

Tax Savings Are Heating Up for Geothermal HVAC

REGULATIONS | 4/22/2024



Key insights

- Geothermal HVAC has been gaining popularity due to its operational efficiencies

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and reduced carbon output.

- The investment tax credit is a dollar-for-dollar credit available for qualified geothermal investments.
- Tax-exempt entities can now turn geothermal credits into cash payments under the Inflation Reduction Act's direct pay program.

**Find opportunities
for green energy tax
rebates and
incentives.**

**Talk to an
Advisor**

Geothermal heating and cooling are certainly not new concepts — you could argue using the earth's underground ambient temperature is the oldest form of heating and cooling. However, the technology behind geothermal has advanced substantially over the last several years, leading to increased energy efficiency and cost savings.

While the cost of geothermal HVAC is still generally higher than traditional systems, **various tax incentives and rebates** have narrowed the price gap. The most significant incentive driving geothermal investments stems from the **Inflation Reduction Act** (IRA), the landmark climate legislation providing billions in tax



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savings to organizations investing in clean energy.

Coupled with the long-term operational savings geothermal HVAC boasts, the IRA is helping to drive a boom for this green technology.

Geothermal in a nutshell

Geothermal systems tap into underground ambient temperatures via wells drilled anywhere from several feet to several hundred feet into the ground. Water is then pumped through a series of pipes and loops connecting the wells.

As water is pumped through these buried pipes, heat is absorbed from the ground (source) or rejected to the ground (sink). The geothermal water — or water exchanging heat with the geothermal water — is then pumped through pipes connecting to an HVAC system serving a building. The core of these systems is heat pumps with a compressor, heat exchanger, and fan.

In cooling mode, water absorbs heat from the HVAC system — and ultimately from the building — and rejects this heat into the ground. In heating mode, water absorbs heat from the ground and rejects this heat into the HVAC system — which ultimately heats the building.

There are various geothermal systems, including open and closed loop systems. Even though basic heating

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and cooling fundamentals still apply, systems may vary greatly in terms of well placement and depth, piping configurations, pump types, and other factors.

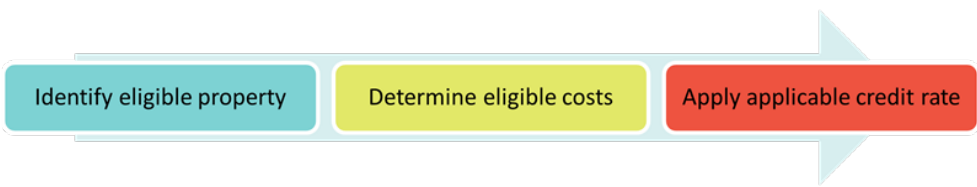
While geothermal heat pumps date back to the late 1940s, the technology has become more advanced. Systems are highly scalable, with uses ranging from small systems for a single home to commercial systems with hundreds of wells to heat and cool buildings more than 100,000 square feet.

Adequate space and subsoil conditions for the geothermal wells (or bore fields) are perhaps the greatest limitation of geothermal systems. However, where favorable conditions exist, geothermal can be an excellent HVAC option for all structure types. They've become particularly favored in educational and health care settings where the need for large-scale, efficient heating and cooling is critical.

Investment tax credit for geothermal

The investment tax credit (ITC) under Internal Revenue Code Section 48 provides a dollar-for-dollar tax credit on geothermal systems. Although geothermal has been eligible for the ITC since 2008, the IRA has supercharged the available benefits, including the opportunity to receive cash in lieu of credits under the new direct pay option.

Computation of the ITC follows a three-step process:



Eligible geothermal property

Qualified geothermal heat pump property is defined broadly in the proposed Treasury regulations and may include HVAC components that distribute the geothermal heating and cooling throughout a building. The ITC also incorporates what’s known as the functional interdependency test, which says qualified energy property includes all functionally interdependent components. Thus, if one component of a geothermal system is dependent on another component to generate, store, or distribute thermal energy, then both components can qualify for the ITC.

By applying the functional interdependency test along with the broad definitions of qualified energy property, the creditable components of a typical geothermal HVAC can be quite extensive — potentially including everything from the geothermal wells all the way to the air handlers and ductwork.

Serve

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installing system components.

Amounts paid to system designers (e.g., architects, mechanical contractors) can potentially be claimed in whole or in part. Pre-installation costs incurred to assess system feasibility such as geotechnical studies or test wells may qualify as well.

ITC rate for geothermal

The IRA created a tiered rate structure consisting of base credits and stackable bonus credits. When combined, these credits can result in a total benefit of up to 50% of eligible costs.

The base credit rate under the ITC is 6%; however, a base credit rate of 30% can be achieved in three different ways:

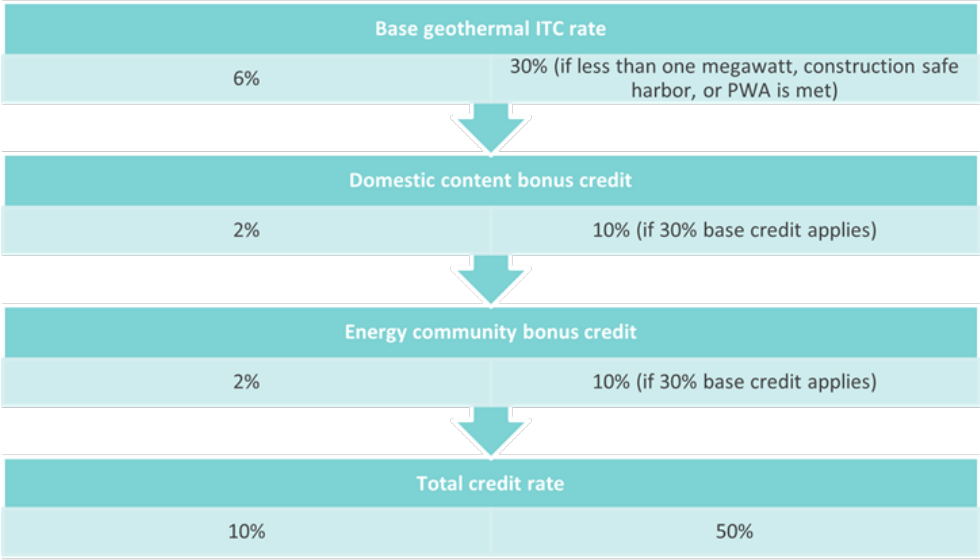
- i. The geothermal system is less than one megawatt (as converted to thermal units),
- ii. Construction on the project began prior to January 29, 2023, or
- iii. Prevailing wage and apprenticeship (PWA) requirements are met.

The domestic content bonus credit can further add 10% to a 30% base credit. To qualify, all structural steel and iron in the system — and a specified minimum of all manufactured components — must be produced in the

United States (through 2024, the minimum for manufactured products is 40%). Meeting these requirements requires close collaboration with and documentation from the manufacturers of the geothermal system’s various components.

If your geothermal project is in an energy community (designated census tracts determined by a few different criteria), another 10% bonus credit is available. The Department of Energy maintains an **energy community map** where addresses can be searched to determine whether they fall within an eligible tract.

If a base credit of 30% is not achieved, then the applicable bonus credit rate drops to 2% for the domestic content and energy community adders.



Direct pay under the IRA

The IRA creates a unique beneficial monetization option where clean energy credits such as the ITC can be turned into direct cash by tax-exempt entities — including nonprofits, colleges, state and local governments, school districts, rural electric cooperatives, credit unions, and homeowner associations.

The opportunity to be refunded up to 50% of a geothermal system's cost through direct pay is changing the cost-benefit calculus for tax-exempt entities large and small, especially for colleges and public school districts with large facilities to heat and cool while also fulfilling carbon reduction goals.

Detailed rules apply as to when and how the ITC can be claimed, so be sure to consult with a tax advisor well-versed in the ITC and IRA to enhance and properly claim your geothermal credits.

How we can help

CLA's **clean energy tax team**, consisting of tax professionals and engineers, helps organizations evaluate, calculate, and claim geothermal ITCs for a wide range of facilities. Learn how you can take advantage of these benefits for your clean energy investments.

Contact us

Find opportunities for green energy tax rebates and incentives. Complete the form below to connect with CLA.

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