

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILES 8672
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The base for calculating a state's share of timber receipts, the largest portion of national forest receipts, was gross receipts less deductions for reforestation fees and the costs of access roads constructed by timber purchasers. In 1976, Congress amended the National Forest Revenue Act to base the state's share on the gross sales value alone, thus increasing the amount states receive by 25 percent of the road and reforestation costs.²¹

Mineral Leasing Act of 1920. When the withdrawal of the national forest system from the public domain was largely complete, the focus of the conservation movement extended to mineral-bearing public lands, especially those containing coal and oil. Again, largely eastern conservation interests supported withdrawing these lands from entry and disposal, and extractive industries and other development interests in western states opposed them.

The Mineral Leasing Act of 1920²² was a compromise between these interests. While the law provided that mineral-bearing public domain lands would remain in federal ownership, private interests could lease development rights to these lands. The states containing leased federal mineral lands would receive a share of the mineral lease receipts, including bonus payments, rents, and royalties on production. That is, the Mineral Leasing Act, like the National Forest Revenue Act, shared the value of the federal proprietary interest with the states.²³

The public debate about mineral resource revenue sharing, like that for national forest revenues, was phrased in terms of compensation for state property tax revenue losses. As put by Representative Mondell in 1919:

. . . There should be no difference of opinion as to the rights of the States and their communities to be compensated for the great losses in taxing value which they will suffer by reason of holding perpetually in Federal ownership untaxed very great areas of land that will in time support large populations and require great outlay for the support of the institution of government. The only question that ever ought to be raised in this connection is as to what portion of the rents and royalties that will be received by the Government are necessary to compensate the States and their communities for their loss in taxing value.²⁴

However, the sharing of the proprietary values of public lands is compensation to the states as well for the continued imposition of federal ownership and management of lands affecting the state and local governments and their constituents. Indeed, it is no accident that federal legislation sharing resource receipts from public lands coincide with federal initiatives to retain valuable resources in federal ownership and control.

When enacted, the Mineral Leasing Act of 1920 provided that states would receive 37-1/2 percent of lease revenues from leased lands within their boundaries. This figure was arbitrary in that it was not based on any empirical evidence of the amount of local tax losses. Rather, it was a compromise between the 30 percent share of lease revenues in the House version and 45 percent share in the Senate bill. Both versions started with the 25 percent share states receive under the National Forest Revenue Act, increasing it to account for the additional benefits the states received from federal funds appropriated for building national forest roads.²⁵

Of the remaining lease revenues, the act provided that 52-1/2 percent be deposited in the Reclamation Fund for irrigation development in certain western states, a similar compromise between 60 percent and 45 percent proposed in the bills as introduced in the House and Senate, respectively. Although Congress continued in this act to restrict the use of shared resource revenues to roads and schools, states did not have to distribute the funds to county governments containing the leased lands, a departure from provisions in the National Forest Revenue Act.

Congress did not extend the provisions of the Mineral Leasing Act of 1920 to public domain lands in the Alaska Territory until 1947.²⁶ In 1957, however, the act was amended to provide that Alaska, still a territory, receive an additional 52-1/2 percent of mineral lease revenues, for a total share of 90 percent. The initial purpose stated for giving Alaska a larger share was to equalize its treatment with respect to other western states that received additional benefits from the Reclamation Fund, which Congress declined to extend to Alaska. Instead, Congress gave the funds directly to the territorial government to encourage it to accept more responsibility for conducting internal improvements and programs.²⁷ The legislature was permitted to use the additional 52-1/2 percent share of mineral lease receipts as the legislature directed, although the standard 37-1/2 percent still had to be used to support public schools and roads.

In 1975, Congress amended the Mineral Leasing Act to increase the share of lease revenues that all states (except Alaska) receive from 37-1/2 percent to 50 percent.²⁸ In addition to schools and roads, permissible uses of the additional 12-1/2 percent included planning, building and maintaining public utilities, and providing public services. In spending the additional shared resource revenues, Congress required states to give priority to localities experiencing social or economic impacts from development of leased lands.

A year later, Congress dropped the use restrictions for all shared receipts under the Mineral Leasing Act of 1920.²⁹ States are now required only to give priority in spending these funds to areas affected by the development of minerals leased under the act.

The Mineral Leasing Act of 1920 does not apply to all federal mineral bearing lands, but only to public domain lands, including any in the national forests. It does not apply to acquired lands or to national parks and monuments; naval petroleum and oil shale reserves; or federal lands within incorporated cities, towns, and villages.

Federal Water Power Act. The Federal Water Power Act³⁰ was enacted in 1920 to provide for orderly development of the nation's waterways, both for hydroelectric power and for navigation. It was the outcome of a decade of controversy over the use and development of waterways which, prior to this law's enactment, were undertaken in an uncoordinated and chaotic manner.³¹ There was also some concern that a few large corporations might gain control of hydroelectric power development.

The Federal Water Power Act authorized the Federal Power Commission to issue licenses for navigational improvements and hydroelectric power generation and transmission on public lands and in national forests. It also provides that states in which the development is located receive 37-1/2 percent of the license receipts after certain administrative costs are deducted. The rationale for this provision is not explained in the legislative reports on it, but it is consistent with the resource revenue sharing provisions of the Mineral Leasing Act, passed in the same year, except that no restrictions were placed on use of the funds.

Taylor Grazing Act. The public lands of the western states were historically considered free and open. This notion received judicial sanction in 1896 by the U.S. Supreme Court, which said that the right to graze cattle on the public lands resulted from "implied license, growing out of custom of nearly a hundred years."³² The Court at that time indicated, however, that legislation closing these lands would, in effect, revoke this implied right. Passage of legislation to protect the arid public grasslands of the western states proved a difficult task; the federal government did not attempt to exercise widespread control over grazing on the public domain until Congress passed the Taylor Grazing Act in 1934.³³

The Taylor Grazing Act authorized the Secretary of the Interior to establish grazing districts on the public domain and to charge a reasonable fee for the use of forage. It also authorized the Secretary to lease isolated and disconnected tracts outside grazing districts. Half of the grazing fee receipts from both types of land were to be distributed to the states to use for the benefit of the counties containing the land, subject to Congressional appropriation.³⁴ The exception to this rule was that 25 percent of fees collected from grazing districts on Indian lands that had been ceded to the United States was to be shared with the states. These funds had to be used for public schools and roads in the counties in which these lands were situated.

The basis for the 50 percent figure is not entirely explained in the record. A predecessor to the Taylor Act contained a provision for distributing 25 percent of grazing fee receipts to the states, based on the national forest precedent. No explanation for the added 25 percent is given, other than assertions that 25 percent was not enough.³⁵

Major changes in the Taylor Act resource revenue sharing provisions were made in 1947.³⁶ Grazing fees were divided into two components: a range improvement fee and a grazing fee proper, the latter of which only was to be shared with the states. In addition, the percentage shared from grazing districts and districts on ceded Indian lands was changed. States now receive 12-1/2 percent of fees from grazing districts (down from 50 percent) and 33-1/3 percent from fees from districts on ceded Indian lands (up from 25 percent). No change was made in the percentage of fees shared from land outside the districts; states continue to receive 50 percent.

The 1947 amendments were intended to bring into the federal treasury sufficient funds to pay for the costs of range administration, which were not met under the original system of distributing the grazing receipts. Peffer indicates that the changes were made as a tradeoff against increased grazing fees.³⁷ Congress provided that the states give up a portion of the funds so that ranchers would not pay higher fees for forage on public domain lands.

The Taylor Grazing Act applies to the unreserved and unappropriated public domain; therefore, it does not apply to national forests, national parks and monuments, Indian reservations, and certain other lands, including all acquired lands. The resource revenue sharing provisions apply only to grazing fee receipts; other sources of revenue from these lands may not be subject to sharing provisions at all, such as special-use permit fees, or may be shared under different laws, such as mineral lease bonuses, rents, and royalties.³⁸

The Taylor Grazing Act never applied to the public domain in Alaska. Seven years before it was passed, Congress enacted the Alaska Grazing Act,³⁹ which established grazing districts and fees and which provides for Alaska to receive that portion of grazing fees that exceeds the cost of administration. It is doubtful that Alaska ever received any payments from grazing lands; if it did, the state would be required to use the funds for public education and roads.

National Petroleum Reserve in Alaska. The Naval Petroleum Reserves Production Act of 1976 redesignated the Naval Petroleum Reserve Numbered 4, Alaska, as the "National Petroleum Reserve in Alaska," transferring its administration to the Interior

Department.⁴⁰ This act contained a provision authorizing the Secretary of the Interior to assist local governments in meeting the costs of increased municipal services and facilities if the Secretary determined that communities located on or near the reserve experienced substantial increases in the need for municipal services as a direct result of mineral exploration on the reserve and if the communities would be unfairly and excessively burdened in meeting those needs.⁴¹

Congress replaced this provision four years later in an appropriations act for the Department of the Interior.⁴² Currently, Alaska receives 50 percent of all receipts from oil and gas lease sales, rentals, bonuses, and royalties on the National Petroleum Reserve in Alaska (NPR-A). The state may use these funds for planning; for building, maintaining, and operating essential public facilities; and for other necessary public services, giving priority to those areas most affected by the oil and gas development activities on NPR-A.⁴³ The statute does not require the state to distribute any NPR-A funds to local governments.

Resource Revenues from Federal Acquired Lands

In 1941, the U.S. Attorney General issued an opinion that the Mineral Leasing Act of 1920 did not apply to all federal lands, but only to the public domain. Congress had granted authority for federal agencies to lease mineral rights on certain acquired lands even before passage of the Mineral Leasing Act of 1920, including authority for the Forest Service to lease national forest lands acquired under the 1911 Weeks Act. In 1946, the Truman administration transferred mineral leasing programs on national forest lands to the Secretary of the Interior, who moved to consolidate the authority for granting leases on acquired lands under one law, with specific exceptions.⁴⁴

Mineral Leasing Act for Acquired Lands. The 1947 acquired lands leasing law provides that all receipts from mineral leases on acquired lands be distributed in the same manner as prescribed for other receipts from the same lands.⁴⁵ Twenty-five percent of mineral lease revenues on acquired national forest lands, for example, are shared with states containing the lands that generate the funds and are subject to the same use restrictions as other forest-generated resource revenues. (Mineral lease revenues on public domain national forest lands, on the other hand, are governed by the Mineral Leasing Act of 1920.) The Congressional reports on this legislation do not explain the rationale for the revenue-sharing provision; presumably it derives from an attempt not to upset the political compromise achieved with the previous laws. The Mineral Leasing Act for Acquired Lands does not apply to lands acquired for national parks and monuments, which are not intended to be revenue-producing, nor to acquired tidelands and submerged lands.⁴⁶

Bankhead-Jones Farm Tenant Act. In 1937, during the Great Depression, Congress authorized the purchase of what were termed submarginal agricultural lands. These lands, located primarily in western states, produced good crops in years with unusually high rainfall, but no crops in even a slight drought. Congress hoped that federal management of these lands would correct maladjustments in land use and control soil erosion as well as aid the families that could not make a reasonable living on them.⁴⁷ These lands eventually became the National Grasslands, part of the National Forest System. Some 2.3 million acres were acquired under the Bankhead-Jones Act, constituting the largest category of acquired lands.⁴⁸

Counties containing Bankhead-Jones lands receive 25 percent of net resource revenues the federal government receives from them and must use the funds to support schools or roads.⁴⁹ The shared revenues include grazing fees and mineral leases, for example, but do not include any receipts from sale of these lands, for which states receive the portion specified in their statehood acts. The 1937 Bankhead-Jones Act succeeded legislation enacted in 1933 to accomplish the same purpose but which did not include provisions to share resource revenues with state and local governments. Congress used the National Forest Revenue Act as a model, with the difference that the compensating payments are made directly to counties, not to states.⁵⁰ Since Bankhead-Jones program focused on resource-poor, marginal lands, the total property values available to share with local governments have been small.

Army Corps of Engineers Flood Control Lands. In 1941, Congress authorized the acquisition of lands for a number of river and flood control projects, to be managed by the Army Corps of Engineers.⁵¹ The statute also authorized payments to states of 25 percent of the revenues from leases of the land acquired for flood control purposes. States must spend the payments on schools and roads in the counties containing the leased lands and for other county government expenses. In 1946, Congress decided that the 25 percent share did not adequately compensate communities for taxes lost through federal land acquisition, and increased the states' share threefold, to 75 percent.⁵²

Administering Resource Revenue Sharing

Some programs specify that administrative costs are subtracted from gross revenues before the sharing percentage is applied. Statutes that explicitly provide for basing state or local payments on net receipts include the Bankhead-Jones Act, the Migratory Bird Conservation Act, the Alaska Grazing Act, the Geothermal Steam Act, and the Federal Water Power Act. Administrative or other costs may be deducted from other receipts even if the statute is silent on the subject. The Forest Service, for example, deducted reforestation

and access road costs from gross receipts before calculating the state share under the National Forest Revenue Act until 1976, when Congress prohibited this practice.

Administrative costs are not deducted from gross receipts in sharing revenues from mineral leases on federal lands. The 1980 legislation creating the Windfall Profit Tax on Crude Oil, however, specifies that the tax is subtracted from federal royalty payments before states' shares are calculated. This significantly reduces the state share of revenues from federal oil leases. In Alaska, the Windfall Profit Tax deduction affects the state share of royalties from the Swanson River and Beaver Creek oil fields on the Kenai Peninsula.

Congress has recently moved to eliminate restrictions on the use of shared resource revenues; however, almost all of the statutes contained such restrictions at one time. During the early days of the new nation and in settling the western states, it made sense to foster construction of schools and roads for the expanding population. Restricted use predominated until 1981, after the use restrictions were removed for payments under the Mineral Leasing Act of 1920.

Alaska has occasionally been singled out for special treatment under these laws. Probably the most significant example is its 90 percent share of mineral lease revenues on most public domain lands. In this case, the state government has received a larger portion of lease receipts than that received by other states because it does not benefit from certain federal programs that are financed, in part, by federal mineral lease revenues. The state receives 50 percent of oil and gas lease receipts on the National Petroleum Reserve Alaska, the same share in this case as other states receive from oil and gas revenues under the Mineral Leasing Act of 1920.

Problems with Resource Revenue Sharing

Public lands that do not produce resource development revenues or user fees do not provide states and localities with any revenues. Lands may generate little or no receipts for several reasons. They may merely be resource-poor lands, for instance, or they may produce little revenue due to federal management policies or economic conditions. For whatever reason they exist, the differences in the levels of resource receipts shared with state and local governments have given rise to numerous complaints.

The fact that certain lands produce little or no revenues does not necessarily indicate that their presence imposes few burdens on localities. Certain public lands--national parks and wilderness areas, for example--are prohibited by law from supporting most revenue-generating activities. These areas may attract many visitors to an area, generating revenues primarily for the state,

not local, governments through income and sales taxes. It is the local government, however, that must provide for law enforcement, road maintenance, hospitals, and other services related directly and indirectly to the activities on these lands.

In general, it is likely that the total of payments made to local governments under resource revenue sharing provisions seldom equals either (1) the level of property tax revenues they would collect were the lands privately owned, or (2) the level of expenditures they make to support the activities on both federal and private lands which have been generated by federal land management.

Another problem for local governments lies in the ad hoc nature of the revenue sharing laws that have been enacted since 1906. The share allocated to states and localities varies widely, from 5 to 90 percent, based on whatever was the necessary political compromise of the day. As a result, the same type of activity may provide very different levels of state and local receipts on adjacent lands. Mineral leasing on public domain and acquired lands in national forests is a case in point; in the former circumstance, the state/local share is generally 50 percent while in the latter, it is one-half as much.

Several additional problems with resource revenue sharing statutes exist. One problem is that state and local governments have been unable to budget these funds with any degree of certainty. Management decisions over which they have no control may quite suddenly reduce or eliminate revenue-generating activities, or economic conditions may cause resource revenues to vary inversely with revenue needs. Statutory restrictions on the use of shared revenues may pose problems in some cases, while insufficient requirements for distributing the shared funds to localities affected by federal land management may cause hardship in others.

Finally, resource revenue sharing suffers from an inherent defect as a mechanism of obtaining local support for federal conservation or preservation efforts. Tying payments to revenue generation almost requires local governments to oppose major federal land purchases for national parks, wildlife refuges, and wilderness areas due to the inevitable fiscal pressures of a diminished property tax base.

Payments in Lieu of Taxes for Public Lands

Payments in lieu of taxes (PILOT) and resource revenue sharing payments constitute different approaches to solving the same problem, that of obtaining local support for national land and resource management objectives. The general approach of PILOT programs is to reimburse local governments for the amount of tax revenues foregone due to the presence of tax-exempt federal property. This ideal is approximated with varying success in

practice, however. Many specific PILOT programs apply to lands originally subject to taxation which were subsequently purchased by the federal government for conservation or preservation uses, causing measurable tax losses.

Historical Precedents for Payments in Lieu of Taxes

Until recently, PILOT laws have all applied to comparatively limited acreage, usually in connection with a specific federal development project. These payments are usually made directly to affected local governments, not to states, and are less often restricted to specified uses than resource revenue sharing payments. Some PILOT provisions, in fact, began as revenue sharing measures that were changed to provide more revenues for local governments. Some combine elements of both types of payments. This section describes the payments in lieu of taxes on public lands enacted since 1916, eight years after the first revenue sharing program was instituted.

Oregon and California Railroad and Coos Bay Wagon Road Grant Lands. The first payment in lieu of tax statutes applied to two transportation system land grants of heavily-timbered lands in western Oregon. The federal government repossessed the Oregon and California Railroad (O&C) and Coos Bay Wagon Road (CBWR) Grant Lands in 1916 and 1919, respectively, when the private grantees failed to follow the grant stipulations. Since portions of these lands had yielded local property tax revenues, the federal government agreed to reimburse the counties containing them for the tax losses. Congress required, however, that these payments must come from revenues actually generated by these lands.

The original intention was to sell the repossessed O&C lands to private parties, with a portion of the proceeds distributed to the counties and states. The sales proceeded slowly, however, and in 1926 Congress adopted a scheme for annual payments in lieu of taxes, appropriating a lump sum to pay back taxes to the counties.⁵³ The counties received very little under the PILOT provision, however, due to a 1928 decision of the Comptroller General that these payments also had to come from proceeds from sale of the lands. As a result, Congress occasionally had to appropriate funds to make the payments in lieu of taxes. This led Congress in 1937 to replace the PILOT program with a resource revenue sharing one, giving the counties 50 percent of all receipts realized from the O&C lands.⁵⁴ Under the 1937 amendment, timber sales on the lands replaced sales of the lands themselves as the main source of the shared receipts. Clawson and Held report that Congress favored the change from payments in lieu of taxes to sharing of receipts because it was expected to yield less revenue for the counties.⁵⁵ No use restrictions exist for these payments.

The Coos Bay Wagon Road lands have a different history. Congress originally adopted revenue sharing as the manner of making payments to the counties for the repossessed lands, but changed this to a payment in lieu of taxes in 1939.⁵⁶ Under the PILOT scheme, the counties receive payments computed "by applying the same rates of taxation as are applied to privately owned property of similar character in such counties" to the assessed value of the land and the timber upon it.⁵⁷ An upper limit is placed upon these payments; they may not exceed 75 percent of the receipts generated by these lands. The law provides for periodic reappraisals of the property so that the federal payments reflect trends in the value of, and taxes paid on, similar private holdings.⁵⁸

Boulder Canyon Project. The 1928 Boulder Canyon Project Act authorized construction of the Hoover Dam and other related works on the Colorado River. This project provides another case, like the Coos Bay Wagon Road lands, of a revenue sharing measure being changed to a payment in lieu of taxes. The legislation originally provided that Arizona and Nevada each receive 18.75 percent of "excess revenues" from the project for a total distributed share equal to 37.5 percent.⁵⁹ The 37.5 percent figure is the same as in the Federal Water Power Act of 1920, and was intended to compensate the states for the revenues they would have collected had the dam and related works been privately built and operated.⁶⁰

The "excess revenues" this percentage applied to were those receipts from charges to power purchasers over and above the amortization payments for the dam. In 1929, however, the U.S. Attorney General ruled that the project was not required to produce excess revenues. Taking this ruling into account and the possibility of downward adjustments in power rates, the states agreed to accept annual flat sum payments. Congress amended the payment schedule in 1940 to a flat sum of \$300,000 (net of any taxes collected from the project by either state or its political subdivisions), paid to each of these states annually until 1987.⁶¹ The statute identifies these payments as "contractual obligations of the United States, requiring that the rates charged for power be high enough to ensure the \$300,000 annual payment to each state."⁶² There are no restrictions on the use of these funds.

Tennessee Valley Authority. The 1933 legislation establishing the Tennessee Valley Authority (TVA) included a revenue sharing provision granting 5 percent of gross proceeds from the sale of power (excluding that used by federal agencies) to the states in which TVA hydroelectric plants were situated.⁶³ At the time, the statute applied only to Alabama and Tennessee. In the late 1930s, however, TVA acquired a number of private rural utility companies with which it competed.⁶⁴ Counties in the vicinity had derived a substantial portion of their revenues from property taxes on these utilities. Without this income, they faced the prospect of

defaulting on bonds and the inability to operate county schools. The constitution for the state of Tennessee did not permit the state to distribute its TVA shared revenue payments to affected counties.

In 1940, Congress adopted a new system for calculating and distributing tax-loss compensatory payments. This system includes two sets of payments and is somewhat complicated. First, TVA pays the counties a sum equal to the two-year average of property taxes last levied on the utilities before TVA purchased them. These payments are subtracted from a second payment made to the states, which is based on two factors. The first factor is the proportion of the value of all TVA property that is located in each state; the second factor is the proportion of gross proceeds from all TVA power sales that are made in each state, excluding sales to the federal government. The statute sets a maximum limit of 5 percent of gross proceeds on total payments to both states and counties. It also sets a minimum payment of \$10,000 annually to each state, including payments to its counties.⁶⁵

Columbia River Basin Project. The 1935 Columbia River Basin Project is a multipurpose water development project in Washington State.⁶⁶ In developing the project, the Department of the Interior temporarily acquired large tracts of privately owned land to reduce speculation. Until the lands were resold to settlers, Congress authorized the Secretary of the Interior to enter into agreements for payments in lieu of taxes with the state and local governments containing the acquired lands. The statute requires that these payments be made from funds derived from leasing of these lands prior to their sale, and the payments may not exceed the amount of taxes that would be paid if the lands continued to be privately held.⁶⁷

The 1944 Rivers and Harbors Act. In 1944, Congress authorized the Secretary of Agriculture to undertake eleven watershed improvement projects scattered across the country.⁶⁸ The Secretary had authority to acquire lands as needed to carry out these projects and to make annual payments in lieu of taxes to the relevant county. Although the statute remained in force for many years, the Department of Agriculture never acquired any lands for these projects or made any payments under this statute.

The PILOT provision spelled out in the law was fairly standard. It set the payment level at 1 percent of the purchase price of the lands acquired, or 1 percent of their value if they were not purchased. The Department of Agriculture could not make acquisitions without state consent. No use restrictions were imposed in the statute.

Migratory Bird Conservation Act. In 1935, counties containing federal wildlife refuges began receiving 25 percent of net revenues generated from the sale of animals, minerals, and other materials

from refuge lands and from leases for public accommodations, concessions, or facilities on them.⁶⁹ The statute required counties to use the revenues for public schools and roads.

This system of sharing receipts proved detrimental to the federal wildlife conservation program, however. Differences in federal management of individual wildlife refuges as well as differing revenue potential led to great disparities in the level of shared local revenues. Counties containing lands that the Department of the Interior wanted to acquire for refuges frequently resisted acquisition since there was no guarantee that they would receive any shared revenues to compensate for losing a portion of their tax base. This resistance effectively blocked fulfilling the purpose of the wildlife conservation program because state permission was required before land could be acquired, and states were often unwilling to go against the counties' wishes.

In 1964, Congress amended the law to address the fiscal inequities and impediments to acquisition.⁷⁰ There was no change in treatment of revenues from public domain lands in wildlife refuges, but the amendments contained new provisions for acquired lands that combined the payment in lieu of tax approach with the revenue sharing approach. Each year, counties containing these lands received the greater of 25 percent of net revenues, or .75 percent of the value of the lands, excluding the value of improvements made after federal acquisition.⁷¹ The basis for determining payment levels under the second method, the value of the lands acquired, was to be adjusted every five years. Congress imposed an upper limit on payments to counties, stipulating that total payments for a year could not exceed net receipts.

In 1978, Congress amended the law again in several significant ways. First, it added a third method for calculating payments for acquired lands. Counties now receive the larger of (1) 75¢ per acre, (2) .75 percent of fair market value, or (3) 25 percent of net revenues. Second, Congress removed the upper limit for total annual payments. If net receipts from refuges are not sufficient to cover the payments to counties, Congress may appropriate the difference.⁷² Third, the 1978 amendments eliminated the requirement that counties use these payments for schools and roads. Counties must, however, distribute the payments to other units of local government which have incurred property tax losses due to the existence of a refuge.

The Boundary Waters Canoe Area. In 1948, Congress authorized the Secretary of Agriculture to make payments in lieu of taxes in order to expedite acquisition of lands for the Boundary Waters Canoe area, a wilderness area designated in the Superior National Forest in Minnesota.⁷³ The justification for this special treatment was that the state would receive little or no revenues from wilderness management under the provisions of the National Forest Revenue Act.

Because some of the lands for the new unit were to be acquired from private owners, local governments would be likely to sustain a real tax loss.⁷⁴

The State of Minnesota receives the PILOT and must distribute the funds to the three counties containing the Boundary Waters Canoe Area lands. The payment is calculated as three-fourths of one percent of the appraised value of the lands. The land must be reappraised every ten years. The statute places no restrictions on the use of these funds.⁷⁵

Grand Teton National Park. In the 1920s, John D. Rockefeller, Jr., bought 33,000 acres in Teton County with the intent of donating the land to the federal government for a public park. The county objected strongly to this plan since 95 percent of the land in the county was already federally owned, and local property taxes were double the state average. The county insisted that the creation of a tax-exempt park would burden it unfairly.⁷⁶

The Rockefeller family finally conveyed the lands to the federal government in 1949, and Congress included a PILOT provision in the legislation creating the park in the following year.⁷⁷ For the first ten years, the state of Wyoming would receive an amount equal to the taxes last assessed on the donated land and any improvements on it. For the next ten years, the PILOT would decline by 5 percent each year, and payments would stop after twenty years. Congress stipulated that the state pass these payments directly to the county but placed no use restrictions on them. The PILOT could not exceed 25 percent of visitor fees collected from both the Teton park and from Yellowstone National Park.

St. Lawrence Seaway Act. In the 1954 St. Lawrence Seaway Act, Congress established the St. Lawrence Seaway Development Corporation, authorizing it to enter into agreements with Canada for joint construction, operation, and maintenance of the St. Lawrence Seaway and Power Project.⁷⁸ The development corporation could acquire land for the project and to make payments in lieu of taxes to state and local governments with respect to lands that had been subject to taxation prior to their acquisition.⁷⁹

The statute gives the corporation discretion to decide the amount and terms of the PILOT, merely directing it to limit payments to the taxes that would be paid on the property were it privately owned. The corporation also has the authority to make larger payments when its actions impose special burdens upon the state or local government. The legislative history does not explain why this PILOT provision is so loosely structured. The Congressional committee report on the legislation simply states that it follows current policy for making payments in lieu of taxes on federally acquired property previously subject to taxation.⁸⁰

Trinity River Basin Project. Congress authorized construction of the Trinity River Basin Project in 1955 for the purposes of irrigation, power generation, and flood control. The statute contained a PILOT provision applicable to lands acquired for the project and also provided for impact-type payments for road maintenance and repair during the construction phase. Construction appropriations and gross revenues of the project once it was operating would provide the source of funds for payments equal to the taxes previously contributed by the acquired property to Trinity County.⁸¹

The committee report justifies PILOT provisions for this type of project because the federal government already owned 70 percent of lands in the county, and removing additional property from the tax base would impose an unfair burden.⁸²

The statute calculates the PILOT by applying the current tax rate to the assessed valuation of the property at the time of acquisition. The tax rate may vary, unlike most similar programs, but the value of the property remains fixed, whether or not there is a general revaluation of other property in the county.⁸³

Payments in Lieu of Taxes Act of 1976

The 1976 Payments in Lieu of Taxes Act⁸⁴ constitutes a significant departure from the PILOT statutes that preceded it. First, it establishes minimum payments to local governments whose jurisdictions contain certain types of public lands. Second, it applies to several categories and vast acreage of public lands for which resource revenue sharing payments may already be made. Third, it establishes a limited PILOT program for national parks and other areas that by law do not support revenue- or fee-producing activities and which previously provided no compensating payments to state or local governments. And fourth, it specifies that Congress makes general fund appropriations for these payments.

The act establishes two separate payments for public lands. The federal government makes the first and more comprehensive payment for "entitlement lands." This definition includes all lands administered by the Bureau of Land Management, all national forest and national park lands, lands used as reservoirs for U.S. Corps of Engineers and Bureau of Reclamation water projects, dredge disposal areas administered by the Corps of Engineers, and inactive and semiactive Department of Army lands which provide no impact aid.⁸⁵ Acquired lands are included in these categories if they were subject to property taxes before being conveyed to the federal government.

The payments made for entitlement lands supplement eight types of resource revenue sharing payments so as to guarantee that local governments receive a minimum annual payment per acre. Under this

provision, local governments receive the greater of (1) 75¢ per acre, less any payments it receives under the National Forest Revenue Act, the Mineral Leasing Act of 1920 and that for acquired lands, the Taylor Grazing Act, the Bankhead-Jones Farm Tenant Act, the Boundary Water Canoe Area statute, the Federal Water Power Act, and payments from the sale of materials on public lands; or (2) 10¢ per acre, regardless of shared resource revenue payments. The upper limit for this payment varies from \$50 per capita in areas with a population of 5,000 or less to \$20 per capita for areas with a population of 50,000, with a maximum allowable payment of one million dollars.⁸⁶ Units of general local government such as counties, townships, municipalities, and boroughs receive these payments directly, and they may be used for any government function.

The second payment authorized in the 1976 Payment in Lieu of Taxes Act is a payment of limited duration made to counties in lieu of taxes for certain acquired lands. The provision applies to lands acquired after 1970 for addition to the National Parks and Wilderness Preservation Systems, excluding lands that were not subject to real property taxes before the federal government acquired them.⁸⁷ Counties receive a payment of 1 percent of the fair market value of the land as of the date of acquisition, for five years. Any payment under this provision may not exceed the taxes last paid when the land was in private ownership. The counties receiving these payments must share them to other units of local government and school districts that lost tax revenues because of the federal acquisition.

The Senate Committee report on the bill recognizes the need to offset the burden imposed by tax immunity of federal lands by providing minimum payments to local governments containing such lands.⁸⁸ The payments for entitlement lands provide all local governments with at least 10¢ per acre more than they received before, up to the per capita limit. The committee report justifies the additional payments as more equitable than resource revenue sharing for compensating local governments for tax losses, both actual and potential, and for costs imposed by activities on public lands. The new system provides payments for the first time for lands--national parks and wilderness areas--where Congress intends federal management to limit revenue-generating activities. The report points out that tourism to these areas imposes costs on local governments but that the fiscal benefits of tourism--income and sales taxes--usually accrue to state government.

The Senate committee report also justifies the payments for entitlement lands as a means of reducing the disparities in resource revenues due to variations in the productivity of public lands, and for reducing the annual variation of resource revenue sharing receipts. The greater stability in payments facilitates local government budgeting.⁸⁹ Finally, the report recognized that a payment based on acreage rather than resource revenues removes

pressures from local governments for federal land management policies that generate higher revenues but that may not be consistent with conservation, sustained yield, or environmental goals. Although the committee preferred a tax equivalency method in theory as the basis for calculating payments in lieu of taxes, they adopted a flat sum method, citing numerous administrative difficulties with the alternative approach.⁹⁰

The second payment authorized under the 1976 Payments in Lieu of Taxes Act addresses the problem of the loss of local tax revenues due to federal acquisition of private lands for preservation. The committee report states that the five-year payment of 1 percent of the value of the lands will "equalize the fiscal burden caused by the acquisition . . . and to reduce the immediate and direct financial impact on the affected local jurisdiction."⁹¹ The report also suggests that this provision will help overcome local opposition to creation of new parks from private land that is valuable to our national heritage.

In summary, the Payments in Lieu of Taxes Act of 1976 broadened the base for federal compensation for public lands, and established a minimum annual payment. It broke with the usual practice by financing payments in lieu of taxes from general fund appropriations instead of from dedicated revenues generated by development and use of the public lands.

PILOT Formulas

Formulas developed by Congress over the years to allocate payments in lieu of taxes may take several forms, ranging from flat dollar amounts to tax equivalency measures of varying complexity. Table 48 summarizes the method of calculating payments and the recipient unit of government for the programs described above. Six of these methods attempt to approximate tax equivalency directly, two laws provide for negotiated payments, and two provide for fixed payment amounts.

Tax equivalency measures generally apply a rate factor to the value of the property in calculating the payment. Some programs allow periodic revaluation of the property and adjustments of the rate factor while others do not. The Coos Bay Wagon Road law allows both factors to be adjusted while the Department of Agriculture water projects law specifies both factors as constants. The Boundary Waters Canoe Area program allows for periodic reappraisals of the property value, but the Trinity River Basin law holds the property value constant and allows the rate factor to vary with the local tax rate.

Table 48. Federal Payments in Lieu of Tax Programs, by Type and Recipient

Type of Payment	<u>RECIPIENT</u>		
	Counties	States & Counties	States
Tax Equivalency	Repossessed Coos Bay Wagon Road Grant Lands 1919	Tennessee Valley Authority 1933	
	Designated Watersheds under Dept. of Agriculture 1944		
	Boundary Waters Canoe Area 1948		
	Grand Teton National Park 1950		
	Trinity River Basin Project 1955		
	Wildlife Refuges (acquired lands) 1964		
Negotiated	St. Lawrence Seaway Act 1954	Columbia River Basin Project 1937	
Fixed	Payments in Lieu of Taxes Act 1976		Boulder Canyon Project 1940

Source: Adapted from Advisory Commission on Intergovernmental Relations, *The Adequacy of Federal Compensation to Local Governments for Tax Exempt Federal Lands*, Washington, D.C., ACIR, 1978, p. 21.

OCS Revenue Sharing

The Submerged Lands Act of 1953

Coastal states have a long history of activism regarding the oceans off their shores. Most claimed jurisdiction over the submerged lands for a distance of three miles from their shores well before the Second World War. Under this claim, California, Texas, and Louisiana began in the 1920s to grant oil and gas leases on submerged lands and levied taxes on production interests and improvements.⁹² Although the federal government initially tacitly recognized the states' claims, the Truman Administration reversed this position in 1945 to claim the submerged lands outside the inland waters of states for the federal government. The federal government brought suit against the State of California claiming title to these lands and their resources. The Supreme Court agreed in U.S. v. California that the federal government did have jurisdiction over submerged lands due to considerations of national defense and international relations.⁹³

Following this ruling, Representatives from coastal states immediately introduced a number of bills in Congress dealing with submerged lands within states' historic boundaries. Some of these bills left submerged lands in federal ownership but provided for revenue sharing with the states.⁹⁴ In 1953, Congress enacted two laws redefining the federal claim to the continental shelf lands. The Submerged Lands Act⁹⁵ granted states ownership and proprietary use of all lands under their navigable waters in the territorial sea, generally three miles from shore. The Outer Continental Shelf Lands Act (OCSLA) gave the Secretary of the Interior authority to manage submerged lands seaward of the territorial limit.⁹⁶ The OCSLA authorized federal leasing of minerals on the Outer Continental Shelf but provided the Secretary with minimal leasing, development, or other policy guidance.

Representatives of coastal states attempted, but failed, to write a revenue sharing provision into the 1953 legislation. The opinion prevailed that coastal states would reap substantial benefits from OCS development through local corporate and individual property taxes and from corporate and individual expenditures associated with the development. The majority of Congress prevailed in the opinion that these benefits, along with state revenues derived from development of resources on submerged lands within state jurisdiction, adequately satisfied state needs. Further, many members of Congress felt that states had no valid claim to a share of revenues from federal property and activities outside state boundaries.⁹⁷

In the 1950s and 1960s, most federal OCS leasing occurred off the coast of southern California and in the Gulf of Mexico. OCS leasing attracted little national interest during this period of low prices and abundant, stable energy supplies. The 1969 Santa Barbara oil spill ended this lack of concern, however; coastal states and environmental and other groups became instantly aware of the impacts of OCS activity on state and local governments and the coastal environment. Shortly thereafter, falling domestic energy production and the Arab oil embargo of 1973 had an equally dramatic effect, leading to federal plans to pursue rapid OCS energy development.⁹⁸

Federal Impact Assistance for OCS Development Effects

While the federal government has accelerated its OCS leasing activities, environmental and citizen organizations, fishing industry interests, and state and local governments have expressed increasing concern over possible adverse onshore effects of rapid development. In 1976, Congress addressed this issue by establishing the Coastal Energy Impact Program (CEIP) to provide loans and grants to assist states and localities mitigate problems caused by OCS energy activities.⁹⁹

The CEIP, amended in 1978 and 1980,¹⁰⁰ is a complicated program composed of three elements. The first is a formula grant program for providing new or improved public facilities and services, or for preventing or mitigating unavoidable losses of environmental or recreational resources that result from OCS and coastal energy activity. States may receive grants calculated by a three-part formula involving the amount of OCS leasing and production adjacent to the state and the amount of oil and gas first landed in the state. These funds must be spent or committed within two years, or they must be returned to the federal government.

The second part of the CEIP consists of discretionary grants that the Secretary of Commerce may make to a coastal state. States are eligible for grants for the purposes of (1) planning for the effects of energy development in the coastal zone, (2) assistance in fulfilling state responsibilities under the OCSLA, or (3) preventing or reducing environmental or recreational resource losses due to coastal energy activities or the transportation or storage of coal.

Under the third part of the CEIP, states receive loans, bond guarantees, and a third category of grants. The loans and bond guarantees may be used to provide new or improved public facilities and services that are necessary due to coastal energy activity. The grants are made to assist states in meeting loan and bond obligations where the energy activity fails to provide adequate revenues to offset new indebtedness. States may also receive grants to compensate for environmental or recreational resource losses that cannot be assessed against any identifiable source, and grants to study and plan for the economic and environmental impacts of energy facilities located in the coastal zone.

Sponsors of the CEIP hoped that it would moderate state concern over social, economic, and environmental disruption from OCS resource development. They also hoped to encourage rapid OCS development by relating the amount of aid available to each state from the first type of grant to the volume of oil and gas produced off its shores and to the level of new energy activity that occurs in it.

As the final vote approached on the CEIP bill, a proposed amendment to the bill made receipt of the formula grants contingent upon a finding that the loans or bond guarantees also provided under the legislation were unavailable. Although many supporters of the program opposed this provision, Congress adopted it in the end to avoid a threatened executive veto of the compromise bill.¹⁰¹

Senator Hollings of South Carolina explained the rationale for this restriction:

The primary assistance offered by the [new aid] program . . . for financing public facilities and services made necessary by any coastal energy activity are federal loans and bond guarantees, not grants. Initial assistance . . . is in the form of credit rather than grants because in many cases the adverse fiscal impacts experienced by a coastal state or local government will only be temporary and will be offset later by increased tax revenues from the coastal energy activity involved.¹⁰²

As originally enacted, the formula calculating the amount of state grants contained four factors. One-third of the total appropriations for these grants was distributed according to the acreage that was newly leased during the preceding year from the OCS adjacent to the states. Another third was distributed according to the number of persons residing in each state who obtained new jobs in the preceding year as a result of new or expanded OCS energy activities. One-sixth was distributed for the volume of oil and gas produced from leased OCS lands adjacent to a state during the preceding year, and one-sixth was distributed according to the amount of OCS oil and gas first landed in a state in the preceding year.¹⁰³

Congress amended this formula in 1978, eliminating the new employment factor because of difficulty in acquiring accurate data, and increasing proportionally the weights for the other factors.¹⁰⁴ Proposals introduced in 1978 for instituting OCS revenue sharing instead of making these changes to the grant formula died in committee. The House committee report explained that revenue sharing would allow states too much discretion in using the funds. The committee wished to ensure the funds would be used to support comprehensive coastal management as structured in the Coastal Zone Management Act and the Outer Continental Shelf Lands Act.¹⁰⁵

Rationale for OCS Revenue Sharing

Federal support has recently been reduced for a variety of coastal programs, including the Coastal Energy Impact Program, the Coastal Zone Management Program, the National Sea Grant Program, and other programs for living marine resource management. The Reagan Administration has supported the reductions by asserting that these programs compete with other federal programs, and that they serve state, not national, interests and, therefore, should be financed by states.¹⁰⁶

This argument contradicts stated Congressional rationales for instituting the programs and providing them with federal support in the first place. Several Congressional leaders have reaffirmed that these programs serve important national interests, which include planning for siting of onshore OCS facilities, pipeline corridors, disposal of dredging materials and coal port expansion as well as management of marine fisheries, and protection of coastal resource systems.¹⁰⁷ Congress may choose to insulate these coastal programs from further budget reductions by funding them through revenue sharing.

The large and increasing sums received by the federal government from OCS leasing and severe fiscal problems of many states add impetus to proposals for OCS revenue sharing. Without federal assistance, most states will have to weaken or terminate coastal management programs. This may lead to inefficient decision making, lengthened state permit review schedules, and increased litigation against federal lease sales. All of these consequences would delay or obstruct OCS energy development plans and affect other national interests in marine and coastal resources management.

Finally, there is an equity issue in OCS revenue sharing. States adjoining OCS lands undergoing energy exploration and development are at a disadvantage compared to states containing onshore federal resource lands. OCS mineral development is the only exception to a long-standing policy of sharing with affected states a significant portion of resource development receipts from public lands. The House Committee on Merchant Marine and Fisheries has also noted that funding for impact assistance for onshore energy development has been increasing at the same time funding for the CEIP has declined.¹⁰⁸ The committee and its Senate counterpart have agreed that federal OCS policies are inequitable, requiring a legislative remedy in order to meet the national objectives of developing OCS energy resources, as well as manage other ocean and coastal resources. OCS revenue sharing is one proposed remedy.

The Current OCS Revenue Sharing Proposal

Proposals to share federal OCS revenues with the states have arisen in Congress repeatedly during the past decade without any apparent resolution of the issue. In the 98th Congress, however,

both the House and Senate have passed OCS revenue sharing bills. The two versions differ in a number of particulars, including the portion of federal OCS revenues to be shared, the form of state payments, allocation formulas, and requirements for pass-through of funds to local governments. In September, 1984, a conference committee completed work on a compromise bill containing the following major features.

The conference committee bill establishes a fund dedicated from annual deposits of 4 percent of total federal OCS lease revenues up to a maximum level.¹⁰⁹ The ceiling level for deposits to the fund begins at 300 million per year but increases by 5 percent annually after 1985. The bill directs the Secretary of Commerce to use a portion of the funds to support the National Sea Grant College Program as well as to establish and support a National Coastal Resources Research and Development Institute at Oregon State University. The remaining funds are available as block grants to coastal states, which may use them for activities authorized by the Coastal Zone Management Act and the CEIP and for the protection, enhancement, and management of living marine and coastal resources.

The formula for allocating the grants among coastal states contains five equally weighted factors. The first factor is a measure of current OCS activity adjacent to the states, including the acres leased and the amount of oil and gas landed in the state. The second factor varies with future planned OCS lease sales adjacent to a state, and the third criterion covers coastal-related energy facilities located in each state.¹¹⁰ The fourth measures shoreline mileage; the fifth measures coastal county population. While Alaska is at a disadvantage in relation to other coastal states in terms of population, the factor measuring shoreline mileage, which receives equal weight, works to the state's advantage.

Under this proposal, each coastal state with an approved coastal zone management planning program receives at least 1.62 percent, and territories, 0.5 percent, of the total amount available for the block grants in any year. No state or territory may receive more than 15 percent of the fund in a single year. States receiving block grants must consult with local authorities with respect to allocation of grant funds within the state and must give at least one-third of grant funds directly to the local governments. The bill directs states to place special emphasis on local projects that mitigate the impacts of coastal energy development activities.¹¹¹

Summary and Conclusions

In this chapter, we have analyzed the legislative history of several types of programs sharing federal revenues from the public lands with state and local governments. Programs sharing property values of the federal public domain have arisen as a form of compensation to states for the continued imposition of federal

management of lands affecting the state and its people. Congress has typically attached these revenue-sharing measures as part of major initiatives to retain resources in federal ownership and control. Examples of this type of legislation are the National Forest Revenue Act (1908), the Mineral Leasing Act (1920), and the Taylor Grazing Act (1934).

Congress has typically initiated programs sharing property values of federal acquired lands as part of legislation authorizing major federal purchases of private land for development or conservation purposes. Programs initiating payments in lieu of taxes are typically associated with the objective of achieving equity in the fiscal treatment of the federal lands. They attempt to reduce disparities among state and local government receipts from shared federal resource development revenues and user fees, which may arise from differences in federal management objectives as well as from variations in the value of the public lands. When the objectives of a federal land acquisition program have moved away from development and towards preservation, Congress has typically replaced sharing of resource revenues with a payment in lieu of taxes clause as the mechanism to compensate local governments for the imposition of the program's political and fiscal costs.

There is an essential difference in economic interpretation between the payments in lieu of taxes approach and the resource revenue-sharing approach. Payments in lieu of taxes attempt to offset local property tax revenue local governments may lose due to the tax immunity of federal lands. Ideally, the level of the payments should approach the level of taxes paid on similar private lands in the same jurisdiction. Resource revenue sharing programs, on the other hand, generally share property values accruing to the federal landowner from resource development.

If there is no development, or if development does not produce returns in excess of development costs, then the landowner does not receive any resource revenues. Landowner payments of this type must come out of the economic rent produced from resource development. If federal managers dispose of resources competitively, then the resource revenues contain substantially all the economic rent. In some cases, economic rents from resource development will greatly exceed the level of property taxes that local governments would collect on similar private lands. In other cases, such as with most of the acquired lands, economic rents from resource development may be small or nonexistent so that local governments are likely to receive more revenues with a program sharing property values than with a payments in lieu of taxes provision.

Table 49 shows the levels of shared revenues from federal lands received in federal fiscal year 1982 by the eleven contiguous western states plus the state of Alaska (including payments to local governments within those states). These twelve states contain

TABLE 49.
SHARED REVENUES FROM FEDERAL LANDS RECEIVED
BY 12 WESTERN STATES, FEDERAL FISCAL YEAR 1982

(million dollars)

State	National Forest Revenues	Mineral Leasing Act	BLM Surface*	PILOT Act	Total
Alaska	3.8	23.0	-	3.5	30.3
Arizona	5.7	5.3	0.6	8.2	19.8
California	42.0	29.8	0.4	10.9	83.1
Colorado	1.8	38.0	0.2	6.6	46.6
Idaho	9.1	4.0	0.4	6.9	20.4
Montana	8.1	15.5	1.0	7.2	31.8
Nevada	0.3	11.5	0.9	5.1	17.8
New Mexico	2.5	151.7	0.7	8.9	161.6
Oregon	95.1	1.5	98.5	2.5	197.6
Utah	1.0	75.4	0.3	7.9	84.6
Washington	29.4	0.1	0.1	1.6	31.2
Wyoming	<u>1.0</u>	<u>149.0</u>	<u>0.9</u>	<u>7.0</u>	<u>157.9</u>
Total, 12 States	199.8	504.8	104.0	76.3	882.7
Total, U.S.	231.2	536.1	104.2	95.5	967.0
Percent, 12 States	86.4	94.2	99.8	79.9	91.3

* Includes Taylor Grazing Act, Sale of Materials, O and C lands, etc.

- Means less than 0.05.

SOURCE: U.S. Department of Treasury, "Federal Aid to States, Fiscal Year 1982."

essentially all of the public domain lands, so it is not surprising to learn from the table that they received over 90 percent of the shared federal revenues in that year. The amounts individual states received varied widely from a low of around \$18 million for Nevada to over \$150 million for New Mexico, Oregon, and Wyoming.

As shown in Table 49, the major resource revenue sharing programs distributed \$870 million to state and local governments in 1982 out of a total of around \$2.2 billion in landowner payments for federal onshore property in the twelve western states. Mineral leasing and national forest revenues contributed over three-fourths of the total. Payments to local governments nationally under the Payments in Lieu of Taxes Act amounted to around \$100 million in federal fiscal year 1982. Except for the repossessed O&C lands, which contributed nearly \$100 million in shared timber receipts to Oregon counties, all of the other programs shared relatively small amounts of revenue.

Seen from the perspective of a legislative history spanning eight decades, current Congressional proposals for sharing OCS revenues are neither consistent in approach nor sufficient in scale to match the historical precedents afforded by the payment in lieu of taxes or the resource revenue sharing programs. The evolution of PILOT legislation culminating with the Payment in Lieu of Taxes Act of 1976 shows a definite trend toward treating the payments as an entitlement grant appropriated out of general fund revenues. Both the House and the Senate OCS revenue sharing proposals dedicate a share of the resource revenues in order to fund the program. More importantly, however, the OCS revenue-sharing bills make no attempt to relate the level of payments to the reduced ability of local governments to raise property tax revenue to finance public services. Not only are the submerged lands immune from taxation, as is the case with onshore federal property, but the state and local governments may not tax private property located on the federal OCS either.

If the Congressional sponsors of the recent OCS revenue sharing proposals had intended the measures to correspond to a payment in lieu of taxes approach, then the level of payments specified in the bills would logically correspond to some notion of foregone property tax revenue. Determining an assessed value for OCS property is not difficult. There are established methods for valuing petroleum and mining property, and many states--among them Alaska--already assess property taxes on offshore exploration, production, and transportation property within their three-mile jurisdiction.

The proposed OCS revenue-sharing laws are also inconsistent with the numerous precedents established in prior federal legislation sharing resource revenues with the states. On the one hand, the OCS bills in both houses of Congress contain complicated formulas for reallocating revenues collected in one region to local governments

in other regions. Both bills include a minimum share of the revenue for each state; the Senate bill even includes a ceiling of 15 percent on any state's share of the total, regardless of the share computed using the statutory allocation formula. The legislative history of shared resource revenues for the federal lands contains no precedent for these reallocations and limits.

The proportion of federal OCS resource revenue shared with state and local governments ranges from zero to five percent in the Congressional proposals. This contrasts with a range of 25 to 50 percent for the major onshore revenue sharing programs. The state share of federal resource revenue under the Mineral Leasing Act of 1920, the precedent most closely analogous to the OCS case, has been 50 percent since 1975. A direct comparison of OCS revenue sharing proportions and proportions typical of onshore programs is probably inappropriate since Congress did address the issue of proprietary rights to submerged lands in the Submerged Lands Act of 1953. At the time, awarding the states property rights three miles seaward from the coast seemed an equitable division of the wealth of the submerged lands, given the abundance of unexploited oil and gas and other subsurface resources remaining onshore, and the limited technology and high cost of offshore mineral exploration and development.

With the unforeseen technological and economic changes which have occurred in the past 30 years, however, the three-mile division is no longer as equitable as it seemed in 1953. There is undoubtedly a great variation among the states in the relative values of the state and the federal offshore estate, but it is unlikely that the state lands generally contain more than 10 percent of the total property value of the Continental Shelf. Taking this into account, the historical precedents suggest that realistic proposals for sharing OCS revenues with the coastal states will contain proportions ranging from one-sixth to one-third of the federal receipts. Given the long history of legislative precedents, it is unlikely that Congress can lay the issue of OCS revenue-sharing to rest until it has enacted a program of comparable scope.

ENDNOTES

¹G. Kevin Jones. "Understanding the Offshore Oil and Gas Controversy." Gonzaga Law Review, V. 17, No. 2, p. 226.

²U.S. Congress, Senate Report No. 753, quoted in Jones, "Understanding the Offshore Oil and Gas Controversy," p. 231.

³Intergovernmental tax immunity is not explicitly mandated by the U.S. Constitution. Judicial precedent, in fact, established the principle of dual sovereignty, under which federal and state governments are immune from taxes levied by the other. Although recent court decisions have qualified the doctrine of tax immunity, states have no authority to tax any federal government instrumentality that Congress chooses to exempt. Advisory Commission on Intergovernmental Relations, The Adequacy of Federal Compensation to Local Governments for Tax Exempt Federal Lands, p. 18.

⁴Several land purchases by the federal government added vast areas to the public domain, including the Louisiana Purchase (1803), the Florida Purchase (1819), the Oregon Compromise (1846), the Mexican Treaty (1848), the purchase from Texas (1850), the Gadsden Purchase (1853), and the Alaska Purchase (1867). Marion Clawson and Burnell Held, The Federal Lands: Their Use and Management, p. 21.

⁵*Ibid.*, p. 22.

⁶*Ibid.*, p. 23.

⁷EBS Management Consultants, Inc., Payments in Lieu of Taxes and Revenue Sharing on Public Lands, V. 2, p. LA-16.

⁸Benjamin H. Hibbard, A History of the Public Land Policies, pp. 171-190.

⁹*Ibid.*, pp. 172-175.

¹⁰*Ibid.*, pp. 175-177.

¹¹*Ibid.*, pp. 188-190.

¹²Section 6(f) of the Alaska Statehood Act, 1958, 72 Stat. 339, 341 (1958).

¹³EBS, Payments in Lieu of Taxes and Revenue Sharing on Federal Lands, V. 2, pp. LA-22-LA-23 (hereinafter cited as PILOT and Revenue Sharing).

¹⁴Act of July 31, 1947, 61 Stat. 681 (1947); 30 U.S.C. 601-603 (1976).

¹⁵Act of August 31, 1950, 64 Stat. 571 (1950).

¹⁶A withdrawal is a taking of land for a public purpose. Both Congress and the Executive have the power to make withdrawals. Withdrawals may vary as to their term; that is, some are for a limited time period while others are permanent. The interest that is withdrawn also varies. "It may range from a small potential scenic reserve superimposed upon a prior withdrawal of the same land . . . to the equivalent of a full fee simple interest." Several withdrawals may apply to the same land, leading to administrative complexities when more than one agency has jurisdiction. Duncan A. Harkin, James B. MacDonald, William B. Lord, and Richard L. Hilliker, Federal Land Laws and Policies in Alaska, pp. 159-160.

¹⁷Clawson and Held, The Federal Lands, p. 236; and EBS, PILOT and Revenue Sharing, V. 1, pp. 18-19.

¹⁸Act of May 23, 1908, 35 Stat. 251, 260 (1908); 16 U.S.C. 500 (1976).

¹⁹EBS, PILOT and Revenue Sharing, V. 1, pp. 17-19; Clawson and Held, The Federal Lands, p. 236.

²⁰Joseph M. Chomski and Constance E. Brooks, The Sagebrush Rebellion: A Concise Analysis of the History, the Law and Politics of Public Land in the United States, p. 21.

²¹National Forest Management Act of 1976, 90 Stat. 2961 (1976).

²²Act of February 25, 1920, 41 Stat. 437, 451 (1920).

²³Section 35 of the Mineral Leasing Act of 1920, 30 U.S.C. 191 (1976). Leasable minerals include oil, natural gas, oil shale, coal, potassium, sodium, phosphate, native asphalt, solid and certain other minerals. States and the federal government do not receive lease revenues from nonleasable minerals. Harkin et al., Federal Land Laws and Policies in Alaska, p. 684.

²⁴EBS, PILOT and Revenue Sharing, V. 2, pp. LF-3 - LF-4.

²⁵Ibid., pp. LF-4 - LF-5.

²⁶Mineral Leasing Act Amendment, 61 Stat. 119 (1947).

²⁷EBS, PILOT and Revenue Sharing, V. 2, p. LF-6.

²⁸Federal Coal Leasing Amendments Act of 1975, 90 Stat. 1083, 1093; 30 U.S.C. 191 (1976).

²⁹Federal Land Policy and Management Act of 1976, 90 Stat. 2770 (1976).

³⁰41 Stat. 1063, 1077 (1920); 16 U.S.C. 810 (1976).

³¹EBS, PILOT and Revenue Sharing, V. 2, p. LG-1.

³²Quoted in EBS, PILOT and Revenue Sharing, V. 2, p. LK-1.

³³Act of June 28, 1934, 48 Stat. 1269, 1273 (1934); 43 U.S.C. 315i-315j

³⁴Clawson and Held report that the counties receiving these funds uniformly turned them over to grazing advisory boards for range improvements. The Federal Lands, p. 238.

³⁵EBS, PILOT and Revenue Sharing, V. 2, pp. LK-4 - LK-5.

³⁶Taylor Grazing Act Amendments, 61 Stat. 790 (1947); EBS, PILOT and Revenue Sharing, V. 2, p. LK-2.

³⁷See EBS, PILOT and Revenue Sharing, V. 2, p. LK-5, note 11.

³⁸Ibid., p. LK-9.

³⁹Act of March 4, 1927, 44 Stat. 1452 (1927); 43 U.S.C. 316 (1976).

⁴⁰P.L. 94-258, Section 102, 90 Stat. 303 (1976); 42 U.S.C. 650 (1976). The reserve had been established by Executive Order in 1923 and administered by the Secretary of the Navy until its transfer in 1976. As a Naval Petroleum Reserve, no resource revenue sharing provisions applied.

⁴¹42 U.S.C. 6507 (1976).

⁴²Act of December 12, 1980, 94 Stat. 2957 (1980).

⁴³42 U.S.C. 6508 (1981).

⁴⁴EBS, PILOT and Revenue Sharing, V. 2, pp. LR-1 - LR-2.

⁴⁵Mineral Leasing Act for Acquired Lands, 61 Stat. 913, 915 (1947); 30 U.S.C. 355 (1976).

⁴⁶30 U.S.C. 352 (1976).

⁴⁷EBS, PILOT and Revenue Sharing, V. 2, p. LM-1.

⁴⁸U.S. Congress, Committee on Energy and Natural Resources, Legislative History of the Federal Land Policy and Management Act of 1976, p. 98.

⁴⁹7 U.S.C. 1012 (1976); 50 Stat. 522, 526 (1937).

⁵⁰Some lands acquired under the Bankhead-Jones Act have become part of National Forests. In this case, revenues from the lands are distributed according to National Forest Revenue Act provisions, i.e., to states, not to counties.

⁵¹Act of August 18, 1941, 55 Stat. 638, 650 (1941); 33 U.S.C. 70(c)(3) (1976).

⁵²EBS, PILOT and Revenue Sharing, V. 2, p. LN-2.

⁵³Act of July 13, 1926, 44 Stat. 915 (1926).

⁵⁴Act of August 28, 1937, 50 Stat. 874 (1937).

⁵⁵The Federal Lands, p. 240.

⁵⁶Act of May 24, 1939, 53 Stat. 753 (1939).

⁵⁷43 U.S.C. 1181 f-1 (1976).

⁵⁸43 U.S.C. 1181 f-2 (1976).

⁵⁹Boulder Canyon Project Act, 45 Stat. 1057, 1063 (1928).

⁶⁰EBS, PILOT and Revenue Sharing, V. 2, pp. LH-4 - LH-8.

⁶¹Boulder Canyon Project Adjustment Act, 54 Stat. 774 (1940);
⁴³ U.S.C. 618(c) (1976).

⁶²43 U.S.C. 618(c) (1976).

⁶³Tennessee Valley Authority Act, 48 Stat. 58, 66 (1933).

⁶⁴EBS, PILOT and Revenue Sharing, V. 2, p. LI-5.

⁶⁵16 U.S.C. 831P (1982).

⁶⁶EBS, PILOT and Revenue Sharing, V. 2, p. LL-1.

⁶⁷16 U.S.C. 835c-1(a) (1982). The EBS report states that agreements were entered into with four counties in Washington State in 1948, which agreements were still in force in 1967. Each agreement provided that the counties received the smaller of (1) 50 percent of total leasing revenues from the lands or (2) a sum equal to taxes that would be assessed against the lands were they privately owned. PILOT and Revenue Sharing, V. 2, pp. LL-2 - LL-3.

⁶⁸1944 Rivers and Harbors Act, 58 Stat. 887, 905 (1944). EBS, PILOT and Revenue Sharing, V. 2, pp. LO-1 - LO-3.

⁶⁹Migratory Bird Conservation Act amendment, 49 Stat. 378, 386 (1935) as amended; 16 U.S.C. 715s (1982). The National Wildlife Refuge System includes wildlife refuges and ranges, game ranges, wildlife management areas, and waterfowl production areas.

⁷⁰Act of August 30, 1964, 78 Stat. 701 (1964).

⁷¹16 U.S.C. 715s (1976). Net revenues are gross receipts less expenses necessary for the disposition of refuge products or for the granting of privileges. EBS, PILOT and Revenue Sharing, V. 2, p. LAB-7.

⁷²The 1978 changes were made in P.L. 95-469, Refuge Revenue Sharing Amendment, Section 1(a)(3), 92 Stat. 1319, 1322 (1978); 16 U.S.C. 715s (1982).

⁷³Act of June 22, 1948, 62 Stat. 570 (1948).

⁷⁴EBS, PILOT and Revenue Sharing, V. 2, pp. LS-1 - LS-4.

⁷⁵16 U.S.C. 577g (1982).

⁷⁶EBS, PILOT and Revenue Sharing, V. 2, p. LU-1.

⁷⁷Act of September 14, 1950, 64 Stat. 849, 851 (1950); 16 U.S.C. 406d-3 (1982).

⁷⁸Act of May 13, 1954, 68 Stat. 93, 95 (1954); EBS, PILOT and Revenue Sharing, V. 2, p. LX-1.

⁷⁹33 U.S.C. 986 (1976).

⁸⁰EBS, PILOT and Revenue Sharing, V. 2, p. LX-2.

⁸¹Act of August 12, 1955, 69 Stat. 719, 720 (1955).

⁸²EBS, PILOT and Revenue Sharing, V. 2, p. LY-2.

⁸³Ibid., p. LY-4.

⁸⁴P.L. 94-565, 90 Stat. 2662 (1976), 31 U.S.C. 1601, 1607 (1976).

⁸⁵Not included as entitlement lands are national wildlife and game refuges; Bureau of Mines lands; Agricultural Research Service and Soil Conservation Service lands; lands of the Navy, Air Force, and Marines; or lands of other agencies (i.e., Department of Transportation, General Services Administration, NASA, and the Energy Research and Development Administration). The committee

report explained these were excluded because they do not require the same level of governmental services as entitlement lands and because in the case of active military installations and wildlife refuges, other in lieu payments are already made. Senate Interior and Insular Affairs Committee, Report No. 94-1262, pp. 13-14.

⁸⁶31 U.S.C. 1602 (1976).

⁸⁷31 U.S.C. 1603 (1976).

⁸⁸U.S. Congress, Senate Report No. 94-1262, Committee on Interior and Insular Affairs, pp. 8-9.

⁸⁹Subject to Congressional appropriation of the authorized payments. See Shands and Healy, The Lands Nobody Wanted, p. 229.

⁹⁰U.S. Congress, Senate Report No. 94-1262, p. 11.

⁹¹*Ibid.*, p. 14.

⁹²G. Kevin Jones, "Understanding the Offshore Oil and Gas Controversy," 17 Gonzaga Law Review, pp. 237-238.

⁹³332 U.S. 19 (1947). See also U.S. v. Louisiana, 339 U.S. 699 (1950) and U.S. v. Texas, 339 U.S. 707 (1950).

⁹⁴EBS, PILOT AND Revenue Sharing, v. 2, p. LW-2. The issue of ownership of the OCS was recently raised again in a lawsuit filed by thirteen Atlantic coast states. In 1975, the Supreme Court affirmed federal control of the OCS in United States v. Maine and held, furthermore, that states could claim no formal role in OCS decision making without a legislative mandate (420 U.S. 515 [1975]).

⁹⁵67 Stat. 31 (1953); 43 U.S.C. 1301-1315 (1976).

⁹⁶67 Stat. 462 (1953); 43 U.S.C. 1331-1343 (1976).

⁹⁷EBS, PILOT and Revenue Sharing, V. 1, p. 25, and V. 2, pp. LW-3-LW-5.

⁹⁸U.S. Congress, House Report 98-206, Committee on Merchant Marine and Fisheries, p. 16; and Jones, "Understanding the Offshore Oil and Gas Controversy," pp. 243-244.

⁹⁹Coastal Zone Management Act Amendments of 1976, 90 Stat. 1013, 1033 (1976); 16 U.S.C. 1456 (1982).

¹⁰⁰1978 amendments are found in P.L. 95-372, the Outer Continental Shelf Lands Act Amendments, 92 Stat. 629, 698 (1978); the 1980 amendments were made in P.L. 96-464, the Coastal Zone Management Improvement Act, 94 Stat. 2060, 2070 (1980).

¹⁰¹Congressional Quarterly, Inc., Energy Policy, p. 167. 16 U.S.C. 1456a (1982). See U.S. Congress, House Conference Report No. 94-1298, Joint Exploratory Statement of the Committee of Conference, p. 33.

¹⁰²Quoted in Congressional Quarterly, Energy Policy, p. 168. This restriction was removed two years later, after states complained it was particularly onerous. See U.S. Congress, House Report No. 95-590, p. 195.

¹⁰³Section 7 of P.L. 94-370, Coastal Zone Management Act Amendments of 1976, 90 Stat. 1013, 1033 (1976).

¹⁰⁴Section 501(a) of P.L. 95-372, Outer Continental Shelf Lands Act Amendments of 1978; U.S. Congress, House Report No. 95-590, pp. 194-196; and 15 C.F.R. 931, Subpart K.

¹⁰⁵U.S. Congress, House Report No. 95-590, p. 195.

¹⁰⁶U.S. Congress, House Report No. 98-206, p. 95.

¹⁰⁷Ibid., p. 46; and U.S. Congress, Senate Report 98-112, p. 10.

¹⁰⁸Ibid., p. 71.

¹⁰⁹Conference Report to accompany S. 2463 adopted Sept. 10, 1984. See U.S. Congress, House Report No. 98-1006, Ocean and Coastal Resources Management and Development Block Grant Act.

¹¹⁰For example, electric generating plants, petroleum refineries, pipelines, transmission facilities, and so on. Section 103(3) of S. 2463, Ibid.

¹¹¹The 98th Congress failed to approve S. 2463 before adjourning in October 1984.

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- Alaska Grazing Act, 44 Stat. 1452, 1455 (1927); 43 U.S.C. 316 (1976).
- Boulder Canyon Project Act, 45 Stat. 1057, 1063 (1928); 43 U.S.C. 618 (1976).
- Tennessee Valley Authority Act, 48 Stat. 58, 66 (1933); 16 U.S.C. 831 (1982).
- Migratory Bird Conservation Act, 48 Stat. 451, 453 (1934); 16 U.S.C. 715 (1982).
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92 Stat. 629, 698 (1978); 43 U.S.C. 1331 et. seq. (1982).

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92 Stat. 1319, 1322 (1978).

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94 Stat. 2060, 2070 (1980).

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CHAPTER VII

CONCLUDING OBSERVATIONS

In this report, we have analyzed the historical pattern of economic rent generated and public revenues collected in Alaska and Texas, two states with major differences in resource ownership and regulation. We have examined the dominant factors which have affected the historical pattern of collection and distribution of public revenues. In addition, we have assessed the sensitivity of projected future public revenues to such factors as geologic and market risks, and revenue collection methods or other public policies. We concluded the analysis with an assessment of the possible effects of existing and proposed federal oil and gas policies on the state of Alaska's share of future economic rent.

In order to perform our analysis, we developed a number of new sources of information on the Alaska petroleum industry which may be useful to other researchers, public agencies, and analysts. For the analysis in Chapter II, we compiled and documented consistent data series on Alaska's oil and gas production, prices, and revenues by region, landowner, and revenue source. For Chapter III, we developed estimates of the historical revenues, costs, and distribution of economic rent from petroleum development in three regions of Alaska and two regions of Texas. For the analysis of Chapter IV, we developed a set of parameters for probable discoveries of new oil and gas fields in Alaska. We used these parameters to analyze the effects of state and federal policies on projected future oil and gas development decisions.

For Chapter V, we developed a simple but useful set of parameters for each of Alaska's known but as yet undeveloped oil fields on the North Slope, including estimated reserves, capital and operating costs, and beginning date of production. This permitted us to analyze the effects on development decisions of world price trends and public policies and, consequently, the sensitivity of federal and state revenues derived from oil and gas development in Alaska. Finally, in Chapter VI, we compiled the legislative history of federal-state sharing of land and resource revenues in order to analyze the proposed federal OCS revenue sharing legislation within this historical context.

Major Project Findings

Our analysis has led to a number of detailed conclusions discussed in each chapter, and we will not repeat these in detail here. However, we will summarize the major findings for the two general areas covered by the analysis. The first area pertains to the major factors which shape the pattern of resource development and revenues. The second concerns the distribution of lease revenues from public lands.

X

Factors Determining Pattern of Oil and Gas Revenues

Formulating appropriate state, interstate, and national policy on sharing energy resource revenues requires an examination of the total economic and fiscal picture of energy resource development. Focusing on one variable, such as the nominal state severance tax rates, is likely to lead one to erroneous conclusions for the direction of policy. Tax rates are only one of several important factors in determining the distribution of energy resource revenues among governments, producers, and consumers.

We have shown that four factors are typically more important than state tax rates in shaping the pattern of resource development and the distribution of resource revenues. These are:

- ✓ 1. Geologic good fortune--the location of accumulations of fossil fuel resources is randomly associated with state political boundaries.
- ✓ 2. Ownership of mineral rights--federal or state governments may retain title to subsurface estate, allowing them to receive proprietary payments such as royalties and lease bonuses.
- ✓ 3. Cost environment--some deposits of energy resources are much more costly to develop than others, and frontier regions such as Alaska are much more costly than onshore areas in the Lower 48.
- ✓ 4. World energy prices--individual states have very little ability to influence the markets for their energy products.

These four factors have profound consequences on both the amount and distribution of economic rents. Consider, for example, the combined importance of world prices and production costs. In Alaska, some oil and gas fields that are just becoming feasible to develop, such as the Endicott River field and portions of the Kuparuk reservoir, would not be feasible under the oil price levels prevailing in the early 1970s. In contrast, if a field geologically similar to the Kuparuk field were found in a state such as Texas, it would not only be feasible but would be considered a bonanza. This would hold true even under the early 1970s price scenario, due to the much lower development and operating costs in that state.

Effective tax rates on resource extraction are often different from the apparent nominal rates. Although the nominal severance tax rate on oil is over three times higher in Alaska than Texas, the lower wellhead value of North Slope oil means that the state severance tax take per barrel is only about twice as high as the average in Texas. Furthermore, while Texas receives substantial

revenues from gas production, Alaska realizes very little tax revenue from North Slope gas because high transportation costs have so far rendered the gas unmarketable. Thus, Alaska's effective tax rate per barrel of oil produced, including related gas revenues (which Texas receives but Alaska does not), roughly compares to that of Texas. *even w/ so diff. econ. conditions, etc. means tax rate is same.*

We expect Alaska's oil production to decline through the 1990s. However, as the Prudhoe Bay field is depleted, revenues (after adjusting for inflation) will fall more rapidly than production. This is due to the economic limit factor (ELF) in the Alaska severance tax schedule, designed to make the tax burden disappear as production from an oil field becomes less profitable. Even as early as 1990, average effective severance tax rates will fall from nearly 15 percent in 1983 to around 10 percent. Several Cook Inlet fields will continue to produce without paying severance taxes.

In the near term, Alaska's relatively high oil severance tax collections are an important factor in the state's total fiscal position. In the longer term, they will play a reduced role. On the one hand, the declining production at Prudhoe Bay and the lower production per well projected for new fields on the North Slope will reduce the ELF and, thereby, reduce tax collections. On the other, even the somewhat reduced severance tax burden may affect economic feasibility of marginal fields, especially when combined with the state's royalty share. Indeed, it is possible that the state's severance tax may even play a negative role in future state revenues.

Seen in this context, attempts by Congress to limit state severance taxes may not have a severe long run impact on the State of Alaska's petroleum revenues. This is especially true if other means of raising petroleum revenues are available, specifically, the separate accounting method of assessing the corporate income tax. The analysis suggests that export restrictions on North Slope oil, Trans-Alaska Pipeline tariffs, and even alleged monopoly power in the west coast oil market may already be causing more serious losses to the state treasury. A corollary to this observation relates to the differing incentives offered by net profit shares and royalty shares in oil and gas leases on public lands. Although not without problems of their own, net profit share leases provided clearly superior economic incentives even to relatively low royalty shares for developing marginal fields.

Distribution of Lease Payments for Public Lands

The second major area of our findings concerns policies which directly affect the distribution of lease revenues from public lands. Congress has set a long list of historical precedents for compensating states (and local governments) for continued federal ownership and management of public lands with valuable developable resources. These laws have been continually broadened and

strengthened throughout this century so that there is now a system in place for sharing with the state or local governments at least 25 percent of all major resource revenues from federal lands within state boundaries.

The federal Outer Continental Shelf is the single giant exception to this rule of resource revenue sharing with the states. It is not reasonable to argue that coastal states are less affected by federal management of submerged lands than of upland areas. A more reasonable explanation of this historical exception is that Congress settled the issue of proprietary interest in the offshore public domain with the Submerged Lands Act of 1953. This law actually gave title to the states of submerged lands out to the three-mile line. Since technology prevailing at the time prevented offshore mineral extraction except in shallow, nearshore waters, this meant that the states received at least one-fourth, and possibly over one-half, of the value of the offshore public domain.

As technology improved and national energy policy developed in the early 1970s, the Department of Interior greatly expanded the federal leasing program. The change in technology, allowing exploration in deep water and far from shore, effectively created a large new federal public domain offshore from the coastal states. The distance offshore (or the water depth for that matter) makes no significant difference when it comes to state impacts and the diminished local control over development patterns.

In the same period since the early 1970s, there has been a rapid increase in the value of energy resources worldwide. This increase in value has served to magnify the value of the new public domain declared by the federal government. Seen in the historical context, the practice of the federal revenue-sharing with states of 5 or 6 percent of OCS lease payments departs significantly from the precedents of distributing 25 percent or more of gross federal receipts to the states.

Another federal program for compensating state and local governments for the tax-exempt status of property associated with federal property development is the system of "payments in lieu of taxes" (PILOT). This program is more recent and is in addition to any resource revenue sharing program that may apply. Offshore drilling and production platforms, pipelines, and terminals located beyond the three-mile limit may not be taxed by state and local governments, although these governments usually are affected by the development. PILOT formulas in existing law do not apply to OCS development but would yield up to 1 percent of assessed real property value if they did. This is an order of magnitude greater than contained in current Congressional revenue-sharing proposals.

In summary, there are two principal reasons which argue why energy-producing states should received much more OCS revenue sharing than proposed recently in Congress:

1. These payments carry a historical symbolic and political association with sharing of federal proprietary rights on the public domain.
2. They compensate state and local governments for the presence of federal tax-exempt property (payments in lieu of taxes concept).

**ALASKA PETROLEUM REVENUES:
THE INFLUENCE OF FEDERAL POLICY**

APPENDIXES

Final Report

Prepared for

**State of Alaska
Office of the Governor**

Prepared by

**Matthew Berman, Eric Myers,
Will Nebesky, Karen White, and Teresa Hull
University of Alaska
Institute of Social and Economic Research
707 A Street, Suite 206
Anchorage, Alaska 99501**

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APPENDIX A

ALASKA OIL AND GAS PRODUCTION, PRICES AND LEASE REVENUES

Appendix A contains historical data compiled on Alaska oil and gas production, prices and revenues by region and by landowner. Because there are a large number of different organizations involved in managing some portion of Alaska petroleum lands, production and revenues, there inevitably arise situations of parallel but differing data series for the same item. While we have attempted to form a consistent set of historical data for each series, some differences represent slightly different reporting conventions or definitions of data. We have chosen to include some of these instances of discrepancy in the tables that follow, documenting the source in the notes.

Tables A.1 and A.2 present annual oil and gas production by landowner, region and by field for the North Slope. Tables A.3 and A.4 present weighted average annual prices received for the production shown in tables A.1 and A.2, respectively. Tables A.5 through A.8 summarize lease payments received by public landowners in Alaska by region. Tables A.5 and A.6 include federal revenues received for leases on the Outer Continental Shelf and in the National Petroleum Reserve Alaska, where there has as yet been no commercial production.

Tables A.9, A.10, and A.11 show the historical value of taxable petroleum production and exploration property as assessed by the State of Alaska and the calculation of estimated property taxes paid on this property. As one might expect, all of the production and most of the exploration property is located either in the Kenai Peninsula Borough (Cook Inlet region) or in the North Slope Borough (North Slope region).

BASIC DATA SOURCE GUIDE

<u>SOURCE</u>	<u>ABBREVIATION</u>
Alaska Department of Natural Resources Division of Management, Revenue Section ¹	DNR, Div. of Management
Alaska Department of Natural Resources, Division of Oil and Gas ²	DNR, DOG
Alaska Department of Natural Resources, Division of Oil, and Gas, Public Information Office	DNR, DOG, Public Information Office
Alaska Department of Natural Resources, Division of Oil and Gas, Royalty Accounting Section	DNR, DOG, Royalty Accounting
Alaska Department of Revenue, Division of Petroleum Revenue	DOR, Division of Petroleum Revenue
Alaska Oil and Gas Conservation Commission ³	AOGCC
American Petroleum Institute, <u>Basic Petroleum Data Book</u> , 1983	American Petroleum Institute
U.S. Department of the Interior, Bureau of Land Management, Data Processing	USDOI, BLM, Data Processing
U.S. Department of the Interior, Minerals Management Service ⁴	USDOI, MMS

¹Formerly Division of Land and Water Management, Administrative Revenue Unit.

²Formerly the Division of Minerals and Energy Management.

³Formerly the Department of Natural Resources, Division of Oil and Gas Conservation.

⁴Includes federal lease revenue accounting functions, formerly located under the U.S. Geological Survey, Conservation Division.

TABLE A.1.
ALASKA OIL PRODUCTION
(MILLION BARRELS)

	COOK INLET			NORTH SLOPE				TOTAL NORTH SLOPE	OTHER STATE	FEDERAL OCS	TOTAL ALASKA
	FEDERAL LEASES	STATE LEASES	TOTAL COOK INLET	PRUDHOE BAY	KUPARUK	LISBURN	NPRA				
1959	0.21	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19
1960	0.56	0.00	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56
1961	6.30	0.00	6.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.33
1962	10.26	0.00	10.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.26
1963	10.74	0.00	10.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.74
1964	11.05	0.00	11.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.06
1965	11.10	0.00	11.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.13
1966	11.71	2.65	14.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.36
1967	12.98	16.15	29.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.13
1968	13.62	52.58	66.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.20
1969	13.15	60.80	73.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.95
1970	12.41	71.21	83.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.62
1971	11.47	68.02	79.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.49
1972	8.90	63.99	72.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.89
1973	10.48	61.83	72.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.32
1974	10.14	60.45	70.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70.60
1975	9.08	60.74	69.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	69.83
1976	7.89	55.49	63.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.40
1977	6.26	50.23	56.44	112.69	0.00	0.00	0.00	112.76	0.00	0.00	169.20
1978	5.11	45.45	50.45	396.65	0.00	0.00	0.00	398.17	0.00	0.00	448.62
1979	4.55	38.87	43.05	468.41	0.00	0.00	0.00	467.00	0.00	0.00	511.33
1980	3.94	32.39	36.28	555.41	0.00	0.00	0.00	555.61	0.00	0.00	591.65
1981	3.10	28.48	31.87	555.29	1.09	0.00	0.00	556.48	0.00	0.00	587.34
1982	3.14	24.59	27.87	559.27	32.36	0.21	0.00	591.51	0.00	0.00	618.91
1983	3.19	21.75	24.94	560.79	39.85	0.10	0.00	603.76	0.00	0.00	625.53

NOTES TO TABLE A.1

Column 1: SOURCE: US Department of Interior, MMS. 1983 figure from AOGCC.

Column 2: derived by multiplying Alaska state royalty share by 8. SOURCE: DNR, DOG, Royalty Accounting.

Column 3: SOURCE: 1959-1976, American Petroleum Institute, Basic Petroleum Data Book (includes lease condensate); 1977-1982, DNR, DOG, Royalty Accounting; 1983, sum of Columns 1 and 2.

Columns 4-6, 8: SOURCE: DNR, DOG, Royalty Accounting.

Column 11: SOURCE: American Petroleum Institute (includes lease condensate), except 1983 figure from AOGCC.

TABLE A.2.
ALASKA GAS PRODUCTION
(BILLION CUBIC FEET)

	COOK INLET			NORTH SLOPE				TOTAL NORTH SLOPE	OTHER STATE	FEDERAL OCS	TOTAL ALASKA
	FEDERAL LEASES*	STATE LEASES	TOTAL COOK INLET	PRUDHOE BAY	KUPARUK	LISBURNE	NPRA				
1959	0.00		0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
1960	0.01		0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
1961	0.26		0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.63
1962	1.33		2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.18
1963	5.99		4.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.50
1964	0.93		6.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.24
1965	4.24		7.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.26
1966	22.76		11.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.27
1967	26.94		14.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.44
1968	33.18		17.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.34
1969	43.62		50.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.86
1970	59.47		111.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	111.58
1971	52.50	35.25	121.62	0.00	0.00	0.00	0.60	0.00	0.00	0.00	121.62
1972	56.28	35.53	125.60	0.00	0.00	0.00	0.70	0.00	0.00	0.00	125.60
1973	52.85	34.90	131.01	0.00	0.00	0.00	0.70	0.00	0.00	0.00	131.01
1974	50.94	35.28	128.93	0.00	0.00	0.00	0.80	0.00	0.00	0.00	128.93
1975	58.01	38.90	160.27	0.00	0.00	0.00	0.80	0.00	0.00	0.00	160.27
1976	60.58	40.25	166.07	0.00	0.00	0.00	0.80	0.00	0.00	0.00	166.07
1977	63.70	42.34	153.01	1.97	0.00	0.00	0.90	1.96	0.00	0.00	187.89
1978	80.20	46.52	163.50	7.26	0.00	0.00	0.90	7.18	0.00	0.00	203.09
1979	78.99	55.20	168.35	8.93	0.00	0.00	0.90	8.97	0.00	0.00	220.75
1980	81.37	56.03	160.39	11.06	0.00	0.00	1.00	10.89	0.00	0.00	230.59
1981	88.77	72.81	176.68	11.52	0.00	0.00	1.00	11.56	0.00	0.00	242.56
1982	93.50	81.60	186.97	12.09	0.10	0.00	1.25	12.98	0.00	0.00	
1983		74.52		13.46	0.14	0.00	1.23	12.95	0.00	0.00	

*EXCLUDES LAND CONVEYED TO COOK INLET REGION, INCORPORATED

NOTES TO TABLE A.2

Column 1: SOURCE: US Dept of Interior, MMS.

Columns 2, 4-6: SOURCE: DNR, DOG, Royalty Accounting.

Column 3, 8: 1959-1976, includes gas used on lease for fuel. SOURCE: American Petroleum Institute (represents gross production net of reinjection and gas vented and flared). 1977-1983, excludes gas used on lease for fuel. Sum of taxable production for Alaska severance taxes (Alaska DOR, DPR) and royalty production (Alaska DNR, DOG, Royalty Accounting and US Dept of Interior, MMS). Barrow gas fields not considered marketed or taxable production.

Column 11: Includes gas used on lease for fuel. SOURCE: American Petroleum Institute (represents gross production less gas used for reinjection and quantities vented and flared).

TABLE A.3.
AVERAGE OIL PRICE
(DOLLARS/BBL)

	COOK INLET			NORTH SLOPE		TOTAL NORTH SLOPE	OTHER STATE	FEDERAL OCS	TOTAL ALASKA
	FEDERAL ROYALTY	STATE ROYALTY	TOTAL COOK INLET	STATE LEASES	NPRA				
1959	1.59	-	1.58	-	-	-	-	-	1.58
1960	2.32	-	2.20	-	-	-	-	-	2.20
1961	2.78	-	2.79	-	-	-	-	-	2.79
1962	3.04	-	3.04	-	-	-	-	-	3.04
1963	3.06	-	3.04	-	-	-	-	-	3.04
1964	3.07	-	3.04	-	-	-	-	-	3.04
1965	3.06	-	3.06	-	-	-	-	-	3.06
1966	3.06	-	3.06	-	-	-	-	-	3.06
1967	3.10	-	3.13	-	-	-	-	-	3.13
1968	3.06	-	2.82	-	-	-	-	-	2.82
1969	3.07	-	2.90	-	-	-	-	-	2.90
1970	3.13	-	3.01	-	-	-	-	-	3.01
1971	3.39	3.28	3.24	-	-	-	-	-	3.24
1972	3.37	3.28	3.23	-	-	-	-	-	3.23
1973	3.93	3.55	3.62	-	-	-	-	-	3.62
1974	6.11	4.70	4.92	-	-	-	-	-	4.92
1975	5.41	4.68	5.22	-	-	-	-	-	5.22
1976	5.29	4.77	5.03	-	-	-	-	-	5.03
1977	5.36	4.83	5.26	6.13	-	6.13	-	-	5.84
1978	5.39	5.59	5.59	5.02	-	5.02	-	-	6.02
1979	6.32	6.14	6.05	10.48	-	10.48	-	-	10.74
1980	9.64	8.58	10.06	16.73	-	16.73	-	-	15.63
1981	29.51	29.38	30.05	23.18	-	23.18	-	-	23.63
1982	27.82	28.25	27.79	19.69	-	19.69	-	-	
1983		25.25		17.44	-	17.44	-	-	

Notes: Column 1: Source, U.S. Department of Interior, MMS.

Columns 2, 4, 6: Source, Alaska DNR, DOG, Royalty Accounting.

Column 3: Sources, 1959-1976, American Petroleum Institute, 1977-1982, weighted average of taxable and royalty share prices (Alaska DOR, DPR, Alaska DNR, DOG, Royalty Accounting and U.S. Department of Interior, MMS).

Column 9: Weighted average annual wellhead price, state average; source, American Petroleum Institute.

TABLE A.4.
AVERAGE GAS PRICE
(DOLLARS/MCF)

	COOK INLET			NORTH SLOPE			OTHER STATE	FEDERAL OCS	TOTAL ALASKA
	FEDERAL ROYALTY	STATE ROYALTY	TOTAL COOK INLET	STATE LEASES	NPRA	TOTAL NORTH SLOPE			
1959	0.00	-	0.12	-	-	-	-	-	0.12
1960	0.30	-	0.12	-	-	-	-	-	0.12
1961	0.30	-	0.20	-	-	-	-	-	0.20
1962	0.33	-	0.21	-	-	-	-	-	0.21
1963	0.25	-	0.25	-	-	-	-	-	0.25
1964	0.25	-	0.28	-	-	-	-	-	0.28
1965	0.24	-	0.25	-	-	-	-	-	0.25
1966	0.18	-	0.25	-	-	-	-	-	0.25
1967	0.19	-	0.25	-	-	-	-	-	0.25
1968	0.18	-	0.25	-	-	-	-	-	0.25
1969	0.17	-	0.26	-	-	-	-	-	0.26
1970	0.17	-	0.25	-	-	-	-	-	0.25
1971	0.17	0.20	0.15	-	-	-	-	-	0.15
1972	0.18	0.22	0.15	-	-	-	-	-	0.15
1973	0.18	0.24	0.15	-	-	-	-	-	0.15
1974	0.20	0.28	0.17	-	-	-	-	-	0.17
1975	0.28	0.62	0.30	-	-	-	-	-	0.30
1976	0.32	0.74	0.39	-	-	-	-	-	0.39
1977	0.32	0.78	0.39	1.07	-	1.07	-	-	0.40
1978	0.36	0.70	0.49	1.19	-	1.19	-	-	0.52
1979	0.41	0.81	0.66	1.75	-	1.75	-	-	0.52
1980	0.61	0.69	0.54	1.84	-	1.84	-	-	0.73
1981	0.88	0.95	0.59	1.75	-	1.75	-	-	0.62
1982	1.13	0.39	0.59	1.70	-	1.70	-	-	0.63
1983		0.43		1.80	-	1.80	-	-	

Notes: Column 1: Source, U.S. Department of Interior, MMS.

Columns 2, 4, 6: Source, Alaska DNR, DOG, Royalty Accounting.

Column 3: Sources, 1959-1976, American Petroleum Institute, 1977-1982, weighted average of taxable and royalty share prices (Alaska DOR, DPR, Alaska DNR, DOG, Royalty Accounting and U.S. Department of Interior, MMS).

Column 9: Weighted average annual wellhead price, state average; source, American Petroleum Institute.

TABLE A.5.
BONUS PAYMENTS
(MILLION DOLLARS)

	COOK INLET			NORTH SLOPE		TOTAL NORTH SLOPE	OTHER STATE	FEDERAL OCS	TOTAL ALASKA
	FEDERAL LEASES	STATE LEASES	TOTAL COOK INLET	STATE LEASES	NPRA				
1959	0.00	2.98	2.98	0.00	0.00	0.00	1.04	0.00	4.02
1960	0.00	0.42	0.42	0.00	0.00	0.00	0.02	0.00	0.44
1961	0.00	21.90	21.90	0.00	0.00	0.00	0.51	0.00	22.42
1962	0.00	15.71	15.71	0.00	0.00	0.00	0.00	0.00	15.71
1963	0.00	7.18	7.18	0.00	0.00	0.00	0.00	0.00	7.18
1964	0.00	1.06	1.06	4.38	0.00	4.38	0.18	0.00	5.61
1965	0.00	4.67	4.67	6.15	0.00	6.15	0.00	0.00	10.82
1966	0.00	7.18	7.18	0.00	0.00	0.00	0.00	0.00	7.18
1967	0.00	18.76	18.76	1.47	0.00	1.47	0.01	0.00	20.24
1968	0.00	1.04	1.04	900.04	0.00	0.00	3.01	0.00	4.05
1969	0.00	0.00	0.00	0.00	0.00	900.04	0.00	0.00	900.04
1970	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1971	0.00	0.46	0.46	0.00	0.00	0.00	0.00	0.00	0.46
1972	0.00	2.88	2.88	0.00	0.00	0.00	0.00	0.00	2.88
1973	0.00	25.95	25.95	0.00	0.00	0.00	0.00	0.00	25.95
1974	0.00	1.04	1.04	0.00	0.00	0.00	0.00	0.00	1.04
1975	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1976	0.00	0.00	0.00	0.00	0.00	0.00	0.00	559.84	559.84
1977	0.00	0.00	0.00	0.00	0.00	0.00	0.00	398.47	398.47
1978	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1979	0.00	0.00	0.00	567.39	0.00	567.39	0.16	488.69	1056.24
1980	0.00	0.00	0.00	12.39	0.00	12.39	0.00	109.75	122.14
1981	0.00	5.82	5.82	0.00	0.00	0.00	0.00	4.58	10.40
1982	0.00	1.31	1.31	59.30	53.30	112.60	0.66	2055.63	2170.20
1983	0.00				0.96				

Notes: Columns 1, 5: Source, U.S. Department of Interior, Bureau of Land Management, Data Processing.

Columns 2, 4, 7: Source, Alaska DNR, Division of Management (ISER allocation to region).

Column 8: Source, U.S. Department of Interior, MMS.

TABLE A.6.
RENTAL PAYMENTS
(MILLION DOLLARS)

	COOK INLET			NORTH SLOPE			OTHER STATE	FEDERAL OCS	TOTAL ALASKA
	FEDERAL LEASES	STATE LEASES	TOTAL COOK INLET	STATE LEASES	NPRA	TOTAL NORTH SLOPE			
1959	0.34	0.00	0.34	00.0	0.00	0.00	0.00	0.00	0.34
1960	0.08	0.18	0.26	00.0	0.00	0.00	0.01	0.00	0.27
1961	0.01	0.34	0.35	00.0	0.00	0.00	0.02	0.00	0.37
1962	0.08	1.00	1.07	00.0	0.00	0.00	0.05	0.00	1.12
1963	0.04	0.96	1.00	00.0	0.00	0.00	0.05	0.00	1.06
1964	0.02	0.75	0.77	0.50	0.00	0.50	0.00	0.00	1.27
1965	0.08	1.56	1.64	1.04	0.00	1.04	0.00	0.00	2.68
1966	0.27	1.06	1.33	1.06	0.00	1.06	0.53	0.00	2.93
1967	0.26	1.13	1.39	1.13	0.00	1.13	0.57	0.00	3.09
1968	5.74	1.38	7.12	1.38	0.00	1.38	0.69	0.00	9.19
1969	0.41	0.79	1.20	1.58	0.00	1.58	0.79	0.00	3.57
1970	0.30	0.72	1.02	1.44	0.00	1.44	0.72	0.00	3.18
1971	0.21	0.76	0.97	1.52	0.00	1.52	0.76	0.00	3.26
1972	0.35	0.75	1.10	1.49	0.00	1.49	0.75	0.00	3.34
1973	0.29	0.83	1.12	1.67	0.00	1.67	0.03	0.00	2.83
1974	0.34	0.90	1.24	1.80	0.00	1.80	0.90	0.00	3.94
1975	0.31	0.86	1.17	1.71	0.00	1.71	0.86	0.00	3.74
1976	0.29	0.69	0.98	1.39	0.00	1.39	0.69	1.23	4.29
1977	0.01	0.67	0.68	1.34	0.00	1.34	0.67	2.83	5.52
1978	0.00	0.55	0.55	1.10	0.00	1.10	0.55	2.83	5.03
1979	0.00	0.52	0.52	1.02	0.00	1.03	0.52	2.32	4.39
1980	0.29	1.39	1.68	2.77	0.00	2.77	1.39	2.23	8.06
1981	0.01	1.65	1.66	3.31	0.00	3.31	1.65	1.88	8.50
1982	2.50	0.81	3.31	1.62	2.72	4.34	0.81	3.32	11.78
1983	2.30				2.65				

Notes: Columns 1, 5: Source, U.S. Department of Interior, Bureau of Land Management, Data Processing.

Columns 2, 4, 7: Source, Alaska DNR, Division of Management (ISER allocation to region).

Column 8: Source, U.S. Department of Interior, MMS.

TABLE A.7.
OIL ROYALTIES
(MILLION DOLLARS)

	COOK INLET			NORTH SLOPE				TOTAL NORTH SLOPE	OTHER STATE	FEDERAL OCS	TOTAL ALASKA
	FEDERAL LEASES	STATE LEASES	TOTAL COOK INLET	PRUDHOE BAY	KUPARUK	LISBURNE	NPRA				
1959	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02
1960	0.11	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11
1961	1.80	0.00	1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.80
1962	3.28	0.00	3.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.28
1963	3.48	0.04	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.52
1964	3.61	0.08	3.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.69
1965	3.55	0.10	3.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64
1966	3.74	0.94	4.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.68
1967	4.44	3.52	7.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.95
1968	5.22	14.23	19.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.45
1969	5.05	17.40	22.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22.44
1970	4.86	22.15	27.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.01
1971	4.86	27.89	32.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.77
1972	3.75	26.22	29.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.97
1973	5.14	27.46	32.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	32.65
1974	7.74	35.52	43.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.35
1975	6.14	35.51	41.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.68
1976	5.22	33.10	38.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.33
1977	4.19	30.35	34.56	78.73	0.00	0.00	0.00	78.73	0.00	0.00	113.29
1978	3.44	31.79	35.24	223.71	0.00	0.00	0.00	223.71	0.00	0.00	258.95
1979	3.60	29.82	33.44	582.27	0.00	0.00	0.00	582.27	0.00	0.00	615.71
1980	4.75	34.74	39.51	1115.64	0.00	0.00	0.00	1115.64	0.00	0.00	1155.15
1981	11.42	104.61	116.03	1568.27	2.73	0.00	0.00	1571.00	0.00	0.00	1687.02
1982	10.92	86.83	97.76	1351.70	70.99	0.50	0.00	1423.18	0.00	0.00	1520.94
1983		68.66		1191.38	78.99	0.22	0.00	1270.59	0.00	0.00	

NOTES: Column 1: Source, U.S. Department of Interior, MMS.
Columns 2, 4, 5, 6, 8: Alaska DNR, DOG, Royalty Accounting

TABLE A.8.
GAS ROYALTIES
(MILLION DOLLARS)

	COOK INLET			NORTH SLOPE				TOTAL NORTH SLOPE	OTHER STATE	FEDERAL OCS	TOTAL ALASKA
	FEDERAL LEASES*	STATE LEASES	TOTAL COOK INLET	PRUDHOE BAY	KUPARUK	LISBURNE.	NPRA				
1959	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1960	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1961	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
1962	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
1963	0.10	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10
1964	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
1965	0.09	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09
1966	0.35	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
1967	0.43	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43
1968	0.53	0.24	0.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.77
1969	0.70	0.39	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09
1970	1.29	0.76	2.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.04
1971	1.13	0.90	2.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.02
1972	1.23	0.96	2.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.20
1973	1.19	1.05	2.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.24
1974	1.31	1.23	2.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.54
1975	2.01	3.03	5.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.04
1976	2.40	3.73	6.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.13
1977	2.58	4.13	6.71	0.26	0.00	0.00	0.00	0.26	0.00	0.00	6.97
1978	3.59	4.05	7.64	1.08	0.00	0.00	0.00	1.08	0.00	0.00	8.73
1979	4.01	5.59	9.60	1.37	0.00	0.00	0.00	1.37	0.00	0.00	10.97
1980	6.24	4.83	11.08	1.83	0.00	0.00	0.00	1.83	0.00	0.00	12.91
1981	9.75	8.60	18.35	2.17	0.00	0.00	0.00	2.17	0.00	0.00	20.52
1982	13.21	4.03	17.24	2.57	0.03	0.00	0.00	2.60	0.00	0.00	19.83
1983		4.02		2.96	0.05	0.00	0.00	3.01	0.00	0.00	

*EXCLUDES LAND CONVEYED TO COOK INLET REGION, INCORPORATED

NOTES: Column 1: Source, U.S. Department of Interior, MMS.

Columns 2, 4, 5, 6, 8: Alaska DNR, DOG, Royalty Accounting

TABLE A.9.
 ASSESSED VALUES AND EFFECTIVE TAX RATES FOR OIL AND GAS PROPERTY
 (thousands of current dollars)

Year	North Slope Borough			Kenai Peninsula Borough			Yakutat ^a		
	Assessed Value	Local Credit	Tax Rate (mills)	Assessed Value	Local Credit	Tax Rate (mills)	Assessed Value	Local Credit	Tax Rate (mills)
1975	424,417	5,220	12.30	403,603	2,640	6.54	0	0	-
1976	1,520,251	15,659	10.30	457,274	3,041	6.65	0	0	-
1977	3,304,837	24,852	7.52	460,401	2,910	6.32	3,887	51	13.10
1978	4,456,311	32,488	7.29	452,631	2,556	5.65	3,213	44	13.70
1979	4,810,888	49,801	10.35	445,727	1,433	3.22	2,640	36	13.70
1980	5,450,597	55,974	10.27	499,955	1,834	3.67	1,944	27	13.70
1981	6,297,617	105,151	16.70	562,863	1,570	2.79	2,033	28	13.70
1982	7,722,400	126,802	16.42	578,500	1,446	2.50	2,060	28	13.70

^aProperty tax revenues taken assumed to be entirely exploration related.

SOURCES: Petroleum Property Assessor, Department of Revenue, Division of Petroleum Revenue.

Alaska Department of Community and Regional Affairs, Division of Local Government Assistance. Alaska Taxable.

TABLE A.10.
HISTORICAL ASSESSED VALUE OF ALASKA OIL AND GAS PROPERTY^a
(thousands of current dollars)

<u>Property Type/Area^b</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Pipeline Property									
Kenai Peninsula Borough	37,601	40,201	53,325	54,846	50,226	47,422	44,046	46,455	45,000
North Slope Borough	54,673	191,664	728,923	1,420,749	1,948,703	1,727,939	2,055,866	2,117,825	2,114,600
Other/Statewide	165,376	453,829	2,628,487	4,700,309	6,151,297	6,672,061	6,194,134	6,248,125	6,067,500
Production Property									
Kenai Peninsula Borough	282,904	353,486	386,743	388,548	380,705	376,899	428,058	495,317	496,700
North Slope Borough									
Sadlerochit	152,283	194,070	706,613	1,781,406	2,375,106	2,878,127	3,141,438	3,716,788	
Kuparuk	0	0	0	0	0	26,000	53,755	104,421	5,200,000
Other North Slope	4,700	8,000	20,000	31,600	42,000	50,000	50,500	79,451	
Other/Statewide	205	621	790	3,944	4,101	4,640	4,892	7,310	9,700
Exploration/Other									
Kenai Peninsula Borough	2,308	9,916	17,219	17,008	21,940	21,406	27,852	21,091	36,800
North Slope Borough	14,767	30,683	64,715	71,082	90,502	128,822	149,038	279,132	407,800
Yakutat ^c	0	0	0	3,887	3,213	2,640	1,944	2,033	2,060
Other/Statewide	1,799	5,820	15,808	18,868	9,432	10,491	14,112	52,686	30,240

^aFull and true value of all taxable property as defined by AS 43.56.

^bFor the Kenai Peninsula Borough, the valuation of oil producing property prior to 1974 was \$265,000 (1971), \$283,000 (1972), and \$304,000 (1973). Source: D.E. Thomas, Director of Assessing Kenai Peninsula Borough.

^cEntire value of petroleum property in Yakutat assumed to be exploration property.

SOURCE: Petroleum Property Assessor, Department of Revenue, Division of Petroleum Revenue.

TABLE A.11.
PROPERTY TAX REVENUES FROM OIL AND GAS PRODUCTION AND EXPLORATION PROPERTY
(thousands of current dollars)

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>
Assessed Valuation ^a	0	0	0	458,966	602,596	1,211,888	2,316,343	2,926,999	3,499,085	3,871,589	4,758,229	6,183,300
Gross Tax Liability ^b	0	0	0	9,179	12,052	24,238	46,327	58,540	69,982	77,432	95,165	123,666
Local Revenue ^c												
KPB	2,200	2,264	2,250	1,996	2,377	2,686	2,563	2,274	1,281	1,672	1,441	1,334
NSB	0	0	*	2,233	2,863	8,151	14,168	13,736	31,914	34,864	69,803	92,080
Yakutat	0	0	0	0	0	0	51	44	36	27	28	28
State Revenue ^d	0	0	0	4,950	6,812	13,401	29,545	42,486	36,751	40,871	23,893	30,224

* Not available.

^aTable A.10. Note that the state property tax was not in effect prior to 1974.

^bCalculated as two percent (20 mills) of the full and true value of all production and exploration property (i.e., exclusive of pipeline property).

^cLocal production and exploration property tax values for the Kenai Peninsula Borough (KPB) and North Slope Borough (NSB) derived by applying effective borough-wide tax rates for all oil and gas property to the assessed value for oil and gas property exclusive of pipeline property. Tables A.9 and A.10. Values for 1974 estimated for KPB using effective rate of 7.0 mills and for NSB using effective tax rate of 13.0 mills. Values for Yakutat from Table A.9 (see footnote).

^dState revenues equal to the difference between gross tax liability and local revenues. Values include negligible amounts of production and/or exploration property tax revenues that accrued to local governments other than KPB, NSB, or Yakutat.

APPENDIX B

HISTORICAL COSTS OF OIL AND GAS EXPLORATION AND DEVELOPMENT IN ALASKA

1.0. Introduction

The historical costs associated with Alaska oil and gas development can be considered as the total of all expenditures for (1) geological and geophysical exploration, (2) drilling and field development, and (3) production, including operation and maintenance. For the purposes of this study, oil and gas development is defined exclusive of pipeline and refinery expenditures. Where published cost estimates were found, they are reported below. Where insufficient data were available, estimates of past costs were derived on the basis of reported levels of activity such as geological and geophysical crew-months of field work or footage of drilling.

Only one source was found to report total statewide historic industry costs as shown in Table B.1. Costs for lease acquisition such as over-the-counter lease application fees, bonus bids, and rental payments are treated separately.

2.0. Exploration Costs

Exploration costs can be defined to include all geological and geophysical exploration expenses, including seismic, gravity, and magnetic surveys, together with the cost of data processing and interpretation. Data on actual expenditures associated with Alaska exploration effort is generally not available, although some limited information is available from the Alaska Department of Natural Resources (DNR) and the Alaska Department of Revenue (DOR). In order to derive more comprehensive historical exploration cost estimates, Alaska exploration activity levels were documented using several sources including the annual reports of the American Association of Petroleum Geologists (AAPG) and the Society of

TABLE B.1.
ESTIMATED COSTS FOR EXPLORATION, DEVELOPMENT,
AND PRODUCTION OF OIL AND GAS IN ALASKA
(millions of dollars)

Activity	1963	1964	1965	1966	1967	1968
Exploration ^a	54.0	61.0	66.0	66.4	74.6	63.6
Development Drilling	4.6	0.7	5.3	17.6	37.2	66.4
Production	1.6	1.8	19.3	55.8	71.8	28.7
Refinery Construction ^b	5.6	2.2	2.0	6.5	34.8	55.8
Total, Exclusive of Refinery Costs	60.2	63.5	90.6	139.8	183.6	158.7

^aIncludes exploratory drilling costs as well as geological and geophysical survey activity together with administration expenses; does not include costs for lease acquisition.

^bIncludes operation and maintenance.

SOURCES: State of Alaska Department of Natural Resources, Division of Mines and Minerals (Annual Reports 1963-1967); State of Alaska, Department of Natural Resources, Division of Oil and Gas (Annual Report 1968).

Exploration Geophysicists (SEG). The data for exploration activity, as measured in yearly crew-months of field work, was then used as the basis for developing an annual series of estimated historical exploration costs in Alaska 1958-1980. A brief review of published historical exploration cost data available from DNR and DOR is provided below, followed by a description of the data used to derive the annual series of estimated historical exploration costs used in our analysis.

An estimate of statewide exploration costs for the two-year period 1960-1961 is available from the annual reports of the DNR Division of Mines and Minerals¹ as shown in Table B.2. An estimate of past costs for geological and geophysical work done in the Cook Inlet Basin 1959-1974 is available from the DOR Petroleum Revenue Division (1975) based on information supplied by the Alaska Oil and Gas Association (AOGA).

TABLE B.2.
EXPLORATION COSTS^a
(millions of dollars)

Year	Geologic	Seismic	Grav-Mag	Total
1960	1.68	3.62	0.13	5.43
1961	1.91	6.92	0.50	9.33

^aThis source also reported costs associated with exploratory drilling as \$8.28 million in 1960 and \$15.08 million in 1961.

SOURCE: Alaska Department of Natural Resources, Division of Mines and Minerals, annual reports 1960-1961.

The DOR report observed: "Information supplied by [AOGA] suggests that geophysical and geological costs have together run about 110 percent of bonus bids for the Cook Inlet Basin." To account for the timing of these exploration costs, the DOR study estimated that 110 percent of the cost of bonus bids in a given year had been incurred two years earlier as costs for geologic and geophysical exploration in Cook Inlet as shown in Table B.3. This same data series for exploration costs was used in a subsequent study by Erickson and Latham (1976). Unfortunately, the practice of collecting data on industry costs has been discontinued by AOGA, and no information on past costs is currently available.

In order to develop a more comprehensive and historically accurate account of the timing of geological and geophysical exploration costs, the level of exploration activity in Alaska was documented as measured in crew-months of field activity. The most comprehensive source of data for yearly exploration activity is the annual review of the American Association of Petroleum Geologists (AAPG). This annual account of exploration activity reports detailed information on petroleum industry activities including the number of crew-months of geological and geophysical exploration effort on a regional basis. The AAPG data for Alaska is summarized in Table B.4. A separate estimate of Alaska geophysical activity (seismic, gravity, and magnetics) is available from an annual survey conducted by the Society of Exploration Geophysicists (SEG). While the SEG survey emphasizes the distinction between onshore and marine geophysical work, the data is collected on a statewide basis disallowing the possibility of allocating costs to different regions such as Cook Inlet or the North Slope. The SEG survey results are shown in Table B.5.

TABLE B.3.
DOR ESTIMATE OF GEOLOGICAL AND GEOPHYSICAL
EXPLORATION COSTS IN THE COOK INLET
BASIN, 1959-1974
(millions of dollars)

Year	Exploration Costs ^a
1959	21.97
1960	17.19
1961	7.90
1962	1.16
1963	5.14
1964	7.89
1965	14.10
1966	3.36
1967	0
1968	0
1969	0.50
1970	3.17
1971	27.30
1972	1.14
1973	1.00
1974	1.00

^aCosts assumed to be 110 percent of total bonus bids for Cook Inlet region with exploration expenditures accounted for two years prior to lease sale. See text for additional explanation.

SOURCE: Department of Revenue, Division of Petroleum Revenue (1975).

TABLE B-4.
EXPLORATION ACTIVITY IN ALASKA
BY GEOGRAPHIC REGION^a
(crew-months)

Year	Cook Inlet			North Slope ^b			Other Areas ^c		
	Geology	Seismic	Grav-Mag	Geology	Seismic	Grav-Mag	Geology	Seismic	Grav-Mag
1958	38.0	36.0	8.5	3.0	0	0	75.0	3.0	3.5
1959 ^d	16.0	61.0	0	14.0	0	0	92.0	27.25	1.0
1960	21.25	27.5	1.75	21.25	0	0	30.0	11.0	3.0
1961	10.5	37.75	5.5	28.5	0	0	19.0	31.0	8.75
1962	3.75	60.25	7.0	12.75	6.5	6.0	19.25	14.50	3.5
1963	2.25	60.0	4.0	29.0	29.25	3.5	33.0	20.75	5.0
1964	2.25	31.5	3.0	19.0	53.5	11.0	32.75	10.0	6.0
1965	0.5	22.25	3.75	15.5	26.75	1.5	18.75	11.25	4.75
1966	5.0	58.5	*	10.1	2.75	*	30.2	18.25	*
1967	6.0	42.5	3.5	3.0	0	0	30.0	24.0	2.0
1968	1.0	33.0	*	12.0	24.0	*	22.0	23.0	*
1969	0	6.0	5.0	20.0	101.0	0	16.0	23.5	3.5
1970	1.0	6.0	*	20.0	96.0	*	25.0	26.0	*
1971	3.0	7.0	*	20.0	21.0	*	27.5	16.0	*
1972	1.0	9.5	*	13.4	8.0	*	22.9	24.5	*
1973	2.6	8.1	*	6.5	24.4	*	17.3	24.4	*
1974	2.8	18.8	*	7.2	54.3	*	32.0	53.2	*
1975	4.0	5.8	*	6.0	82.9	*	23.4	102.6	*
1976	4.3	15.0	*	3.4	22.6	*	15.2	91.3	*
1977	2.1	8.61	*	6.8	14.4	*	20.3	27.0	*
1978	4.1	8.0	*	4.2	19.7	*	12.2	15.7	*
1979	0.4	14.9	*	3.8	19.7	*	6.7	17.6	*
1980	0.3	30.5	*	6.8	25.14	*	4.1	38.8	*
1981	0	12.59	*	9.67	45.38	*	7.67	56.91	*

*Not available. AAPG data gives only two categories of crew-month activity: geologic and geophysical. No distinction is made between seismic geophysical work and the less costly gravity and magnetics work.

^aGeological and geophysical activity by private industry (exclusive of work by the federal or state government). No clear distinction is made between onshore and offshore work prior to 1976. Categories of work include surface geological investigations (geologic), seismological surveys (seismic), and gravity and magnetics surveys (grav-mag).

^bNorth Slope onshore areas only (i.e., foothills and coastal plain).

^cIncludes all geologic and geophysical exploration activity by private industry outside the Cook Inlet and North Slope regions. Includes exploratory work in the Beaufort Sea.

^dGeologic crew-months for 1959 estimated from data provided on the number of companies operating in the area. The number of companies reported as active was multiplied by a factor of 2 in order to reflect two crew-months of exploration per company.

SOURCE: AAPG, Annual Activity Reports, 1958-81.

TABLE B.5.
CREW-MONTHS OF
ALASKA EXPLORATION ACTIVITY^a
(crew-months)

<u>Year</u>	<u>Onshore</u>		<u>Marine</u>		<u>Total</u>	
	<u>Seismic</u>	<u>Grav-Mag</u>	<u>Seismic</u>	<u>Grav-Mag</u>	<u>Seismic</u>	<u>Grav-Mag</u>
1959	*	*	*	*	97	10
1960*	*	*	*	*	*	*
1961	*	*	*	*	71	12
1962	*	*	*	*	67	1
1963	*	*	*	*	106	3
1964	*	*	*	*	100	13
1965	*	*	*	*	67	4
1966	*	*	*	*	94	0
1967	34	0	31	0	65	0
1968	80	0	26	2	106	2
1969	155	1	22	0	177	1
1970	84	14	15	5	99	19
1971	40	3	22	2	62	5
1972	41	20	22	1	63	21
1973	41	6	23	1	64	7
1974	129	*	54	*	183	*
1975	101	*	76	*	177	*
1976	54	*	75	*	129	*
1977	24	*	10	*	34	*
1978	16	*	*	*	*	*
1979	30	*	*	*	*	*
1980	37	*	*	*	*	*

*Not available.

^aThe SEG survey discontinued reporting of nonseismic crew activity on a state-by-state basis in 1974. The first year the survey distinguished between onshore and marine work was 1967.

SOURCE: Society of Exploration Geophysicists Annual Activity Reports.

The unit costs of geological and geophysical exploration activities (dollars per crew-month of activity) have been given detailed consideration by the National Petroleum Council (1981) in its study of U.S. arctic oil and gas development potential. Additional data is available from Mead (1980) and Beck (1977).

The NPC study observed that it is generally far more expensive to conduct exploration in arctic Alaska than in the "Lower 48" states. While each exploration project should be costed out on a site-specific basis, general unit cost estimates were developed as part of the study as shown in Table B.6. It should be emphasized that these estimates were developed by the NPC for the purpose of evaluating prospective arctic oil and gas developments. The costs shown, therefore, reflect expenses for geological and geophysical work on the North Slope and in the frontier OCS areas of the Beaufort Sea, Chukchi Sea, and Bering Sea. While the actual historical costs attributable to any one specific exploration program for a given year may differ from the NPC estimated unit costs, the values shown in Tables B.6 and B.7 provide a basis for making historical exploration cost estimates.

TABLE B.6.
GEOLOGICAL AND GEOPHYSICAL
EXPLORATION COSTS^a
(1981 dollars)

<u>Activity</u>	<u>Area</u>	<u>Cost/ Crew-Month (\$000s)</u>	<u>Cost/Mile (\$000s)</u>
Geologic	North Slope	100-125	NA
Seismic ^b	North Slope	1300-2700	12-45
	Bering Sea	3000-4000	1.5-2
	Beaufort Sea	850-2400	8-12
	Chuckchi	850-5000	2-12
Gravity-Magnetic	All Areas	100-250	NA

NA - Not applicable.

^aThe cost of exploration programs as shown include only "on-site data gathering" and does not include additional costs of data processing and interpretation. Cost data shown prepared for purposes of evaluating arctic exploration expenses on the North Slope and in the frontier OCS areas of the Bering Sea, Beaufort Sea, and Chuckchi Sea (see text).

^bRange of costs for seismic work varies depending upon assumptions regarding the efficiency of operation (miles/month). See Table B.7.

SOURCE: National Petroleum Council, Exploration Task Group Working Paper #4 (1981).

TABLE B.7.
COSTS OF REFLECTION SEISMIC SURVEY WORK
NPC ESTIMATES
(1981 dollars)

<u>NPC Region/Location</u>	<u>Cost/Month</u>	<u>Miles/Month</u>	<u>Cost/Mile</u>
Region I: North Slope			
● Coastal	\$1.3-1.76 million	110	\$12,000-16,000
● Foothills	\$1.5-2.7 million	60	\$25,000-45,000
Region II: Bering Sea	\$3-4 million	2000	\$1,500-2,000
Region III: Beaufort/Chuckchi Sea			
● Hard water	\$0.85-1.2 million	100	\$8,500-12,000
● Shallow marine	\$1.6-2.4 million	200	\$8,000-12,000
● Beaufort	\$12.75-15 million	1500	\$8,500-10,000
● Chuckchi	\$4-5 million	2000	\$2,000-2,500

SOURCE: National Petroleum Council, Exploration Task Group Working Paper No. 4 (1981).

A separate estimate of geophysical exploration costs is available from Mead (1980) as part of a study for USGS on OCS lease competition and performance in the Gulf of Mexico. As part of that study, Mead reported geophysical exploration costs based primarily upon data collected by the Society of Exploration Geophysicists plus additional data gathered directly from seven of the major Gulf of Mexico offshore oil producers. The geophysical exploration costs for the Gulf of Mexico are summarized in Table B.8.

Beck examined marine geophysical costs as part of a study by Arthur D. Little Co. (ADL) for the Bureau of Land Management. The ADL report developed an index of marine geophysical data acquisition costs per line mile of effort in 1975. The index is shown in Table B.9. As indicated by these figures, because of the severe ice conditions, geophysical work in the Beaufort Sea is far more expensive than elsewhere. For the purpose of comparison, estimated national average geophysical exploration costs are shown in Table B.10.

A note of caution is appropriate with regard to the use of the statistic "crew-month." As far back as 1906, in the SEG annual activity report it was observed: "One area in which we are not satisfied is in 'months' as a unit for quantity of work. Fast marine operations, where 24-hour days are often the rule, will produce a thousand miles of line and more per month. When this quantity of work is compared to a land crew where 50 miles is a good month's work, the shakiness of our reporting system is really noticeable. However, until some better system of universal acceptance is available, we will continue to use 'months' as a basic statistic."

A year later, the SEG annual activity report repeated concerns about the "crew-month" as a measure of activity: "Once again we refer to

TABLE B.8.
EXPLORATION COSTS, GULF OF MEXICO OCS AREAS
1950 - 1969
(current dollars)

<u>Year</u>	<u>Cost per Crew Month (Marine Seismic)</u>
1950	\$120,000
1951	125,000
1952	130,000
1953	135,000
1954	140,000
1955	145,000
1956	150,000
1957	150,000
1958	150,000
1959	155,000
1960	155,000
1961	160,000
1962	165,000
1963	170,000
1964	180,000
1965	200,000
1966	180,000
1967	120,000
1968	130,000
1969	155,000

SOURCE: Mead, Appendix 2 (1980).

TABLE B.9.
INDEX OF MARINE GEOPHYSICAL COSTS PER LINE MILE
FOR ACQUISITION OF DATA
1975

<u>Area</u>	<u>Cost Index</u>
Gulf of Mexico	100
Atlantic Coast	127
Pacific Coast	127
Gulf of Alaska	132
Chuckchi Sea	127
Bering Sea	132
Beaufort Sea ^a	1,136

^aBeaufort Sea costs are assumed to be the same as average Canada land costs because surveys on ice tend to be more like land surveys than like sea surveys.

SOURCE: Beck (1977).

TABLE B.10.
ESTIMATED NATIONAL AVERAGE COSTS
OF EXPLORATION ACTIVITY DOLLARS PER CREW-MONTH^a
(thousands of dollars)

<u>Year</u>	<u>Land</u>	<u>Marine</u>	<u>Total</u>
1964	*	*	48
1965	35	180	56
1966	*	*	52
1967	40	120	48
1968	45	130	49
1969	65	155	66
1970	50	158	53
1971	47	170	51
1972	59	130	60
1973	71	191	82
1974	84	213	97
1975	93	241	109
1976	107	216	117

*Not available.

^aAs reported by the SEG annual activity survey or derived by dividing total data gathering costs by total crew months of activity. Data acquisition costs only (no processing or interpretation).

SOURCE: Society of Exploration Geophysicists, Geophysics (annual activity reports 1964-1976).

the inadequacy of crew-months in reporting [marine seismic activity] We continue to give it a value of 10X land work as a measure of useful work."

During the mid-1970s, the line mile (and costs in \$/line mile) emerged as a new standard of measure for exploration activity. As a measure of costs, the line mile can accommodate differences in efficiency associated with land versus marine operations.

For the purposes of estimating historical activity and costs, however, the only consistently gathered statistic is crew-months of activity. Moreover, the only data available on a state-by-state basis is crew-months of activity.

A substantial component of exploration expenditures beyond raw geological and geophysical (G and G) data acquisition are those costs associated with data processing and interpretation. According to Mead (1980), the costs of geological data processing and interpretation "have risen from about 25 percent of data acquisition costs (1950-1953) to over 100 percent of acquisition costs (since 1975), reflecting the improvements in computer technology and sophistication of mathematical and other modeling of geological information." Mead emphasizes the "rapid rise since 1966 of processing/interpretation costs as a proportion of total 'G and G' costs." Estimates of processing and interpretation costs as a percentage of data acquisition costs are shown in Table B.11.

3.0 Drilling and Development Costs

Statistics regarding the amount of exploratory and development drilling that has taken place in Alaska are currently kept by the Alaska Oil and Gas Conservation Commission and formerly by the Alaska Department of Natural Resources. Additional data is available from the annual reports of the American Association of Petroleum Geologists. An annual account of statewide exploration, development, and service well drilling is shown in Table B.12.

TABLE B.11.
ESTIMATES OF PROCESSING AND INTERPRETATION COSTS
AS A PERCENTAGE OF DATA ACQUISITION COSTS^a
(percent)

<u>Year</u>	<u>Land</u>	<u>Marine</u>
1959	*	35
1960	*	35
1961	*	35
1962	*	40
1963	*	40
1964	*	40
1965	*	30
1966	*	30
1967	*	50
1968	30	60
1969	30	60
1970	*	*
1971	*	*
1972	30	100
1973	30	100
1974	30	100
1975	30	100
1976	30%	110%

*Not available.

^aPercentages based on unit cost of \$/crew-month as 100 percent.

SOURCE: Mead (1980) and the Society of Exploration Geophysicists Annual Activity Reports.

TABLE B.12.
ALASKA DRILLING STATISTICS
(feet of well depth)

<u>Year</u>	<u>Exploration</u>	<u>Development</u>	<u>Service</u>	<u>Total</u>
1959	75705	62197	0	137902
1960	93749	166592	0	260341
1961	197499	302989	0	500488
1962	290976	84421	0	375397
1963	135248	80337	0	215585
1964	177110	2363	0	179473
1965	187135	81236	0	268371
1966	383972	162513	0	546485
1967	317986	588448	0	906134
1968	172444	999998	0	1172442
1969	583518	640096	0	1223614
1970	214111	504920	0	719031
1971	69637	264949	0	334586
1972	105827	191505	0	297332
1973	92966	186841	0	279807
1974	115826	241644	0	357470
1975	208303	406405	61843	676551
1976	133167	579001	88548	800716
1977	166259	487814	26943	681016
1978	176335	580134	105688	862157
1979	155335	786940	81659	1023934
1980	158373	1186009	9500	1353882
1981	256428	1557668	53280	1867376
1982	147403	1952761	77123	2177287

SOURCE: Alaska Oil and Gas Conservation Commission, Statistical Reports, 1977-82; State of Alaska Department of Natural Resources, Division of Oil and Gas, Annual Reports, 1968-76; and State of Alaska Department of Natural Resources, Division of Mines and Minerals, Annual Reports, 1959-67.

Data collected by the Alaska Oil and Gas Conservation Commission on drilling activity by geographical location allows the identification of drilling activity in the Cook Inlet Basin, on the North Slope, and in other areas of the state. The drilling associated with these three regions (Cook Inlet, North Slope, and other areas of Alaska) was estimated as a fraction of total drilling activity in order to derive regional estimates of drilling footage, as shown in Table B.13. The sources used to derive these estimates of footage by region made no distinction between drilling on land or offshore although it is clear that much of the drilling in the Cook Inlet area has been from offshore platforms while drilling on the North Slope has been largely onshore.

Drilling cost data was found from several sources. The most authoritative source of data on historical drilling costs is the Joint Association Survey (JAS) of the oil- and gas-producing industry which has been issued annually since 1955, with the exception of the years 1957-1958. The JAS surveys contain the most detailed and systematically collected data available on drilling and well equipment costs.

The JAS survey defines costs to include both tangible and intangible costs. Reported expenditures reflect the costs for drilling dry holes as well as productive ones and equipping new productive wells through the Christmas tree installation. Included are costs of labor, materials, supplies, water, fuels, power, and direct overhead (i.e., field, district, and regional) for such operations as site preparation, road building, erecting and dismantling derricks and drilling rigs, drilling hole, running and cementing casing, hauling materials, machinery and tool charges and rentals, with deductions for the value of materials to be salvaged after use where appropriate. For offshore wells, costs include expenditures for fixed platforms and islands. Not included in the costs reported by the JAS survey are expenditures related to

TABLE B.13.
ESTIMATED DRILLING ACTIVITY^a
BY REGION
(thousands of feet)

Year	Cook Inlet		North Slope		Other		Alaska Total	
	Footage	Percent	Footage	Percent	Footage	Percent	Footage	Percent
1959	120.0	87	0	0	17.9	13	137.9	100
1960	210.8	81	0	0	49.5	19	260.3	100
1961	450.4	90	0	0	50.1	10	500.5	100
1962	307.8	82	0	0	67.6	18	375.4	100
1963	194.3	90	4.3	2	17.2	8	215.6	100
1964	147.2	82	25.1	14	7.2	4	179.5	100
1965	255.0	95	10.7	4	2.7	1	268.4	100
1966	522.9	95	21.8	5	1.8	*	546.5	100
1967	887.9	98	18.1	2	0	0	906.1	100
1968	1137.2	97	35.2	3	0	0	1172.4	100
1969	709.7	58	465.0	38	48.9	4	1223.6	100
1970	201.3	28	452.9	63	64.7	9	779.0	100
1971	53.5	16	281.1	84	0	0	334.6	100
1972	142.7	48	139.7	47	14.8	5	297.3	100
1973	176.3	63	95.1	34	8.4	3	279.8	100
1974	175.2	49	171.6	48	10.7	3	357.5	100
1975	250.3	37	412.7	61	13.5	2	676.6	100
1976	288.2	36	496.4	62	8	1	800.7	100
1977	204.3	30	449.5	66	27.2	1	681.0	100
1978	215.6	25	646.3	75	0	0	862.2	100
1979	171.0	17	852.9	83	0.4	*	1023.9	100
1980	81.2	6	1259.1	93	13.5	1	1353.9	100
1981	130.7	7	1718.0	92	18.7	1	1867.4	100
1982	174.2	8	2003.1	92	0	0	2177.3	100

*Less than one half of one percent.

^aTotal footage drilled annually from the Alaska Oil and Gas Conservation Commission. Estimates of regional footage drilled annually estimated from data published by the Alaska Oil and Gas Conservation Commission (Annual Statistical Reports 1977-1982); State of Alaska Department of Natural Resources, Division of Oil and Gas (Annual Reports 1968-1976); and State of Alaska Department of Natural Resources, Division of Mines and Minerals (Annual Reports 1959-1967). Figures shown reflect exploratory, development and service well footage on land and offshore.

production. These include lease equipment such as artificial lift and downhole lift equipment, flow lines, flow tanks, and separators.

Data from the JAS survey, 1953-1981, for the United States as a whole is summarized in Table B.14. Including the costs of drilling dry holes, U.S. average onshore costs have increased from about \$12.00 per foot in 1959 to over \$80 per foot in 1981. Offshore drilling costs were about \$38 per foot in 1959 and rose to almost \$385 per foot in 1981. Data for Alaska from the JAS survey is also shown in Table B.14 for the years 1975-1981. As shown in Table B.15, average onshore drilling costs per foot in Alaska were five-to-ten times higher than the U.S. average drilling costs per foot during the period 1975 to 1981. Offshore drilling costs in Alaska during the period 1975-1981 have also generally been higher, although not to the same degree as onshore costs. In fact, during two years, 1978 and 1980, Alaska offshore drilling costs were only 60-90 percent of the U.S. average. This may reflect the fact that offshore drilling in Alaska during this period was largely development drilling in the Cook Inlet area from existing platforms, whereas offshore drilling in other parts of the country was taking place in frontier OCS areas.

Another estimate of Alaska drilling costs is available from the Council on Energy Resources (CER) at the University of Texas at Austin. The CER data is presented as constant dollar (1976 \$) estimates of drilling costs per foot for cost regions compatible with U.S. Census regions. Alaska and Hawaii costs are presented together, although the limited oil and gas activity in Hawaii results in these figures being essentially Alaska costs, as shown in Table B.16.

A study by Erickson and Latham (1976) for the Legislative Affairs Agency provided cost estimates for drilling and development in the Cook Inlet Basin 1957-1975 as shown in Table B.17. The study distinguished between the cost of exploratory (wild cat) drilling

TABLE B.14.
DRILLING COSTS
(dollars per foot)

Year	U.S. Average Costs ^a			Alaska Costs ^b		
	Onshore	Offshore	All Types	Onshore	Offshore	All Types
1953	12	31	12	*	*	*
1954	*	*	*	*	*	*
1955	11	40	12	*	*	*
1956	12	43	12	*	*	*
1957	*	*	*	*	*	*
1958	*	*	*	*	*	*
1959	12	38	13	*	*	*
1960	12	37	13	*	*	*
1961	12	38	13	*	*	*
1962	12	35	13	*	*	*
1963	12	36	13	*	*	*
1964	12	35	13	*	*	*
1965	13	39	13	*	*	*
1966	13	45	15	*	*	*
1967	13	48	16	*	*	*
1968	13	53	17	*	*	*
1969	14	57	18	*	*	*
1970	16	58	19	*	*	*
1971	16	58	19	*	*	*
1972	17	63	21	*	*	*
1973	19	69	23	*	*	*
1974	26	92	29	*	*	*
1975	32	120	37	274	181	257
1976	34	150	40	292	176	273
1977	39	178	47	380	204	342
1978	48	219	57	423	194	395
1979	57	259	68	347	316	346
1980	67	308	77	371	199	369
1981	83	385	94	420	0	420

*Not available.

^aU.S. average costs from Basic Petroleum Data Book, Vol. III, No. 3 (September 1983) which reported data from the "Joint Association Survey of the U.S. Oil and Gas Producing Industry" annual survey on drilling costs. Values rounded to nearest whole dollar.

^bAlaska cost data from Joint Association Survey annual reports 1975-1981.

TABLE B.15.
INDEX OF JAS ALASKA DRILLING COSTS
RELATIVE TO JAS U.S. AVERAGE COSTS

<u>Year</u>	<u>Onshore</u>	<u>Offshore</u>
1975	8.6	1.5
1976	8.6	1.2
1977	9.7	1.1
1978	8.8	0.9
1979	6.1	1.2
1980	5.5	0.6
1981	5.1	NA

NA - Not applicable; no Alaska offshore drilling reported
in JAS survey for 1981.

SOURCE: Table 14.

TABLE B.16.
DRILLING COSTS BY COST REGION^a
(dollars per foot)

Year	1976 Dollars		Current Dollars ^b	
	Alaska-Hawaii	Ak-Offshore	Alaska-Hawaii	Ak-Offshore
1969	406	337	266	221
1970	268	314	185	217
1971	218	285	158	206
1972	311	233	235	176
1973	211	166	169	133
1974	307	159	267	138
1975	*	*	*	*
1976	*	*	*	*
1977	340	159	360	168
1978	352	159	400	181
1979	364	159	450	196
1980	376	159	507	214
1981	389	159	574	234
1982	403	159	630	249
1983	416	159	*	*
1984	431	159	*	*
1985	446	159	*	*

*Not available.

^aData for 1977-1985 based on CER projections from historic costs assuming real cost growth rates of 0.0344 percent (Alaska-Hawaii) and 0.0 percent (Alaska Offshore). Cost regions adapted from U.S. Census regions. All figures rounded to nearest whole dollar.

^bCurrent dollar values derived using GNP deflator.

SOURCE: Council on Energy Resources, National Energy Policy: A Continuing Assessment, University of Texas at Austin (1978).

TABLE B.17.
ESTIMATED DRILLING AND DEVELOPMENT COSTS
IN THE COOK INLET BASIN 1957-1975
(thousands of dollars)

<u>Year</u>	<u>Exploration Drilling</u>	<u>Development Drilling</u>	<u>Platform Investments</u>	<u>Total</u>
1957	1794	0	0	1794
1958	2010	0	0	2010
1959	810	355	0	1165
1960	3149	9780	0	12929
1961	11057	18496	0	29553
1962	14848	4993	0	19841
1963	8232	4635	0	12867
1964	14273	696	0	14969
1965	18618	5261	25590	49469
1966	14993	17600	10491	43084
1967	41325	37200	6012	84537
1968	23080	110264	1966	13531
1969	14454	78642	3446	96542
1970	6924	22749	0	29673
1971	5533	4049	0	9582
1972	7888	17558	0	25446
1973	15360	20666	0	36026
1974	8432	26949	0	35381
1975	14176	36280	0	50456

SOURCE: Erickson and Latham (1976).

and development drilling with the latter estimated to be approximately two-thirds as expensive per foot drilled as shown in Table B.18. The study by Erickson and Latham indicates that exploratory drilling costs rose from about \$75/foot in the late 1950s to approximately \$300/foot in 1975. Development drilling costs during the same period rose from about \$56/foot to about \$200/foot. The study by Erickson and Latham identified the costs for Cook Inlet platforms from drilling costs. (The study by Erickson and Latham drew heavily on the DOR study cited previously.)

As noted previously, drilling costs described by the JAS survey account only for expenditures for drilling dry holes and productive wells and equipping new productive wells through the Christmas tree installation. A precise definition of drilling costs is not provided in the CER report, nor is a precise definition of drilling costs included in the study by Erickson and Latham.

Mead (1980) notes the need to account for costs of equipment "beyond the Christmas tree" or those necessary to convert a drilled well into a producing well. The U.S. Department of Commerce, Bureau of the Census, publishes an annual survey of the oil and gas industry nationwide, which includes an accounting of expenditures for "lease equipment" defined as "expenditures beyond the Christmas tree installation, including flow lines, flow tanks, field separators, heater-treaters, production platforms, and related field facilities (including) artificial lift equipment . . . required for primary production." Data from the Department of Commerce survey indicates that, between 1973-1981, expenditures for lease equipment has averaged about 20 percent of total expenditures for drilling and equipping wells, as shown in Table B.19.

A historical accounting Alaska drilling and development costs is also available from the Legislative Finance Division Producer Benefits Model (PBM). The PBM has fiscal year capital cost data for each of three historically producing areas in the state--Cook Inlet,

TABLE B.18.
DRILLING AND DEVELOPMENT COSTS
COOK INLET BASIN 1957-1975^a
(dollars per foot)

<u>Calendar Year</u>	<u>Exploratory Drilling (\$/ft)</u>	<u>Development Drilling (\$/ft)</u>
1957	71	NA
1958	81	NA
1959	85	56
1960	88	59
1961	92	61
1962	95	64
1963	99	58
1964	103	93
1965	107	65
1966	126	108
1967	146	63
1968	165	110
1969	184	123
1970	204	136
1971	223	149
1972	242	161
1973	261	174
1974	281	187
1975	300	200

NA - Not applicable; no development drilling.

^aCost figures rounded to nearest whole dollar.

SOURCE: Erickson and Latham (1976).

TABLE B.19.
U.S. EXPENDITURES FOR LEASE EQUIPMENT
AS PERCENTAGE OF TOTAL DRILLING COSTS
(millions of dollars)

<u>Year</u>	<u>Lease Equipment^a</u>	<u>Drilling Wells^b</u>	<u>Percent^c</u>
1973	572.2	2711.0	21.1
1974	824.1	3845.7	21.4
1975	1499.6	5478.8	27.3
1976	1486.8	6621.5	22.4
1977	1607.9	8933.7	18.0
1978	2175.0	10937.0	19.9
1979	2146.0	13191.7	15.8
1980	3572.8	18872.0	18.9
1981	\$4760.3	\$29653.2	16.1%

^aDefined as equipment beyond the Christmas tree installation required for primary production. See text.

^bIncludes of both exploratory and development well drilling.

^cLease equipment expenditures as a percent of costs for drilling wells. Nine-year average equals 20.1 percent.

SOURCE: U.S. Department of Commerce, Bureau of Census: Annual Survey of Oil and Gas as published in the Basic Petroleum Data Book Vol. III, No. 3 (September 1983).

Sadlerochit, and Kuparuk--as well as capital costs for two areas expected to produce in the future--Beaufort Sea and east of Prudhoe. While neither of the latter two areas has yet gone into production, the PBM allocates a portion of historic North Slope capital costs to these two areas, as shown in Table B.20.

Capital costs reported in the PBM for Cook Inlet date from fiscal year 1958 with an expenditure of \$8 million. This value steadily increases to a nominal dollar peak value of \$122 million in fiscal year 1968 and then drops to about \$50 million per year throughout most of the 1970s.

Capital costs in the PBM for the North Slope climb rapidly from \$5 million in 1965 for the Sadlerochit field to nearly \$500 million in 1970 (this includes \$96 million for Kuparuk and \$7 million for other North Slope developments). North Slope development costs for the Sadlerochit field rose to over \$1 billion annually for the period 1976-1977, reflecting major initial expenditures for field development (gathering lines, personnel facilities, etc.), along with substantial development drilling. Between 1978-1980, expenditures for the Sadlerochit field dropped to an annual average of about \$580 million, followed by another surge in costs during the early 1980s for the waterflood project, which cost about \$1.75 billion annually during 1981-1982. During this same period, costs for Kuparuk and other arctic areas increased total North Slope capital costs several hundred million, as shown in Table B.20. The PBM capital cost values do not reflect expenditures for the TAPS line.

Finally, another measure of drilling and development costs is available from the National Petroleum Council (NPC) which estimated arctic drilling and development costs as part of a comprehensive review of Alaska's oil and gas potential. According to the NPC study, a rough "rule of thumb" is that there is a minimum cost of \$10 million (in 1981 dollars) for a ten-thousand-foot well on the

TABLE B.20.
OIL AND GAS FIELD CAPITAL COSTS^a
(millions of dollars)

<u>Fiscal Year</u>	<u>Cook Inlet</u>	<u>Sadlerochit</u>	<u>Kuparuk</u>	<u>Other NS^b</u>
1958	8	0	0	0
1959	17	0	0	0
1960	32	0	0	0
1961	46	0	0	0
1962	51	0	0	0
1963	37	0	0	0
1964	31	0	0	0
1965	53	5	0	0
1966	67	3	0	0
1967	81	1	0	0
1968	122	6	0	6
1969	120	48	0	7
1970	66	374	96	7
1971	22	117	6	0
1972	21	75	6	0
1973	36	53	6	6
1974	41	167	6	0
1975	46	603	6	13
1976	55	1158	6	13
1977	56	1010	6	21
1978	59	590	6	7
1979	63	535	15	19
1980	47	628	101	13
1981	50	1532	227	46
1982	41	1980	534	44

^aFiscal year capital costs estimates for oil and gas field development. The figures shown do not reflect costs associated with the Trans-Alaska Pipeline system.

^bOther North Slope oil and gas field development costs includes expenditures allocated by the PBM to development of the Beaufort Sea and areas east of Prudhoe Bay.

SOURCE: Legislative Finance Division, Producer Benefits Model (1982).