



# Central Geothermal Heat Pump System

Central geothermal heat pump systems use centralized equipment and a hydronic loop to condition the entire building. Compatible with many airside options, they provide broad design flexibility, high efficiency, quiet operation, and easy maintenance — all in a unified solution that elevates whole-building performance and long-term value.



## \$10.2B

The commercial geothermal heat pump market is expected to be **\$10.2 billion** by 2029, growing at **11.7% CAGR**.\*

## 50%

Up to **50% more efficient than air-source systems** and as much as 75% more efficient than standard HVAC systems.\*\*

## 6%

**6% base ITC**, with bonuses raising total tax credits up to **50% of eligible project costs**.

\*Global Forecast to 2029, MarketsandMarket. \*\*Guidehouse Inc. Residential HVAC and Heat Pump Market Reports.

## How it Works

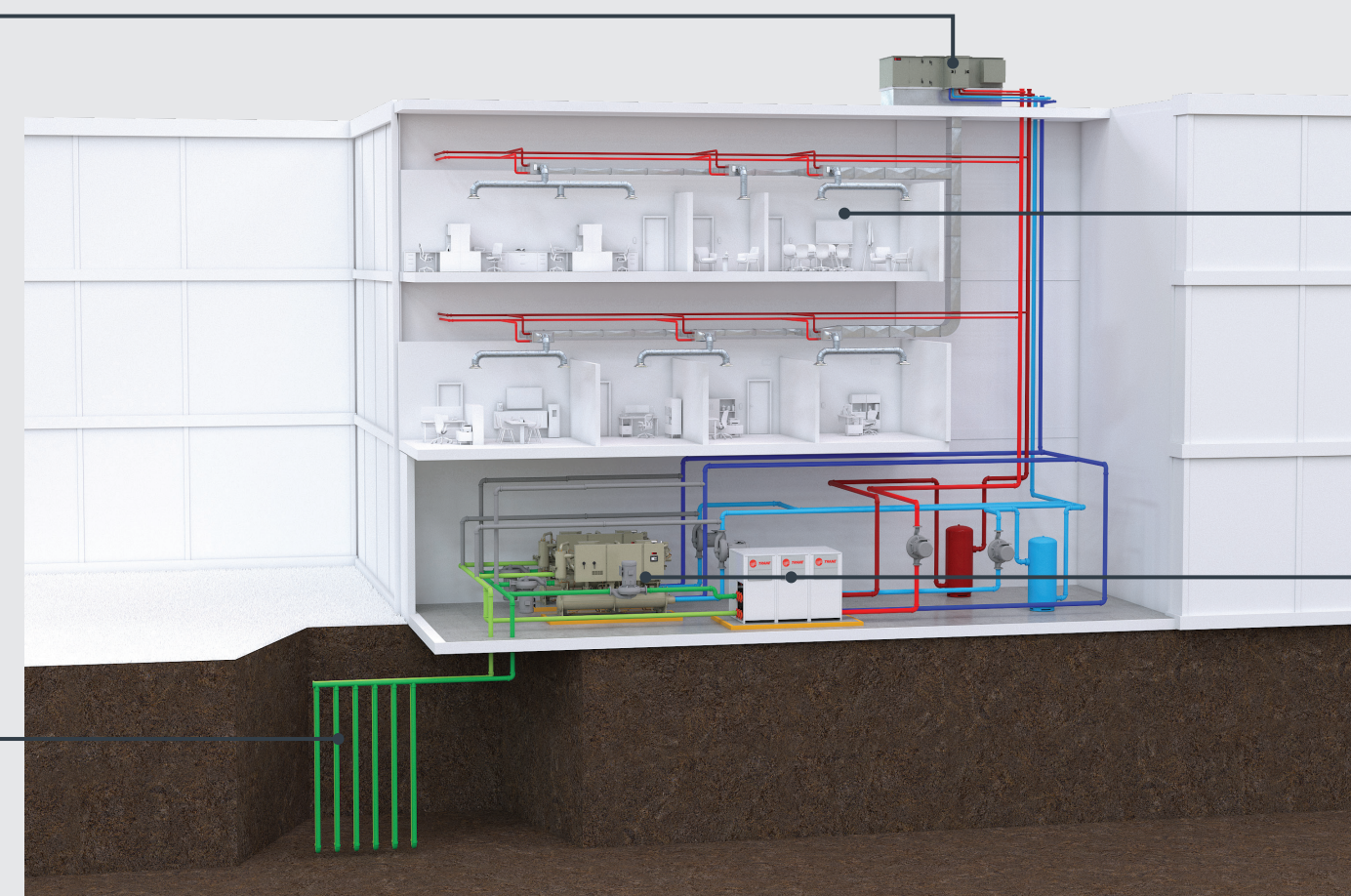
Central geothermal heat pump systems use a ground loop and centralized water-to-water heat pump or heat-pump chillers to deliver hot and chilled water for the entire building. These units move heat to and from the earth, while air handlers distribute conditioned air, and Tracer® controls manage staging and flow for precise heating and cooling.



**Air Handling And Hydronic Accessories**  
Options for designing air handling/hydronic systems for efficiency, performance, and serviceability.



**Geothermal Loop**  
Ground heat exchanger facilitates heat transfer with the earth.



**Tracer® SC+ Controls**  
Manages operation of the geothermal system.



**Water-To-Water Heat Pumps (MWS, WXM, RTWD, CTV)**  
Absorbs or rejects heat from buildings hydronic cooling/heating coils.

## Benefits



**High System Efficiency**  
Uses stable ground temperatures and centralized heat pump chillers to recover energy more effectively for stronger year-round performance.



**Airside Flexibility**  
Allows advanced air handlers with economizers, high-efficiency filtration, and IAQ enhancements not available in distributed units.



**Centralized Maintenance**  
Fewer compressors/fans and centralized components lower maintenance and reduce service disruptions.



**Heat Rejection**  
Manages ground-loop heat rejection through centrally controlled economizers to support strong seasonal performance.



**Quiet Indoor Spaces**  
Moves major sound sources to the central plant, enabling better attenuation and creating noticeably quieter interiors.



**End-To-End Support**  
Benefit from Trane's fully packaged design documentation, application guidance, and proven control sequences.