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PRACTICAL ISSUES IN LONG TERM  
FISCAL PLANNING FOR ALASKA

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## PRACTICAL ISSUES IN LONG TERM FISCAL PLANNING FOR ALASKA

### 1. Introduction

There are several practical issues which can be raised with respect to long term fiscal planning for the state of Alaska. These problems are related to the level of analysis, the time frame over which one is doing the planning, and certain constraints which data availability may impose upon the process. Of course, these problems are not unique to Alaska, but the pace of economic and population growth, lack of social and economic data and infrastructure, and the amount of funds the state expects to receive from oil and gas activities will mean that the traditional problems in planning will be exacerbated.

The level of analysis will determine the choice of planning tools to a greater extent than might be imagined. For economic impact issues of the most general kind, it may be sufficient to forecast independently the total level of State expenditures planned for each year, introduce this planned series into a few simple equations describing population, income, and employment growth, and have a fairly accurate overview of the impact. For questions of much greater complexity, such as the different impacts of specific

percentages of the Permanent Fund to be spent for specific types of projects, a detailed econometric model might be needed. The complexity of the question will have definite implications for the level of complexity of the analysis, and the effort which might be needed to produce the answer.

The time frame of the analysis will also affect the type and detail of analysis done on a specific question. Suppose, for example, that one wished to know the effect on the rate of growth of education expenditures of an increase in the rate at which migration to Alaska included children of school age. If the time frame of analysis were one to five years, the major effects could probably be modeled by adding students into the base of the current school finance laws. However, since in a longer run period of ten to twenty years, a more general relationship between numbers of students and the expenditures per student could tend to dominate and even cause changes in specific funding formulas, general funding assumptions might be more accurate than the current formulas.

Finally, the rate of growth of the Alaskan economy and the scarcity of certain social and economic elements, such as multiple transport modes between points and local availability of some goods and services normal for the

United States, makes it extremely difficult to project past economic and government relationships into the future. This is compounded by lack of reliable data and indicators of business and government activity in many areas; and by the fact that Alaska is facing a situation in which its economy is maturing at the same time that the traditional spending constraints imposed on the state government for most of the historical period by lack of an adequate tax base will soon be removed. The lack of a traditional industrial and transportation base, along with weather and cost problems in Alaskan business, makes data from other states of limited use. Yet, data compromises may have to be made, especially to answer the more complex and difficult modeling questions regarding future Alaskan growth in response to government fiscal policy. Ultimately, the choice of the form of analysis will depend both on the objectives of the analysis and the quality of the supporting data.

There are a series of long term fiscal policy questions or options which will affect Alaskan state government fiscal planning over the foreseeable future. Among these are: whether the State wishes to increase or decrease its dependence on oil revenues, or its dependence on revenues

resulting from taxes on recurrent economic activity; whether to provide the equivalent of the most modern health, communication, transportation, and education services to all Alaskans; whether to increase the size, stability, and complexity of the State's economy; and whether to minimize the tax burden on the average Alaskan. To reach any of these fiscal goals or any other fiscal goal, however, it will be desirable for the planners to restate the goal in increasingly precise terms, as is done with one goal in the following section. Following this, it will be desirable to deal with a large range of specific issues related to both revenues and expenditures of state government in Alaska. The purpose of this paper will be to identify several of these specific issues as they relate to the budget process and to the specific goal of releasing the State from dependence on oil revenues as the largest source of funding for the operating budget.

I have chosen to organize the issues in Alaskan fiscal planning around a number of specific subject areas, for analytical convenience. In actually attempting to complete any long term fiscal plan, the planner will have to deal with several of these specific issues simultaneously. However, by classifying them according to subject areas, I hope to encourage a more organized approach to the bewildering

number of factors which have to be taken into account. In each case, I will attempt to identify the issues, suggest some methodologies for dealing with them, tell where I feel the data gaps lie, and discuss some strategies for dealing with these gaps. Where necessary, further studies are outlined. In each case, I will try to use examples which deal with the specific objective of long term State fiscal independence from oil and gas.

## 2. Objectives and Goals of the Fiscal Plan

In any fiscal planning process, the State administration should define its general fiscal objectives as operational goals so that the planning staff can tell whether the objective is being met. While this may seem an obvious point, it is not necessarily easy to come up with a specific set of goals, both of which will fulfill the long term objective, and which will permit the fiscal planning staff to empirically determine whether or not the goal is being met. For example, if the objective of "fiscal independence from oil" is not stated as a more precise goal, such as "no funds from oil property taxes, bonuses, severance taxes, or royalties are to be used to finance current general fund expenditures," the staff is left to conclude that maybe these funds could be used for ten percent of current expenditures and that

this would constitute "independence." Obviously, the path to such a goal could be much different than the goal actually intended, if literally no dependence is desired. In any case, it is desirable to define the goal operationally, as is demonstrated in the following example.

a. Example of Defining a Fiscal Objective

The State of Alaska currently depends on oil and gas taxes, bonuses, and royalties to fund 60 to 70 percent of the general fund budget of FY 1978.<sup>1</sup> Since oil and gas deposits are finite, this source of money is limited, and the State is faced with the problem of how to move from a dependence on this single unreplenishable source of funding to sources based exclusively on continuing State economic activity, without substantially reducing services, disrupting the growth of the Alaskan economy, or saddling the populace with a large tax burden in the short run. Besides the term "exclusively," this statement of the fiscal goal has four basic elements which raise specific questions of definition:

1. How soon is the State to be independent of oil revenue?
2. What exactly are the prohibitions on reduction of government services? What constitutes "substantial" reduction?

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<sup>1</sup>Alaska Office of the Governor, Division of Budget and Management, Executive Budget Fiscal Year 1977-1978, p. 9.

3. What sort of disruption of the Alaskan economy is not tolerable?
4. What defines an onerous tax burden?

The answer to the first question is critical to the overall strategy, since if the State were to save all its oil revenues next year rather than spend any on its operating budget, either large increases would be required in effective tax rates on personal and business income, or there would have to be large cuts in government services, or both. At the other extreme, since it can be reasonably supposed that not all the oil and gas in place on State lands has been found, it is not necessarily true that the State will have no more oil revenues after current sources run out. While other choices are available, I recommend that experiments be done with at least two arbitrary dates of "independence"--for example, one 10 years hence and one 25 years hence. Substantial oil revenue seems assured for at least 10 years, so Alaska would probably not have to worry about draconian measures over a much shorter period. Conversely, 25 years is probably past the outer plausibility limit on projections of such crucial factors as population growth, so a 25-year projection is useful if we want to discuss independence from oil revenues only in the "long run."

The second operational term whose meaning the State must examine is "substantial reduction in services." While it is possible that the citizens of Alaska would never accept a reduction in the overall level of government service each receives, it is not clear that this translates into a prohibition against reductions in real expenditures per capita for at least some programs. Neither does it translate into any particular rule on the rate of increase in total real expenditures in either total or per capita terms. However, three useful and plausible assumptions concerning expenditures are: constant per capita real expenditures on each expenditure category, a low fixed growth rate in total real expenditures, and the historic experience in growth of expenditures per capita by category. The first case essentially "freezes" spending at current levels, the second case would show the effect of a relatively conservative government expenditure guidelines policy like that being currently attempted, and the third suggests a "no controls" situation.

The third aspect of the policy of becoming independent of oil and gas as a source of current revenues is that of impacts of the policy on Alaska's economy. A state administration would probably not wish to pursue policies leading

to actual massive and persistent reductions in total employment, for example, because of the high political and human costs of doing so. However, the policies which the State may pursue to get to the goal of independence from oil revenue in the long run might, theoretically, reduce the rate of growth of the economy to such an extent as to frustrate the achievement of the goal of independence. This could occur either because of an attempt to reach the goal too fast by confiscatory tax rates on the current tax base and by holding down State spending in Alaska to too great an extent; or failure could occur because the government spent too much and taxed too little. Without trying to prejudge the issue, I can recommend that the State adopt some basic guidelines for "intolerable" results, such as: no decreases in total employment lasting more than one year, no decreases in per capita real disposable income persisting beyond one year, or some critical growth rate which is considered too low to support the long term increase in population.

Finally, it is necessary to define an "onerous tax burden." This could be done by reason of its economic effects, or by some (necessarily arbitrary) standard of fairness, such as the average or highest effective tax rates for certain taxes in other states. Since any policies

undertaken to reach the goal of independence from oil revenues have implications for the feasible tax rates on non-petroleum sources, some standards must appear against which tax effects are to be measured. As an example, one can specify that the average effective tax rates for any tax on personal income and on the activities of the nonpetroleum sectors of the economy not exceed the highest average effective tax rate for a similar tax in any other state.

As can be seen from the example, even if no other sources of variation existed, definition of the goal itself could lead to many equally interesting cases which would have to be evaluated. There are, however, many other issues to examine in the context of a fiscal plan. Discussion of these follows.

### 3. Issues Related to the Size of Budget and Growth in Expenditures

It is useful to think of the state government as taking one of two approaches to fiscal management. It can either take what I shall call an "expenditure-oriented" approach--that is, try to determine what expenditures will be demanded by the people of the State over the forecast period and devote most of its effort to looking for sources of funds for those expenditures--or, it can take a "revenue-oriented

approach," in which forecasts are made of state revenues and the State's budgeted expenditures are made to fit to the revenues available. In neither case can the State pick its path of future expenditures with impunity, since level of available revenues will always potentially constrain the choice of the level of expenditures. Secondly, some expenditures are not within the discretion of the budget staff. This is important, since the economic effects of the budget (and, therefore, some future revenues) depend not only on discretionary expenditures but on other expenditures which are not part of those sections of the budget over which any single administration and legislature have control. Alaska has relatively few state expenditures which do not go through the appropriations process, but overall flexibility in spending is somewhat limited in many cases. A strictly "expenditure-oriented" approach may get into trouble because of unanticipated economic effects of those expenditures which affect revenues, and a "revenue-oriented" approach may get into trouble because some expenditures cannot be tailored to the available revenues. Therefore, fiscal planning needs to include elements of both strategies.

a. Size of the Budget Generally

For Alaska to carry out either strategy or a mixture of them, a series of distinctions have to be made with respect to the size of budgets and the growth in expenditures. In the first place, the capital budget in any year contains within it implicit obligations for future operating budgets. Highways, for example, must be maintained once built, if they are to continue to provide service (and debt service will continue in any case). This relationship between capital and operating budgets is likely to increase in importance in the future as the capital stock ages, especially if the State embarks on a large capital construction program, using oil and gas revenues to supply either part or all of the necessary funds.

However, I am aware of no studies in existence or planned which investigate the relationship between capital and operating expenditures. If the State elects to pay cash on a large capital construction program, it may be left without a source of earned interest income. In such a case, the construction program may itself have to generate enough long run funds to pay for maintenance. If the State elects to guarantee construction bonds with its oil money, then the public projects built and interest on the invested oil money backing the bonds may have to supply enough funds

to pay for maintenance and coverage of debt, plus repayment of principal. Either way, the future demand for operating budget expenditures will increase as a result of current State capital budget expenditures, and this relationship needs to be examined.

One possible strategy to determine the relationship would be to use State Public Works and Highways financial records to determine 1) capital cost and 2) subsequent levels of maintenance expenditures of a large group of capital projects. If a standard time profile of operating expenditures can be established by comparison of projects (with maintenance expenditures as a proportion of capital expenditures explained by one or two parameters), then the overall capital budget can be related to subsequent operating expenditures.

Whether or not the relationship between the capital and operating budget can be established, it is still important to make a distinction between the two, since they influence the Alaskan economy (hence, future revenues and expenditures) somewhat differently. For one thing, the operating budget is quite labor intensive. The many services ordinarily supplied in the budget are usually personal services of some sort. Furthermore, a fairly high

percentage of the government operating expenses represents salaries paid to Alaska residents. The capital budget on the other hand sometimes represents construction expenditures which end up either as purchases from materials suppliers outside of Alaska or as wages and salaries of construction workers who are not state residents. As such, they represent a leakage of spending power from the Alaskan economy. Since the resultant effects of a dollar of these two kinds of expenditures are much different, it is important to distinguish between them in planning total expenditures and examining effects.

b. Expenditures Not Under Staff Control

Some expenditures are obligated by formulas written into the statutes (such as the Teachers' Retirement System or the Public School Foundation Program), or by the acceptance of Federal programs requiring state matching funds. These expenditures usually grow right along with the size of the client population, or with the increases and decreases in Federal funding. In long run fiscal planning, it appears worthwhile to compile a time series on each formula expenditure, and to attempt to forecast the demand these functions will place on state revenues over the forecast period. These obligated expenditures represent a minimum amount of revenues which must be available in each year, and

many state employees were also immediately prior to their employment with the state

4. The Budget Through 1985
  - a. Overview by category
  - b. Overview by object
  - c. Detail by groups of programs
5. Policy Experiments with the Budget
6. Appendices
  - a. Definitions of variables and constants
  - b. Estimated equations and results
  - c. Annotated data listing
7. References

#### V. Budget

Total estimated cost of the project is approximately \$35,000.

It is anticipated that Man-in-the-Arctic Program work on fiscal modeling in closely related areas will have significant impact on reducing the total cost of the project to the figure cited here.

restrict the ability of the State to influence the Alaskan economy by switching expenditures from one expenditure category to another. Similar projections ought to be made for State expenditures which lie entirely outside the State budget, such as the Trust and Agency Funds, the Enterprise Funds, and the State corporate entities like the Alaska State Housing Authority. As was stated at the outset, however, the exact form of this projection would depend on whether it is relatively short range, where present formula factors might be important, or whether the projection is long range, and depends upon more general relationships.

It is unclear at this time what the relevant explanatory variables would be in all cases. However, Foundation program expenditures are well explained by the size of school age population, and similar variables might be found for other formula programs. In projecting budget expenditures, it will be useful to forecast formula State expenditures separately.

c. Strategies for an Expenditures Approach to the Budget

More generally, if the State primarily takes an "expenditures approach" to budget projection, it may be necessary to forecast either explicitly or implicitly the

demand for government services. In general, it will not be sufficient to extrapolate past trends in total expenditures, since, for example, the mix of total expenditures has been changing rapidly from transportation toward expenditures on health, social services, and education.

While expenditures for both transportation and social services have been increasing, the two categories are controlled by different demand relationships, so the change in mix alters the rate of growth of the total. At the very least, it will be necessary to extrapolate each major expenditure category separately. However, it will probably be more useful in the long run to search for explanatory variables for each major expenditure category. Both Department of Revenue and ISER have initiated work in this area (see the attached working paper by Scott on education), but much more remains to be done.

There appear to be three obvious alternatives for using the expenditure projection information. One method is to project the series some distance into the future based on extrapolation of each category or on exogenous assumptions concerning the underlying demand relationships, and to compare the expenditures for each year with revenue projections made independently. This method would be the easiest to do,

but would ignore the expenditures' effects on the rate of growth, and on revenues. It could only be used for rough comparisons. A second method would be to project a series of expenditures based on extrapolation of each category or on assumptions concerning the underlying demand relationships, and enter these exogenously into an econometric model such as the ISER statewide model, or Department of Revenue's adaptation of the model. This method would imply that the State has some plan of expenditures which is invariant with the effects of the expenditures. However, it would show the effect of such expenditures on total revenue. A third method would be to make expenditures truly endogenous in an econometric model, "determined" by specified relationships inside the model as is currently done in the Department of Revenue adaptation of the ISER econometric model, and feeding back into the model (through wages and salaries, for example), as in the ISER version. It is not necessary that State government expenditures be completely endogenous, by the way. ISER is currently experimenting with including both an endogenous and an exogenous component to expenditures, and there is no mechanical reason why it could not be done.

The principal practical difficulty, as I see it, is the scarcity of instrument or explanatory variables available

to project "demand" for government expenditures. While one would ideally like to take into account changes in program offerings, shadow prices for services, and changes in the tastes and structure of the community client populations, only population by age and sex, employment, payrolls, gross product, and personal income are available as general instrument variables and proxies. As a result, it is usually only possible to estimate reduced form "expenditure" equations rather than true "demand" relationships.

For some expenditures such as those of the State Ferry System, it may be necessary to estimate future expenditures using both State and national data--the relationship between State population and system data on ridership, and the (exogenous to the model) relationship of the U.S. economy to ridership, for example. Whether studies of this detail are attempted will obviously depend on the presumed importance of the endogenous part of the expenditure projection.

#### d. Appropriations as a Proxy for Expenditures

Another issue which is related to the general size of the budget and the rate of expenditure growth is a data problem. The fact is that budget expenditures from a given year's appropriations in a given fiscal year do not correspond to actual expenditures during that fiscal year, spending

which may be funds from the previous, current, or coming fiscal year budget, or any of several successive capital budgets. It is not surprising, therefore, that total operations budget expenditures for any given fiscal year are usually smaller than the corresponding total operating expenditures in that year (as defined by The Annual Financial Report from the Department of Administration, Division of Finance), or that operating budget plus capital budget appropriations generally exceed total cash expenditures. Ideally, one would like to have actual expenditures functionally related to planned appropriations, and economic impacts related to actual expenditures. With a few exceptions, the eventual operating expenditures in any one year in the past have been within ten percent of original budget total appropriations. It seems reasonable, therefore, since there appear to be no particular instrument variables which explain the difference between actual expenditures and prior appropriations, to use operating budget appropriations directly to explain economic impacts of this portion of State spending.

Capital expenditures are more difficult. The basic components of capital expenditures are General Fund highway construction expenditures, non-highway "general fund"<sup>2</sup>

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<sup>2</sup>As this term is used by the Division of Finance, not as the Division of Budget and Management uses the term.

capital expenditures, and Capital Project Funds (general obligation bond) capital expenditures. Highways expenditures are not obviously predictable from appropriations, since highways expenditures are dependent on highways expenditures timing as well as the total size and timing of appropriations. Since Capital Project Fund capital expenditures depend upon biennial general election approval of general obligation bonds, rate of bond sales, and expenditures out of the bond sales (which depend in turn on the desired finish date of each project and the required construction time), capital projects expenditures funded by general obligation bonds are not predictable from appropriations, either. In general, causation seems to run the other way: expenditures are directly related to the demand for capital goods services, and appropriations are fitted to the requirements for the expenditures program and the economics of the bond markets. A way to econometrically model State capital expenditures is to develop demand indicators for services, capital depreciation, and carrying capacity of the capital stock, and try a few capital replacement rules from outside the model. For example, in hospital construction there are acceptable hospital use to hospital bed ratios. A possible rule is that hospital capacity be provided at such a rate that the acceptable

bed use ratios not be violated at any time over a specified time period, and that if they are, that hospital capacity be augmented by some specified number at prevailing construction costs. In addition, any hospital would be replaced at specified intervals, and real facilities upgrading expenditures per capita could follow historical trends, so that total hospital construction expenditure in any year would be (exogenous) new construction costs, plus (endogenous) capital replacement costs, plus (endogenous) facilities upgrading costs. School construction, university construction, airports, and highways all lend themselves to similar treatment, although demand and capacity measures are different in each case. Ferry construction is done out of state, so it should not be a part of capital expenditures for economic impact purposes, although it is part of total expenditures for budget purposes.

To summarize, it is necessary to project as closely as possible actual expenditures in any one fiscal year to find the impact on the State economy. It is probably a satisfactory substitute to use appropriations as a proxy for expenditures in demand relationships for operating expenditures. However, it is unsatisfactory to use appropriations or appropriations plus bond sales to do this for capital expenditures, and another method is suggested.

If, however, this is considered too complex a methodology, the obvious alternative is to simply prepare a limited number of capital budgets outside the econometric model, and introduce the bond sales, expenditures, and general fund capital appropriations into the model as exogenous series.

#### 4. Issues Related to Revenue Estimation

The State could take a primarily revenue-oriented approach to fiscal modeling. One way to do this would be to make a "first pass" estimate of revenues from recurrent (non-petroleum) sources for a series of future years; establish a schedule of recurrent expenditures (initially larger than non-petroleum revenues) which would permit, for example, some target annual growth rate for the unexpended balance of oil and gas revenues, including both the Permanent Fund and General Fund; and then introduce the exogenous expenditures series into an econometric model to see the projected revenue results of the policy, given the expenditures. By successive adjustments of the expenditures, a target growth rate of unexpended petroleum revenues could be achieved without ever making expenditures a function of revenue, under a wide variety of assumptions concerning the rate of development in the petroleum sector.

While the technique does not inherently provide "guidelines" for expenditures, in the same sense that modeling the demand for government expenditures does, the "supply" of government expenditures exogenously introduced into the model in each year can be compared to a model-generated "demand" values in the same year, and adjustments made to successive exogenous expenditures series to reduce the disparity between "supply" and "demand" values. As alternative strategies, the gaps between desired and demanded expenditures could simply be left as they come out of the experiment and analyzed for differences in government services delivered, or changes introduced on the revenue side to reduce differences between "demand" and "supply."

It is not recommended that an extensive search be conducted with models for "the best" solution, given the constraints on use of oil revenues imposed from outside the model. Probably a wide variety of explicit policies will result in approximately the same long run average growth rate in the unexpended balance of oil and gas revenues, while yielding much different results as to timing of expenditures and their distribution among the major functions of government. Instead, the best use of the econometric model would be to help define some rough

limits of expenditure policy, beyond which a proposed expenditure pattern would result in the violation of one or more target revenue rules.

If the State wishes to take a revenues approach without explicitly accounting for the feedback effect of State expenditures upon the growth rate of the economy as a whole and upon recurrent revenues, it risks facing in the future a circumstance where induced growth brought about by State expenditures policies has so increased the size and altered structure of the Alaskan economy that both revenue and expenditures estimates are gross underestimates. In such a circumstance, hindsight probably would reveal that the State could have achieved independence from non-recurring oil and gas revenues as a source of funds for current expenditures at an earlier date with lower population and economic growth rates. Failing to account for the feedback loop is equivalent to saying either that total government expenditures are totally unrelated to government expenditures on wages and salaries in Alaska (which must then be forecast exogenously), since total government expenditures do not affect the determination of how much is spent for wages and salaries; or it says that government spending has an impact multiplier of zero, since neither larger nor smaller government expenditures alters the rate of growth.

There are three separate issues which relate to the State fiscal planners' ability to project recurrent revenues using econometric models. These are the problem of aggregate data, the problem of sensitivity of revenues to changes in the type of revenue base, and the problem of changes in the structure of the Alaskan economy.

a. Use of Aggregate Data

The issue of aggregate data is essentially the same one as came up earlier in the paper with respect to the scarcity of explanatory variables which determine demand for government services. We know that total tax collections are a function of both the taxable base, be it income or property or gross sales, and the effective rate structure. In order to predict increases in total personal income tax collections, for example, it is not sufficient to know how much aggregate income in the State increased; it is also necessary, given the progressive rate structure, to predict total incomes of persons in each rate class, or equivalently, the average effective rate on total income.<sup>3</sup> The detailed information is not

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<sup>3</sup>ISER is currently working on a model which projects the "distribution of income" on the basis of an average wage rate in each of 11 major occupational categories, with changes in the distribution being caused by changes in the occupational mix. However, even this model will prove of only limited use for estimating income tax collections when the distribution of income for each occupation shifts along with average income for that occupation. We still would have to use aggregate estimated effective rates for each occupation.

currently available to model this kind of change in the tax structure, however, so this tax must be modeled on an aggregate basis, using alternative assumptions concerning the average effective rate, if necessary. Similar problems apply to all taxes with anything but a proportional rate structure with respect to its tax base. This is a problem that can only be solved by improved data, and can only be partially avoided by clever use of modeling techniques.

b. Sensitivity to the Revenue Base

The second issue is that the calculation of total State revenues will probably be sensitive to different variables during different parts of the forecast period. Recurrent revenue estimates are currently very sensitive to the average effective tax rates on personal and corporate income, since these constitute the bulk of non-petroleum revenues. However, estimates for future years are likely to be increasingly sensitive to the rate of return on unexpended oil revenues in the General Fund and the Permanent Fund. The higher the target rate of growth of these funds, and the higher the early rate of return, the more important it will be to account for the expenditures and revenues sides of fiscal policy simultaneously, because the greater will be the interaction of expenditures and revenues policy. Also, because in this case fewer

petroleum dollars are available to fund current expenditures in the early years, fiscal planners may have to worry about ways to change the effective personal and corporate tax rates to generate enough revenue, which may throw all the projections off the true value. Perhaps the only creative way to deal with this issue is to run sensitivity tests on the model or other method of projection, to see if it has any important effects on policy.

c. Effect of Structural Changes

The third issue is that changes in the structure of the Alaskan economy, particularly changes which result in unanticipated changes in the tax base, will reduce the usefulness of any formal modeling technique which depends upon past history of economic growth to forecast future economic growth and State revenues. For example, large expansion of Alaskan manufacturing of finished goods for export has not been a past feature of growth. However, if such growth were to occur as a result of radically changed economics of energy in industry, or if the State's fiscal policy were successful in inducing large growth of manufacturing in the future, there might well be increases in gross receipts, property, and corporate income taxes that no model or simple projection could anticipate.

(Econometric models do satisfactorily handle "evolutionary" changes in the level of secondary business activity related to local increases in population and major industrial demand.)

Any change of this type in the entire structure of the economy can be handled best by introducing outside the model a side analysis, where effects of State policy on the attracting of industry are analyzed. If, based on this analysis, it appears the structure of Alaska's economy will change drastically, the fiscal planner will probably want to take explicit account of the change in his revenue projections, either by adding blocks of corporate, property, and sales taxes explicitly; or by exogenously introducing primary manufacturing production and employment series into his econometric model in the way petroleum mining and transportation is currently done in ISER's MAP models.

It may have occurred to the reader that at sufficiently high level of complex intermediate economic activity in manufacturing, the technique of input-output analysis may prove useful for analysis of the ultimate revenue impacts. This is probably true, except that I-O is not well adapted to even evolutionary changes in the structural coefficients of the I-O matrix, and it is not well adapted to time series policy analysis, a separate run being required for each year over which the fiscal planner wants to simulate

policy. Finally, the same type of assumptions are necessary to introduce non-existent industries into I-O matrices as into econometric models, even though the specific data requirements are somewhat different. Little seems to be gained by using I-O at this time.

#### 5. Issues Related to the Permanent Fund and Its Use

There are four general issues related to the management of the Permanent Fund, as it affects long range fiscal planning for the State. These four management issues must either actually be resolved or assumptions made with respect to them in order to do anything about expenditure policy. Since management of this fund is not part of the regular revenue and budgeting process of the State, fiscal planners may have to accept some aspects of its management as exogenous to their planning process. Stated as questions, the issues are as follows: What rate or rates of return will be earned on the Permanent Fund balance? At what rate and by what criteria will payments into the Fund take place? What will be the actual permitted uses of Permanent Fund principal? What will be the actual permitted uses of Permanent Fund interest?

a. Rate of Return

The rate or rates of return which the Permanent Fund earns are obviously crucial to any planning process, whether the Permanent Fund interest is transferred to the General Fund and used to pay for goods and services purchased by the State, or whether it is permitted to accumulate, increasing the size of either the General Fund balance or Permanent Fund balance. Yet, the rate is not easily predicted since rates of return vary across classes of securities according to their riskiness, taxability, and maturity date, since the rates of return on each type of security vary over time, and since there is some pressure to invest in Alaskan lending institutions and investment projects quite apart from liquidity and rate of return considerations. Some effort must be made to project a plausible rate of return, but the greater the extent to which criteria other than liquidity and risk come into plan, the more difficult this task will be. In view of the many uncertainties involved, a variety of rates should probably be assumed, to test the sensitivity of revenues to the rate of return.

b. Rate of Fund Accumulation

Quite apart from rate of return issues, there is the question of how fast money will be paid into the Permanent

Fund, with its resultant effects on the rate at which the Fund grows. This would be particularly important if the State chooses a target rate of growth for the Fund. Whether or not fiscal planners have some say in the rate of mineral leasing, amounts received for lease bonuses, royalties, property taxes, and production taxes will depend at least partly on markets for mineral products outside of Alaska. Since it is not possible for the State to force the workings of these markets to accommodate State fiscal plans, the plans will have to accommodate currently unforeseen events in these markets.

Fortunately, there are some tools available to aid in these projections. The State Division of Minerals and Energy Management has conducted studies of oil leasing policy using computer programs which demonstrate expected impact of future fields on State revenues. ISER has a program called SCENARIO which will aggregate year by year oil and gas income from several fields in different stages of development, given a specific leasing policy, prices of oil and gas, and assumed successes in exploration. The State Legislative Affairs Agency can project the effect on State revenues of any change in taxation policy on total tax collections from existing State fields. Alternatively, fiscal planners could simply assume some

illustrative time paths of the various oil and gas revenues to see how the fiscal plan is affected.

c. Uses of Fund Principal .

The third issue with respect to the Permanent Fund is the permitted uses of Fund principal. It was shown above that this may affect the earned rate of return on the Fund. However, if the principal of the Fund is invested inside the State of Alaska or on projects to encourage Alaskan exports (such as a pipeline or LNG tanker fleet) by accepting rates of return on these projects that, while profitable for the State, are below private market rates, then unpredictable economic growth would occur in Alaska which may not be conveniently analyzed by any existing impact or forecasting model. To the extent that the State does not invest Permanent Fund principal in Alaskan projects, or to the extent that it accepts only market rates of return and merely substitutes for private capital, the rate of Alaskan economic growth will not be substantially affected, although the rate of return on the Fund might be.

The temptation to assume that Permanent Fund principal is not invested in Alaska at subsidized rates is overwhelming, considering all the modeling complexities raised

by the alternative. However, in the event that subsidized Alaskan investment must be taken into account, assumptions will have to be made or analysis done concerning the amount, timing, type of business growth that will occur as a result of subsidized lending rates, since future tax revenues and endogenous state expenditures may be affected. Default and repayment rates on the type of loans involved will also have to be considered, since this will affect the rate of return on the Fund.

d. Uses of Fund Interest

The final issue to be considered here is the uses which are assumed to be made of the interest on the Permanent Fund. Several possibilities emerge, including: transferring all of the interest to the General Fund, with no further restrictions on its use; transferring only part of interest to the General Fund for a specified period of years, in order to save the rest in the Permanent Fund to augment the rate of increase and move up the day of fiscal independence; paying part or all of the interest earned as "dividends" to Alaskans, perhaps on the model of stock dividends, or on the model of a negative income tax; or some combination of the above. Currently, there are so many proposals for use of Permanent Fund interest that no single assumption regarding its use seems justifiable.

Two approaches to the problem appear useful. One would be to proceed, as has been recommended in several other cases, with several alternative assumptions which span the range of possible uses of the Fund interest, to check the sensitivity of resulting revenues and expenditure paths.

The other approach is to statistically "search" for a "best" policy. For example, set up some hypothetical fiscal series, such as an expenditure-determined rate of withdrawals from the General Fund, and an endogenous rate of non-petroleum revenues additions to the General Fund, the remainder of revenues to be provided by Permanent Fund interest. Then, employing a social welfare criterion such as "maximize present value of per capita payments from the Permanent Fund to Alaska, Inc., over time," an optimal control model could be used to yield the time path of permitted withdrawals for direct payments to individuals which maximized this social welfare measure, subject to the cited fiscal constraints. The series of Alaska, Inc., payments thus introduced into the economy as incomes of persons could be added to the economic model as a series of exogenous payments to personal income, and the parent econometric model resimulated to note the effects. Several runs of the optimal control model subject

to the same social welfare criteria, but with different preferred paths of expenditures, would yield a family of "best" Alaska, Inc., expenditures, subject to the given constraints. By changing the constraints and the criteria, one could check the economic effects of different "optimal" paths, and different "optimality" criteria.

The preferred strategies for use of Permanent Fund interest could be found by comparing simulated economic effects of the path of expenditures which maximized each criterion, or by combining these strategies in various ways. The essential difference from the simpler expedient of using intuition to generate the assumed levels and uses of interest payments is that each program of payments in the case where the optimal control model is used maximizes some social welfare criterion and, therefore, has some claim of "optimality."

In summary of this section, whether fiscal planning involves choosing a series of expenditure paths, and adapting Permanent Fund policies to those expenditures, or whether fiscal planning involves picking certain Permanent Fund criteria and adapting expenditure policies to these criteria, it will still be necessary to make certain assumptions about the policy parameters applying to the Permanent Fund, and there are a few tools available to

make consistent use of these assumptions, and which will aid the fiscal planning process.

## 6. Issues Related to Economic Impact

Throughout this paper to this point, I have discussed fiscal planning policy in terms of its economic impacts. Although some of what is said here has been anticipated in what has been written in previous sections, it is worthwhile to briefly discuss two important issues that will have to be faced in any fiscal planning done for the State of Alaska. One of these is that the aims of a given fiscal policy can probably not be restricted to a single criterion of success, such as the level of disposable personal income per capita, or the number of jobs created, or the rate of spending of oil revenues. The State's goals are inherently multidimensional. The other is that it is not sufficient to look at only the aggregate measures, such as total spending or employment or personal incomes earned. Fiscal planners must be concerned with the distribution of benefits and costs of policy between groups and over time.

### a. Multiple Dimensions of Impact

The existence of the first issue, that fiscal planners must examine at once several dimensions of policy, implies that there ought to be consistent treatment of the

assumptions the planner wishes to make with respect to the State economy and fiscal structure in a single, unified, general equilibrium framework. While it is theoretically possible to do fiscal analysis in a partial equilibrium framework, holding a proposed path of expenditures and the structure of the economy constant and successively computing its effect on revenues, employment, output, etc., in each year, it is much more convenient and sensible to link an expenditure model with specified structural impacts to a model whose structure evolves naturally and which structure accounts for hard-to-trace general equilibrium effects of one variable on another through time. A dynamic expenditures model linked to an econometric model seems the best way to accomplish both the goals of simultaneous accounting for multiple effects of policy and of allowing for a natural growth path in the Alaskan economy.

b. Aspects of Impact Not Handled by Models

The second issue is not conveniently handled by even a relatively sophisticated econometric model such as the ISER MAP models. The problem is that while these models can, given appropriate assumptions, trace out in some detail the aggregate effects of a given fiscal policy over time, the most important effects may occur at an individual

and small group level beyond the analytical ability of the model. For example, suppose that a run of an augmented MAP model showed that by spending only half of Permanent Fund interest and allowing it to accumulate, state income and other recurring taxes and interest on the Permanent Fund could take over all recurring expenditures reasonably anticipated by 1995, and that this policy would result in a 50 percent increase in employment. The criteria should be expanded to include the distribution of benefits and costs. If, for example, this achievement of fiscal independence from oil by 1995 can only be had by reducing real expenditures per capita by 50 percent between 1978 and 1985, the desirability of the goal might be called into question. Beyond that, even if total expenditures for government functions were not reduced, reductions for some functions and offsetting expansions of others might have distributional consequences about which the models are silent, but which would lead to rejection of the policy if they were known.

Aware of this problem, and similar general problems with distributional issues, ISER staff have begun the modeling of demand and supply of occupation classes, and of distribution of income based on average compensation of occupational classes in Alaska. However, completion

of this effort is about one year away, and does not include distribution of government expenditures in any case. Precise knowledge of benefits and costs will depend on individual program analysis. At the more general decision level, the fiscal planner will have to depend on a combination aggregate measure of economic and fiscal impact, and on informed judgment guided by model outputs.

## 7. Summary

This paper has organized a series of issues with respect to long term fiscal planning in Alaska into four areas: issues related to forecasting the size of state budgets and effect of state spending policy on the economy and on revenues; issues relating to the forecasting growth of revenues, whether used to meet a given series of state expenditures or adopted as criteria to regulate expenditures policy; issues related to the role the Permanent Fund plays in the future financing of Alaskan government services; and finally, a short section on two issues relating to generating and interpretation of forecast results. Where I have been aware of convenient methods of handling these issues in some useful and creative way, I have briefly described how the method might be applied to resolve the issue. Where I have felt that several alternatives

existed, I tried to suggest what these are. Obviously, however, the solutions or methodologies selected will depend upon what the State administration determines its goals are with respect to fiscal planning, where goals are really more precise and defined ways of stating more general objectives.

While I have applied the methodologies in a general way to one possible goal of fiscal policy, stated in rather limited terms, I do not mean to suggest that this is anything more than an example of "how it might be done." Definition of the goals leading to the general fiscal objectives will undoubtedly be a shared executive-planner responsibility where the author has no special expertise. I hope, however, that I have demonstrated that one of the benefits of the planning exercise outlined in this paper is that the questions to be answered by the plan become much clearer, no matter by what process they are finally resolved.

APPENDIX A

Model of Education Expenditures

The MAP State Education  
Expenditures Model

Progress Report

Institute of Social and Economic Research  
Anchorage Fairbanks Juneau

October 4, 1976

## Introduction

This model is the first in a series designed to improve MAP program capabilities to project the consequences of state government expenditures policies in Alaska. This model (EDMOD) is not an attempt to forecast the future, both because it requires the input of several exogenous data series which themselves cannot be forecast precisely, and because the structure of the model depends upon historic relationships which may not hold true in the future. Moreover, the model projects education expenditures for a period in which state revenues are expected to be abundant, while the historical data come from a period when the state's funds were relatively scarce.

Because of these problems, the model was built with two primary considerations in mind concerning the level of state education expenditures in the future. First, the model should provide some distinction between expenditures which are primarily discretionary in nature, and those which may be mandated by increases in population and past trends in expenditures per pupil. (Ideally, one would like to explain the trend in expenditures per pupil, but it has not proved possible with the data available to separate past movements in expenditures per pupil into demand and supply components.) This projection of past relationships into the future has value in the budget planning process, and can be used to demonstrate the importance of differences in assumptions concerning the exogenous variables and

parameters of the model in the forecasting of future expenditures. Second, since the state may be the future recipient of large amounts of discretionary income, it is also important for the model to allow departures from past trends in expenditures at the discretion of the researcher, and to offer some basic measures of the effectiveness of the discretionary spending decision in altering the level of government services in education.

A decision was made early in the development of this model to temporarily set aside the problem of capital spending for education, both because the relevant determinants of demand for capital spending would be less easy to isolate than those for operations spending, and because the measures of capital services are a profound conceptual and data problem. (In contrast, the ratio of professionals or teachers per student is a recognized, though admittedly crude measure of educational "services".) Also, because of the importance of state operations expenditures for wages and salaries in inducing state economic growth, it was felt that the initial payoff would be highest in modelling operations expenditures.

To generate business-as-usual expenditures, the model estimates the levels of enrollment in the various state school systems and in the Native BIA schools based on predicted population from the MAP population model. (A model listing is shown in Appendix A.) These enrollments are combined with the historical spending-to-enrollment relationships to estimate state operations spending on primary and

secondary education, excluding debt service and capital outlays. A provision has been made in the model to accommodate consolidation of the BIA attendees into the state schools by the use of a variable constant. Primary and secondary education expenditures are combined with state expenditures for the University of Alaska and for a "miscellaneous" category (the state library system and public television are major components) to estimate total state government operating expenditures for education.

Local school district operating expenditures are estimated in much the same fashion as total state operating expenditures, with state funds transferred to district schools being estimated based on enrollment, local funds being estimated from personal income, and federal funds being supplied exogenously. These three components are added together as an estimate of local potential operations spending, actually being an estimate of revenues available for operations spending on education, and the sum is used to estimate actual spending, to which it bears a strong historical relationship. (Local districts have historically been limited in their spending capacity by the level of transfers from the state and federal governments, and by the tax effort which has been made locally.) The moving proportion of available revenues spent by school districts on wages and salaries of professionals is computed, and this district schools proportion is multiplied times total operations expenditures in the state for all primary and secondary education to estimate the number of

education professionals and professional/student ratios for the forecast period.

The basic model has been modified for this report to permit the state to make additional discretionary transfers to local school districts, signified by the variable EXEDS. Theoretically, it is possible to alter the model in several ways with exogenous variables--e.g., to permit a higher local tax effort, an exogenous component could be added to EDFINL, the local funds variable. In addition, it is possible to test the sensitivity of state expenditures and services delivered to changes in the basic assumptions underlying the model, such as enrollment/population ratios. Finally, the model is designed to either operate as an independent model using exogenous data supplied by the MAP model, or to be integrated into the structure of the MAP econometric and population models, and to interact with them.

#### The Data

The data used to develop EDMOD came from four major sources in Alaska state government, and from one federal source. As a result, there are data incompatibility problems which have to some extent determined the possible structures the model could take. The enrollment data (actually, Average Daily Membership, which is the average enrollment figure used to determine state aid) are reported by the

schools to the State Department of Education, and appear in their Annual Report. A consistent series is available from FY 1963 through FY 1975. Also appearing in the Annual Report are the sources of funds used by local district schools, a broken series which is not reported in FY 1971 or before FY 1966. Actual expenditures of local districts come from this source, also, as does the proxy variable for reported expenditures by local districts on professionals (instruction plus administration expense), and the number of full-time equivalent professionals working for the districts. More detail is available in some years on how this number of professionals breaks down into teachers, administrators, and others, but the series is so severely broken that, for example, there is only one year in which both instructional services expenditures and the number of teachers are both reported. Therefore, all professional employment was used as a measure of service. The reporting system has now been changed, so no consistent series on expenditures is available after FY 1974.

The historical series in the state Budget Document (Supplement, in later years) are the main source for state government expenditures for the University of Alaska, state expenditures for district and state-operated rural and military base schools, and state expenditures for miscellaneous educational purposes. The numbers reported in this source form an unbroken series from FY 1963 to FY 1975 (with the exception of miscellaneous, which is unbroken only since FY 1964), but corresponding figures reported by the Department of Education

(e.g., the amount transferred from the state to its district schools under the Foundation Program, which dominates such transfers) do not equal each other. Nor does the total expenditure figure for education reported in the Budget Document equal that reported in the state's official Annual Financial Report from the Department of Administration Division of Finance. Part of the discrepancy comes from differences in reporting dates and accounting conventions, especially concerning the treatment of encumbrances at the end of the fiscal year, but may not account for all the difference.

The source of personal income (PI) was a combination of the wages and salaries data reported by the State Department of Labor, and of other sources of personal income as reported by the U. S. Department of Commerce, Bureau of Economic Analysis. The wages and salaries data reported for corresponding categories by the state and federal sources do not match, and since state employment figures were used, the federal payroll figures were adjusted to the state totals.

There is no good count of population by ethnic group prior to the 1970 Census of Population which can be used as a guideline to build a detailed population model. Consequently, the detailed breakdown of population by ethnic group and age group generated by the MAP population model and used by this model is only available for a five-year period, 1970 to 1975. This causes some problems. The ratios on school enrollments to population 1970-75 indicate that

variance in the equation is high, but it was left to stand for this report. Total expenditures by the University (EUA) was forecast exogenously.

### Estimation of the Equations

The complete results of the estimation of the stochastic structural equations of EDMOD appear in Appendix B. This section will briefly describe the results of the regression analysis to date.

Initially, the decision was made to run the equations with ordinary least squares (OLS), treating each equation independently. As in other MAP research, the researcher is faced with the problem of extremely short data series, combined with a relatively large number of explanatory variables and a scarcity of variables which permit identification of individual equations. These considerations combine to exclude as impractical the use of two-stage least squares (2SLS) or indirect least squares techniques. In any case, the test of the model is not the structural elegance of the single equations comprising it, but the model's ability to give intuitively satisfactory projections which meet consistency tests. The OLS results were of high quality, though not consistently so. A major internal test was passed in every case--the explanatory variable was highly significant in every case, and the explanatory power of the equations was generally high. In the two cases where corrected multiple correlation coefficient

(CRSQ) was less than 0.80, additional effort will be made to improve the fit of the equation to the historical data. However, it should be pointed out that reestimation of the local expenditures equation 16 has thus far produced worse results.

An additional comment seems worthwhile on two other issues--the apparent arbitrary choice of the range of the regression equations, and the low values of the Durbin-Watson statistic in three of the equations. The overall MAP approach has been consistently to use as much data as is available and possible to use in estimating structural equations. In this case, the choice of range was not affected by data outliers; rather, it was dictated by missing data. The Durbin-Watson statistic seems to indicate first-order serial correlation in three of the equations, which could affect the efficiency of the equation estimated. However, this is probably not a problem in these cases even if serial correlation exists, since the null hypothesis (coefficient  $C_iB=0$ ) is so overwhelmingly rejected. In any case, the coefficient is not biased by the serial correlation problem if it exists, so the estimates in the forecast period will not be changed, even though the degree of confidence which can safely be placed in them may be reduced. However, since the simulation model of which these equations are a part will likely be affected even more by other larger sources of bias and loss of efficiency, worry over this source seems an inefficient use of research time.

### Simulations and Results

The model described above was used for two simulation experiments over the period 1976 to 1990. In the first experiment, the past relationships between variables were projected into the future in a "growth as usual" case based on non-Native civilian population data from an earlier run of the MAP econometric model A7 (accelerated growth at a wellhead oil price of \$7 per barrel), with Native population growth proceeding at the rate which prevailed between 1970 and 1975, and with military population constant at the 1975 level. In the second experiment, the variables remained the same, except that the state was assumed to spend an extra \$100 million per year in the form of operating subsidies to the district schools. The results are summarized in Tables 1, 2, 3, and 4 and are described briefly below.

Table 1 shows the base case simulation enrollments. Since enrollment figures for district schools and state-operated rural schools are fixed proportions of civilian non-Native population growth, the increase in ADND (district school membership) and ADMS (state rural school membership) reflects the population growth associated with petroleum development in the A7 case. Military population is assumed constant, so membership in base schools (ADMB) also remains constant. Enrollment in district schools doubles between 1976 and 1990, while rural school districts slightly more than double their enrollment.

Table 1

GROWTH-AS-USUAL CASE, A7 SCENARIO  
SCHOOL ENROLLMENT VARIABLES

(Thousands of Students)

|      | ADMD    | ADMB    | ADMS    | ENRN    | ENRU    |
|------|---------|---------|---------|---------|---------|
| 1976 | 75.817  | 6.91    | 7.8976  | 4.68867 | 22.1688 |
| 1977 | 78.8054 | 6.91    | 8.2089  | 4.71651 | 23.8313 |
| 1978 | 78.7363 | 6.91    | 8.2017  | 4.74516 | 25.6187 |
| 1979 | 80.879  | 6.91    | 8.4249  | 4.77351 | 27.5402 |
| 1980 | 86.759  | 6.91    | 9.0374  | 4.80228 | 29.6055 |
| 1981 | 92.9568 | 6.91    | 9.683   | 4.83105 | 31.826  |
| 1982 | 98.8531 | 6.91    | 10.2972 | 4.86003 | 34.213  |
| 1983 | 105.846 | 6.91    | 11.0256 | 4.88922 | 36.779  |
| 1984 | 112.537 | 6.91    | 11.7226 | 4.91862 | 39.5374 |
| 1985 | 119.132 | 6.91    | 12.4096 | 4.94802 | 42.5077 |
| 1986 | 126.164 | 6.91    | 13.1421 | 4.97763 | 45.6905 |
| 1987 | 133.488 | 6.91    | 13.905  | 5.00766 | 49.1171 |
| 1988 | 141.352 | 6.90994 | 14.7242 | 5.03749 | 52.801  |
| 1989 | 149.727 | 6.91    | 15.5966 | 5.06793 | 56.761  |
| 1990 | 158.346 | 6.91    | 16.4944 | 5.09838 | 61.0182 |

Key: ADMD = District Schools, Average Daily Membership  
 ADMB = Base Schools, Average Daily Membership  
 ADMS = State Rural Schools, Average Daily Membership  
 ENRN = Native BIA Schools, Potential Enrollment  
 ENRU = University of Alaska, Potential Enrollment

Native potential enrollment increases, but a combination of low net population growth and the fact that many Natives attend district or state-operated rural schools keep enrollment increases to only about 10 percent of the 1976 base. This may even actually overstate the case, since with recent increases in local statutory control in the state-operated rural schools, and probable increased levels of funding to all state schools, the BIA alternative will likely appear less attractive than in the past. The attendance at the University of Alaska (all campuses: ENRU) more than triples, from a 1975 base of about 18,500 to a 1990 enrollment of just over 61,000. The decision to attend school is probably much more an economic one for the potential college student than for the potential primary or secondary student, since the college student directly bears part of the cost as tuition and fees, and this latter enrollment could be markedly affected by changes in the cost and value of education to the student. However, if past trends prevail, the potential for enrollment growth is very large. Even so, the expenditures "required" by trends in past relationships may be less than would be predicted by extrapolating the past proportion of the state budget to the new era.

Table 2 reports the expenditure data for the base case. As can be seen from the table, all categories of state spending for education grow substantially between 1976 and 1990. While spending on primary and secondary education grows some twelve times over the 1976 level between 1976 and 1990, and miscellaneous spending grows 3.4 times

Table 2  
EXPENDITURES BY CATEGORY, GROWTH-AS-USUAL  
(Millions of Dollars)

|      | EEDS96A | EEDS98A | EEDMSCS | EEDUAS  |
|------|---------|---------|---------|---------|
| 1976 | 105.205 | 143.348 | 53.3155 | 36.8301 |
| 1977 | 117.665 | 162.545 | 60.0638 | 39.2354 |
| 1978 | 117.366 | 162.082 | 62.3724 | 41.7982 |
| 1979 | 126.854 | 176.9   | 66.6725 | 44.5284 |
| 1980 | 155.432 | 222.53  | 75.4293 | 47.4365 |
| 1981 | 189.802 | 279.149 | 84.7299 | 50.535  |
| 1982 | 226.791 | 341.937 | 93.8396 | 53.8357 |
| 1983 | 276.416 | 428.787 | 104.481 | 57.3522 |
| 1984 | 330.093 | 525.681 | 114.725 | 61.0981 |
| 1985 | 389.264 | 635.604 | 124.708 | 65.0888 |
| 1986 | 459.571 | 769.943 | 135.005 | 69.3403 |
| 1987 | 541.13  | 930.289 | 145.404 | 73.8691 |
| 1988 | 638.672 | 1127.65 | 156.274 | 78.6941 |
| 1989 | 754.484 | 1369.   | 167.638 | 83.834  |
| 1990 | 887.2   | 1653.8  | 179.203 | 89.3097 |

|      | EEDGFS  | EEDL99  | Key:                                 |
|------|---------|---------|--------------------------------------|
| 1976 | 233.493 | 131.41  | EEDS96A = Total State Transfers to   |
| 1977 | 261.844 | 144.763 | Local School Districts               |
| 1978 | 266.252 | 145.739 | EEDS98A = Total State Operating      |
| 1979 | 288.101 | 156.981 | Expenditures for Primary             |
| 1980 | 345.395 | 187.412 | and Secondary Education              |
| 1981 | 414.414 | 222.629 | EEDMSCS = Total State Miscellaneous  |
| 1982 | 489.612 | 260.131 | Education Operating                  |
| 1983 | 590.619 | 310.745 | Expenditures                         |
| 1984 | 701.504 | 365.325 | EEDUAS = Total State Transfers to    |
| 1985 | 825.401 | 425.093 | the University of Alaska             |
| 1986 | 974.288 | 495.607 | EEDGFS = Total State General Fund    |
| 1987 | 1149.56 | 576.904 | Operating Expenditures               |
| 1988 | 1362.62 | 673.602 | for Education                        |
| 1989 | 1620.47 | 787.833 | EEDL99 = Total Local School District |
| 1990 | 1922.31 | 919.215 | Operating Expenditures               |

over the period, transfers to the University of Alaska grow only about 2.4 times, less than the projected rate of increase in student population. This suggests that higher education may be a future area within education where the state may wish to increase funding, relative to past trends. For example, if state transfers to the University of Alaska bore the same proportion of total education operations spending in 1990 as in 1976, the University would receive \$303.2 million in 1990, not \$89.3 million. If real spending per University student were constant (allowing for an average annual inflation rate of 5 percent), then 1990 transfers to the University in this case would be \$200.7 million.

Table 3 shows the difference between estimated total spending on education projected by using past proportions of total state spending by function and spending on education projected with the same exogenous data, using past enrollment trends. As the table shows, the difference is quite large in most years. Initially, the difference is a little over \$200 million, peaks at nearly \$600 million, and then declines rapidly.

Table 4 reports the result of the second experiment, which took the same exogenous data as in the growth-as-usual case, but added \$100 million per year to the operating revenues which the state provides to the local school districts, and which, it is assumed, are spent in the same manner as other operating subsidies.

Table 3

## TOTAL EDUCATION EXPENDITURES

PROJECTED PAST BUDGET PROPORTION VS.  
"REQUIRED" BY ENROLLMENT TRENDS

(Millions of Dollars)

|      | <u>Past Budget<br/>Proportions</u> | <u>"Required" Total<br/>Expenditures*</u> | <u>"Required" Operating<br/>Expenditures</u> | <u>Projected, Less<br/>"Required"</u> |
|------|------------------------------------|-------------------------------------------|----------------------------------------------|---------------------------------------|
| 1976 | 485.8                              | 276.6                                     | 233.5                                        | 209.2                                 |
| 77   | 521.7                              | 310.1                                     | 261.8                                        | 211.6                                 |
| 78   | 472.2                              | 315.5                                     | 266.3                                        | 156.7                                 |
| 79   | 555.2                              | 341.3                                     | 288.1                                        | 253.9                                 |
| 80   | 757.2                              | 409.2                                     | 345.4                                        | 348.0                                 |
| 81   | 841.1                              | 490.9                                     | 414.4                                        | 350.2                                 |
| 82   | 1051.5                             | 580.0                                     | 489.6                                        | 471.5                                 |
| 83   | 1242.6                             | 699.6                                     | 590.6                                        | 543.0                                 |
| 84   | 1413.6                             | 831.0                                     | 701.5                                        | 582.6                                 |
| 85   | 1574.5                             | 977.8                                     | 825.4                                        | 596.7                                 |
| 86   | 1738.5                             | 1154.2                                    | 974.3                                        | 584.3                                 |
| 87   | 1882.7                             | 1361.8                                    | 1149.6                                       | 520.9                                 |
| 88   | 2026.1                             | 1614.1                                    | 1362.6                                       | 412.0                                 |
| 89   | 2181.0                             | 1919.6                                    | 1620.5                                       | 261.4                                 |
| 90   | 2332.3                             | 2277.2                                    | 1922.3                                       | 55.1                                  |

\*Based on the ratio of state general fund operations expenditures for education to all state expenditures for education, as reported in the State of Alaska Annual Financial Report. Ratio = 1.1846.

Table 4

PROFESSIONAL EMPLOYMENT IN EDUCATION, NUMBER OF PROFESSIONAL  
EMPLOYEES PER STUDENT, AND DEPARTMENT OF EDUCATION  
DIRECT PLUS INDIRECT EXPENDITURES PER STUDENT

## Case 1: Growth as Usual

|      | PROF    | PROFPS   | EEDPSS  |
|------|---------|----------|---------|
| 1976 | 5.36903 | 0.059245 | 2.17009 |
| 1977 | 5.71125 | 0.060807 | 2.37009 |
| 1978 | 5.71704 | 0.060918 | 2.39167 |
| 1979 | 5.99123 | 0.062166 | 2.53157 |
| 1980 | 6.71111 | 0.065343 | 2.90107 |
| 1981 | 7.5297  | 0.068733 | 3.32158 |
| 1982 | 8.36341 | 0.072061 | 3.75474 |
| 1983 | 9.42601 | 0.07615  | 4.30814 |
| 1984 | 10.5142 | 0.080158 | 4.88228 |
| 1985 | 11.6539 | 0.084173 | 5.49153 |
| 1986 | 12.942  | 0.088512 | 6.18911 |
| 1987 | 14.3643 | 0.093092 | 6.9713  |
| 1988 | 15.9836 | 0.098067 | 7.87751 |
| 1989 | 17.8132 | 0.103425 | 8.92178 |
| 1990 | 19.8097 | 0.108994 | 10.0852 |

## Case 2: State to Local Exogenous Transfer = \$100 million per year

|      | PROF    | PROFPS   | EEDPSS  |
|------|---------|----------|---------|
| 1976 | 6.39216 | 0.070534 | 3.27354 |
| 1977 | 6.67535 | 0.071072 | 3.43477 |
| 1978 | 6.68116 | 0.071191 | 3.45723 |
| 1979 | 6.90402 | 0.071757 | 3.57092 |
| 1980 | 7.53046 | 0.07332  | 3.87472 |
| 1981 | 8.25086 | 0.075316 | 4.23441 |
| 1982 | 9.00032 | 0.077549 | 4.61636 |
| 1983 | 9.97393 | 0.080577 | 5.11601 |
| 1984 | 10.9871 | 0.083763 | 5.64465 |
| 1985 | 12.0613 | 0.087116 | 6.2138  |
| 1986 | 13.2879 | 0.090878 | 6.87303 |
| 1987 | 14.654  | 0.094969 | 7.61938 |
| 1988 | 16.2205 | 0.099521 | 8.49106 |
| 1989 | 18.0015 | 0.104518 | 9.50239 |
| 1990 | 19.9547 | 0.109792 | 10.6355 |

Key: PROF = Professionals Employed in Primary and Secondary Education,  
in Thousands

PROFPS = Professionals Per Student

EEDPSS = State Expenditures for Primary, Secondary, and General  
Education, Per Student, in Thousands of Dollars Per Student.

How much of a difference would this additional discretionary spending make? Table 4 shows that since the number of pupils is assumed to be independent of the level of the subsidy (i.e., good schools do not in themselves attract large numbers of additional primary and secondary students to Alaska), the difference in spending per student declines from over \$1,100 per student in 1976 to \$550 per student in 1990. The additional \$100 million initially translates into about 1,000 additional professionals if schools spend these funds in the normal manner, i.e. not concentrating it only on teacher salaries. It also reduces the student-to-professional ratio from 16.9 to 14.2, a difference of not quite 16 percent. However, by the end of the period, \$100 million per year makes virtually no difference in this ratio. Enrollment growth, increasing labor costs, and inflation combine to reduce the effect of the \$100 million to almost no difference in "service".

#### Conclusion

The education expenditures model in this report is for demonstration and is not the final version. Additional work may remain to be done on several of the equations which, while they give intuitively satisfactory results for the projection period, have not been subjected to the full range of tests, and could be improved. The problems of integrating this model with the MAP econometric and population models

remain, as does that of satisfactorily projecting capital spending in education. Some district education data is reported on a regional basis, and this awaits coordination with regional population models, if regional local expenditures for education are to be projected. The model should be taken for what it is: an initial attempt, not a completed effort.

# EDMOD

## Appendix A

### Symbol Declarations and Equations

The model whose results are given in this progress report is reported below. The definitions of variables and parameters appear at the end of this Appendix, in alphabetical order. The values of the parameters and coefficients appear in Appendix B.

#### SYMBOL DECLARATIONS:

##### ENDOGENOUS:

ADMB ADMD ADMS EDFINL EEDL99 EEDMSCS EEDS96 EEDS98  
EEDUAS ENRN ENRU ESCHPROF FOUNPROF

##### DEFINITION:

ADMN ADM97 ADM98 EEDGFS EEDL EEDL98 EEDPSS EEDS96A  
EEDS98A EED99S PROF PROFEX PROFPS

##### EXOGENOUS:

EDFINF EUA EXEDS NPOP519 PI POPC519 POPM519 TPOP  
TPOP1524 TPOP519 DUM1 DUM2

##### COEFFICIENT:

C10A C10B C12A C12B C13A C13B C14A C14B C6A  
C6B C7A C7B C8A C8B C8C C8D C9A C9B

##### PARAMETER:

CADM1 CADM2 CADM3 CADM4 CADM5 K

## EQUATIONS:

```

1:      ADMD == CADM1*POPC519
2:      ADMS == CADM2*POPC519
3:      ADMB == CADM3*(TPOP519-NPOP519-POPC519-POPM519)
4:      ADM97 == ADMD+ADMS
-----
5:      ENRN == CADM4*NPOP519
6:      ADMN == K*ENRN
7:      ADM98 == ADM97+ADMB+(1-K)*ENRN
8:      ENRU == CADM5*TPOP1524
9:      LOG(EEDS96) = C6A+C6B*LOG(ADMD)
10:     EEDS96A == EEDS96+EXEDS
11:     LOG(EEDS98) = C7A+C7B*LOG(ADM98)
12:     EEDS98A == EEDS98+EXEDS
13:     EEDMSCS = C8A+C8B*TPOP+C8C*DUM1+C8D*DUM2
14:     LOG(EEDUAS) = C9A+C9B*LOG(ENRU)
15:     EEDGFS == EEDS98A+EEDMSCS+EEDUAS
16:     LOG(EDFINL) = C10A+C10B*LOG(PI)
17:     EEDPSS == (EEDS98A+EEDMSCS)/ADM98
18:     EED99S == EEDS98A+EEDMSCS+EUA
19:     EEDL == EEDS98A+EDFINL+EDFINF
20:     EEDL98 == EEDS96A+EDFINL+EDFINF
21:     EEDL99 = C12A+C12B*EEDL98
22:     ESCHPROF = C13A+C13B*EEDL99
23:     LOG(FOUNPROF) = C14A+C14B*LOG(ESCHPROF)
24:     PROFEX == FOUNPROF/EEDL98
25:     PROF == PROFEX*EEDL
26:     PROFFS == PROF/ADM98

```

## Definitions of Variables:

ADMB = Average Daily Membership in Base Schools (Thousands)

ADMD = Average Daily Membership in District Schools (Thousands)

ADMN = Average Daily Membership in Native (BIA) Schools (Thousands)

ADMS = Average Daily Membership in State-Operated Rural Schools  
(Thousands)

CADM1 = Ratio of ADMD to POPC519, for School Year 1974-75

CADM2 = Ratio of ADMS to POPC519, for School Year 1974-75

CADM3 = Ratio of ADMB to Military Dependent Population, for  
School Year 1974-75

CADM4 = Ratio of ENRN to NPOP519, for School Year 1974-75

CADM5 = Ratio of ENRU to TPOP1524, for School Year 1974-75

EDFINF = Federally Supplied Operating Funds of Local School  
Districts (Millions)

EDFINL = Locally Supplied Operating Funds of Local School  
Districts (Millions)

EEDL = Estimated Total Operating Expenditures for Primary and  
Secondary Education (Millions)

EEDL98 = Estimated Total Operating Expenditures for Primary and  
Secondary Education by Local Districts (Millions)

EEDL99 = Actual Total Operating Expenditures for Primary and  
Secondary Education by Local Districts (Millions)

EEDGFS = Total State General Fund Operating Expenditures for  
Education (Millions)

EEDMSCS = Total State Miscellaneous Operating Expenditures for  
Education (Millions)

EEDPSS = Total State Operating Expenditures for Primary and  
Secondary Education, Per Student (Thousands)

EEDS96 = Total Demand-Induced Operating Expenditures for Primary  
and Secondary Education by Local Districts (Millions)

## Definitions of Variables (Continued):

EEDS98 = Total State Demand-Induced Operating Expenditures for  
Primary and Secondary Education (Millions)

EEDUAS = Total State Operating Funds Transferred to the University  
of Alaska (Millions)

EED99S = Total Operating Expenditures for Education by the State  
and University (Millions)

ENRN = Potential Enrollment in Native (BIA) Schools (Thousands)

ENRU = Potential University of Alaska Enrollment, All Campuses  
(Thousands)

ESCHPROF = Expenditures for Instruction and Administration,  
by District Schools (Millions)

EUA = Total Operating Expenditures of the University of Alaska  
(Millions)

EXEDS = Exogenous State Transfer of Funds to Local Districts  
(Millions)

FOUNPROF = Total Professional Personnel Hired by Local Districts  
(Thousands)

K = Proportion of Potential Native School Enrollment Attending  
BIA Schools

PI = Personal Income (Millions)

NPOP519 = Native Population 5-19 Years of Age (Thousands)

POPC519 = Civilian Population 5-19 Years of Age (Thousands)

POPM519 = Military Population 5-19 Years of Age (All 15-19)  
(Thousands)

PROF = Total Primary and Secondary Education Professionals  
(Thousands)

PROFEX = Ratio of Professionals Hired per \$1000 of Operating  
Expense, District Schools

PROFPS = Ratio of Professional Personnel per Student, All Schools

TPOP = Total State Population

TPOP1524 = Total State Population, 15-24 Years of Age

EDMOD

Appendix B

Estimated Values and Regression Statistics  
for Stochastic Equations

Key:

NOB = Number of Observations

NOVAR = Number of Explanatory Variables (Including the Constant)

RANGE = Time Series of Observations (Includes End Dates)

RSQ = Multiple Correlation Coefficient

CRSQ = RSQ, Corrected for Degrees of Freedom

SER = Standard Error of the Residuals

SSR = Sum of Squared Residuals

F = Fiedecor "F" Statistic of Significance

DW = Durbin-Watson Statistic of First-Order Serial Correlation  
of Errors

COEF = Regression Coefficient (The A-coefficient is always  
the constant)

STER = Standard Error of the Coefficient

T-STAT = Student "t" Statistic of Significance

$$9: \text{LOG}(\text{EEDS96}) = \text{C6A} + \text{C6B} * \text{LOG}(\text{ADM96})$$

NOB = 13      NOVAR = 2

RANGE = 1963 TO 1975

RSQ = 0.91428      CRSQ = 0.90649

F(1/11) = 117.332

SER = 0.2224      SSR = 0.544

DW(0) = 0.64

| COEF | VALUE    | ST ER   | T-STAT   |
|------|----------|---------|----------|
| C6A  | -7.87517 | 1.06519 | -7.39323 |
| C6B  | 2.89514  | 0.26728 | 10.83200 |

$$11: \text{LOG}(\text{EEDS98}) = \text{C7A} + \text{C7B} * \text{LOG}(\text{ADM98})$$

NOB = 13      NOVAR = 2

RANGE = 1963 TO 1975

RSQ = 0.9259      CRSQ = 0.91916

F(1/11) = 137.438

SER = 0.1948      SSR = 0.417

DW(0) = 0.58

| COEF | VALUE     | ST ER   | T-STAT   |
|------|-----------|---------|----------|
| C7A  | -10.87220 | 1.27174 | -8.54907 |
| C7B  | 3.51419   | 0.29976 | 11.72330 |

$$13: \text{EEDMSCS} = \text{C8A} + \text{C8B} * \text{TPOP} + \text{C8C} * \text{DUM1} + \text{C8D} * \text{DUM2}$$

NOB = 12      NOVAR = 4

RANGE = 1964 TO 1975

RSQ = 0.92175      CRSQ = 0.8924

F(3/8) = 31.410

SER = 5.3373      SSR = 227.898

DW(0) = 1.00

| COEF | VALUE     | ST ER    | T-STAT   |
|------|-----------|----------|----------|
| C8A  | -85.07470 | 24.60170 | -3.45809 |
| C8B  | 0.32589   | 0.09048  | 3.60164  |
| C8C  | 8.55669   | 6.27211  | 1.36424  |
| C8D  | -22.24140 | 6.19347  | -3.59111 |

14: LOG(EEBUAS) = C9A+C9B\*LOG(ENRU)

NOB = 13      NOVAR = 2  
 RANGE = 1963 TO 1975  
 RSQ = 0.92607      CRSQ = 0.91935      F(1/11) = 137.787  
 SER = 0.1812      SSR = 0.361      DW(0) = 1.59

| COEF | VALUE   | ST ER   | T-STAT   |
|------|---------|---------|----------|
| C9A  | 0.89536 | 0.14213 | 6.29977  |
| C9B  | 0.87487 | 0.07453 | 11.73820 |

16: LOG(EDFINL) = C10A+C10B\*LOG(PI)

NOB = 9      NOVAR = 2  
 RANGE = 1966 TO 1970, 1972 TO 1975  
 RSQ = 0.67839      CRSQ = 0.63245      F(1/7) = 14.766  
 SER = 0.1927      SSR = 0.260      DW(1) = 1.86

| COEF | VALUE    | ST ER   | T-STAT   |
|------|----------|---------|----------|
| C10A | -1.93336 | 1.27576 | -1.51545 |
| C10B | 0.67178  | 0.17483 | 3.84254  |

21: EEDL99 = C12A+C12B\*EEDL98

NOB = 8      NOVAR = 2  
 RANGE = 1966 TO 1969, 1972 TO 1975  
 RSQ = 0.99055      CRSQ = 0.98897      F(1/6) = 628.858  
 SER = 4.1371      SSR = 102.692      DW(1) = 2.65

| COEF | VALUE    | ST ER   | T-STAT   |
|------|----------|---------|----------|
| C12A | -4.11577 | 3.50147 | -1.17544 |
| C12B | 0.94426  | 0.03765 | 25.07700 |

22: ESCHPROF = C13A+C13B\*EEDL99

NOB = 7      NOVAR = 2  
 RANGE = 1966 TO 1969, 1972 TO 1974  
 RSQ = 0.9557      CRSQ = 0.98233      F(1/5) = 344.547  
 SER = 2.9571      SSR = 43.723      DW(1) = 1.51

| COEF | VALUE   | ST ER   | T-STAT   |
|------|---------|---------|----------|
| C13A | 3.23779 | 2.59664 | 1.24692  |
| C13B | 0.64289 | 0.03463 | 18.56190 |

23: LOG(FOULPROF) = C14A+C14B\*LOG(ESCHPROF)

NOB = 10      NOVAR = 2  
 RANGE = 1963 TO 1969, 1972 TO 1974  
 RSQ = 0.97604      CRSQ = 0.97305      F(1/8) = 325.957  
 SER = 0.0490      SSR = 1.920E-02      DW(1) = 0.52

| COEF | VALUE    | ST ER   | T-STAT   |
|------|----------|---------|----------|
| C14A | -0.80588 | 0.09820 | -8.20667 |
| C14B | 0.50308  | 0.02786 | 18.05430 |

Constant Values:

K = 1.0    CADM1 = 0.96    CADM2 = 0.10    CADM3 = 0.50    CADM4 = 0.21  
 CADM5 = 0.18

Exogenous Data Supplied on Endogenous Series:

ESCHPROF: 1975 = 100.0

APPENDIX B

Proposal for Expenditures Modeling

PROPOSAL FOR EXPENDITURES  
MODELING PROGRAM

I. Introduction

The accompanying paper on practical issues in long term fiscal planning for Alaska provides a general rationale for an expenditure modeling effort linked to an econometric model of Alaska's economy, in that there is currently no sophisticated budget planning model in Alaska's state government which projects future demand for current government expenditure programs, and which has an expenditures "feedback" loop that takes into account the effect of altered expenditures paths on subsequent revenues and demand for expenditures.

The feature of demand for expenditures modeling is valuable, since it may point out discrepancies between planned or projected expenditures and those expenditures which would have resulted from extending current levels and trends in government services. Second, the feedback loop may be particularly important for certain expenditures policies which could result in high levels of immigration. Preliminary MAP studies with a cruder model indicate, for example, that use of oil revenues to roll back the state personal income tax is counterproductive, in that half of the initial gains in disposable real personal income are eroded by population increases.

Similar effects could exist in many other fiscal areas, and it is important that these be examined in planning fiscal policy. Third, detailed expenditures modeling lends itself to estimation of measurable effects of those expenditures in terms of services delivered. This would enhance the value of the effort, since regardless of eventual expenditures policies decided, at least some of the resulting effects on services can be projected.

## II. Proposed Project

I.S.E.R. proposes to do a comprehensive, detailed five-year state expenditures planning study for the use of the Division of Policy Development and Planning, Division of Budget and Management, and other state agencies which the governor or his representative may direct. The study in its finished form will be compatible with (and will draw from) I.S.E.R.'s statewide long run econometric model, and with long run modeling efforts currently proposed by I.S.E.R. for contract with the state's Legislative Affairs Agency. At a minimum, the detailed expenditures study will provide the following:

- a. Detailed projection of demand for budget expenditures by subcategories of the nine major functional categories of expenditure in the state operating budget through 1985. This will be a more detailed modeling effort than that contemplated in the Legislative Affairs proposal, and is aimed at systematically projecting the current programs into the future to test their implications for state budgets.

b. Study of a number of alternatives for budget expenditures through 1985 to demonstrate the sensitivity of the budget to various assumptions concerning individual programs.

c. Projections of state expenditures by object by year by budget category.

d. The impact of transferring variable proportions of interest to the General Fund and to other projects, including direct distribution to persons.

e. Projections of some limited measures of government service availability.

f. Relationships between budget expenditures and total economic impacts.

g. Separate treatment of special funds, state enterprises, and formula spending programs.

In addition, I.S.E.R. will attempt to model two other capabilities which are valuable, though far less tractible to produce:

h. The projected demand for capital expenditures.

i. The relationship between capital expenditures and subsequent continuing expenditures.

The proposed project will involve model development and a series of applications to study the future of the state budget in detail. The State will have an additional option either to purchase the use of Institute resources for additional use of the model, or to pay for the subsequent conversion of the model from TROLL software environment in which the model will be developed, to a form compatible with the State's computer in Juneau. The final product will consist of a copy of the model listing, regression results,

annotated data listing, and the applied budget study, to be delivered to the Division of Policy Development and Planning 120 days after the contract is signed.

### III. Data

Though additional clarification of data definitions and additional limited aid in data compilation may be requested from Division of Budget and Management, Department of Revenue, and Division of Employment Security, I.S.E.R. staff currently has in hand nearly all the data anticipated as usable for the modeling effort. Little extra collection effort is anticipated. The primary sources will be the state's Executive Budgets (title varies), Revenue Sources, Annual Financial Reports, and miscellaneous sources such as the U.S. Department of Commerce, State Division of Employment Security, and State Departments of Labor and Public Works. The data is of uneven quality, particularly before 1965, but is usable for the present project.

### IV. Outline of the Study

1. Introduction and Executive Overview of the Budget Through 1985
2. Data Problems and Solutions
3. Estimation of the Equations, to Include:
  - a. Choice of variables
  - b. Choice of functional form
  - c. Results of estimation and adjustments

6:18.9 # S  
COMM

STATE  
of ALASKA

## MEMORANDUM

TO: Senator Clem Tillion

DATE: April 17, 1979

FILE NO:

TELEPHONE NO:

FROM: Governor Hammond SUBJECT: Permanent Fund Legislation;  
Loan Programs

The following are my bottom line concerns regarding permanent fund enabling legislation and reorganization of the loan programs. I will be flexible regarding details and other aspects of the legislation, but I hope to see the following principles incorporated into any permanent fund legislation which arrives on my desk.

Permanent Fund

1. The permanent fund should be managed as an inviolable trust fund. This means that these funds should be invested in a safe, secure manner to provide a relatively certain flow of income. The principal of the permanent fund may not be used as a guarantee for any debt nor may the fund be used to guarantee debt of its own.
2. 50% of income return to general fund and 50% of income for specific programs as designated by the legislature, such as guarantees for hydro projects, guarantees for state loans, dividends to Alaskans (Ak., Inc.), provided that at a minimum of 25% of earnings would be returned to Alaskans.
3. Investment of permanent fund principal should be based on a list of eligible investments identified as appropriate with respect to risk level and return to the fund.
4. All permanent fund investments should yield a market rate of return.
5. Fund managers should be limited to operating within the guidelines specified in enabling legislation. They are not to be responsible for designing or implementing social or economic policy outside of their specific mandate.
6. No reorganization of state government for loan programs.
7. Increase contribution rate of 50% of bonuses and royalties, at a minimum.

8.

# STATE OF ALASKA

JAY S. HAMMOND, GOVERNOR

## DEPARTMENT OF LAW

OFFICE OF THE ATTORNEY GENERAL

POUCH K-STATE CAPITOL  
JUNEAU, ALASKA 99811

March 21, 1979

The Honorable Brian Rogers  
Alaska House of Representatives  
Pouch V  
Juneau, Alaska 99811

Re: HJR 23, proposing a  
constitutional amendment  
re permanent fund

Dear Representative Rogers:

You have asked whether it is necessary for the effective date clause of a constitutional amendment to be made a part of the proposition to be voted on by the electorate.

The short answer is no.

The pertinent provision of the constitution reads as follows:

Amendments to this constitution may be proposed by a two-thirds vote of each house of the legislature . . . . Unless otherwise provided in the amendment, it becomes effective thirty days after certification of the election returns by the lieutenant governor.

Alaska Const., art. XIII, § 1.

As originally introduced, the provisions on amendment and revision of the constitution did not include any language on the effective date of an amendment. 6 MINUTES, Alaska Constitutional Convention, App. V, p. 25 (1956) (hereinafter, MINUTES). It was added by way of amendment, with the following explanation:

[O]n line 8, we added the words, 'Unless otherwise provided in the amendment, it becomes effective . . . .' We want to make it [a constitutional amendment] effective 30 days later,

but we have not changed the intent, because the legislature, if it so desires, can designate the effective date . . . . We just wanted to put in a cautionary note there if the legislature should happen to forget when it became effective.

5 MINUTES 3425.

The constitution has a related provision in the article on the legislative branch. It reads as follows:

Laws passed by the legislature become effective ninety days after enactment. The legislature may, by two-thirds of the membership of each house, provide for another effective date.

Alaska Const., art. II, § 18.

The spokesman quoted above probably had it in mind when he said that the provision on amendments "now conforms" to other provisions of the constitution. 5 MINUTES 3425.

While it can be argued that the phrase "in the amendment" means that the effective date must be a literal part of the actual amendment to the constitution, we think that goes too far and that it serves no useful purpose. We think the better view is that the convention used the word "amendment" in the sentence at hand to mean the bill or resolution on which the legislature would act in proposing to amend the constitution.

The convention routinely referred to the papers before it which contained proposals to alter the language of the proposed articles it was considering as amendments. Thus, HJR 23 can itself be thought of as a proposed constitutional amendment -- which it is -- and the effective date is provided in it just as was contemplated by the convention. This particular use of language is common, particularly where, as here, there was no established procedure or mechanism for proposing amendments at the time the constitution was drafted. Not having an established mechanism to which they could refer, the framers simply used the word "amendment" in an inclusive sense.

The Honorable Brian Rogers  
March 21, 1979  
Page #3

Moreover, a convention which prided itself on its lean and spare language and which avoided the excessive verbiage of its nineteenth century counterparts with a passion, could hardly have intended to clutter up its own document with effective date clauses of only transitory significance. The only possible purpose of making an effective date clause a part of the actual amendment itself would be to have a popular vote on it. That purpose is negated, however, by the testimony of the spokesman quoted above, in which he says, "the legislature, if it so desires, can designate the effective date of the amendment . . . ." 5 MINUTES 3425.

Accordingly, we can see no constitutional intent to require that the effective date be incorporated into the actual language of an amendment and conclude that it suffices that the clause is included in the resolution.

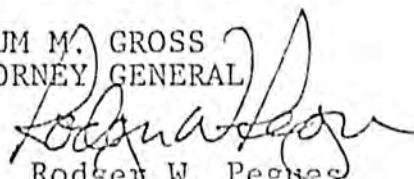
You have also asked whether a section should be added which contains directions for placing the proposed amendment on the ballot. This is the format used in the Legislative Drafting Manual, Appendix XIII. Because the standard section has no legal effect and merely restates a directive contained in article XIII, section 1, of the Alaska Constitution, we have considered recommending its deletion from the format to the Revisor of Statutes. However, we have not yet done so, and the omission of the standard section was simply an oversight. We would in no way object to its insertion as a section 3.

Your inquiry has caused us to review the resolution in its entirety. In doing so, we have discovered that the title -- which stems from an original working draft of a somewhat different proposal -- is overbroad. We recommend that the word "finance" be deleted and that the words "the permanent fund" be inserted in its place.

Sincerely yours,

AVRUM M. GROSS  
ATTORNEY GENERAL

By:

  
Rodger W. Pegues

Assistant Attorney General

RWP/pjg



STATE OF ALASKA  
OFFICE OF THE GOVERNOR  
JUNEAU

February 14, 1980

The Honorable Hugh Malone  
Alaska State House of Representatives  
Alaska State Legislature  
Pouch V  
Juneau, Alaska 99811

Dear Representative Malone:

Benefits from oil wealth which belong to all Alaskans can be distributed in many ways: low interest loans, tax relief, expanded government services. While these all may have merit, not all Alaskans are beneficiaries. This is why I have proposed a Permanent Fund Dividend program which, compared to drastic income tax reduction or repeal, would:

1. Provide benefits to all Alaskans from the earnings of their resource wealth.
2. Encourage greater contributions to the Permanent Fund.
3. Set in place a dividend dispersal system which most economists believe better meets the objectives of an A.G.S.O.C.
4. Not serve to narrow our already too narrow tax base.
5. Confine benefits to Alaskans.
6. Be less vulnerable to federal "tax bites".
7. Serve as less a magnet to attract persons to come up here.
8. Equitably impact both rich and poor.
9. Retain the taxpayer's one remaining tie with, and consequent concern for, government growth: How much it costs them.

February 14, 1980

10. Far less likely reduce federal revenue sharing to the State.
11. By contrast maximize favorable impact upon the State's economy by keeping a far larger portion of the money to fund the program here in Alaska.
12. Likely satisfy both the tax reduction and A.G.S.O.C. initiatives.

If it were not for these twelve considerations, I would prefer income tax reduction or repeal. It's simpler and far easier to sell politically, so long as the public can be kept unaware of what we could achieve with a comparable expenditure of their oil wealth through the Permanent Fund Dividend concept. Once they in turn become aware, various interest groups, many initially favoring instead drastic tax reduction or repeal, have similarly concluded that the Permanent Fund Dividend concept better meets the above objectives. To date, that concept has been endorsed as preferable to income tax repeal by ANS, ANB, AKPIRG, the Municipal League, the Council of Mayors, and Rural CAP.

All of the above twelve points are, in my view, important. However, some are less so than others. To aid you in your deliberations, here are the ones which I deem most important.

1. First and most important, the aggregate cost of the benefits provided must be ultimately offset by some source of sustainable revenue. The logical source is the income stream of the Permanent Fund. By relating the size of their benefit to one-half the earnings of the Permanent Fund contributions, the public will not only be supportive of larger fund contributions but as well will likely be far more demanding that at least this portion of their oil wealth be invested prudently, rather than used for hidden subsidies or bigger government.

Initially, of course, one-half the earnings of the Permanent Fund would be inadequate to fund "benefits" equal in cost to the State of either income tax repeal or the minimal \$50 per share Permanent Fund Dividend I propose. However, once three billion dollars were in the fund, one-half the income stream would be sufficient to offset the costs of income tax repeal -- about \$160 million for 1979.

February 14, 1980

Ultimately, were no "lid" placed upon the total benefit (aside from limiting it to one-half Permanent Fund earnings) each share would become worth several hundred dollars. Then the aggregate costs would far exceed that incurred through repeal of the income tax. Accordingly, I propose that the aggregate costs in any given year not exceed what the total income tax obligation was for the prior year.

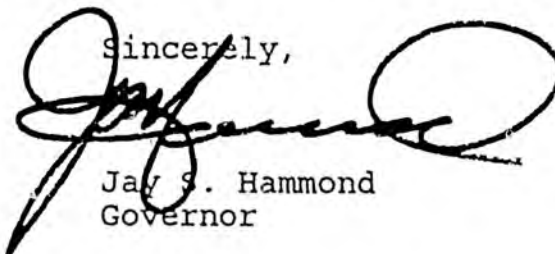
2. In any program increasing the dispersal of our oil wealth all Alaskans, not simply taxpayers, should be beneficiaries. We already have numerous programs selectively dispersing portions of our oil wealth in the form of expanded subsidized government programs and low interest loans. These go only to select Alaskans, not to all. The size of these selective "hidden dividends" can be substantial. For example, take the case of someone who gets a \$100,000 State loan of oil wealth at 9 1/2 percent interest. Yet, all other Alaskans who own just as much of that wealth as he could get about 15 1/2 percent return if their money was loaned at market rate. Therefore, the loan recipient is receiving a "dividend", or subsidy, of \$6,000 in the first year alone. That subsidy or "dividend" would amount to an incredible \$94,000 on a 30-year loan. That "dividend" or subsidy is being paid from oil wealth owned by all Alaskans. We don't confine payment of such loan "dividends" to taxpayers only or demand that before we provide Alaskans with low interest loans, we first eliminate the income tax. Why should a system which provides far more equitable benefits to all Alaskans, such as the Permanent Fund Dividend concept, be subordinate to that consideration? It seems high time that any new means of dispersing oil wealth should provide that all Alaskans, even the non-taxpaying, housewife, student, unemployed or retired couple get a share.

3. If benefits are confined to taxpayers only, as benefits grow in size with increased Permanent Fund earnings the income tax obligation would ultimately be eliminated. We would then have no continuing system for distributing benefits. This is yet another reason for setting up a system which disperses some of their oil wealth to all Alaskans -- even after income tax obligations have been eliminated.

February 14, 1980

Please use the above twelve criteria as a yardstick to measure whatever proposals may come before you. If you can better meet them through a system other than the Permanent Fund Dividend concept, I will happily support it.

Sincerely,

A handwritten signature in black ink, appearing to read "Jay S. Hammond", with a large, stylized loop at the end.

Jay S. Hammond  
Governor

PLEASE NOTE: THE FOLLOWING PAGES WERE TREATED  
AS A UNIT IN THE ORIGINAL DOCUMENT.