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A PROSPECTUS FOR GEOTHERMAL ENERGY - THE ATLANTIC COASTAL PLAIN

Fletcher C. Paddison

The Johns Hopkins University Applied Physics Laboratory
Laurel, Maryland 20810

ABSTRACT

The Department of Energy is targeting and evaluating the not-so-obvious geothermal resource areas under the Atlantic Coastal Plain. These potential hydrothermal resources turn out to be areas of reasonable size from the State of New Jersey to the State of Georgia. The resources are evidenced by higher-than-normal thermal gradients; however, the sedimentary sequences are of limited depth, so that the expected temperatures at the bottom of the sedimentary pile are such that use will be limited to direct (non-electric) applications. A survey of the northern half of the Coastal Plain established the potential market for moderate temperature geothermal energy. This effort is being followed in each resource area by the preparation of a "how-to-apply" prospectus or scenario. Since each state is unique in its resource characteristics, its laws, regulations, environmental concerns and, further states differ in their method of planning for accommodating new energy forms and economic development of state and counties. The prospectus is accordingly prepared either by, or with the assistance of, local agencies. The prospectus outlines the applications engineering, and economic considerations and a road map through the institutional, environmental and legal requirements for his particular use. Finally, the prospectus identifies those issues which are yet to be resolved, either by the federal, state or local government. There results, therefore, a planning document with enough detail so that a potentially interested user (entrepreneur) can assess the resource's potential to his needs.

DISCUSSION

The Department of Energy has had prepared, through its Regional Operations Research Contractors or their equivalent, scenarios of known or suspected geothermal resource areas. These scenarios quantified the energy potential of the resource area and estimated the rate of development of the resource in respect to the energy market in that area. These scenarios in aggregate were intended, first, to provide a quantitative measure of the geothermal potential of regional areas or the entire country, and, second, to identify early in the process potential problems in the realization of the potential. The reference is an example of such a scenario for the entire Eastern Coastal Plain.

At the time the resource definition program progresses to the point where the resource extent, temperature and hydrology are apparent, then a different need arises. This is to initiate the process of education as to what the resource is, its application, its economics and the laws and regulations required to provide for an orderly process of development.

The Department of Energy is dedicated to assisting in the development of and commercialization of geothermal resources by local interests. However, in the case of the Eastern United States, with little or no experience with moderate temperature hydrothermal geothermal resources, the Department of Energy commissioned the Eastern Regional Operations Research Contractor to aid in expediting the process of commercialization. This is being done by first conducting a survey in detail of the potential market for geothermal energy over each of the resource areas. The results of such a survey are presented elsewhere in these Proceedings. The survey was carried out initially in the Delmarva area of the State of Delaware, the Eastern Shore of Maryland and the Eastern Shore of Virginia, see Figure 1, and has been followed by a prospectus for geothermal energy development. A prospectus for each of the other coastal states, i.e., New Jersey, Tidewater Virginia, North Carolina, South Carolina and Georgia, are planned to follow.

The prospectus for the development of geothermal energy on the Delmarva Peninsula which is in an advanced stage of preparation, not only discusses in a

narrative form the description of the resource and its potential energy content, but also through workshops, discussion with local planning groups and the market survey, present and future uses and users are outlined in as much detail as possible at this time. The Reservoir Engineering Program status and or data, as appropriate, are given together with the mechanics for reservoir management and plans of the state for implementation. Applications engineering, if not covered in specific applications, is covered separately, as is, finally, an estimate of the cost of geothermal water at each resource area in the state. The range of expected costs for the industrial user of geothermal energy for process heat, as well for the multi-residence space heating are included. The requirements in each state and locality for a prospective developer in terms of legal, environmental and institutions are set forth together with an estimate of the time required for each and the order in which they must occur. A list of action items, i.e., issues, for either federal, state and/or local government is presented. Finally, state and federal, technical, planning and financial assistance programs applicable to that area are listed.

CONCLUDING REMARKS

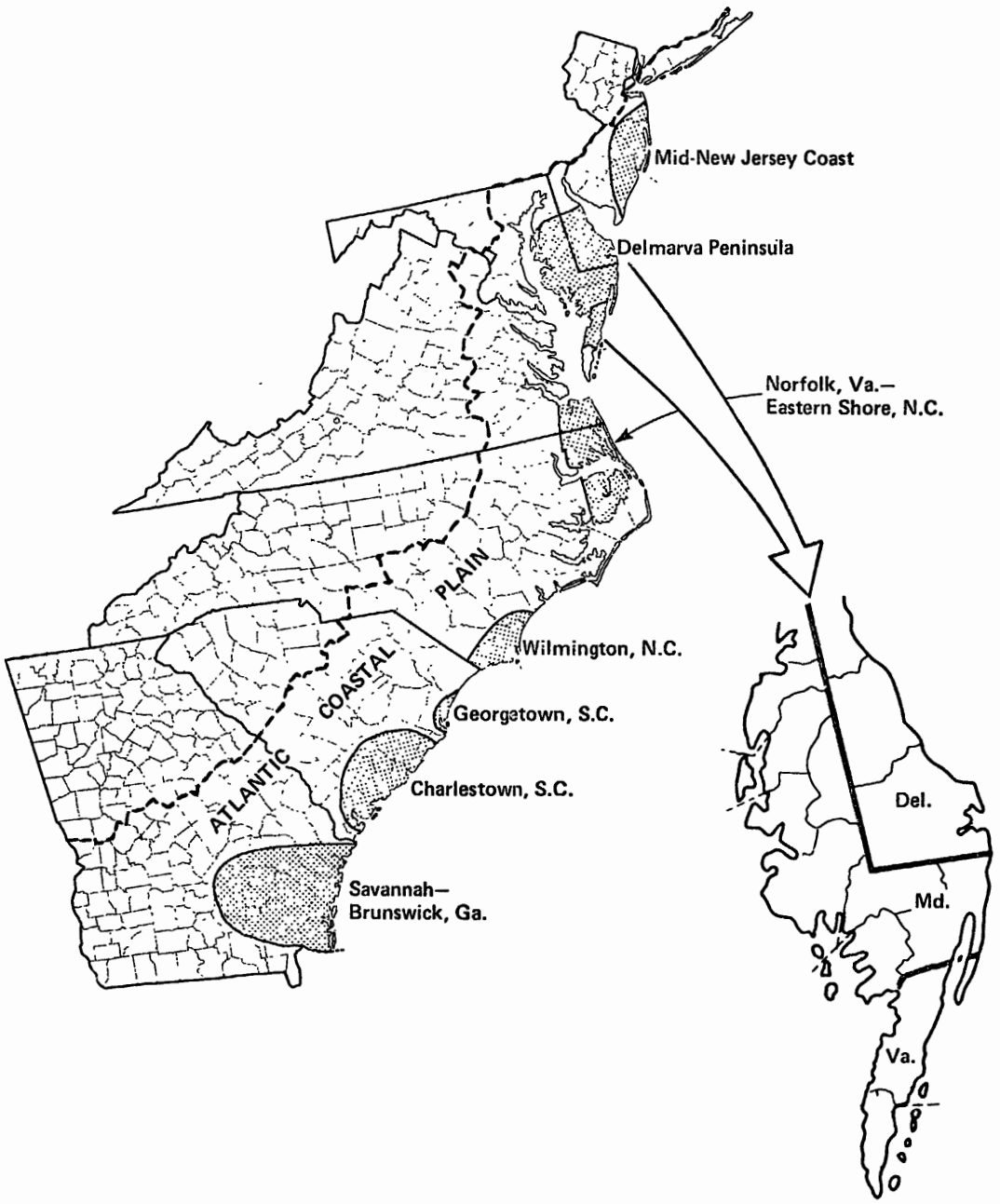
A year ago there was little thought to geothermal energy in the east. Through the success of the Virginia Polytechnic Institute and State University's geologic program and the stimulus of local interest through inquiry about the potential of geothermal energy on the Atlantic Coastal Plain there is now consierable interest and action. A Geothermal Act was signed into law in Maryland in July 1978, and Delaware and Virginia are working with the National Conference of State Legislatures in considering geothermal legislation. In response to the recent Department of Energy's Program Research and Development Announcement (PRDA), eight proposals from a total of four Eastern Coastal States were submitted.

The prospectus and, to a great extent, the mechanics of its writing is an effective planning tool to aid and expedite the development of a specific geothermal resource. The prospectus cannot, however, ensure that all the regulations, etc., called out as required will be emplaced and worked out when the first applicant starts through the process. Accordingly, the prospectus will require revision until the process is well understood and guidance is no longer required.

REFERENCE

"Geothermal Energy and the Eastern U.S., A Scenario for Geothermal Energy Development, The Atlantic Coastal Plain," APL/JHU QM-77-129, October 1977.

GEOTHERMAL RESOURCE AREAS – ATLANTIC COASTAL PLAIN



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