**Final Report: Earth Source Heat: A Cascaded Systems Approach to DDU of Geothermal Energy on the Cornell Campus**

**Shortened Descriptive Title:**

**“Direct District Heating for the Cornell Campus Utilizing Deep Geothermal Energy”**

**Final Submission at completion of Department of Energy project DE-EE0008103**

The purpose of this document is to describe the contents contained within a submission to the Geothermal Data Repository (GDR) node of the National Geothermal Data System (NGDS) in support of Earth Source Heat: A Cascaded Systems Approach to DDU of Geothermal Energy on the Cornell Campus.

**Abstract**: Cornell completed a comprehensive evaluation of the potential for Earth Source Heat (ESH), Cornell’s specific application of Deep Direct Use (DDU) geothermal energy, to create viable heat energy for its Ithaca, NY campus district heating system. The study included assessment of the natural rock properties within and surrounding two potential reservoirs, coupled to the assessment of the thermal energy needs for a district heating system capable of supplying 20% of Cornell’s building heating load. The feasibility and benefits of such a district heating system at the specific location of Cornell University's Ithaca, NY campus are evaluated from the perspectives of economic cost, environmental benefits, and economic benefits in the region external to Cornell University. The economic cost is expressed as the Levelized Cost of Heat, and comparison to the existing inexpensive fossil fuel system. MORE HERE

**Keywords:** geothermal, energy, Cornell University, district heating, direct-use heating, Appalachian Basin, New York state, low-temperature geothermal, reservoir simulation, techno-economic analysis, uncertainty analysis MORE HERE such as heat pumps, levelized cost of heat LCOH, externality values, environmental value, economic value

**Contents of Submission:**

**1. Resource: Final Project Report:**

**a. Folder:**

**b. Folder:**

**c. etc**

**2. Resource: Subsurface data and simulations to estimate Ithaca, NY temperatures and reservoir properties:**

**a. Folder: About Appalachian Basin Temperature-Depth Maps and Structured Data**

**b. Folder: About Sets of Analysis Files and Data Files that Document Subsurface Temperatures and Porosity Near Ithaca, NY**

**c. Folder: Geothermal Reservoir Simulation Results**

**3. Resource… secondary folder (related to Cornell thermal energy usage, for example:**

**a. Folder:**

**b. Folder:**

**c. etc**

**4. Resource… secondary folder (related to MEnU, for example) :**

**a. Folder:**

**b. Folder:**

**c. etc**

**5. Resource…secondary folder (related to LCOH, economic benefits external to campus, etc):**

**a. Folder:**

**b. Folder:**

**c. etc**

**References: (may not be appropriate to this master entry)**