

Benefit/Cost Analysis of Onshore Leasing of State-Owned Minerals
Associated with Oil and Gas in Mississippi,
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Benefit/cost analysis is the primary tool for the economic evaluation of public programs in natural resource management, such as flood control, hydropower, harbor improvements, and energy supply projects. It is an integral part of an Environmental Impact Analysis process, meant to evaluate the impacts of public and private developments on environmental resources.

The Basic Framework

As the name implies, a benefit/cost analysis involves measuring, adding up, and comparing all the benefits and all the costs of a particular public project or program. There are essentially four steps in a benefit/cost analysis:

1. Specify clearly the project or program.
2. Describe quantitatively the inputs and outputs of the program.
3. Estimate the social costs and benefits of these inputs and outputs.
4. Compare these benefits and costs.

Each of these steps incorporates a number of component steps. In doing a benefit/cost analysis, the very first step is to decide on the perspective from which the study is to be done. Once the perspective has been determined, complete specification of the main elements of the project (location, timing, groups involved, connections with other constituencies, etc.) must be included.

When the basic project or program has been specified, the next step is to determine the relevant flows of inputs and outputs. It is in this step that we have to recognize the importance of time. Environmentally related projects or programs don't usually last for a single year, but are spread out over long periods of time. So the job of specifying inputs and outputs involves predictions of future events, often quite remote in time. This puts a premium on having a good understanding of things like future growth patterns and future rates of technological change and possible changes in consumers' preferences.

The next step is to put values on input and output flows; that is, to measure costs and benefits. This can be done in any units we wish, but normally we try to measure benefits

and costs in monetary terms. This does not mean in market value terms, because in many cases we will be dealing with effects, especially on the cost side, that are not directly registered on markets. Nor does it imply that only monetary values count in some fundamental manner. It means that we need a single metric into which we can try to translate all of the impacts of a project or program, in order to make them comparable among themselves as well as with other types of public activities. Ultimately, certain environmental impacts of a project may be irreducible to monetary terms because we cannot find a way of measuring how much people value these impacts. In this case we must supplement the monetary results of the benefit/cost analysis with estimates of these intangible impacts.

Finally, the benefits are compared to costs. Benefits and costs can be compared in several ways. One way is to subtract the total costs from the total benefits to get “net benefits.” Another method is the benefit/cost ratio, found by taking the ratio of benefits to costs. This method shows the benefits the project will produce for each dollar of costs.

The Basic Scenario

The State of Mississippi is rewriting and refining regulations allowing leasing for oil and gas exploration of onshore areas of state owned lands administered by the Mississippi Development Authority. During the time from FY 1991 through FY 03 the State issued 20 leases with the total bonuses equaling \$292,770. That equals an average of 1.66 leases issued per year and an average lease bonus of \$14,638.53. The lease bonuses ranged from \$750 to \$73,600.00. In addition to the lease bonus income, the bonus is the price paid to obtain the lease, there is also royalty income derived from state leases upon which oil and/or gas production is established. Using FY 04 as an example the state received \$15,300.00 for the year. This income is then divided into three funds. The educational trust fund receives 97 1/2%, wildlife restoration and oil spill contingency get 1% each, and MDA receives 1/2%. The state also receives revenues from some federal leases including federal sharing in the offshore leases within three miles of the state/ federal boundary. In state FY 04 the federal income was \$473,686. These funds again are separated into the three funds and at the percentages set out above.

Benefits of leasing state minerals

The state has determined to use this income to primarily benefit education along with some safe guards for the environment and a small administration fee. From the historical perspective the state can expect to issue 1 or 2 onshore leases per year. The bonus will range widely depending on the number of acres involved and industry activity in the area of the lease. Using the figures cited above in an average year the state will receive approximately \$14,000.00 to \$15,000.00 per year in lease bonuses and \$15,000.00 annually in royalty income. These figures can decrease if exploration activity falls off and new production is not added. Likewise, these figures could rise substantially with increased leasing or a good discovery where the state owned a meaningful number of acres.

Thus, benefits accruing to the state for a typical year would equal an estimated 0.5 jobs and \$14,672 in labor income, annually. These jobs and income will also generate an estimated \$900 in general fund revenue, annually.–

Costs

There is no evidence that leasing of state-owned minerals for oil and gas in Mississippi has produced any costs associated with environmental damage.

Benefit/Cost Comparison

The benefits associated with seismic surveying as described above are estimated to be:

0.5 Jobs
\$14,672 in Labor income, and
\$900 in general fund revenue.

The costs associated with leasing as described above are estimated to be:

Oil and Gas exploration companies will pay lease bonuses and royalties from successful wells into the state mineral lease program. Assuming that the level of activity remains similar to past years the program can be administered for a cost of approximately \$ 5,000, annually.

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