2012 Geothermal Technologies Student Competition

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Geothermal Project Title: Comprehensive Assessment of the Geothermal Potential in the Snake River Plain

Approach and Methodology

We propose a 4-step study to characterize the Snake River Plain resource and determine its potential for geothermal energy utilization. Step (1) is a comprehensive literature review of publications about the Snake River Plain and an information gathering process for consumption data and other related factors. The literature review will include geothermal resource studies; geologic history, models, and maps of the area; available oil and gas well data; and general exploration, surveying, and remote sensing techniques used by both the geothermal and petroleum industries. Data will also be gathered regarding the electricity and heat consumption profile in the Snake River Plain area and surroundings to identify potential markets for geothermal heat or electricity. This consumption data will inform our group as to potential areas of focus early in the process and help guide later project decisions. Step (2) builds upon information collected in the literature review by assessing the status of the current estimates of the geothermal resource potential in the Snake River Plain and proposing innovative approaches for developing a more robust and refined appraisal of the geologic, hydrologic, and thermal profile for the region. Our group will analyze the methods used to generate the current geothermal resource assessments, the granularity of these assessments, and the contemporaneity of the data sources. We will then critically evaluate the validity of these inputs and determine if any old data should be discarded and where new data or methods should be incorporated. Our group will acquire this data, where possible, and use it to construct a more complete picture of the available resource in the Snake River Plain. Step (3) employs the resource assessment in combination with the data gathered regarding electricity and heat consumption to develop proposals for geothermal energy projects in the region. These recommendations will be formulated by identifying where high grade resources and high demand areas overlap, as well as communicating with local government and industry to determine the optimal locations. The proposed projects will be screened by conducting economic analysis on the required investment needed for acquisition of the land and construction of the project, and the expected payback period based on local utility rates. Step (4) is the culmination of our work in the form of a journal-quality article that clearly expresses the major conclusions of our research, as well as a multi-media presentation summarizing the most important aspects of our work. The article will provide an overview of why the Snake River Plain is being investigated for its geothermal potential, a description of the research performed and

relevant data sources, the geothermal profile of the region and the methodology used to develop it, and options for geothermal energy projects (both electricity and heating) along with associated economic impacts. If from Step (2) some data is not readily available, we will note this in the report and specifically recommend what future research is needed and how it can be applied. Our group will also produce a more detailed report to accompany the article that will provide additional information on certain aspects of our research, where appropriate.