



GEOTHERMAL HEAT PUMP CASE STUDY:

# Epic Systems Corporation

Tech Company Heated and Cooled by Green Energy



Photo from Epic Systems Corporation

**Name:** Epic Systems Corporation

**Location:** Verona, Wisconsin

**Campus Size:**

- About 40 connected buildings
- Approximately 9 million square feet of building space

**Geothermal System Size:**

- 6,100 wells
- 4 borefields
- 2 lake exchange systems

**Unique Features:**

- Stormwater lake and quarry lake serve as heat sinks
- Spare capacity to accommodate growth
- Cooling support for a 3.5-MW data center

**Research Collaborations:**

- Subsurface soil conditions monitored by University of Wisconsin-Madison

**Funding Incentives:**

- Federally incentivized through various tax programs over the years, including most recently the Inflation Reduction Act of 2022

## Not Your Typical Workplace

Epic Systems Corporation's (Epic's) campus architecture is not your typical office park—as a software factory, it's designed to inspire creativity. There are buildings styled like the Emerald City of Oz, Willy Wonka's Chocolate Factory, and a gingerbread cottage from Grimm's fairytales. Staff can hold their meetings in the treehouse conference room, skip across a medieval drawbridge, and eat lunch at the old school soda fountain.

But Epic's creativity runs deeper than interior design—much deeper. A geothermal network reaches 500 feet underground and runs thousands of miles of piping. Epic's campus space is almost exclusively conditioned by geothermal heat pumps (GHPs)—most pipes transport water, with gas infrastructure reserved for just a few specialty heating applications.

## Critical Software Cooled Sustainably

Epic claims their 1,400-acre campus hosts one of the largest geothermal systems in the world.





The geothermal system at Epic is complemented by many other sustainability solutions such as heat reduction through rooftop gardens, wind turbines and acres of solar photovoltaics, and energy-efficient building envelopes. Epic's buildings consume about 25% less energy than comparable buildings in the same climate. *Photo from Epic*

Large tech companies use substantial energy, and the data center needs to be cooled around the clock, even through the Wisconsin winter. Excess heat from the data center is transferred into the relatively cooler ground beneath the building, maintaining optimal temperature in the data center with much less electricity than traditional air conditioning.

Epic develops the software for electronic medical records used at most health care facilities in the United States. More than 305 million patients have a medical record in Epic's software. Serving healthcare patients requires 24/7 operations, and the geothermal system helps Epic meet this standard of reliability.

## University Collaboration Supports Knowledge Sharing

The University of Wisconsin-Madison has been monitoring Epic's geothermal system since its installation. Researchers track data such as the air and soil temperature, subsurface water flow, and the water level in the quarry pond to help understand system performance. Epic hopes the collaboration will advance knowledge sharing and improve geothermal technology. The engineers managing Epic facilities are also highly trained in these large-scale systems.

## Connected Design Makes For an Energy-Neutral Campus

An integrated campus design further contributes to Epic's energy savings. On most days, some buildings need heating while others need cooling, meaning that piped water can redistribute heat around campus while the borefield pumps are switched off. The boreholes are the primary loop of the geothermal system, but the campus buildings can form a closed secondary loop.

The combined effect of these designs reduces costs, energy use, and carbon emissions.



Beyond the energy savings, the geothermal system has resulted in goodwill from the local community and the worldwide healthcare network. It also resonates with the talent Epic seeks to recruit. We are making a long-term plan for sustainability and this system demonstrates that commitment. ”

Derek Schnabel, Epic Facilities Director



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