completion Quarter	2				

Year	Geo Deprec Allowance		Geo Deprec Deduction		Geo Tax Savings***		Geo Cash Flow				Conv Cash Flow		Geo Net Cash Flow	
	Special	5 Yr MACRS	Special	5 Yr MACRS	Tax Credits	Depreciation	Addtl Cost	Tax Savings	O&M Savings	Total	Depr Ded	Tax Savings	Annual	Cumulative
2023	0%				\$ 338,100		\$ (211,750)	\$ 338,100	\$ 17,000	\$ 143,350	\$ 16,244	\$ -	\$ 143,350	\$ 143,350
2024								\$ 35,700	\$ 35,700	\$ 16,244	\$ -	\$ 35,700	\$ 179,050	
2025								\$ 37,485	\$ 37,485	\$ 16,244	\$ -	\$ 37,485	\$ 216,535	
2026								\$ 39,359	\$ 39,359	\$ 16,244	\$ -	\$ 39,359	\$ 255,894	
2027								\$ 41,327	\$ 41,327	\$ 16,244	\$ -	\$ 41,327	\$ 297,221	
2028								\$ 43,394	\$ 43,394	\$ 16,244	\$ -	\$ 43,394	\$ 340,615	
2029								\$ 45,563	\$ 45,563	\$ 16,244	\$ -	\$ 45,563	\$ 386,178	
2030								\$ 47,841	\$ 47,841	\$ 16,244	\$ -	\$ 47,841	\$ 434,019	
2031								\$ 50,233	\$ 50,233	\$ 16,244	\$ -	\$ 50,233	\$ 484,253	
2032								\$ 52,745	\$ 52,745	\$ 16,244	\$ -	\$ 52,745	\$ 536,998	
2033								\$ 55,382	\$ 55,382	\$ 16,244	\$ -	\$ 55,382	\$ 592,380	

Simple Payback Years: 0
Internal Rate of Return: infinite

REAL ECONOMICS

CLASS A OWNER-OCCUPIED
CORPORATE HQ BUILDING



REAL ECONOMICS

Hybrid Dry Cooler for Load Balancing



CLIMATEMASTER®

PRE-IRA REAL ECONOMICS

50% Bonus and 5 Year MACRS Depreciation



Project:	Gulfport Energy HQ Building					
Conditioned Area (sq ft):	118,000		6 Story plus basement parking			
HVAC tons:	407					
Geothermal HVAC Cost:	\$ 3,462,000	\$29.34	per sq ft	\$8,506	per ton	30 EER geothermal heat pumps - rooftop ERVs - dry cooler hybrid
Conventional HVAC Cost:	\$ 3,052,500	\$25.87	per sq ft	\$7,500	per ton	rooftop single-duct fan-powered VAV with electric terminal reheat
Additional Cost:	\$ 409,500					
Utility Rebate*	\$ (237,406)	\$583	per ton estimate of utility geo rebate			
Net Additional Cost:	\$ 172,095					
Other Installation Costs**:	\$ 443,086		portion of electrical, plumbing and GC fees related to HVAC system (for either system)			
Income Tax Rate:	40%		total of federal and state non-taxable entity			
Energy Credit:	10%					
Annual Cost Savings:	\$ 70,800	\$0.60	per sq ft in energy and maintenance			
Energy Inflation:	3%					
Completion Year	2016					
Completion Quarter	4					

Year	Geo Deprec Allowance		Geo Deprec Deduction		Geo Tax Benefits		Geo Cash Flow				Conv Cash Flow		Geo Net Cash Flow	
	Bonus	5 Yr MACRS	Bonus	5 Yr MACRS	Energy Crd	Deprec Ded	Addtl Cost	Tax Savings	O&M Savings	Total	Depr Ded	Tax Savings	Annual	Cumulative
2016	50%	5.00%	\$ 1,742,148	\$ 87,107	\$ 366,768	\$ 731,702	\$ (172,095)	\$ 1,098,470	\$ -	\$ 926,376	\$ 89,630	\$ 35,852	\$ 890,523	\$ 890,523
2017		38.00%		\$ 662,016		\$ 264,807		\$ 264,807	\$ 72,924	\$ 337,731	\$ 89,630	\$ 35,852	\$ 301,878	\$ 1,192,402
2018		22.80%		\$ 397,210		\$ 158,884		\$ 158,884	\$ 75,112	\$ 233,996	\$ 89,630	\$ 35,852	\$ 198,143	\$ 1,390,545
2019		13.68%		\$ 238,326		\$ 95,330		\$ 95,330	\$ 77,365	\$ 172,695	\$ 89,630	\$ 35,852	\$ 136,843	\$ 1,527,389
2020		10.94%		\$ 190,591		\$ 76,236		\$ 76,236	\$ 79,686	\$ 155,922	\$ 89,630	\$ 35,852	\$ 120,070	\$ 1,647,459
2021		9.58%		\$ 166,898		\$ 66,759		\$ 66,759	\$ 82,077	\$ 148,836	\$ 89,630	\$ 35,852	\$ 112,984	\$ 1,760,442
2022									\$ 84,539	\$ 84,539	\$ 89,630	\$ 35,852	\$ 48,687	\$ 1,809,129
2023									\$ 87,075	\$ 87,075	\$ 89,630	\$ 35,852	\$ 51,223	\$ 1,860,352
2024									\$ 89,687	\$ 89,687	\$ 89,630	\$ 35,852	\$ 53,835	\$ 1,914,187
2025									\$ 92,378	\$ 92,378	\$ 89,630	\$ 35,852	\$ 56,526	\$ 1,970,713
2026									\$ 95,149	\$ 95,149	\$ 89,630	\$ 35,852	\$ 59,297	\$ 2,030,010

Simple Payback Years: 0
Internal Rate of Return: infinite

IRA ECONOMICS

80% Bonus and 5 Year MACRS Depreciation



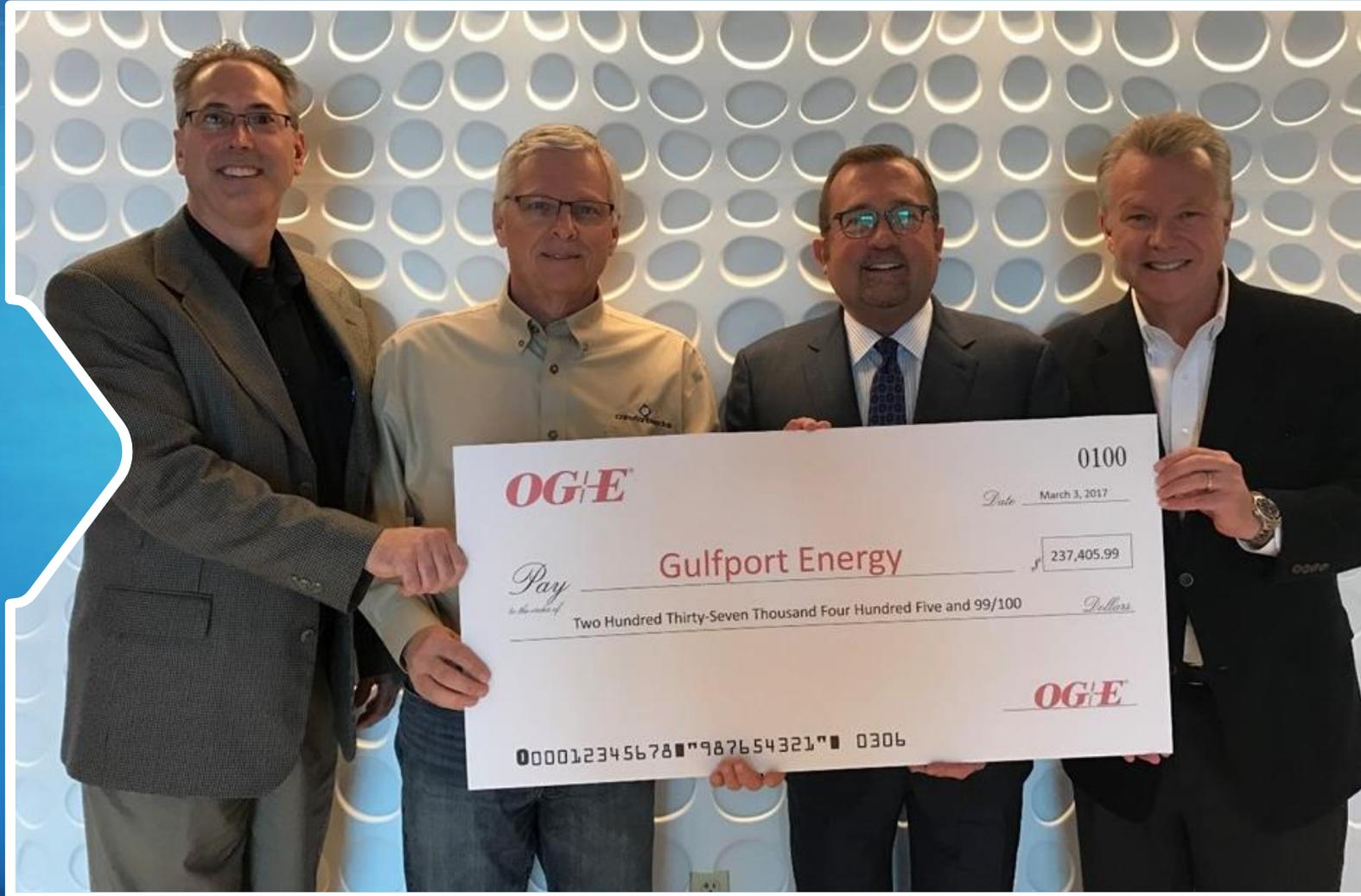
Project:	Gulfport Energy HQ Building				
Conditioned Area (sq ft):	118,000		6 Story plus basement parking		
HVAC tons:	407	290	sq ft per ton		
Geothermal HVAC Cost:	\$ 3,462,000	\$29.34	per sq ft	\$8,506	per ton 30 EER geothermal heat pumps
Conventional HVAC Cost:	\$ 3,052,500	\$25.87	per sq ft	\$7,500	per ton Rooftop single-duct VAV with electric terminal reheat
Additional Cost:	\$ 409,500				
Utility Rebate*	\$ (237,406)	\$583	per ton estimate of utility geo rebate		
Net Additional Cost:	\$ 172,095				
Other Installation Costs**:	\$ 443,086		portion of electrical, plumbing and GC fees related to HVAC system (for either system)		
Income Tax Rate:	26%		total of federal and state 21% corporate federal and 4.75% state (OK C-corp)		
Energy Credit:	30%		either 6% base or 30% bonus under IRA		
Domestic Content Credit:	10%		either 2% base or 10% bonus under IRA (if qualified)		
Annual Cost Savings:	\$ 70,800	\$0.60	per sq ft in energy and maintenance		
Energy Inflation:	5%				
Completion Year	2023				
Completion Quarter	4				

Year	Geo Deprec Allowance		Geo Deprec Deduction		Geo Tax Savings***		Geo Cash Flow				Conv Cash Flow		Geo Net Cash Flow	
	Special	5 Yr MACRS	Special	5 Yr MACRS	Tax Credits	Depreciation	Addtl Cost	Tax Savings	O&M Savings	Total	Depr Ded	Tax Savings	Annual	Cumulative
2023	80%	5.00%	\$ 2,347,315	\$ 29,341	\$ 1,467,072	\$ 611,989	\$ (172,095)	\$ 2,079,061	\$ -	\$ 1,906,967	\$ 89,630	\$ 23,080	\$ 1,883,887	\$ 1,883,887
2024		38.00%		\$ 222,995		\$ 57,421			\$ 74,340	\$ 131,761	\$ 89,630	\$ 23,080	\$ 108,681	\$ 1,992,568
2025		22.80%		\$ 133,797		\$ 34,453			\$ 78,057	\$ 112,510	\$ 89,630	\$ 23,080	\$ 89,430	\$ 2,081,998
2026		13.68%		\$ 80,278		\$ 20,672			\$ 81,960	\$ 102,631	\$ 89,630	\$ 23,080	\$ 79,552	\$ 2,161,550
2027		10.94%		\$ 64,199		\$ 16,531			\$ 86,058	\$ 102,589	\$ 89,630	\$ 23,080	\$ 79,509	\$ 2,241,059
2028		9.58%		\$ 56,218		\$ 14,476			\$ 90,361	\$ 104,837	\$ 89,630	\$ 23,080	\$ 81,757	\$ 2,322,816
2029									\$ 94,879	\$ 94,879	\$ 89,630	\$ 23,080	\$ 71,799	\$ 2,394,615
2030									\$ 99,623	\$ 99,623	\$ 89,630	\$ 23,080	\$ 76,543	\$ 2,471,158
2031									\$ 104,604	\$ 104,604	\$ 89,630	\$ 23,080	\$ 81,524	\$ 2,552,682
2032									\$ 109,834	\$ 109,834	\$ 89,630	\$ 23,080	\$ 86,754	\$ 2,639,436
2033									\$ 115,326	\$ 115,326	\$ 89,630	\$ 23,080	\$ 92,246	\$ 2,731,682

Simple Payback Years: 0
 Internal Rate of Return: infinite

REAL ECONOMICS

UTILITY INCENTIVES



REAL SUCCESS

Geothermal Project Portfolio



PROJECT TYPE	Qty of Projects	Total Square Feet	Smallest Square Feet	Largest Square Feet
Office - Office/Bank/Medical	37	959,000	3,200	118,000
Public - Fire Stations/Museums/Community Centers/ Religious	8	119,000	2,000	42,000
Charities - Office/Shelters	7	156,000	7,800	40,000
Multi-Family	3	100,000	30,000	40,000
Assisted Living	1	88,000	88,000	88,000
Education	5	109,000	11,000	44,000
Lodging - Convention	1	130,000	130,000	130,000
Retail - Stores/Spas/Recreational	7	132,000	6,800	61,000
Manufacturing	3	510,000	25,000	375,000
Industrial - Office with Warehouse	21	1,022,000	2,000	507,000
Auto / Truck Dealerships	10	572,000	19,100	136,400
	102	3,897,000		

GEO ECONOMICS TOOL - IRA



ClimateMaster Geothermal HVAC Economics - using Special Depreciation Allowance Updated 3-20-23 based on current data
This is an estimating tool only. [Click Here](#) for Disclaimer, Terms & Conditions



Project Name:

Conditioned Area (sq ft): Vertical Market: State:

sq ft per ton: *Tip: 400 sq ft per ton is a typical rule of thumb for commercial buildings. Variables that effect this include glass area and type, insulation values, lighting and plug load, etc.*

Calculated HVAC Tons: Brief Description: Business Type:

Geothermal Costs		vs.	Conventional Costs	
Geothermal HVAC Cost	<input type="text" value="\$32.00"/> per sq ft		Conventional HVAC Cost	<input type="text" value="\$22.00"/> per sq ft
	<input type="text" value="\$12,800"/> per ton			<input type="text" value="\$8,800"/> per ton
	<input type="text" value="\$ 1,600,000"/> Total Geothermal HVAC Cost			<input type="text" value="\$ 1,100,000"/> Total Conventional HVAC Cost
Describe your Geothermal System: <input type="text" value="i.e. 30 EER geothermal heat pumps"/>			Describe your Conventional HVAC System: <input type="text" value="i.e. Rooftop single-duct VAV with electric terminal reheat"/>	

Additional Cost: \$ 500,000
 Utility Rebate*: \$ (25,000)
 Net Additional Cost: \$ 475,000

per ton estimate of utility geo rebate *Tip: Varies based on region and incentives. Consult your local energy program specialist for insight.*

Other Installation Costs**: portion of electrical, plumbing and GC fees related to HVAC system (for either system) *Tip: Rely on your experience / cost quotes to estimate this number*

Income Tax Rate: Corporate / Federal: State: *Based on business type and state table in Input Data Tab*

Energy Credit: Domestic Content Credit: Energy Community Credit: *Tip: Choose applicable credit rate % under IRA Guidelines*

Energy Inflation: *Tip: This number typically follows economic inflation trends. Generally between 2% to 8%*

Savings per sq ft: in energy and maintenance *Tip: Lean on the experience of your trusted HVAC professional to estimate this savings vs. alternative systems*

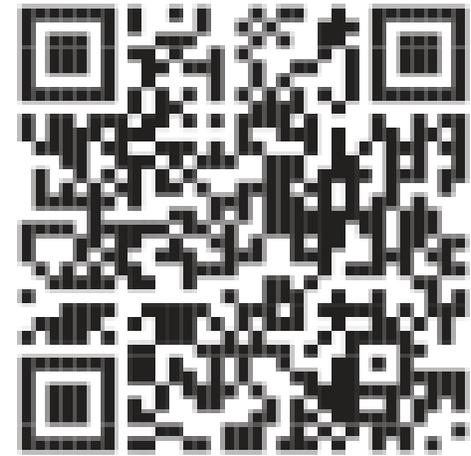
Annual Cost Savings: calculated

Project Completion Year: Project Completion Quarter:

YEAR	GEO DEPREC ALLOWANCE		GEO DEPREC DEDUCTION		GEO TAX SAVINGS***		GEO CASH FLOW				CONV CASH FLOW		GEO NET CASH FLOW	
	Special	5 Yr MACRS	Special	5 Yr MACRS	Tax Credits	Depreciation	Addtl Cost	Tax Savings	O&M Savings	Total	Depr Ded	Tax Savings	Annual	Cumulative
2023	80%	15.00%	\$ 1,020,000	\$ 38,250	\$ 850,000	\$ 355,572	\$ (475,000)	\$ 1,205,572	\$ 9,375	\$ 739,947	\$ 31,410	\$ 10,554	\$ 729,393	\$ 729,393
2024		34.00%		\$ 86,700		\$ 29,131		\$ 29,131	\$ 39,375	\$ 68,506	\$ 31,410	\$ 10,554	\$ 57,952	\$ 787,346
2025		20.40%		\$ 52,020		\$ 17,479		\$ 17,479	\$ 41,344	\$ 58,822	\$ 31,410	\$ 10,554	\$ 48,269	\$ 835,614
2026		12.24%		\$ 31,212		\$ 10,487		\$ 10,487	\$ 43,411	\$ 53,898	\$ 31,410	\$ 10,554	\$ 43,344	\$ 878,958
2027		11.30%		\$ 28,815		\$ 9,682		\$ 9,682	\$ 45,581	\$ 55,263	\$ 31,410	\$ 10,554	\$ 44,709	\$ 923,668
2028		7.06%		\$ 18,003		\$ 6,049		\$ 6,049	\$ 47,861	\$ 53,910	\$ 31,410	\$ 10,554	\$ 43,356	\$ 967,024
2029									\$ 50,254	\$ 50,254	\$ 31,410	\$ 10,554	\$ 39,700	\$ 1,006,723
2030									\$ 52,766	\$ 52,766	\$ 31,410	\$ 10,554	\$ 42,212	\$ 1,048,936
2031									\$ 55,405	\$ 55,405	\$ 31,410	\$ 10,554	\$ 44,851	\$ 1,093,787
2032									\$ 58,175	\$ 58,175	\$ 31,410	\$ 10,554	\$ 47,621	\$ 1,141,408
2033									\$ 61,084	\$ 61,084	\$ 31,410	\$ 10,554	\$ 50,530	\$ 1,191,937

Simple Payback Years: 0
Internal Rate of Return: infinite

QUESTIONS?



or visit [climatemaster.com](https://www.climatemaster.com)
to download the calculator



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We are not tax professionals and the information provided in this presentation should not be interpreted as tax advice. Please consult with your own accountant and/or attorney for guidance on claiming any of the following incentives.