



GEO-HEAT CENTER

Oregon Institute of Technology Klamath Falls, Oregon 97601 541/885-1750 FAX 541/885-1754

November 30, 2011

To Whom It May Concern:

RE: STARS Innovation Credits for a Geothermal Combined Heat and Power Plant
Oregon Institute of Technology

The purpose of this letter is to affirm the innovative nature of OIT's implementation of a geothermal combined heat and power (CHP) plant. The plant was constructed during 2009 and became fully operational in January 2010.

Description of the Innovative Practice: Any power plant employing the Rankine Cycle, whether using fossil or renewable energy, inherently has a relatively low conversion efficiency of heat to power, and the majority of heat is wasted and rejected to the environment. Capturing this waste heat and making it useful is one of those things that looks great on paper, but is often difficult to achieve in practice. CHP plants are often even more elusive with geothermal power plants because the heat source is often remote from an economical use of the waste heat.

OIT has successfully implemented the first and only geothermal CHP plant in the United States, where the geothermal fluids leaving the power plant are recovered for useful heat to the campus heating system. The power plant was designed and installed so that it utilizes the hottest geothermal fluids, "upstream" of the existing campus geothermal heating system, and the heating system controls were optimized by OIT Facilities personnel to accept the geothermal fluid at approximately 160F after it leaves the power plant.

What the Innovative Practice Has Achieved: This innovation has two main achievements. First, the geothermal power plant generates about 1,750 MWh of renewable electricity per year. Second, implementing the geothermal power plant as a CHP plant effectively doubles the overall efficiency of the plant, and in addition has made the campus heating system 100% renewable because no fossil electricity is consumed to supply the fluids to the heating system.

Sincerely,

Andrew D. Chiasson, PhD, PE
Program Manager
Geo-Heat Center
Oregon Institute of Technology