Stumpf, Andrew J

From: david.b.buss@gmail.com <david.b.buss@gmail.com> **On Behalf Of** David Buss
Sent: Thursday, April 5, 2018 3:34 PM
To: Stumpf, Andrew J <astumpf@illinois.edu>
Subject: Re: UIUC greenhouse geothermal proposal

Andrew,

Here's an estimate on equipment for the 30X74 Greenhouse.

10-tons of Water-to-water equipment, with pumps, buffer tanks, and load pumps (not including the actual radiant floor tubing)

18-tons of Water-to-Air equipment with pumps, thermostats, and necessary controls

Your cost $ 35,650.

This arrangement will allow the forced-air portion of the system to carry the load, but the water-to-water portion can be used if applicable for radiant warming of the soil/growing containers if that is applicable.

This equipment reflects a building load of 240,000 BTU/HR, so the required loop would be 20, 150 ft. vertical boreholes. That piping would be tied to one set of 2" headers entering the building. I don't have the piping cost in here, so if you need that, let me know.

This pricing is basically wholesale pricing, so if the equipment has to go through a dealer, you can expect a somewhat higher cost.

If any further information indicates a lower or higher heat load, we can make adjustments.

Thanks,

Dave

From: david.b.buss@gmail.com <david.b.buss@gmail.com> **On Behalf Of** David Buss
Sent: Thursday, April 5, 2018 4:15 PM
To: Stumpf, Andrew J <astumpf@illinois.edu>
Subject: Re: UIUC greenhouse geothermal proposal

Andrew,

Generally, the 1-circuit per ton arrangements works best for minimum pressure drop. However, if there's a significant advantage to your boring costs to go deeper, we can do that, we'll just probably have to use larger (1") circuit piping instead of the 3/4".

From: david.b.buss@gmail.com <david.b.buss@gmail.com> **On Behalf Of** David Buss
Sent: Thursday, April 5, 2018 4:18 PM
To: Stumpf, Andrew J <astumpf@illinois.edu>
Subject: Re: UIUC greenhouse geothermal proposal

Andrew,

That price seems to be way high. Typically vertical loops are installed (drilling, loop provided, and installed, header and installation) for about $2000-2500/ton.

So they could do the entire 20-tons of loop for $40,000-$50,000.

Dave

DAVID BUSS, Director and Annual Conference Committee member and GAOI Trainer

Dave Buss joined the GAOI board in March, 2012. He is a geothermal product manager for Connor Co., a founding member of the GAOI. Dave has worked in the geothermal industry for many years and holds many geothermal heat pump credentials, including the Certified Geothermal Designer designation. Dave's experience with geothermal technology goes back to the 1980s. In addition to his board service with GAOI, Dave is a lead trainer for GAOI, helping to provide training for staff of GAOI member organizations seeking accredited company status. Dave is an experienced and sought-after speaker and geothermal trainer. *Dave Buss, Connor Co./ClimateMaster, Golden, IL*