CASCADE, IDAHO

CASCADE GEOTHERMAL

WELCOME!

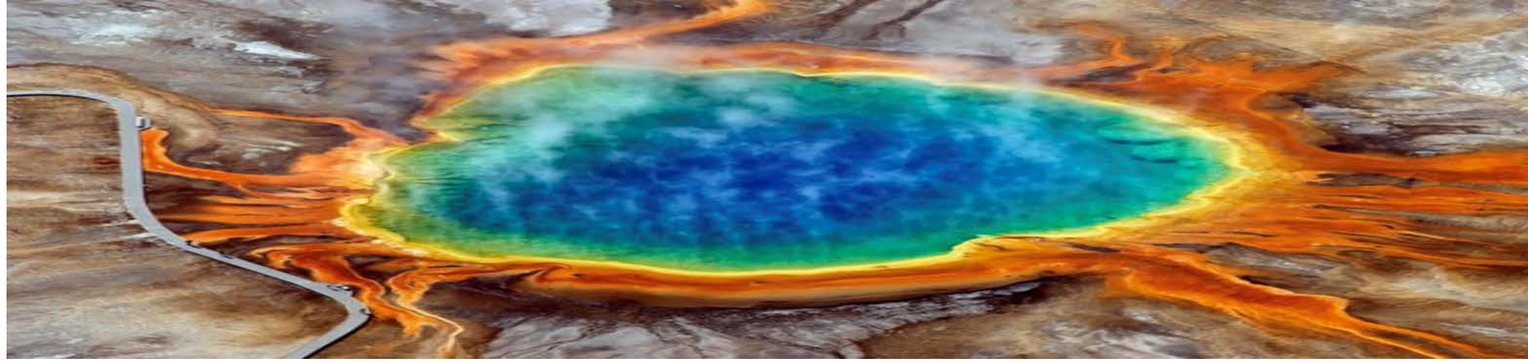
Geothermal Heating and Cooling District Planning Project: Open House

CITY OF CASCADE, IDAHO
CASCADE
EST. 1917

Community Geothermal Heating and Cooling Initiative will help communities:

- Reduce energy burden and fossil fuel dependence
- Increase grid resilience and stability
- Improve environmental quality
- Support jobs

ABOUT THE SYSTEM



Geothermal resources in Cascade can be used to heat and cool buildings throughout town in a networked two-pipe system. The temperature in the loop system is modulated by water from existing geothermal wells in Cascade that produce water in the range of 50-98F. Each of the commercial and residential buildings served by the loop will have heat pump(s) to either take or put heat into the loop. Supply water would be served by one side and return or discharge water by the other side.

Expected high temperatures from the system are in the 70’s in winter and expected low temperatures in the 50’s in summer. This centralized distribution system avoids the thousands of penetrations required for individual geothermal heat pump systems.

PROJECT BACKGROUND

The City of Cascade was announced as one of twelve selectees of the Energy Efficiency and Conservation Block Grant (EECBG) Competitive program, a funding opportunity from the Office of State and Community Energy Programs (SCEP) at the U.S. Department of Energy (DOE) to support the implementation of energy improvements in local governments and tribes across the country.

We plan to use this funding to lower costs, reduce emissions, and promote energy efficiency in our community by developing a preliminary plan for a city-wide geothermal heating and cooling district.

PROJECT BACKGROUND

Studies of the geothermal resources and potential development completed in 2002, 2008, 2014 and 2018 document the geothermal potential within Cascade.

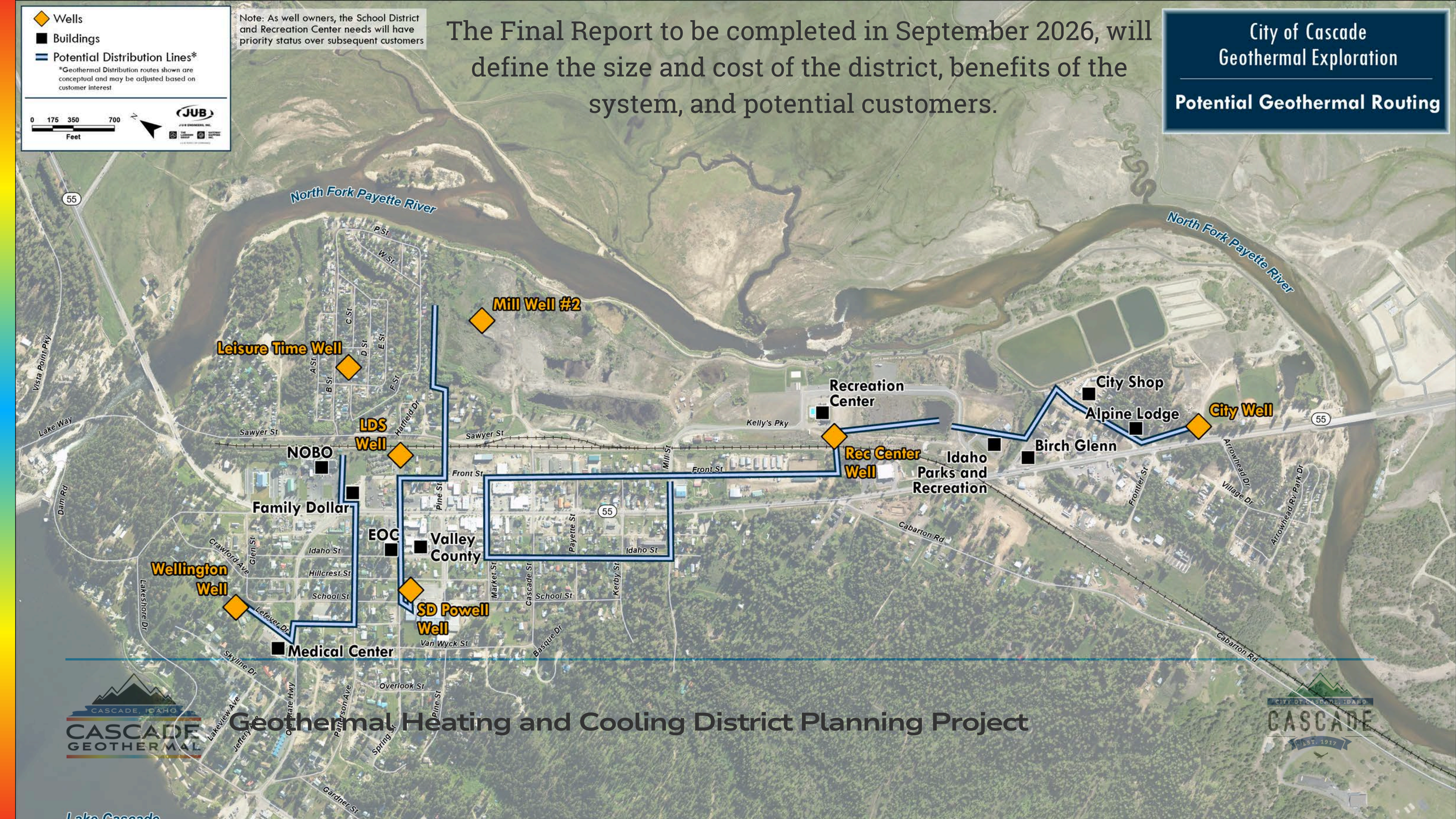
The Cascade School District and Cascade Aquatic and Recreation Center are testaments to the geothermal potential in Cascade. The school has used a ground water source heat pump system and geothermal well to heat most of their buildings since 2004. The Recreation Center has been heating its pool since 2010. Even after being used by these facilities, discharged geothermal water still contains significant amounts of energy that could be used throughout the City.

Including the Recreation Center and School's wells, 7 existing geothermal wells in Cascade have the capacity to serve a modified 4G/5G geothermal heating and cooling district (GHCD) that could serve the entire city of Cascade.

PROJECT BACKGROUND

The concept for the district is to distribute geothermal water throughout the city so that customers can extract energy from it with water source heat pumps.

- Water source heat pumps can extract energy from water as cool as 42 F. Available geothermal water ranges from 70-90F
- Heating and cooling with geothermal heat pumps cost approximately 1/3 of other heating and cooling options such as electricity or propane


Wells
Buildings
Potential Distribution Lines*
*Geothermal Distribution routes shown are conceptual and may be adjusted based on customer interest
0 175 350 700
Feet
JUB ENGINEERS, INC.
Note: As well owners, the School District and Recreation Center needs will have priority status over subsequent customers
The Final Report to be completed in September 2026, will define the size and cost of the district, benefits of the system, and potential customers.
City of Cascade
Geothermal Exploration
Potential Geothermal Routing
North Fork Payette River
Mill Well #2
Leisure Time Well
LDS Well
NOBO
Family Dollar
EOC
Valley County
Wellington Well
SD Powell Well
Medical Center
Recreation Center
Rec Center Well
Idaho Parks and Recreation
Birch Glenn
City Shop
Alpine Lodge
City Well
Sawyer St
Front St
Idaho St
Hillcrest St
School St
Van Wyck St
Overlook St
Kelly's Pky
Cabarton Rd
Lake Way
Vista Point Pky
Dam Rd
Lakeshore Dr
Skyline Dr
Gardner St
Harfield Dr
Pine St
Mill St
Payette St
Market St
Cascade St
Kerby St
Basque Dr
Frontier St
Arrowhead Dr
Village Dr
Arrowhead Rv Park Dr
Crawford Ave
Glen St
Lakeview Ave
Jefferson Ave
Patterson Ave
Spring St
55
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PROJECT SCHEDULE

JAN-APRIL 2025 → MARCH-JUNE 2025 → DECEMBER 2025 → JAN-SEPT 2026

PUBLIC OUTREACH

- Determine Well Owners' level of interest
- Determine Potential Customer buy-in

PROJECT SCHEDULE

JAN-APRIL 2025 | MARCH-JUNE 2025 | DECEMBER 2025 | JAN-SEPT 2026

PRELIMINARY DESIGN

- Identify District Footprint
- Refine Estimated Cost of System and User Costs

PROJECT SCHEDULE

JAN-APRIL 2025 → MARCH-JUNE 2025 → DECEMBER 2025 → JAN-SEPT 2026

PUBLIC INFORMATION

- Present findings
- Determine potential customer buy-in based on estimated user costs and benefits

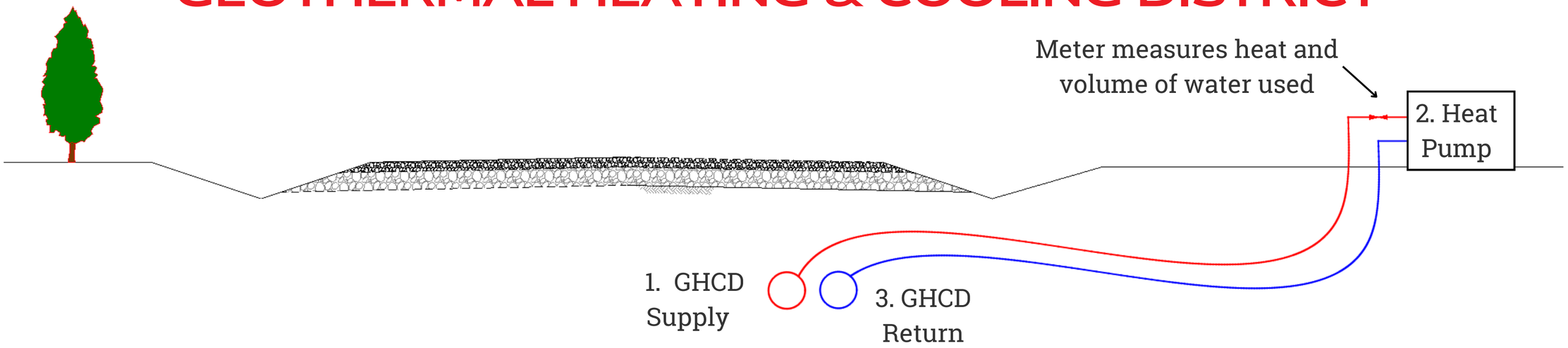
PROJECT SCHEDULE

JAN-APRIL 2025 → MARCH-JUNE 2025 → DECEMBER 2025 → JAN-SEPT 2026

FINAL REPORT

- Environmental Assessment
- Operations and Maintenance Plan
- Community Benefits Plan

CONNECTING TO THE GEOTHERMAL HEATING & COOLING DISTRICT



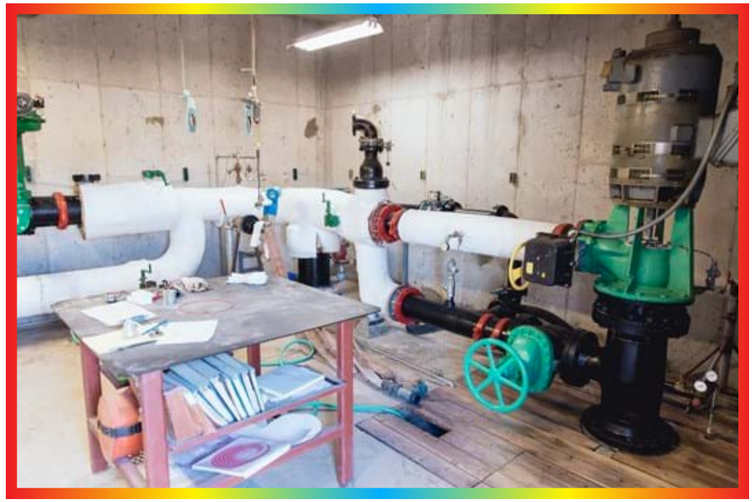
1. The District installs and maintains distribution lines to provide geothermal water to customers. Geothermal water is supplied at 70-100° F
2. Customers extract energy from geothermal water. Heat pumps can use the energy for heating or cooling.
3. The District installs and maintains a distribution line for customers to discharge water to after extracting energy

WHAT WILL OUR SYSTEM LOOK LIKE?

YOU MAY HARDLY NOTICE IT IS THERE!

SD POWELL WELL
SCHOOL DISTRICT

WELLINGTON WELL



BOISE GEOTHERMAL
WELL HOUSE

GEOTHERMAL BENEFITS

Cleaner Air–both indoor and outdoor air quality

Cheaper than electricity or propane

Quiet and comfortable heating and cooling source

Local, sustainable affordable energy source

Energy Independence

Local Job Creation

GEOTHERMAL INCENTIVES

Idaho Residential Alternative Energy Tax Deduction

The residential alternative energy tax deduction allows taxpayers an income tax deduction of 40% of the allowable costs of geothermal devices used for heating.

This can be applied in the year that the energy system is installed. 20% can be deducted each year for an additional three years. The maximum deduction in any one year is $5,000.
The total maximum deduction is $20,000.

GEOTHERMAL INCENTIVES

Idaho Power Incentive

$1000 for Idaho Power Customers for qualified heat pump installation

FEDERAL TAX CREDITS

Energy property – Heat Pumps

Heat pumps that meet or exceed the CEE highest efficiency tier, not including any advanced tier, in effect at the beginning of the year when the property is installed qualify for a credit up to $2,000 per year. Costs may include labor for installation.

Qualified property includes new:

- Electric or natural gas heat pumps

FEDERAL TAX CREDITS

Energy Efficient Home Improvement Credit

The amount of the credit you can take is a percentage of the total improvement expenses in the year of installation.

2023 through 2032: 30% or for heat pumps an annual maximum of $2,000, no lifetime limit

FEDERAL TAX CREDITS

Residential Clean Energy Credit

The Residential Clean Energy Credit equals 30% of the allowable costs of new, qualified heat pumps that meet Energy Star requirements for your home installed anytime from 2022 through 2032.

Qualified expenses may include labor costs for onsite preparation, assembly or original installation of the property and for piping or wiring to connect it to the home.