

Foreword

Geothermal energy is the heat from the Earth. Resources of geothermal energy range in depth and quality from the heat in shallow ground, to hot water and hot rock found a few miles beneath the Earth's surface, and even deeper, to the extremely high temperatures of molten rock called magma at even greater depths.

Geothermal energy is a domestic resource that can be used to generate electricity in a clean, reliable, and sustainable manner. Geothermal power plants have almost no carbon footprint, require no purchase of fuel and are not subject to fuel price volatility or supply changes from global energy markets. The current and continued development and application of new, advanced geothermal technologies will enable geothermal energy to become a major component of the United States energy supply portfolio.

According to the Geothermal Energy Association, the United States has approximately 2,930 MWe of installed geothermal capacity and approximately 2,900 MWe of planned capacity from geothermal power plants under development. In 2007, geothermal energy accounted for 4 percent of renewable energy-based electricity consumption in the United States, including large hydropower. That same year, geothermal energy generated 14,885 GWh of electricity.

The results of a DOE sponsored study released in January 2007, "The Future of Geothermal Energy," led to renewed interest in an advanced technology known as Enhanced Geothermal Systems (EGS). EGS are both enhanced and engineered reservoirs created to produce energy from geothermal resources deficient in economical amounts of water and/or permeability. A panel of 18 independent experts, led by the Massachusetts Institute of Technology (MIT), examined the potential of geothermal energy to meet the future energy needs of the United States. The panel concluded that EGS is capable of providing at least ten percent (i.e., 100,000 MWe) of the nation's future electric power needs (approximately 100 quadrillion Btus). In the 2008 Annual Energy Outlook, the Energy Information Administration estimated that 103.5 quadrillion Btus (Quads) were used in 2008 and that 118 Quads will be needed by 2030. In September 2008, the U.S. Geological Survey (USGS) released a resource assessment of the western United States and estimated the EGS generation potential at 517,800 MWe.

By 2015, the U.S. Department of Energy, Office of Energy Efficiency and Renewable, Geothermal Technologies Program, in partnership with geothermal energy developers, plans to demonstrate that EGS is technically feasible. This Multi-Year Research, Development, and Demonstration Plan describes in detail the Geothermal Technologies Program activities for the next seven years, and projects the longer-term RD&D activities. This detailed Program Plan will incorporate Program progress and findings on a regular basis.

Geothermal technology developer evaluation of this Program Plan is essential. We welcome the opportunity to receive your comments and look forward to working with you on this critical energy initiative.

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