

FILE

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PUCO

This is a copy of the
information I presented
at the Sandusky meeting
on 10-25-10

Thank You
Ed Cullen

CASE # 10-176-EL-ATC

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237 West Washington Row
Sandusky, OH 44871-5141
December 15, 1997

Mr. Ed Cullen
3202 Bardshar Road
Sandusky, OH 44870

Dear Mr. Cullen:

Thank you for the opportunity to provide you with information on Ohio Edison's new construction programs. Geothermal heating, air-conditioning and water heating operates at a lower cost than any other system on the market today. Enclosed are the following:

- Operating cost summary for a typical 2,500 square foot, ranch house.
- Information on the operating benefits and efficiency of Geothermal heating, air-conditioning, and water heating.
- Information on other new construction programs available to you.

After reviewing this information, I am sure you will agree that with all of its benefits, a new home incorporating Geothermal provides the maximum in energy efficiency, comfort and cost savings.

I will be contacting you within the next two weeks to see if I can be of further assistance. If you have any questions or require additional information, please call me at 627-6803 or toll free 1-800-OEDISON Ext. 6803. Thanks!

Sincerely,

A handwritten signature in cursive script that reads "Michael G. McCall".

Michael G. McCall
Account Representative

klj

Geothermal

Heating, Air Conditioning and Water Heating

GEO THERMAL HOW DOES IT WORK?

Geothermal heating, air-conditioning and water heating is an electrically powered system that taps the solar heat stored beneath the earth's surface to heat and cool your home. The earth absorbs 46% of the sun's energy, providing a natural and inexhaustible source of energy, right in your background. Through a technology we call Geothermal, you can use that energy to provide the most efficient whole-house heating, cooling and water heating system available today. No matter where you live, the underground temperature stays relatively constant all year, even though outdoor temperatures vary widely.

HEATING MODE

In winter, a water solution circulating through a "loop" of underground pipe absorbs heat from the earth and carries it to the Geothermal unit which extracts the heat, compresses it to a higher temperature, and distributes it throughout your home.

COOLING MODE

In summer, the unit extracts heat from your home and transfers it back to the circulating water solution in the underground loop system, where it is dispersed into the cooler earth.

WATER HEATING MODE

Geothermal also provides another benefit to homeowners - significantly lower water heating costs. Depending upon options, your Geothermal package can also supply most or all of your domestic hot water needs. Using what's called a desuperheater, in the summer months (cooling mode), waste heat from the system can be used to generate hot water at little or no cost. Throughout the rest of the year, this task can be accomplished while still achieving substantial operational cost savings. This can save you annually up to 30 percent on your water heating bill.

Geothermal

Heating, Air Conditioning and Water Heating

BENEFITS OF GEOTHERMAL HEATING, AIR-CONDITIONING AND WATER HEATING

- . **High Efficiency** Geothermal heating, air-conditioning and water heating is the most energy efficient comfort system available today! Geothermal technology simply extracts heat from the earth, uses electricity to transfer the heat and distributes that heat through the home's duct system. The system is 300 percent efficient - for each unit of electrical energy it consumes, it puts out three (3) units of Geothermal heat.
- . **Comfort** Air temperatures are very even throughout the home; no hot spots, no cold spots. Constant, even temperature and humidity control.
- . **Flexibility** One system can heat, cool, dehumidify and provide hot water.
- . **Safe and Clean** No by-products of a combustion process, such as carbon monoxide, are introduced into your home, thereby reducing your cleaning and redecorating costs and improving safety.
- . **Environmentally Superior** Approximately 46% of the sun's energy is absorbed into the earth. Geothermal taps into this source for free unlimited energy. This system emits no carbon dioxide, which is considered a major contributor to environmental air pollution.
- . **Attractive** And, because Geothermal is housed under ground and in your home, there is no outdoor unit to interfere with your landscaping.
- . **Long Compressor Life** Because there is no outdoor unit, the compressor is located in your basement. Therefore, the compressor is not exposed to temperature extremes and severe weather conditions. Experience has proven this will significantly extend compressor life.
- . **Low Maintenance** Routine maintenance requires only periodic cleaning or changing of the indoor air filter.

Geothermal

Heating, Air Conditioning and Water Heating

GEOHERMAL OPERATING COSTS

An analysis of a newly constructed typical 2,500 square foot, ranch house was conducted. Using accepted Air-Conditioning Contractors of America (ACCA) procedures, Heat Loss and Heat Gain calculations were performed. This information was used to develop energy consumption and operating cost data.

ANNUAL HEATING, COOLING AND WATER HEATING OPERATING COST SUMMARY

Geothermal Heating Air-Conditioning and Water Heating		Gas Furnace with Electric Air-Conditioning and Gas Water Heater	
Heating	\$452	Heating	\$911
Cooling	\$120	Cooling	\$217
Water Htg.	\$132	Water Htg.	\$216
Total	\$704	Total	\$1344
Annual Cost Savings			
\$640			

Geothermal Heating, Air-Conditioning and Water Heating

- It's the most efficient system available today using the natural heat storage ability of the earth.
- Provides year-round heating and cooling comfort while combining wise use of energy resources with the lowest possible operating costs.
- Reliable, clean and quiet. No outdoor air-conditioning unit means no landscaping restrictions and no noisy outdoor unit on warm summer days.

The operating costs provided are submitted as an estimate based Ohio Edison's electric heating and water heating rate and Columbia Gas at \$0.62 per ccf.

Geothermal

Heating, Air Conditioning and Water Heating

GEO THERMAL OPERATING COSTS

An analysis of a newly constructed typical 2,500 square foot, ranch house was conducted. Using accepted Air-Conditioning Contractors of America (ACCA) procedures, Heat Loss and Heat Gain calculations were performed. This information was used to develop energy consumption and operating cost data.

ANNUAL HEATING, COOLING AND WATER HEATING OPERATING COST SUMMARY

Geothermal Heating Air-Conditioning and Water Heating		Propane Gas Furnace with Electric Air-Conditioning Propane Gas Water Heater	
Heating	\$452	Heating	\$1575
Cooling	\$120	Cooling	\$217
Water Htg.	\$132	Water Htg.	\$360
Total	\$704	Total	\$2152

Annual Cost Savings

\$1448

Geothermal Heating, Air-Conditioning and Water Heating

- It's the most efficient system available today using the natural heat storage ability of the earth.
- Provides year-round heating and cooling comfort while combining wise use of energy resources with the lowest possible operating costs.
- Reliable, clean and quiet. No outdoor air-conditioning unit means no landscaping restrictions and no noisy outdoor unit on warm summer days.

The operating costs provided are not guaranteed but are submitted as an estimate based on Ohio Edison's electric heating and water heating rate and propane at \$1.00 per gallon.

Geothermal

Heating, Air Conditioning and Water Heating

A+ HEATING DEALER PROGRAM

The A+ Heating Dealer Program is a special quality assurance program where Ohio Edison works with area heating and cooling dealers to assure proper Geothermal applications and installations. A+ Heating Dealers have passed Ohio Edison strict requirements for system installation and service.

All Geothermal installations must be installed by an A+ Dealer. An inspection is conducted to verify proper installation practices, sizing, air flow, etc. This gives you extra assurance of a quality, comfortable system that will be enjoyed for years. For a list of participating A+ dealers, contact your Ohio Edison Account Representative.

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Ohio Edison has received approval from the Public Utilities Commission of Ohio on our new rate plan. This plan will lower customer costs for electric service and cap base rates until the year 2006 extending our current five-year rate freeze for an additional ten-year period. In 2006, rates will then be reduced for all customers by approximately 20%.



RATE SUMMARY

RATE 10A: Standard Residential Rate. No load. No Discounts.

All KWH's @ 12 cents

RATE 10B: 80-gallon water heater on Power Commander equipment. No load.

First 350 KWH's @ 12 ½ cents

Next 350 KWH's @ 4 cents

All additional KWH's @ 12 cents

RATE 17: Load Rate. Load X 125 = number of KWH's @ 12 ½ cents.

All other KWH's @ 3 cents.

RATE 14: Power Commander Rates. Calculate the same as RATE 17 with a discount in the billing load for the following equipment:

Winter - Add-on Heat Pump -3KW

Dual fuel resistance heater -10KW

All year - 80-gallon water heater -3KW

RATE 11A: Total Electric Heating Rate. No load.

Summer - All KWH's @ 12 ½ cents

Winter - First 900 KWH's @ 12 ½ cents

Over 900 KWH's @ 4 cents

RATE 11B: Total Electric Heating Rate with 80-gallon water heater on Power Commander.

Summer - First 550 KWH's @ 12 ½ cents

Next 350 KWH's @ 4 cents

Over 900 KWH's @ 12 ½ cents

Winter - First 550 KWH's @ 12 ½ cents

Over 550 KWH's @ 4 cents

RATE 11C: Electric Heat with \$15 credit per month for integrated water heating

Summer - All KWH's @ 12 ½ cents

Winter - First 900 KWH's @ 12 ½ cents

Over 900 KWH's @ 4 cents

Summer - June through September

Winter - October through May

USE THIS SHEET FOR QUICK CALCULATIONS. IT SHOULD ARRIVE WITHIN
\$3 TO \$5 OF AN ACTUAL BILL.