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EVALUATION OF STATE TAXES AND TAX INCENTIVES AND THEIR IMPACT ON THE DEVELOPMENT OF GEOTHERMAL ENERGY IN THE WESTERN STATES

Leonard D. Bronder and Richard T. Meyer

Business Forecasting Services and Western Energy Planners, Ltd.

The report sets forth the principles of taxation of the Federal, state and local governments as well as the tax provisions as they apply to geothermal energy producing and consuming enterprises. The tax provisions were coupled with current administrative practices in eight western states (AZ., CO., ID., MT., NV., NM., ND., and UT.,) and three hypothetical states to determine the taxes which would be due and payable for the reservoir and transmission systems and for the energy-consuming business for four different categories of geothermal energy utilization. For four of the twelve states studied (OR., SD., WA., and WY.), the tax provisions and the administrative practices were cited but detailed life cycle cost analyses were not undertaken. The business enterprise categories included in the study were a greenhouse, apartment complex, food processing plant and a small scale energy plant. While the enterprises are not specific examples, they are predicated on real business enterprises.

Taxes by level of government were computed year by year for a 30-year life cycle in the eight states and three hypothetical states examined in detail. Rules and regulations as well as statutory provisions regarding accelerated depreciation, tax credits, preference taxes, depletion and deductibility of costs and taxes were introduced in the computer simulations. The system for Economic Evaluation under Risk (SEER) computer program of Science Applications, Inc. was utilized for evaluations of revenue requirements, profitability measures, and taxes.

All four geothermal/business enterprises reflected similar patterns of profitability and tax consequences. In the report, the 30-year life cycle is telescoped into life cycle averages. Each geothermal enterprise

has a reservoir and transmission system supplying energy to the business operation. In the first stage analysis the life cycle simulations of the reservoir and the transmission systems are calculated separately from the energy consuming enterprises. The norm for reservoir and transmission systems was a rate-of-return of 30% on equity investment and a 12% rate-of-return on indebtedness. The second stage of the analysis was the integration of the reservoir and transmission system with the business operation. At this stage, the rate-of-return for the total integrated enterprise was assumed to be 16% for the equity investment and 12% on indebtedness.

The SEER computer simulations provided three measures of profitability for the reservoir and transmission systems and for the business enterprises. These measures of profitability are discounted cash flow rate of return, the payback period and the net present value after a target rate of return of 16% (or 30% for reservoir and transmission) on equity is achieved. The profit patterns of the four enterprises were similarly affected by the imposition of state and local taxes. That is to say, that the states and local taxes depressed profitability and lengthened the payback periods. This phenomenon is reflected in the state by state comparisons. The State of Nevada served as a good reference point since it was the lowest tax state and had a consistently high profitability and short payback period. For example, the food processing enterprise in Nevada had a payback period which was 5.5 years less than the highest tax state, a discounted cash flow rate of return, which was 5 percentage points higher, and a net percent value, after a 16% rate of return, which was $3.7 million higher compared to the highest tax state.

The effect of taxes is shown graphically in the figures of net present value versus average annual state and local taxes. By way of illustration,

the food processing enterprise showed the relationship between taxes and profitability for the eight states studied. The figure shows that a change of $430,000 in net present value after a 16% rate of return was realized for each change of $100,000 in annual state and local taxes.

In the case of the reservoir and transmission system alone, the food processing simulation showed a similar pattern. The payback period varied from 4.8 years in Colorado to 2.4 years in Nevada, and the discounted cash flow rate of return rose from 21% in Colorado to 34.5% in Nevada on the same enterprise. The annual state and local tax was $83,000 in Nevada, $718,000 in Arizona, and $670,000 in Colorado from the reservoir and transmission system portion of the food processing operation. Property and income taxes were almost entirely responsible for the differences.

The property tax is a particularly important factor as an impact on profitability because the property tax is imposed from the initial year of investment unless there are exemptions. State income taxes are not as great a factor as a rule, because of the delay in tax liability over time associated with accelerated depreciation, depletion, and investment tax credit. Furthermore, new enterprises are generally not very profitable during the first several years of the life cycle.

The amounts of state and local taxes expressed in dollars per million BTUs of geothermal energy were calculated for the four business enterprises for three hypothetical tax states. For the small scale energy system, system, the state and local taxes varied from $0.02 in a low tax state to $1.50 in a high tax state. The economic benefits from the accelerated growth of geothermal/business enterprise were estimated for three growth scenarios. All of the measures such as gross revenues, employment and energy-saved indicate a marked socio-economic gain from utilizing

incentives to induce growth in geothermal energy. It should be pointed out that geothermal energy production is capital intensive. Consequently, the taxes collected will be sizable as compared with the socio-economic costs which are population-related, such as education, police and fire protection, general government, etc. In this sense, capital intensive enterprises are a positive factor in the local community.

Findings

The state by state comparisons reveal a wide difference in total tax bills for the geothermal reservoir and transmission systems as well as the related energy consuming business enterprises. The differences are not traced to energy taxes, such as severance taxes, since these are seldom imposed upon geothermal activity. The basic reason for the wide differences are the state income tax rates and provisions and the property tax imposition. Sales taxes were not a sizable factor unless the energy output was subject to a yearly tax as in the case of the small scale energy systems.

State and local taxes had a significant effect on net present value, payback periods, and discounted cash flows. While the economics of decision-making were not specifically addressed, the differences in taxes appear large enough to be a factor in decisions to go forward with a capital investment or to decide against it. Where there is flexibility in the location of an operation, the differences among the states in the taxes levied would appear high enough to be a factor in the locational decision.

Recent Federal tax changes, which have been adopted almost in their entirety by the states, has mitigated the impact of the state income tax. Depletion allowances, expensing of intangible drilling costs and accelerated depreciation have reduced the impact of the state income taxes. A feature

not adopted by the states has been an investment tax credit for geothermal energy production of usage. Tax credits which are being extended to other alternative energy sources should be extended to geothermal energy.

Property taxes are burdensome on geothermal energy because of the capital intensity of such economic developments. There has not been a great deal of attention given to geothermal energy insofar as property taxation is concerned.

The Nevada exemption of intangible drilling investments deserves attention and action by other states. And while taxation of the resource in situ has not been an issue in most of the states, it could very well become an issue. There does not appear to be an exemption of geothermal resources in situ under the property tax statutes or state constitutions of the western states studied. Water rights were found to be taxable in the twelve western states included in this study. Exceptions were both Utah and Idaho, which exempt water rights when used for irrigation purposes.

Recommendations

In order to accelerate geothermal and related using enterprise developments, the following tax policy should be considered:

1. Investment tax credit should be allowed by the states for geothermal energy production and delivery systems. Tax credits should be applicable to the operation without any time restriction.

2. Exploration costs should be made deductible as an expense as are development costs.

3. Sales taxes should not be applied to geothermal developments either as an initial tax on tangible investments nor on the productive output on a yearly basis.

4. Severances taxes should not be applied to geothermal extraction.

5. Property taxes should be reduced by exemption of intangible drilling investments in the reservoir development as is now done in Nevada. In states where property is classified for taxation, alternative energy sources such as geothermal should be classified at a low percent of full value for property tax assessments. In order to accelerate alternative energy development, the states should consider an exemption such as the five-year exemption of property taxes allowed in North Dakota for certain job-creating businesses. The present methods of assessing and taxing geothermal energy should be examined to ascertain whether a capitalization of income approach would be more realistic or whether or not more rapid depreciation schedules should be used.

The thrust of the recommendations is to foster tax policies to accelerate geothermal development. At a minimum, the incentives adopted for solar energy should be extended by the states to geothermal energy. It is recognized that state and local tax systems have been created over the years within a statutory and constitutional framework. In order to accelerate alternative energy development, there may be required some alteration of traditional tax structures. It is hoped that this study will provide an improved guideline as to what the necessary changes should be.