

HEAT PUMP COSTS IN THE CON ED BILLING AREA

COP DEFINITION: HOW MANY WATTS OF THERMAL ENERGY CN BE MOVED USING 1 WATT OF ELECTRICAL ENERGY

A new cold climate heat pump (CCHP) maintains a COP (Coefficient of Performance) of at least 1.75 at 5° F, meaning it produces 1.75 to 2.5 times more heat than the electricity it consumes. While standard heat pump COP drops to 1.0 (a 1 : 1 ratio) at this temperature, CCHPs use technology like enhanced inverter technology, vapor injection, and improved refrigerants to stay efficient. **However, defrost cycles for ice buildup can temporarily lower the COP, and overall seasonal efficiency also depends on proper system sizing and installation.** [↻](#)

How CCHPs perform in the cold

- **Efficiency:** Unlike standard heat pumps that become inefficient in cold weather, CCHPs are specifically designed to operate in low temperatures.
- **COP:** Modern CCHPs have a minimum COP of 1.75 at 5° F, with many systems achieving a COP of 2.2 – 2.8 at this temperature. For reference, electric resistance heating has a COP of 1.0.
- **Heating capacity:** At 5° F, a CCHP must provide at least 70% of its heating capacity compared to its performance at 47° F.
- **Defrost cycles:** To prevent ice buildup on the outdoor coils, the system will briefly reverse operation to melt the ice. This process uses energy and temporarily reduces heating output, but modern units are designed to minimize how often this happens.
- **Technology:** These models use enhanced inverter technology, vapor injection, and better refrigerants to maintain efficiency in cold air. [↻](#)

COP at 5 Deg-F	70%	Minimum Required COP at 40 Deg-F	DERIVED FROM THE INFORMATION ABOVE	
1.75	0.7	2.5		
Energy Costs	Feb-25			
Electricity		\$0.34	per KWh	From Bill Below - February 2025
Natural Gas		\$2.42	per Therm	From Bill Below - February 2025
Energy Equivalent		29.3	KWh/Therm	Constant
Therm Equivalent at COP=2.5		11.72	KWh Usage per Therm at Heat Pump Location	29.3/2.5
Therm Equivalent at COP=1.75		16.74286	KWh Usage per Therm at Heat Pump Location	29.3/1.75
Cost per Therm at COP=2.5		\$3.99	Cost per Therm at a COP of 2.5 in the Con Ed Service Area	11.72 x \$.34
Cost per Therm at COP=1.75		\$5.70	Cost per Therm at a COP of 1.75 in the Con Ed Service Area	16.742 x \$.34
Therm Usage 90% AFUE Boiler		1.111111	Therm Usage to deliver 1 Therm of Heat on a 90% efficient gas boiler	
At a COP = 2.5 On a 40 degree day				
Cost per Delivered Therm Using Gas		\$2.69	Cost per Therm Using a 90% AFUE Gas Boiler	\$2.42 x 1.111
Cost Difference		\$1.30	Higher cost per Therm using a Heat Pump even at it's highest efficiency	
At a COP = 1.75 On a 5 degree day				
Cost per Delivered Therm Using Gas		\$2.69	Cost per Therm Using a 90% AFUE Gas Boiler	\$2.42 x 1.111
Cost Difference		\$3.01	Much Higher cost per Therm using a Heat Pump on a cold day	
Percentage Difference		148.37%	1.48 x the Cost to operate a heat pump on a 40 degree day in NY City	
Percentage Difference		211.95%	2.11 x the Cost to operate a heat pump on a 5 degree day in NY City	

UTILITY BILLS BELOW ARE FROM FEBRUARY 2025. WINTER BILLS WERE CHOSEN BECAUSE NATURAL GAS IS MORE EXPENSIVE DURING THE WINTER AND ELECTRICITY IS MORE EXPENSIVE DURING THE SUMMER

Your gas breakdown Rate: G53 Residential or Religious Heating <4 Units



Gas Meter Detail - billing period from January 27, 2025 to February 26, 2025 (30 days)

Meter #	New Read	Read Type	Date	Prior Read	Read Type	Date	Read Diff	Usage in ccf
01	32323	Actual	Feb 26	31289	Actual	Jan 27	1034	1034 ccf
Therm conversion factor								1.025
Total Gas Use								1060.00 therms

Your Supply Charges

Supply 1060.00 therms @68.009¢/therm	\$720.89
Merchant function charge	\$26.73
GRT & other tax surcharges	\$7.55
Sales tax @4%	\$30.21
Total gas supply charges	\$785.38

Your total gas supply cost for this bill is 74.09¢ per therm. You can compare this price with those offered by energy services companies (ESCOs). For a list of ESCOs, visit PowerYourWay.com or call 1-800-780-2884.

Your Delivery Charges

Basic service charge (includes first 3.00 therms)	\$32.64
Remaining 1057.00 therms @131.771¢/therm	\$1,392.82
Monthly rate adjustment @14.896¢/therm	\$157.90
System Benefit Charge @0.001¢/therm	\$0.01
GRT & other tax surcharges	\$45.00
Sales tax @4%	\$65.13
Total gas delivery charges	\$1,693.50

Your gas total **\$2,478.88**

Your electricity breakdown Rate: EL1 Residential or Religious - Net Metering



Electric Meter Detail - billing period from January 27, 2025 to February 26, 2025 (30 days)

Meter #	New Read	Read Type	Date	Prior Read	Read Type	Date	Read Diff	Multiplier	Total Usage kWh
	10946	Actual	Feb 26	10864	Actual	Jan 27	82	40	3,280

Your Supply Charges

Supply 3280.00 kWh @12.791¢/kWh	\$419.54
Merchant Function Charge	\$14.40
GRT & other tax surcharges	\$4.38
Sales tax @4%	\$17.53
Total electricity supply charges	\$455.85

Your total electricity supply cost for this bill is 13.36¢ per kWh. You can compare this price with those offered by energy services companies (ESCOs). For a list of ESCOs, visit PowerYourWay.com or call 1-800-780-2884.

Your Delivery Charges

Basic service charge	\$20.64
Delivery 3280.00 kWh @17.447¢/kWh	\$572.26
System Benefit Charge @0.689¢/kWh	\$22.60
GRT & other tax surcharges	\$19.04
Sales tax @4%	\$25.38
Total electricity delivery charges	\$659.92

Your electricity total **\$1,115.77**