

**PE4 Action – Heat Pumps Memo**  
**May 2022 Village of Bronxville**

In 2005 Bronxville installed a geothermal heating & cooling system in Village Hall, a 20,500 square foot building located in the center of the Village of Bronxville. The system continues to heat and cool the building. This system was designed by Calgi Construction (<http://www.calgiconstruction.com/>). The wells were dug by Connecticut Wells/Geothermal Services, Inc (<https://connecticutwells.com/>). D P Wolff (<https://www.dpwolff.com/>) installed the heat pumps and services the system. See attached screen shots showing that Connecticut Wells and DP Wolff are certified by NYSERDA.

Because this project was completed so long ago, we have not been able to find the original design plans. Below are four photos of the specifications listed on the system itself. Also below are photos from Connecticut Wells showing construction of the wells. A letter to DP Wolff from the Bronxville Trustees identifies as being chosen to construct part of the system.

The equipment complies with the 1999 requirements of ASHRAE standard 90.1 (see attached photos). The system consists of 20 wells dug to a depth of 400 feet with HDPE u-bend installed at the farthest depth. The wells were piped individually into the mechanical space, meaning each well has a supply and return line coming from them and 20 heat pumps provide warm and cool air. Each pipe grouted to surface using a bentonite-based product. Water runs through the pipes.

Since no educational campaign was done when the system was originally installed, the Village ran one in April 2022. Attached are photos of signage in Village Hall, an article that appeared in the local digital newspaper My Hometown Bronxville (which was then distributed to other local print publications and served as a press release), a mention in the Village's monthly newsletter, and a social media post. This information was also added to the Bronxville Green Committee website under the Clean Energy Tab: <https://www.bronxvillegreencommittee.org/clean-energy/heating-cooling>

The equipment complies with the 1999 requirements of ASHRAE standard 90.1

**Carrier**

Model **50RHS04BCT50120** Serial **2306V31371**

| Electrical Service |       | Current (Amps)               |       | Fuse/Circuit Breaker Size |     |
|--------------------|-------|------------------------------|-------|---------------------------|-----|
| 208/230            | V     | Min CKT Ampacity             | 18.5A | Max Time Delay Fuse       | 30A |
| 60                 | Hz    | Branch CKT Selection Current | NA    | Max HACR CKT. BKR -UL     | 30A |
| 3                  | Ph    | Total Amps                   | NA    | Max CKT. BKR -CSA         | 30A |
| 180                | Min V |                              |       |                           |     |

| Factory Charged |     | Compressors (EA) |      | Blower Motor (EA) |     |
|-----------------|-----|------------------|------|-------------------|-----|
| Refrigerant     | R22 | RLA              | 12.4 | HP                | 3/4 |
| oz/CKT          | 74  | LRA              | 88   | FLA               | 3.0 |
|                 |     | QTY              | 1    | QTY               | 1   |

| ISO Capacity Ratings |            |
|----------------------|------------|
| Cooling              | Heating    |
| A27-W30/B25          | A20-W20/B0 |
| 13/14                | 16/11      |
| kW                   | kW         |

Design Pressure PSIG: High 400, Low 150

Min Distance to Combustible Surfaces (in.): NA

Max Ext Static Pressure (in. water): 8

**WARNING**  
WHEN SETTING UP THIS EQUIPMENT FOR OPERATION, BE SURE THE TIGHTNESS OF ALL ELECTRICAL TERMINAL CONNECTIONS, SCREWS, ETC. AS THESE MAY HAVE BECOME LOOSE IN STORAGE. ALSO ADVISABLE TO RE-TIGHTEN ALL ELECTRICAL CONNECTIONS. EQUIPMENT HAS BEEN IN OPERATION AND COMPONENTS MAY BE AT OPERATING TEMPERATURE. OPEN DISCONNECT SWITCH BEFORE TIGHTENING ELECTRICAL CONNECTIONS.

**AVERTISSEMENT**

The equipment complies with the 1999 requirements of ASHRAE standard 90.1

**Carrier**

Model **50RVS036LCT50120** Serial **2306V31013**

| Electrical Service |       | Current (Amps)               |       | Fuse/Circuit Breaker Size |     |
|--------------------|-------|------------------------------|-------|---------------------------|-----|
| 208/230            | V     | Min CKT Ampacity             | 13.8A | Max Time Delay Fuse       | 20A |
| 60                 | Hz    | Branch CKT Selection Current | NA    | Max HACR CKT. BKR -UL     | 20A |
| 3                  | Ph    | Total Amps                   | NA    | Max CKT. BKR -CSA         | 20A |
| 180                | Min V |                              |       |                           |     |

| Factory Charged |     | Compressors (EA) |     | Blower Motor (EA) |     |
|-----------------|-----|------------------|-----|-------------------|-----|
| Refrigerant     | R22 | RLA              | 9.6 | HP                | 1/2 |
| oz/CKT          | 60  | LRA              | 63  | FLA               | 1.8 |
|                 |     | QTY              | 1   | QTY               | 1   |

| ISO Capacity Ratings |            |
|----------------------|------------|
| Cooling              | Heating    |
| A27-W30/B25          | A20-W20/B0 |
| 10/10                | 12/8       |
| kW                   | kW         |

Design Pressure PSIG: High 400, Low 150

Min Distance to Combustible Surfaces (in.): NA

Max Ext Static Pressure (in. water): 7

The equipment complies with the 1999 requirements of ASHRAE standard 90.1

**Carrier**

Model **50RVS036LCT50120** Serial **2306V31014**

| Electrical Service |       | Current (Amps)               |       | Fuse/Circuit Breaker Size |     |
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| 10/10                | 12/8       |
| kW                   | kW         |

Design Pressure PSIG: High 400, Low 150

Min Distance to Combustible Surfaces (in.): NA

Max Ext Static Pressure (in. water): 7



# Connecticut Wells/Geothermal Services, Inc.

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whose needs range from small geothermal systems of two or three wells to large, complex geothermal systems where 40 to 50 wells are needed. We are the premiere geothermal well drilling operation in Connecticut (CT), New York (NY) and New England.

## Certifications

Connecticut Wells is certified with the International Ground Source Heat Pump Association (IGSHPA) and the National Ground Water Association (NGWA). Connecticut Wells is also a member of The Connecticut Heating and Cooling Contractors Association (CHCC).



REQUEST SERVICE

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info@dpwolff.com

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### Professional Affiliations & Accreditation:



The Hudson Valley Mechanical Contractors Association represents the contracting firms that install and service mechanical systems in hospitals and schools; office complexes and high-rise condominiums; superconductor clean-rooms and water filtration plants; supermarket freezers and luxury homes.



MSCA STAR is an achievement designation for service excellence awarded to an elite group of mechanical service contractors. As an MSCA STAR certified company, we have demonstrated we offer commercial business and facilities clients unsurpassed support, quality workmanship and safe, reliable service.



The Mechanical Contractors Association of America (MCAA) serves the unique needs of approximately 2,600 firms involved in heating, air conditioning, refrigeration, plumbing, piping, and mechanical service.



ASHRAE, founded in 1894, is a global society advancing human well-being through sustainable technology for the built environment. The Society and its members focus on building systems, energy efficiency, indoor air quality, refrigeration and sustainability within the industry.



We are a Participating Contractor through NYSERDA's NYS Clean Heat Pump Program which offers incentives through rebate offers on both air and ground source heat pumps. Heat pumps provide a clean, cost-effective alternative for heating and cooling.



The mission of USGBC is to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life. As members, we are helping build a better, healthier and safer future.



We are a Participating Contractor for the Con Edison Commercial & Industrial



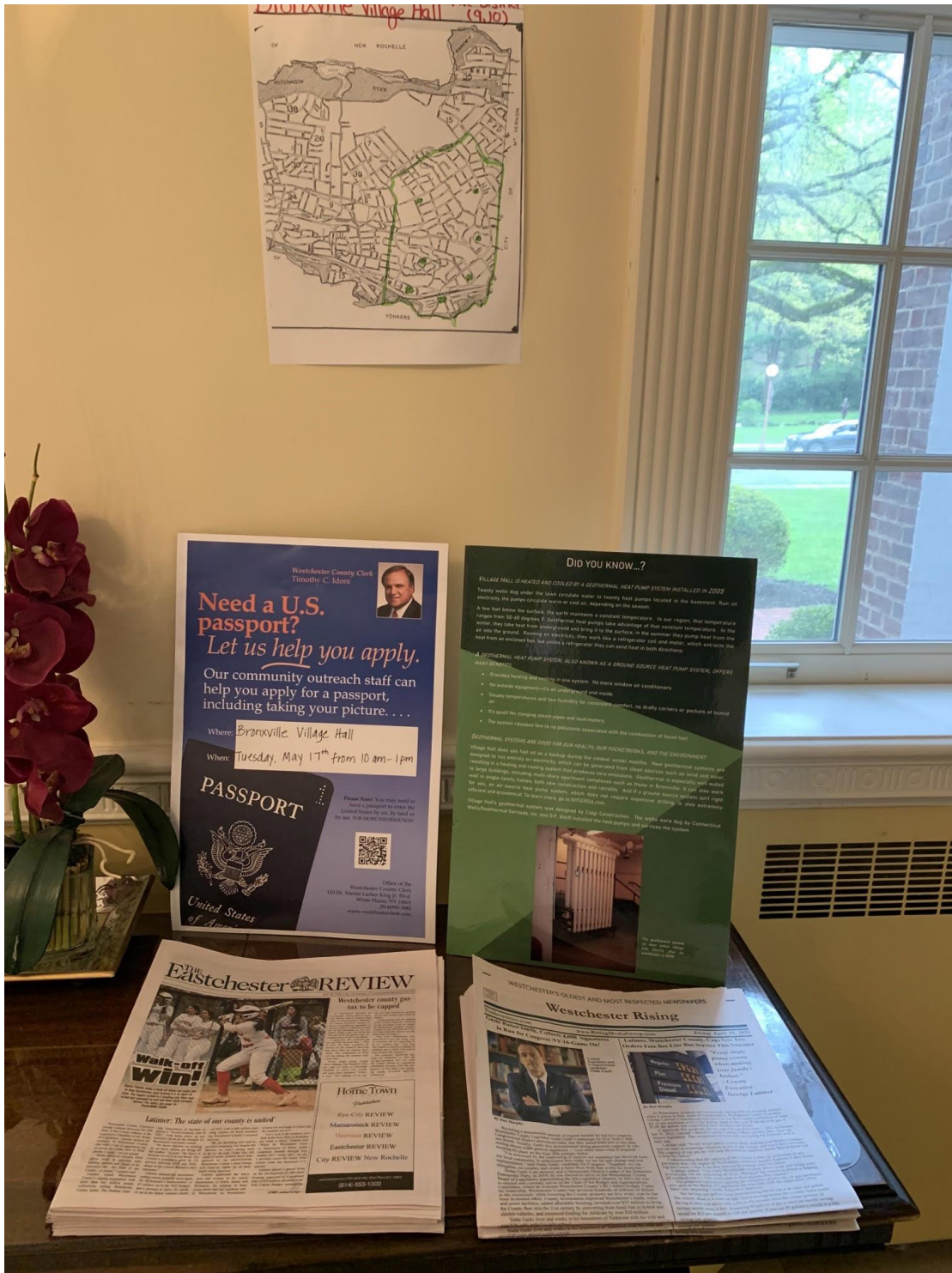
We are a Licensed Master Plumber (LMP) serving Westchester County with



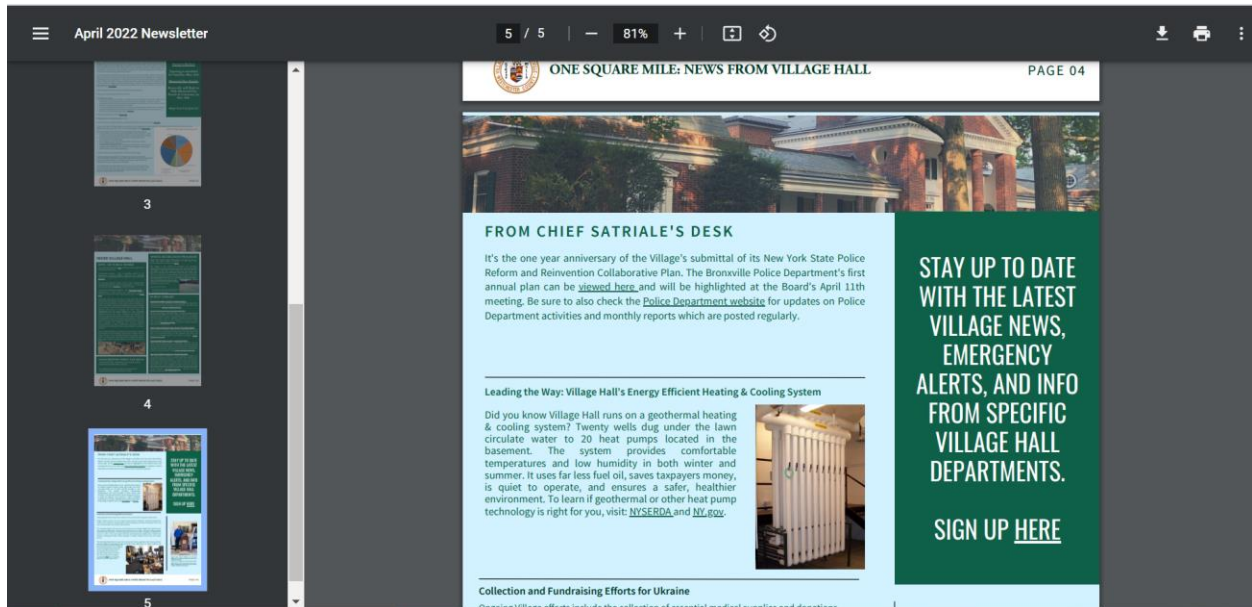
Safety is our top priority. Our entire team goes through rigorous OSHA training to



Bronxville Village Hall Signage:



## Bronxville Village Newsletter One Square Mile:




[https://www.villageofbronxville.com/sites/g/files/vyhlf336/f/uploads/april\\_2022\\_newsletter.pdf](https://www.villageofbronxville.com/sites/g/files/vyhlf336/f/uploads/april_2022_newsletter.pdf)

## Social Media Post Instagram:



## Bronxville Green Committee Website:



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### Electrify Your Heating and Cooling: Best to consider for upgrades and long-term benefits


To significantly lower your carbon footprint, consider retrofitting your oil- or gas-based heating and cooling system with heat pumps or geothermal. These highly efficient systems, which run on electricity, are "heat exchange systems."

**Heat pumps**, which provides "forced hot and cool air," raises or lowers the temperature of the outside air. If it's time to replace your burner or boiler, heat pumps are an easy switch to electricity instead of oil or gas and can save you money over time. These systems are healthier because they eliminate any potential carbon monoxide in your home.

**Geothermal** is more complex and expensive to install because it involves drilling, but it saves the most money over time and takes advantage of the steady 50 degree temperature of the ground. It's ideal to install in new construction or during renovations/additions. These systems are quiet (no clanking pipes!), comfortable (fewer drafts!), cleaner (no chemical fumes!), and pay for themselves over time in much lower monthly costs. Bronxville Village Hall is heated and cooled with geothermal!

**The best time to electrify your heating and cooling equipment:**

- Your oil or gas furnace needs to be replaced
- You need to replace or install central air conditioning
- Your home is always cold even though you pay a fortune in energy bills
- You've been considering switching from oil



**Did you know the Bronxville Village has been leading the way with Geothermal?** Since 2005, a Geothermal system has been saving the Village money and drastically reducing its reliance on heating oil. Village Hall does rely on fuel oil backup during the coldest winter months. In 2018 the system burned 4,000 gallons. That's

<https://www.bronxvillegreencommittee.org/clean-energy/heating-cooling>

## Digital Newspaper: My Hometown Bronxville: (full copy below)







Menu

HOME
SUSTAINABLE LIVING
LEADING THE WAY: VILLAGE HALL'S ENERGY EFFICIENT HEATING & COOLING SYSTEM

**PARK STERLING REALTY**  
PUTTING PEOPLE FIRST



2 Brooklands, Unit #10  
Bronxville, NY 10885  
**(914) 337-1234**

## Leading the Way: Village Hall's Energy Efficient Heating & Cooling System



Bronxville Village Hall. Photo courtesy Bronxville Green Committee

By the Bronxville Green Committee

April 6, 2022: Beneath the lawn of Bronxville's Village Hall lie twenty wells, each drilled to a depth of 400 feet and filled with flexible piping that circulates water to twenty heat pumps located in the basement. This geothermal system, also known as a ground-source heat pump system, provides most of the heating and cooling for the 20,300 square foot Village Hall.

Installed in 2005, this system has been saving the Village money and has

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Are you residing or working in the Bronxville, Purchase and Yorktown communities? Then, have your voice heard by participating in the community needs survey organized by the MET Community Fund in collaboration with Pace University.

Scan the bar code below to complete the survey.



## Leading the Way: Village Hall's Energy Efficient Heating & Cooling System

By the Bronxville Green Committee

Beneath the lawn of Bronxville's Village Hall lie twenty wells, each drilled to a depth of 400 feet and filled with flexible piping that circulates water to twenty heat pumps located in the basement. This geothermal system, also known as a ground-source heat pump system, provides most of the heating and cooling for the 20,500 square foot Village Hall.

Installed in 2005, this system has been saving the Village money and has drastically reduced its reliance on heating oil. Geothermal systems are among the most efficient heating and cooling technologies available, and they also work in single-family homes and apartment buildings—for both new construction and retrofits.

A few feet below the surface, the earth maintains a constant temperature. In our region, that temperature ranges from 50-60 degrees F. In the winter, heat pumps take heat from underground and pump it to the surface; in the summer they pump heat from the air into the ground. Run on electricity, they work very much like a refrigerator coil and motor, which essentially extracts heat from an enclosed box, but unlike a refrigerator, they can send heat in both directions.

Geothermal systems are good for our health, our pocketbooks, and the environment.

Geothermal systems offer many benefits:

- \*Provide heating and cooling in one system. No more window air conditioners.
- \*No outside equipment—it's all underground and inside.
- \*Comfort: Steady temperatures and low humidity. No drafty corners or pockets of humid air.
- \*Quiet. No clanging steam pipes and loud motors.
- \*Healthy and Safe: Release few to no pollutants associated with the combustion of fossil fuel.

Village Hall does rely on fuel oil backup during the coldest winter months. In 2018 the system burned 4000 gallons. That's far less than a building of its size running completely on fuel oil would require. By all accounts, geothermal systems have also become more efficient in recent years; heat pumps now operate well in very cold climates, which makes them suited to buildings in the Northeast. According to NYSERDA, a new geothermal system can run without any fossil fuel.



New York State has six million buildings, which produce 32% of the state's total greenhouse gas emissions (1). To drastically reduce our emissions by 2030, which scientists tell us will be necessary to avoid the worst effects of climate change, here in Westchester we need to electrify 80,000 buildings each year, a tall order (2). Ground-source heat pumps are expected to play a big role in that transformation.

As we electrify our homes and businesses, we're also greening the grid. Once the electricity running a geothermal system is generated entirely by solar or wind, it produces zero emissions.

You can determine if your home is right for a geothermal heat pump system by getting an energy audit, which often starts by identifying where added insulation or plugged holes will better seal the envelope of your home. Bedford2030, a nonprofit that assists residents transition to clean energy, is now offering free home energy consultations, in person or via Zoom; learn more [here](#).

Finances are also a consideration; ground-source heat pumps cost more than air-source heat pumps, which don't require expensive drilling, and both involve significant upfront costs that can be recouped over time in lower energy bills. A contractor can help identify rebates, which can be substantial.

Perhaps you're ready to consider a geothermal heating and cooling system for your home, apartment building, or business. Learn more [here](#) and [here](#). And the next time you're in Village Hall, give a thought to the comfort provided by its geothermal heating and cooling system.

*The Bronxville Green Committee is a volunteer organization that is part of the Village of Bronxville. We work to propose and implement environmentally sustainable programs in our community. Visit [our website](#) to learn more and join our efforts.*

(1) "The New York State Climate Action Council Draft Scoping Plan," December 2021.

(2) Nina Orville, Executive Director, Sustainable Westchester Annual Meeting, February 16, 2022