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Geothermal National and International Initiative Inc.
1615 M. Street N.W. Suite 800 Washington DC 20036

The Road to 30%!

The discussion has **CHANGED!!!**

In 2012, **356** all time HIGH temp records were broken and **34,008** Daily high temperature records were set or tied and **19** States had their warmest year ever.

I am **not** claiming that these are a direct result of Global warming but this opens the door for the discussion of how **GHP technology** could have a positive impact, in the rebuilding process with it's **Triple E benefits of Energy independence & security, Environmental stability and Economic prosperity.**



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HOUSEKEEPING

What do we call it... **Geothermal, Ground Source, GeoExchange.**

The feds call it **geothermal heat pumps (GHP).**

They are ground loops, boreholes not **WELLS** (unless you are doing an open system)



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Geothermal Heat Pumps

Use the earth's **thermal properties** (ground source energy) , in conjunction with electricity, to provide **space conditioning** (heating and cooling) and **water heating** to institutional, commercial and residential facilities both nationally & Internationally.

It is a **60 year old** technology whose time is ----

NOW !!!

GEO  **NII**

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Why GHP Technology?

The US Department of Energy states, **36%** of the primary energy used in the US is from energy use in buildings. This is more than the energy used by the transportation industry.

AND

40% of the total energy used in a building is for space conditioning and water heating.



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PEAK LOAD / EMISSIONS REDUCTION

In a report by the National Renewable Energy Laboratory (NREL) they determined that every installed ton of GHP capacity reduced peak load by **.55 - .88 kW** so GHPs can provide a cost effective, environmentally responsible solution to a utility's "***peak load***" energy problem.

Western Farmer's Cooperative in OK has determined that **every kW** saved equals **\$2,000** of energy generation resources that does not have to be built and if **20%** Of their customer base changed to GHPs, **one half billion dollars** of generation infrastructure would not be needed.



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Environmental Stability.

The US Environmental Protection Agency states that GHPs reduce Greenhouse Gas Emissions (the leading contributor to Climate Change) by up to **40%** over convention HVAC systems.



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Job Creation / Retention & Training

In an Industry study done in 2010 it was determined that a commercial project involves **22 different job classifications**.

The International Ground Source Heat Pump Association has, in partnership with the Association of Energy Engineers, ASHRAE and NATE, developed the **training and certifications** needed to ensure a strong infrastructure to support the growth of geothermal heat pumps both nationally and internationally.



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WATER SAVINGS:

In a comparison study done on a **300 ton cooling system**
GHPs vs Water Cooled Chiller the results were dramatic...

Annual Savings:

Potable Water Savings (gals.) – 4,730,400

Bleed Savings (gals) - 1,892,160

Water Cost Savings - \$32,106.72

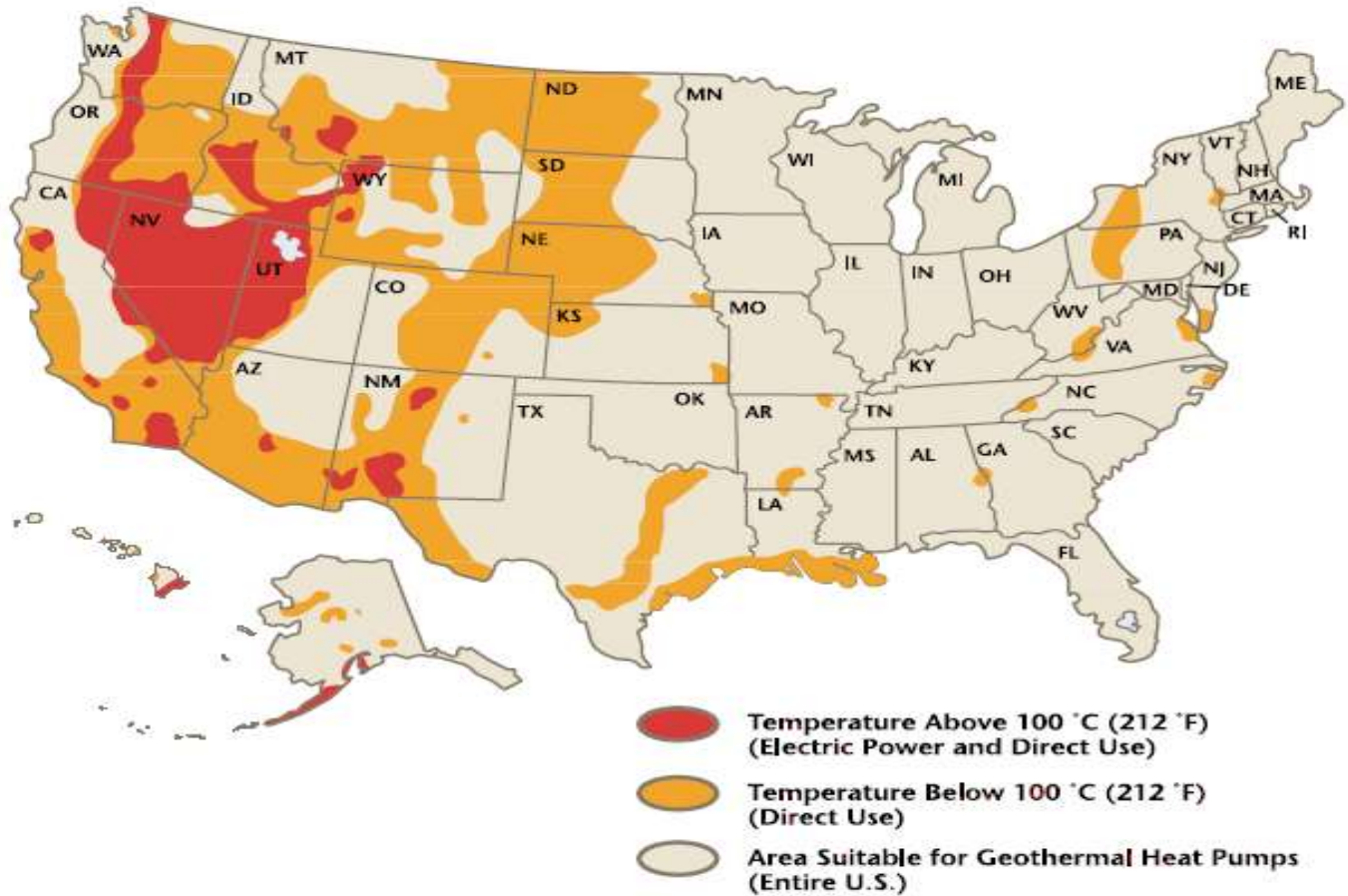
Sewer Cost Savings - \$12,866.69

(based on 96 gal per Rm per day, double occupancy)



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The Nation's geothermal resources represent a huge and viable energy resource, providing the U.S. with various ways to use them and enhance national security, and economic and environmental health.



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WHAT IS NET ZERO

By producing (Solar – Wind) and reducing (Geothermal heat pumps) more energy than your facility uses, your facility can reduce your utility bill to almost no cost at all. This provides you with a NET ZERO facility.



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LADY BIRD JOHNSON –MIDDLE SCHOOL.

•2012 CAUDILL AWARD WINNER

- The 1st NET ZERO public school in Texas**
- The 1st NET ZERO middle school in the U.S.**
- The LARGEST NET ZERO school in the U.S.**

(There are over 250 Geothermal schools in Texas)



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MOVING FORWARD!!!

The States of MD and NH have approved Bills, which effectively makes GHPs an accepted technology available for Renewable Energy Credits (RECs) under the state's Renewable Portfolio Standard (RPS).

This legislation recognizes GHPs as a renewable energy source giving electric utilities credit for the thermal load avoided.



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AND...

We are currently working with the NY Public Service Commission to include GHPs as an accepted technology in their Renewable Portfolio Standard, which would qualify GHPs for Renewable Energy Credits.

This would allow Utilities to own the ground loop and have it be rate recoverable and satisfy their mandated quotas for renewable technology.



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GHP's - as a Renewable Technology for Utilities.

- 1- They are a “demand reduction” technology which does not have to have “backup” generation. A equivalent megawatt of installed ghp capacity, reduces that amount from the grid.
- 2- They work 24/7, 365, never needing the sun to shine or the wind to blow.



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GHP's - as a Renewable Technology for Utilities.

3- It is a permanent (50 year) demand reduction, one that does not need any notification.

4- It can become a new business unit (Loop leasing or collection of REC benefits).

5- It is using “energy” already owned by the consumer but delivered by the Utility.



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Remember !!!

Timing is everything, Now is the Time to get involved.

Attend training, look for opportunities, we now have larger companies recognizing the value of this technology.



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Geothermal Heat Pump Technology

Uses the “**ENERGY UNDER OUR FEET**”, the energy **we already OWN** to deliver the **Triple E** benefits of:

Energy independence & security

Environmental stability

Economic prosperity



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**We cannot solve our
problems with the same
thinking we used when we
created them.”**

- Albert Einstein



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If you have any questions or need further information please contact me at 610-659-4998 or e-mail me at jdienna@geo-nii.org



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