

Geothermal Education Program – Washington DC  
Get up to speed with state-of-the-art information about “Geothermal” technology and its applications

## USING THE EARTH'S RENEWABLE ENERGY

**Tuesday, June 12, 2012**  
**Doubletree Hotel Crystal City**  
**300 Army Navy Drive, Arlington, VA 22202**

**Ground Source Heating & Cooling for Residential and Commercial Properties**  
Latest Technologies, Economic Advantages, Environmental Impacts and Regulations



Presented by:

**American Ground Water Trust**  
50 Pleasant Street, Concord, NH  
501(c)(3) education organization



**THANK YOU TO OUR SPONSORS:**

**Baroid IDP**

**ClimateMaster**

**Preferred Pump**

**GEO**



In cooperation with:



**GEO and International Ground Source Heat Pump Association**

### Continuing Education Credit

Architect Credits – 7.25 LUS (FOR HSW AND SUSTAINABLE DEVELOPMENT) THROUGH THE AIA

American Society of Home Inspectors – 7.0 ASHI® CE CREDITS

IGSHPA Accredited Installers – 0.75 CEU's

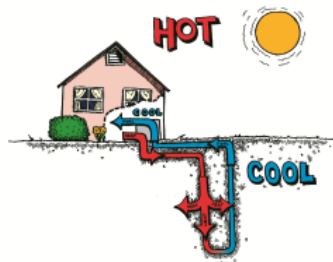
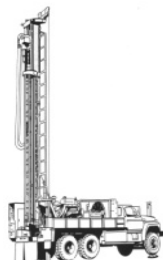
Virginia Water Well System Provider – 8 Hours – retroactive credit will not be given before July 31, 2012

Maryland Water Well Contractors – Pending Approval

Virginia HVAC Contractors – 8 Hours – Retroactive credit will not be given before July 31, 2012

GBCI Approved Provider – GBCI Course Approved – 7 General CE Hours

Call for details about other professions - 800-423-7748



### WHO SHOULD ATTEND?

This program is geared to potential end-users and to professionals who design, install, inspect, approve, recommend or regulate geothermal systems. Geothermal has the potential to become the technology of choice among those considering “green energy” options for commercial or residential installations.

Energy company engineers, architects, planners & conservation commissioners, building code inspectors, environmental health professionals, home inspectors, water well contractors, HVAC professionals, real estate agents, home builders and developers, town officials (Conservation, Zoning, Planning), water testing specialists etc. should not miss this opportunity to get up to speed with this technology. It will be coming to buildings near you!

## WHAT IT IS ALL ABOUT

Geothermal, (Ground source heating and cooling) (GSHC) technology provides a proven method for saving energy costs for heating, cooling and hot water generation. Thousands of homes, businesses and manufacturing plants across the nation are already taking advantage of these energy-efficient conditioning systems. GSHC systems operate at significantly lower costs than traditional gas, oil or electric-based installations. National benefits from geothermal installations include less demand for energy generation capacity, reduction in green-house gas emissions and a reduced dependence on imports of fossil fuels. Installation of ground source systems involves accessing the sub-surface by excavation or by drilling vertical bores. Because the sub-surface heat-exchange process occurs near or beneath the groundwater table, environmental and water resource regulatory issues make it important to “do the job right.” Correct design, materials specification and installation are critically important to maximize efficiency and minimize risk. There is not a one-size-fits-all for geothermal.

### The Program will:

- ➔ Show the professional connections among designers, manufacturers and installers
- ➔ Provide the “state of the art” in terms of design options and pay-back calculations
- ➔ Demonstrate the environmental and strategic benefits of the technology
- ➔ Explain the tax-breaks, incentives and subsidies available for installing geothermal
- ➔ Dispel myths about the effectiveness, reliability & safety of ground source systems
- ➔ Explain industry-accepted installation, operation and maintenance practices
- ➔ Provide an update on state, local and regulatory oversight

The program draws on the experience & expertise of industry and agency professionals and will provide a unique opportunity for exchange of information among policy makers involved in energy issues and specialists involved with the design, construction and permitting of ground source geothermal systems for cooling and heating.

## PROGRAM

### 7:15 – 8:00 REGISTRATION

### 8:00 - 8:30 ENERGY & WATER

#### **Garret Graaskamp, Hydrogeologist, American Ground Water Trust, Concord, NH**

- Concept of Resource Sustainability
- Trends in US energy sources
- Is natural-gas the energy source game changer?
- Environmental issues related to “Geothermal” technology
- Role of “Independent Education” in energy issue awareness
- The importance of “doing it right” for geothermal installations (No shortcuts – No one-size-fits-all)

### 8:30– 9:15 GROUND SOURCE EARTH COUPLING DESIGN PRINCIPLES

#### **Paul Bony, Director of Residential Market Development, ClimateMaster, Montrose, CO**

- Explanation of the methods:
  - Closed loop – vertical, horizontal (slinky)
  - Open system – to surface, to diffusion
  - Heat exchanger systems for surface water (ponds and lakes)
- Weighing positives and negative aspects of each earth coupling method
- Design considerations for geothermal wells in bedrock vs. shallow sand & gravel wells
- What makes one well more efficient than another for thermal transfer?
- “State of the Art” GX systems

### 9:15 – 10:00 GEOEXCHANGE WELL / BORE CONSTRUCTION AND LOOP INSTALLATION

#### **Dennis Duty, Senior Field Services Technical Representative, Baroid IDP, Buckingham, VA**

- Criteria for selecting a drilling contractor for geothermal projects
- Matching the drilling equipment and drilling methods to the geological and site conditions
- Collecting geologic data for the geothermal designer
- Installing the vertical loop into the drilled bore
- Grouting material properties and options for geothermal projects
- Techniques of grout placement to meet geothermal design specifications

### 10:00 – 10:30 THE GHPsRUS PROJECT - A STATUS REPORT

#### **Liz Battociletti, Senior Associate, Bob Lawrence & Associates, Inc. Alexandria, VA**

- The GHPsRUS Initiative’s objectives
- Status Report on GHPsRUS
- Funding Sources and the DSIRE network

### 10:30 – 10:45 NETWORKING BREAK

**10:45 – 11:30 GROUND SOURCE HEAT PUMPS - THE FUNDAMENTALS**

**Scott Emery, Senior Project Manager, Bowman Geothermal, Manassas, VA**

- Understanding the basic physics of the heat transfer process
- Explanation of terminology (geoexchange, geothermal, ground source, BTUs, tons etc.)
- How the heat exchange process works for heating and cooling
- What happens to the heat transferred underground – are there any risks?
- How to measure the efficiency of geothermal systems
- Primary differences between geothermal and traditional HVAC applications

**11:30 – 12:15 GEOEXCHANGE SYSTEM INSTALLATIONS: The LEED PERSPECTIVE**

**Amy Boyce, Manager, LEED Technical Development, US Green Building Council, Washington DC**

(invited)

- Overview of the various Green Building rating systems:
  - United States Green Building Council (USGBC)
- Overview of the LEED rating systems - Commercial vs. Residential
- How is a building's heating and cooling system (energy-use) evaluated in the LEED rating system?
- How do Ground Source Heating and Cooling systems achieve LEED rating points?
- Role of Geothermal in energy-neutral design for commercial buildings

**12:15 1:15 LUNCH** (provided on-site)

**1:15 – 2:00 HYBRID GEOTHERMAL SYSTEMS**

**Dennis Meyer, Director of Commercial Sales, ClimateMaster, Oklahoma City, OK**

- Tax incentives and cost benefits of hybrid systems
- Advantages of hybrid for summer and winter demands
- Costs and life-cycle benefits
- Case study example of a 750 ton installation

**2:00 – 2:45 GEO-SOLAR SYSTEM PROJECT FOR ALEXANDRIA CITY PUBLIC SCHOOLS**

**Bruce Beddow, Principal, b2E Consulting Engineers, Leesburg, VA**

- Geothermal retrofit at Williams High School Minnie Howard Campus
- Regulatory issues impacting design criteria for loop field
- System design to accommodate the school's needs and timing for heating and cooling demand
- Before and after energy use and life-cycle analysis

**2:45 - 3:00 BREAK**

**3 :00 – 3:45 FINANCING INNOVATIONS FOR GEOTHERMAL INSTALLATIONS**

**Paul Bony, Director of Residential Market Development, ClimateMaster, Montrose, CO**

- Best practices for implementation based on financing and geoexchange programs.
- Consumer-friendly long term financing for "new" or "retrofit"
- How utilities can establish geoexchange by leveraging federal tax credits
- On-Bill financing methods
- Utility loop ownership – own the loop and recover cost over time
- Payback calculations for geothermal
- Making space conditioning costs a fixed expense
- Thermal purchase agreements

**3:45 – 4:30 THE STATUS OF THE "GEOTHERMAL" INDUSTRY**

**Douglas Dougherty, President/CEO, The Geothermal Exchange Organization (GEO), Washington D.C.**

- Geographic distribution of geothermal installations
- Trends in the growth of geothermal applications
- Market potential and market predictions for the geothermal industry
- How the Geothermal industry is organized nationally, regionally and locally
- What appear to be the barriers to greater acceptance of geothermal installations?

**4:15 – 4:30 WRAP-UP – QUESTIONS TO THE EXPERTS**

**4:30 ADJOURN**

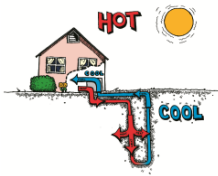
**Program Venue - Hotel information**

**Doubletree Hotel Crystal City**

**300 Army Navy Drive, Arlington, VA 22202**

To obtain the special sleeping room rate of \$229.00 call: (800) 445-8667

We have established a courtesy block of rooms under "American Ground Water Trust."



Another Education Program from:  
**American Ground Water Trust**  
 50 Pleasant Street (Suite 2)  
 Concord, NH 03301



# GEO THERMAL

Get CEUs

## Ground Source Heating & Cooling Workshop

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 300 Army Navy Drive, Arlington, VA 22202**

- ☞ NATURAL GAS HAS ENVIRONMENTAL PRESSURES
- ☞ NUCLEAR ENERGY IS LESS CERTAIN
- ☞ OIL PRICES ARE RISING
- ☞ **GEO THERMAL IS GROWING!**

!! DON'T GET LEFT BEHIND !!

### GEO THERMAL PROGRAM - REGISTRATION FORM

**Tuesday, June 12, 2012, Doubletree Hotel Crystal City - Arlington Virginia**

<b>Registration (General)</b>	<b>\$195</b>	<input type="checkbox"/>
<b>Registration (AGWT Members)</b>	<b>\$150</b>	<input type="checkbox"/>
<b>Registration (Government- fed, state, local)</b>	<b>\$150</b>	<input type="checkbox"/>
<b>Registration (Full-time Student) (ID required)</b>	<b>\$ 90</b>	<input type="checkbox"/>
<b>CD of Presentations (\$50 for non attendee)</b>	<b>\$ 20</b>	<input type="checkbox"/>
<b>Exhibit Table (does not include registration)</b>	<b>\$200</b>	<input type="checkbox"/>

[Walk-in registration (on day of event) \$225]

**TOTAL \$ \_\_\_\_\_**

**PAYMENT:**  Check [payable to: American Ground Water Trust]

AMEX  Visa  MasterCard  PO

**Credit Card or PO No.** \_\_\_\_\_ **Expiration** \_\_\_\_\_

**Cardholder Name** \_\_\_\_\_

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**Title/Position** \_\_\_\_\_

**Company/ Organization** \_\_\_\_\_

**Address** \_\_\_\_\_

**City** \_\_\_\_\_ **State** \_\_\_\_\_ **Zip** \_\_\_\_\_

**Phone** \_\_\_\_\_ **Fax** \_\_\_\_\_ **E-Mail** \_\_\_\_\_

#### CANCELLATION POLICY

- Cancellations received in the AGWT office by 5 pm EST 5 days prior to event will receive a full refund less \$25.
- For cancellation 4-2 days prior to the there is a 50 % refund.
- Cancellations one day prior to the start of the event or on the day of the event are considered "No Shows" and no refund will be made - (substitutions gladly accepted).
- The Trust will not cancel a program because of bad weather conditions. Except that, as the result of an event cancellation resulting from, (but not limited to) circumstances such as a state mandatory evacuation or a fire at the program facility, the Trust will reschedule the event and honor registrations as payment for the new event.

**Return by mail: American Ground Water Trust, 50 Pleasant Street, Concord, NH 03301**

**Return by fax: (603) 228-6557 Call to register (800) 423-7748**

**Register on line <http://www.agwt.org> (Conferences/workshops)**