

HAYDEN

COLORADO

A coal plant's planned closure sparks investment in a thermal energy network with a unique ownership and business model.



Overview

AT FULL BUILDOUT

15

Buildings served by
4 independent TENs

308k+

Square feet of
conditioned space

629

Equivalent tons of
heating and cooling

205

Boreholes 950–1,000
feet deep

Hayden is an emerging leader in community-centered geothermal innovation through its development of the Northwest Colorado Business Park, a municipally planned **greenfield development project** in Routt County, Colorado. The district will host light industrial, commercial, and mixed-use buildings totaling more than **308,500 square feet of conditioned space**, all served by a shared thermal energy network (TEN).

The TEN will heat and cool buildings via a two-pipe ambient temperature loop, which is expected to lower emissions and reduce energy consumption and costs for users. A **municipal geothermal utility**, formed under the auspices of the Northwest Colorado General Improvement District, will own and operate the TEN. The project is undergoing phased construction. Phase 1 of the TEN was completed in 2025, and construction will continue over several years as the built-to-suit project is completed.



*Bedrock Energy began drilling Phase 1 in 2025.
Photo credit: Brooke Ashlee Photography.*

Background & Vision

WHY HAYDEN CHOSE GEOTHERMAL

The Town of Hayden is planning for long-term economic resilience and diversification as part of a transition away from coal in the regional economy. Local leaders have identified a need to strengthen and stabilize key revenue sources, including property taxes that support essential services.

One key opportunity emerged in the greenfield east of town. Zoned for light industrial, commercial, and mixed-use buildings, this area would become the Northwest Colorado Business Park, anchoring a broader effort to spur growth and attract investment. To support development at the site, the town needed an HVAC solution that would perform reliably in a cold climate while offering heating and cooling at an accessible, competitive price point for future building owners and tenants. The project team evaluated conventional gas/electric rooftop packaged units, air-source heat pumps, and hybrid systems as part of this process.

Gas-powered units eliminated available grant funding opportunities and came with the risk of fuel price volatility and high maintenance costs as systems aged. Air-source heat pumps were not projected to be cost-effective for light industrial heating and cooling in this climate with current electric rate structures. Therefore, geothermal heating and cooling emerged as the best option. Geothermal systems could also leverage state grant funding, federal Inflation Reduction Act incentives, and provide heating and cooling at an affordable, attractive price to building owners.

“I’m not a diehard coal person or a diehard solar person—I am a diehard economics person. Our ‘why’ was people, jobs, and property taxes. Geothermal happened to do all of that for us.”

MATHEW MENDISCO • HAYDEN TOWN MANAGER

While the emissions impacts of geothermal heat pumps are beneficial, Hayden Town Manager Mathew Mendisco emphasizes that the economic argument was most compelling. The first phase of the project is already complete, with “interconnect-ready” heat pumps and equipment prepared for eventual connection into a networked system. Development is now in Phase 2. Connection to the Yampa Valley Regional Airport, just across a county road, is underway as part of this phase. The town anticipates at least two more phases of buildout. According to Mendisco, “Hayden’s vision for the TEN is not just site-specific: it will be the backbone of a new regional energy framework.”

Key Details

OUTCOMES

100%

Elimination of on-site fossil fuels for heating

1,498

Metric tons of CO₂e reduced per year

80-year

Warranty on underground pipes and boreholes

Lower

Long-term energy costs for customers

SPECIFICATIONS

- 58-acre greenfield site
- ~308,350 square feet of conditioned space
- 15 buildings
- 629 tons of heating and cooling
- 2-pipe distribution system
- Served by 4 independent TEN loops
- Loop temperature: 50.5°F–64.1°F
- ~205 boreholes, ~1,000 feet deep
- Gravel and clay to 50'; clay and shale to 1000'



The Northwest Colorado Business Park zoning allows for advanced light manufacturing, distribution, logistics, and warehousing, clean tech and renewables, and other start-ups interested in shovel-ready, industrial and commercial sites with access to multimodal transportation.

Technical Design

Phasing Strategy, System Configuration

The Northwest Colorado Business Park will grow in phases. The project team evaluated multiple design approaches, comparing economics of centralized pump houses and individual geothermal boreholes on each lot. Eventually, the team landed on a “geothermally-anchored thermal energy network” with centralized pumping and distributed controls and metering stations in each building owner’s mechanical space.

PHASE 1	PHASE 2	PHASE 3
111 tons	234 tons	263 tons
Four buildings; interconnect-ready equipment. Complete.	Lot 11C, a warehouse, and Yampa Valley Regional Airport. Ongoing.	Final expansion, bringing total capacity to 560 tons. Not yet started.

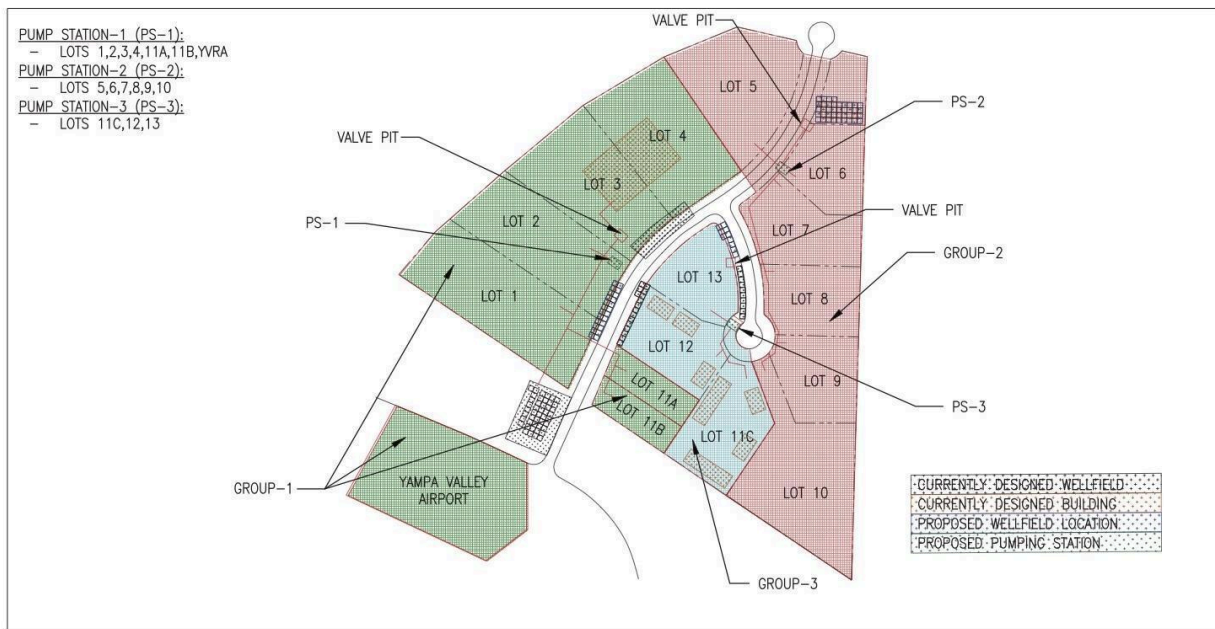
Buildout Process

- Thermal conductivity test: In May 2025, a test borehole reached a depth of 1,000 feet and confirmed the site’s geology and subsurface profile is well-suited to a TEN.
- Drilling and parallel infrastructure installation: Utility conduits, electrical infrastructure, and high-speed data lines will be installed at the same time as the borefield.
- Load modeling and field expansion: Each new building owner shares their anticipated heating and cooling loads to inform the size of the geothermal field.
- Distribution system for the TEN: Includes horizontal piping systems, vaults, flow control stations, and connection points for individual lots.
- Building connections: Each building has a dedicated connection point to the TEN. Building owners will install their own geothermal heat pumps to condition their spaces, then bill the town, which owns the heat pumps.
- Demand planning: As the business park expands and building owners come and go, the thermal utility will continually refresh demand planning scenarios, correct any system imbalances, and report pumping energy and system COP.

Borefield & Load Sharing

Rather than concentrating the borefield in a single central location, Hayden's design locates boreholes in the right-of-way directly in front of the buildings. The proximity of the boreholes to each building minimizes heat loss in the distribution lines. The distribution lines themselves are thermal resources. Because lots will eventually connect, each lot requires fewer boreholes than it would in a standalone geothermal heat pump system.

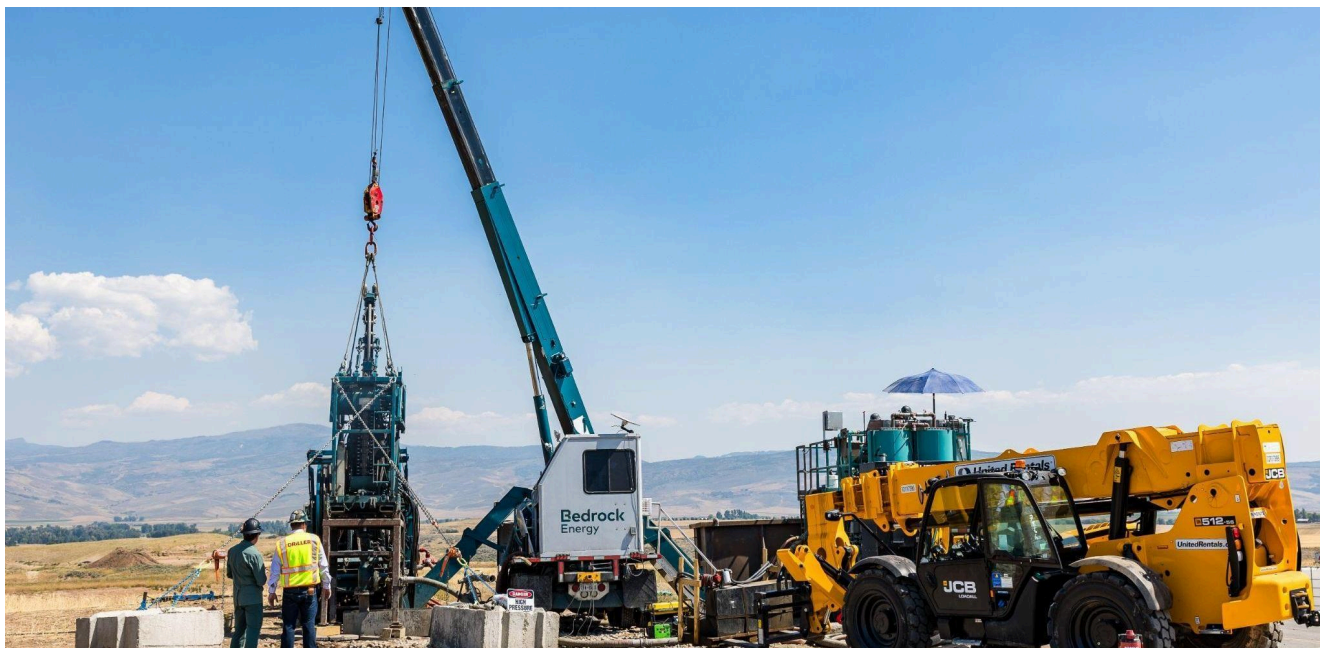
This load-sharing can be valuable in summer, when buildings often reject heat back into the ground. While smaller buildings in the business park are projected to inject relatively little heat from cooling, even in summer, larger and higher-intensity users including Yampa Valley Regional Airport will inject substantial amounts of heat back into the network, creating an opportunity for efficient seasonal storage and load balance.



B5 **OPTION 5 - CONNECTED WELL FIELDS - SITE PLAN**
SCALE: NOT TO SCALE

The site plan above shows phasing (green, blue and red) along with pump station, borefield locations. Boreholes are shown in the right-of-way as well as one central field. This type of design can minimize pump stations needed and can reduce system cost.

Borehole Details



Drilling company Bedrock Energy experimented with a coil tube rig but also utilized a mud rotary drill during Phase 1 and 2. Photo credit: Brooke Ashlee Photography.

The vertical boreholes are equipped with a 1.5-inch SDR9 HDPE U-loop in an AC configuration, meaning the pipes are attached to one another and to the borehole wall. The loop fluid consists of water mixed with 30% propylene glycol for freeze protection. The bore was fully grouted using a blend of GeoPro TG Lite and PowerTEC, ensuring full thermal contact and consistent integrity across its depth.

Phase 1: Phase 1 included 45 boreholes, roughly 950 feet deep. This is somewhat deeper than typical wells, but made sense for Hayden because of the ability to reduce the quantity needed to match the load requirements of the buildings.

SUMMARY

1.5-inch

SDR9 HDPE U-loop

30%

propylene glycol mixture in loop

45

Phase 1 boreholes

Ownership & Governance

A MUNICIPAL THERMAL UTILITY

AUTHORIZATION

Colorado statute allows General Improvement Districts (GIDs) to levy taxes, construct, and operate public improvements and services within a specific area. In November 2025, the Northwest Colorado General Improvement District became the legal vehicle to own and operate the TEN.

Creating a new thermal utility required a vote of property owners within the GID's boundaries. That vote was held and passed in 2025.

Of note: Colorado Senate Bill 26-142 (Development of Thermal Energy Resources – 2026) provides express statutory authority for local governments to operate thermal energy networks beyond their own facilities.



Hayden Town Manager Mathew Mendisco discusses the project at Yampa Valley Regional Airport with interested parties from around the nation (2025).

Governance

Because GIDs function as extensions of a municipality, the Hayden Town Council serves as the GID's board. The board sets rates for thermal utility customers, similar to tap fees for a municipal water utility. The board comprises the town's local elected officials, meaning the process of setting and refining rates is uniquely accessible to customers, says Mendisco, as they have direct access to the board.

There are no commercial service agreements for heating or cooling. When an owner or tenant moves into the business park, participation in the thermal utility is mandatory—it is a condition of land ownership within the district, recorded on title. In this way, it functions similarly to a municipal water utility. The single exception is the Yampa Valley Regional Airport, which sits outside the boundary of the GID. As such, serving the airport requires an extra-territorial service agreement, which is being drafted during Phase 2.

Component Ownership

The General Improvement District will own and maintain all network infrastructure. To accommodate federal tax credit guidance and maximize incentives, this will, at least initially, include the heat pumps within the buildings. Standard easements will cross property lines to allow the municipality to provide access to in-building equipment. All air ducts and distribution equipment in the buildings (everything in the system between the heat pump itself and the customer) will be owned by the individual customers.

Each building has one heat exchanger and one connection. For example, “Lot 11C” is a single lot with four buildings; one of those buildings has four separate 1,000-square-foot units. Each unit has its own heat pump, but the building itself has just one circulation pump and one heat exchanger.

EQUIPMENT OWNERSHIP SUMMARY

NETWORK

The GID owns and maintains the network infrastructure, such as boreholes, pumps and the ATL.

BUILDINGS

The GID initially owns in-building heat pumps to maximize federal tax rules and incentives.

CUSTOMERS

Customer ownership begins where the air ducts connect with the heat pumps.



The Yampa Valley Regional Airport, shown in this aerial, is a next-step partner in possible connection to an expanded thermal energy network. Northwest Colorado Business Park sits on an adjacent property. It has a large and complementary load profile. The GID boundaries and customer base may change over time and is intentionally designed to accommodate growth.

Financials

Funding Sources

The Northwest Colorado General Improvement District is the primary bonding and financing vehicle for the project. Grant funding and state and federal tax credits systematically reduce total expenses:

- Colorado Department of Local Affairs (DOLA): 2 separate grants
- Colorado Energy Office: 2 separate grants
- Federal Investment Tax Credit (Sec. 48E under direct pay): up to 50% of project costs
- Colorado Geothermal Energy Tax Credit Offering (GETCO): awarded for each phase of construction

Operating Expenses & Savings

- Building owner operating savings projected at \$15,900 in the first year compared to gas, increasing thereafter to reach nearly \$25,000 annually by Year 7
- Addition of cooling
- Predicted revenue to Town of Hayden at end of 2027: \$41,176
- Predicted revenue to Town of Hayden at full buildout: ~\$200,000 annually

Capital Expenses

\$14M

total cost of the geothermal network at full buildout, including heat pumps

\$2.97M

cost of Phase 2, currently under construction

~\$4M

total capital investment from the Northwest Colorado GID

Additionally, stacked incentives generally help the business park development depending on the owner or tenant – such as Strategic Fund Job Growth Incentives, Rural Jump-Start and Enterprise Zone incentives and other owner-specific tax credits for industrial or other business types.

Ongoing Maintenance & Rates

Ongoing Maintenance

The total assessed value of the business park, at full buildout, is approximately \$19 million. Because commercial property in Colorado is assessed at 27% of its actual value, the GID's authorized levy of five mills—equal to \$5 in tax for every \$1,000 of assessed value—will generate roughly \$95,000 per year. This revenue covers routine maintenance of public improvements throughout the district independent of the town's general fund, so Hayden taxpayers are not financially responsible for the upkeep of the business park. As Mendisco puts it, this is “growth paid its own way”—except the town, and not a private company, is the developer.

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MATHEW MENDISCO • HAYDEN TOWN MANAGER

Rate Structure

The thermal utility charges three fees, mirroring the common structure of municipal water utilities.

1	2	3
Connection fee	Base rate	Volumetric fee
The connection fee is a one-time charge to connect to the system. As with water utilities, the connection fee varies by size: a 1-inch connection will cost more than a ¾-inch connection.	The base rate is a recurring monthly charge to each building owner, tied to the size of the connection. This reflects a customer's potential impact on the system. Larger connections pay higher base rates.	The volumetric fee is charged per BTU consumed, metered at the building level with a tiered pricing structure. Lower BTU consumption falls into a lower rate tier, and the rate per BTU will increase as consumption rises.

Operating Economics

A conventional gas/electric rooftop HVAC for a 7,000-square-foot office building would require roughly \$980,000 in installation costs, followed by ongoing expenses for natural gas service, maintenance, combustion checks, and equipment that wears faster than a geothermal heat pump.

The TEN will likely have a construction cost premium, estimated to be up to \$100,000 for added heat exchanger equipment and other components. Despite this, the operational savings begin immediately, with a TEN connection generating \$15,900 of savings in the first year of operating costs compared to gas. These savings are realized by the avoided cost of lower maintenance, no gas infrastructure, and reduced equipment wear. The all-electric system provides a hedge against gas market and rate volatility. The estimated mechanical system life is 20–30 years.

Modeling assumptions project that number increasing every year thereafter, reaching \$24,648 in savings by the seventh year of operation. Thus, without any rebates or incentives, the geothermal system pays for itself in approximately seven years, well within the 20-to-30-year lifespan of the mechanical systems. But Colorado has robust incentives that will bring down the actual costs of installation for the town. The 2026–2028 Colorado Heat Pump Tax Credit, as well as incentives from Xcel Energy, bring down the premium.

< \$100K

Estimated construction premium
over natural gas

\$24,648

Projected annual operating
savings by year seven

~7 years

Estimated payback without
rebates or incentives

Project Team



Derek Kobe of Green Built Construction and Fernando Aguilera of Bedrock Energy lead a tour group at the thermal energy network construction site. Photo credit: Brooke Ashlee Photography.

TOWN OF HAYDEN

Mathew Mendisco, Town Manager
Bryan Richard, Public Works Director

ENGINEERING

CMTA
Mead & Hunt
Geothermal Resource Technologies, Inc.

DRILLING

Bedrock Energy

About the Authors



The Building Decarbonization Coalition (BDC) aligns critical stakeholders on a path to transform the nation's buildings through clean energy, using policy, research, market development, and public engagement. The BDC and its members are charting the course to eliminate fossil fuels in buildings to improve people's health, cut climate and air pollution, prioritize high-road jobs, and ensure that our communities are more resilient to the impacts of climate change.

Learn more at www.buildingdecarb.org

Report lead:

Jessica Silber-Byrne, Senior Manager, Thermal Networks



Clean Energy Economy for the Region (CLEER) works to accelerate the transition to a clean energy economy, strengthen local energy resilience, and reduce greenhouse gas emissions. CLEER develops and implements collaborative clean energy projects across the Mountain West, with expertise in energy efficiency, renewable energy, geothermal heating and cooling, thermal energy networks, clean transportation, and emerging energy technologies. CLEER works with partners on early stage project development, technical and financial analysis, grant development and administration, securing project funding, stakeholder coordination, policy support, and implementation.

Learn more at: www.cleanenergyeconomy.net

Report lead:

Lauren M. Suhrbier, Deputy Director

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