

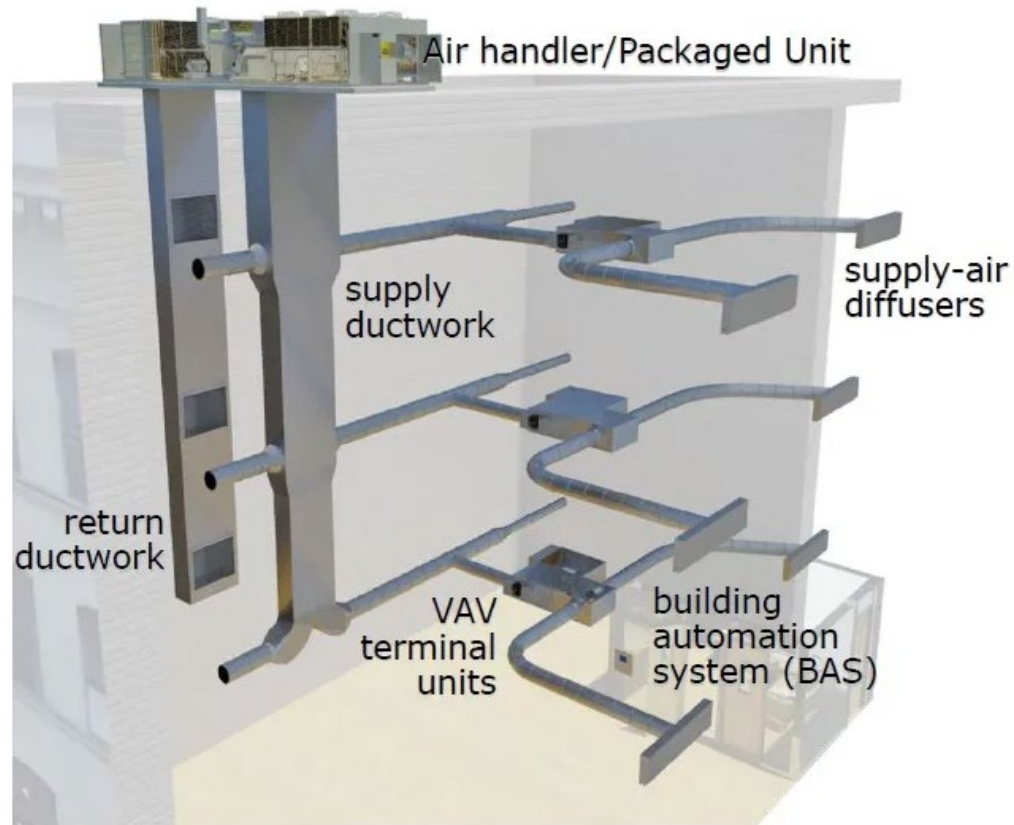
HVAC Options

Option 1 – Traditional Gas Fired Rooftop Air Handling Units with VAV terminal units for zoning

EUI 62.9 total site energy / EUI 105 total source energy

EUI - Energy Use Intensity

Energy Consumed Per Square Foot Per Year – Typical Library: 71 site / 143 source



Option 2 – Water Source Heat Pump Rooftop Air Handling Units VAV terminal units for zoning

EUI 39.5 total site energy / EUI 118.6 total source energy

HVAC Options

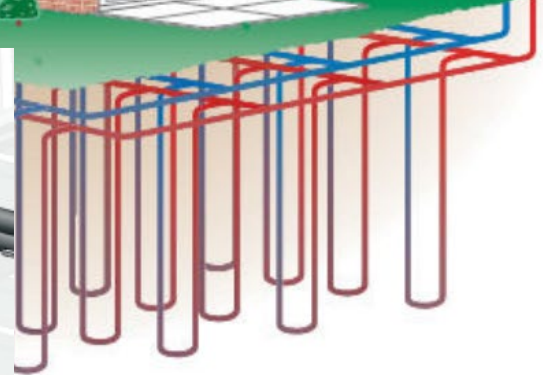
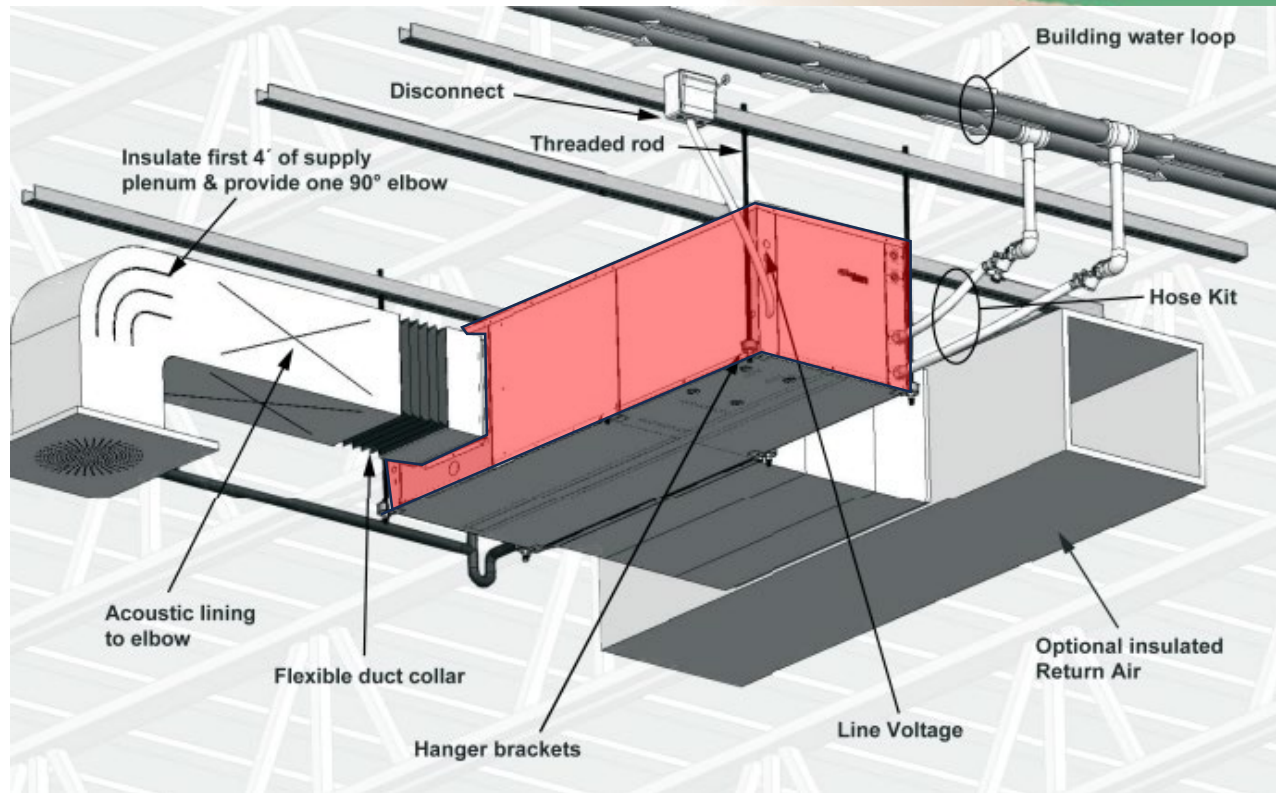


Vertical System



Option 3 – Distributed Water Source Heat Pump Units and DOAS

EUI 24.2 total site energy / EUI 72.7 total source energy



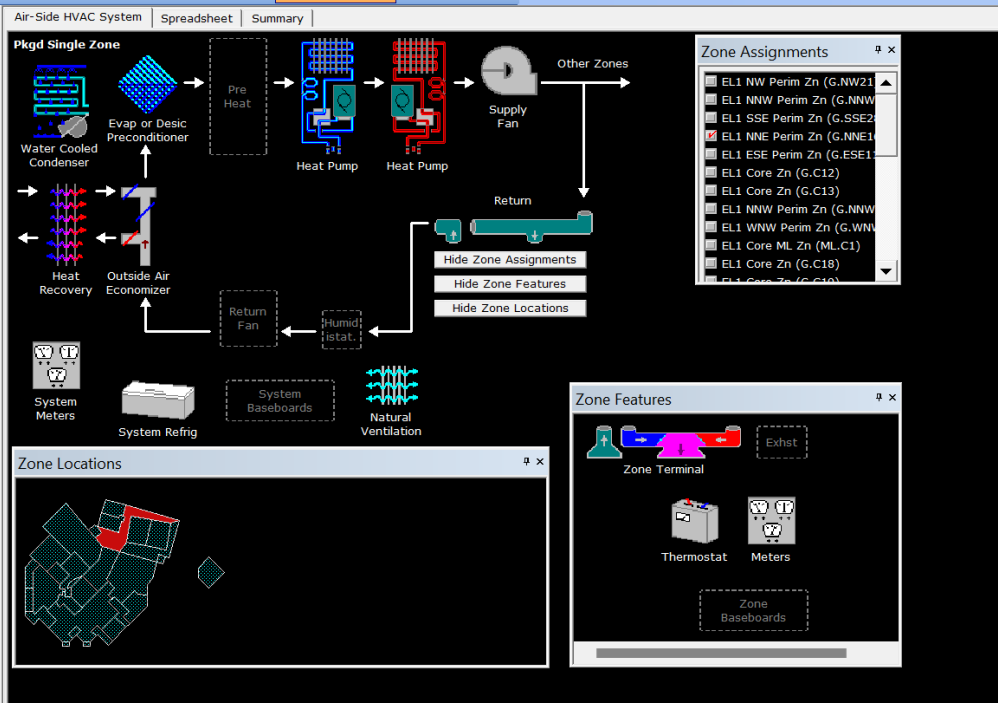
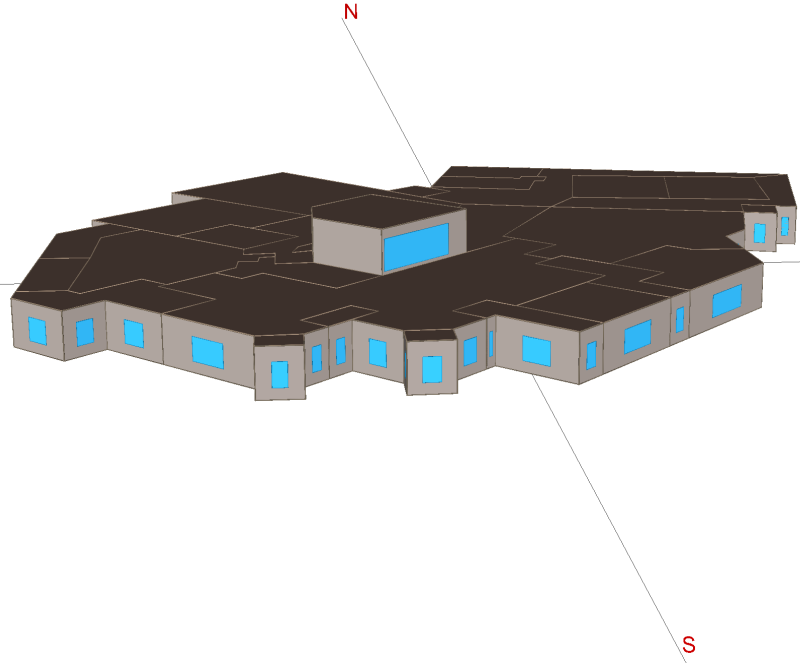
HVAC
Options



SITE PLAN

Energy Model

HVAC
Options
Pros &
Cons



	Electricity			Natural Gas			TOTAL	
	MBTU	KWH	Cost	MBTU	THERM	Cost	Energy (MBTU)	Cost
Option 1 Gas-fired, VAV zoned RTU's	1,069.70	313,422.00	\$ 59,550.18	2,127.10	21,271.00	\$ 22,547.26	3,196.80	\$ 82,097.44
Option 2 VAV zoned heat pump RTU's	1,909.00	559,329.00	\$ 106,272.51	---	---	---	1,909.00	\$ 106,272.51
Option 3 Distributed heat pumps	1,232.90	361,253.00	\$ 68,638.07	---	---	---	1,232.90	\$ 68,638.07

Cost Comparison

	Construction Estimate	National Grid Rebate (estimate)	IRA Incentives (30%)	Net Investment	Annual Energy Cost
Option 1	\$ 3,800,000	\$ -	\$ -	\$ 3,800,000	\$ 82,097.44
Option 3	\$ 7,600,000	\$ 150,000	\$ 2,235,000	\$ 5,365,000	\$ 68,638.00

Difference	\$ 1,565,000	\$ 13,500.00
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HVAC
Options
Pros &
Cons



Federal Tax Incentives

For Commercial Geothermal Heat Pumps

BENEFITS OF TAX INCENTIVES:

- Up to **30%** credit on system cost
- Up to **10%** credit for domestic content
- Up to **10%** credit for energy communities
- Up to **\$5 per square foot** tax deduction
- 5-year** accelerated depreciation and a **1-year** bonus depreciation

HVAC
Options
Pros &
Cons

Option 1 – Roof Top Units

Pros

- **Lower Upfront Cost**
- **Less Equipment to maintain**

Cons

- **Less Efficient Than Geothermal**
- **No Reduction in Greenhouse Gases**

Option 3 – Geothermal with Distributed Heat Pumps

Pros

- **Increased Energy Efficiency**
- **Eco-friendly**
- **Less Rooftop Equipment**

Cons

- **Higher Upfront Cost**
- **More Equipment to Maintain**

Energy



Elective Pay Overview



What is elective pay?

Elective pay allows applicable entities, including tax-exempt and governmental entities that would otherwise be unable to claim certain credits because they do not owe federal income tax, to benefit from some clean energy tax credits. By choosing this election, the amount of the credit is treated as a payment of tax and any overpayment will result in a refund.

For example, because of the Inflation Reduction Act, a local government that makes a clean energy investment that qualifies for the investment tax credit can file an annual tax return with the IRS to claim elective pay for the full value of the investment tax credit, as long as it meets all of the requirements including a pre-filing registration requirement. As the local government would not owe other federal income tax, the IRS would then make a refund payment in the amount of the credit to the local government.

Who is eligible?

Applicable entities can use elective pay. Applicable entities include tax-exempt organizations, states and political subdivisions such as local governments, Indian tribal governments, Alaska Native Corporations, the Tennessee Valley Authority, rural electric cooperatives, U.S. territories and their political subdivisions, and agencies and instrumentalities of state, local, tribal and U.S. territorial governments.

What types of businesses are eligible?

Generally, only "applicable entities" are eligible for elective pay. However, there are special rules for three of the clean energy tax credits. Specifically, other taxpayers that are not "applicable entities" may make an election to be treated as an applicable entity for elective pay with respect to the applicable credit property giving rise to:

1. The section 45Q credit (credit for carbon oxide sequestration),
 2. The section 45V credit (credit for production of clean hydrogen), or
 3. The section 45X credit (advanced manufacturing production credit).
- There are additional rules if the taxpayer is a partnership or S Corporation.

How do I make the elective payment election?

Eligible entities would claim and receive an elective payment by making an elective payment election on their annual tax return along with any form required to claim the relevant tax credit.

However, there are steps leading up to this, such as a required pre-filing registration process. An EIN or TIN is required to complete the pre-filing registration process.

Electronic return filing is strongly encouraged.

What will I need to do to receive a payment?

1. **Identify and pursue the qualifying project or activity:** You will need to know what applicable credit you intend to earn and use elective pay for.
2. **Determine your tax year, if not already known:** Your tax year will determine the due date for your tax return.
3. **Placed in service:** The applicable credit property must be placed in service BEFORE a registration number will be issued.
4. **Complete pre-filing registration with the IRS:** This will include providing information about yourself, which applicable credits you intend to earn, and each eligible project/property that will contribute to the applicable credit and other information required. Upon completing this process, the IRS will provide you with a registration number for each applicable credit property. You will need to provide that registration number on your tax return as part of making the elective pay election.
 - Complete pre-filing registration in sufficient time to have a valid registration number at the time you file your tax return.
5. **Satisfy all eligibility requirements for the tax credit and any applicable bonus credits, if applicable, for a given tax year:**
 - You will need the documentation necessary to properly substantiate any underlying tax credit, including if bonus amounts increased the credit.
6. **File the required annual tax return by the due date (or extended due date) and make a valid elective payment election.**

What tax credits can elective pay be used for?

See Publication 5817g for a list of tax credits that can be used for elective pay.

Resources

- › [Elective Pay and Transferability](#)
- › [irs.gov/cleanenergy](#)
- › [Publication 5884, IRA and CHIPS Pre-Filing Registration Tool User Guide](#)
- › [Publication 5902, Clean Energy Authorization Permission Management User Guide](#)



Publication 5817 (Rev. 4-2024). Catalog Number 941211 Department of the Treasury Internal Revenue Service www.irs.gov

what about ENERGY.

ADVANTAGES OF GEOTHERMAL WITH DISTRIBUTED HEAT PUMPS

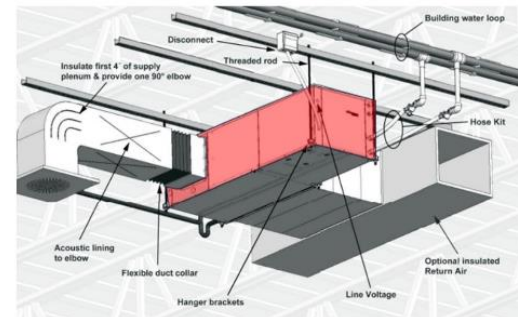
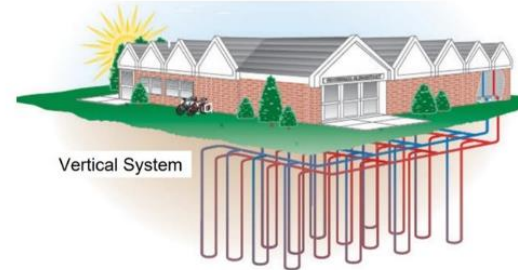
Carbon Footprint Reduction - No fossil fuels will be utilized on site. A geothermal heat pump option would be the most efficient system for heating and cooling the building using an all-electric energy source.

Energy Source Long-Term Reliability - Although natural gas is presently a cheaper fuel source than electricity, that is unlikely to be the case in the years ahead. Both federal and state governments have developed climate legislation to drastically reduce reliance on fossil fuels for energy consumption.

Noise - The proposed geothermal option will provide heat pumps above the ceiling inside the building, alleviating concerns about noise from present roof top HVAC equipment. The heat pumps include acoustic insulation and are designed to operate at low fan speeds to ensure quiet operation in a library setting.

Energy Efficiency - Upgrading and expanding the current Traditional Gas Fired Rooftop Air Handling Units with VAV terminal units for zoning would result in an Energy Use Intensity (EUI) of: 62.9 total site energy / 105 total source energy. Switching to a Distributed Water Source Heat Pump Units and a DOAS system would lead to an EUI of: 24.2 total site energy / 72.7 total source energy. This change will decrease total site energy consumption by 61.5% and total source energy consumption by 30.8%!

Cost - When considering refundable tax credits from the Federal government and a rebate from National Grid, the cost of a geothermal option becomes comparable to that proposed for the "standard" HVAC option, utilizing similar rooftop units as the existing library.



Federal Tax Incentives

For Commercial Geothermal Heat Pumps

BENEFITS OF TAX INCENTIVES:

- Up to 30% credit on system cost
- Up to 10% credit for domestic content
- Up to 10% credit for energy communities
- Up to \$5 per square foot tax deduction
- 3-year accelerated depreciation and a 3-year bonus depreciation

*The Bethlehem Library is eligible for the Federal IRA incentives – which are tax credits for for-profit businesses and can be taken as a Direct Payment – also called **Elective Pay** for not-for-profit organizations. The Elective Pay is at the same percentage, with the same eligibility criteria. Please disregard references to Transferability – that’s not something the Library is eligible to do for this project.*

*The project will also be **eligible for the National Grid, NYS Clean Heat Rebate.***