

ECONOMIC AND FISCAL SIMULATIONS FOR ALASKA
WITH DEPARTMENT OF REVENUE (MARCH 1985)
PETROLEUM REVENUE PROJECTIONS

by

Scott Goldsmith
Institute of Social and Economic Research
University of Alaska, Anchorage

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The sharply lower petroleum revenue projections of the Alaska Department of Revenue (DOR) in March 1985 have raised questions about the effects which this will have both on future state budgets and on the health of the economy. In this paper, the results of two simulations of the Alaska economy are presented based upon these petroleum revenue projections--a "business as usual" case and an alternative involving "revenue augmentation."

The implications of the analysis are as follows:

- (1) Absent any measures to augment the revenues going into the state General Fund, state revenues and expenditures will continue to fall from their all-time high in the early 1980s each year through the first decade of the next century.
- (2) Measures to augment revenues, including
 - a. reimposition of the personal income tax
 - b. appropriating Permanent Fund earnings (including money currently going to dividends)
 - c. settlement of the pipeline TARIFF lawsuit
 - d. settlement of the dispute over the disposition of bonuses from disputed tracts offshore on the North Slopecan at best postpone the commencement of this downward secular trend for one or two years but cannot reverse it.
- (3) The growth in aggregate economic activity in the state will stop in the latter part of this decade, and the hiatus will continue into the first part of the next decade. The secular decline in state expenditure will cause employment in the government and infrastructure sectors to fall, and growth in basic and support sectors will be hard pressed to make up the difference to maintain aggregate employment at the current level through the next decade.

- (4) The deficit in state revenues is not a temporary phenomenon associated with the current (FY 1986) budget.

Business as Usual

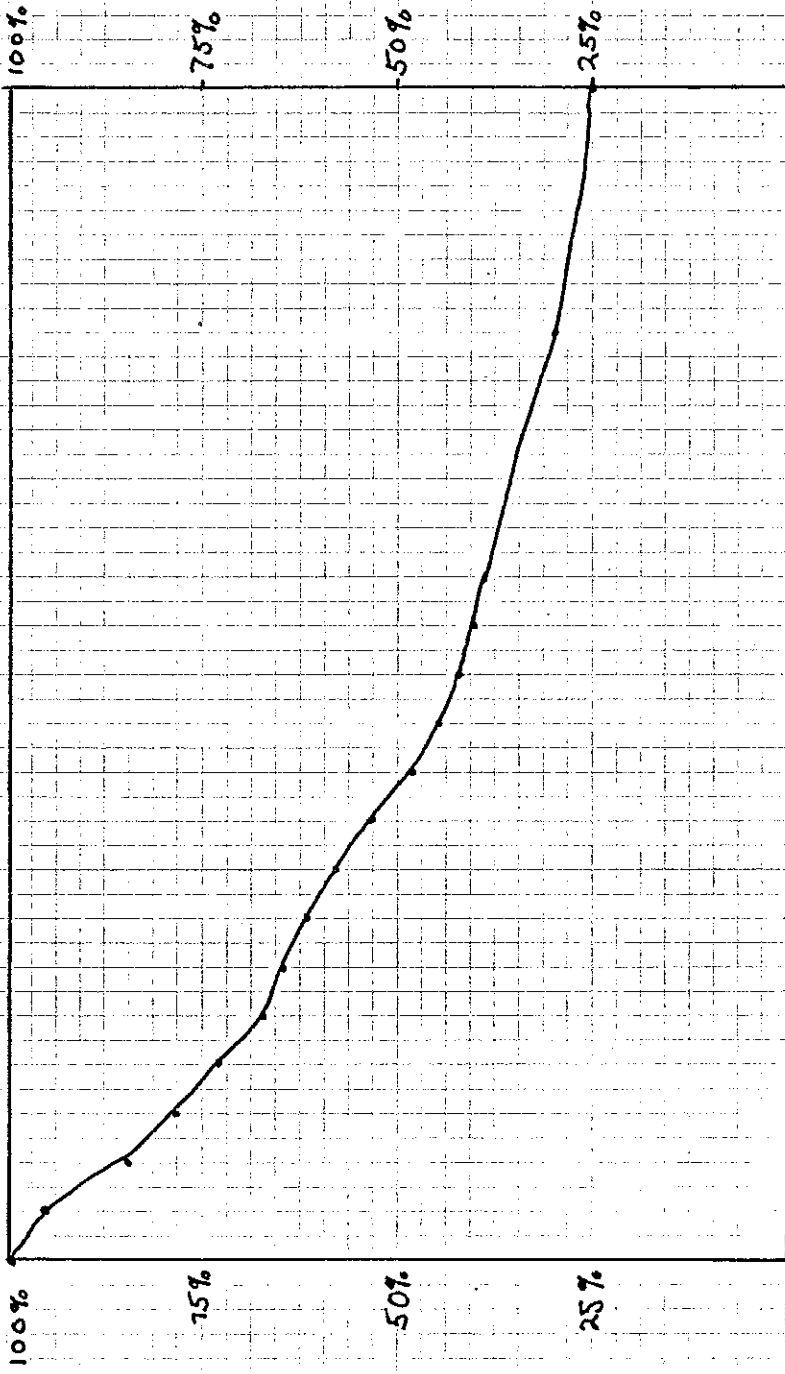
Using DOR revenues and assuming no changes in policy relating to taxes or the Permanent Fund, state revenues and fund balances will change over time, as shown in Table 1. The year-to-year change in revenues is shown in Figure 1.

TABLE 1. STATE REAL GENERAL FUND REVENUE AND FUND BALANCES
(1984 million \$)

| | Revenues | | | | Funds | |
|------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Total | Petroleum | Earnings | Other | Permanent | General |
| 1985 | \$3023.54 | \$2678.07 | \$122.324 | \$223.145 | \$6184.87 | \$1395.07 |
| 1986 | 2752.21 | 2440.07 | 86.203 | 225.943 | 6518.52 | 1195.68 |
| 1987 | 2619.25 | 2315.82 | 77.068 | 226.368 | 6829.75 | 1146.05 |
| 1988 | 2306.83 | 2003.11 | 84.077 | 219.639 | 7123.75 | 1065.1 |
| 1989 | 2137.19 | 1845.09 | 78.192 | 213.913 | 7403.79 | 1007.21 |
| 1990 | 2007.36 | 1720.23 | 73.956 | 213.178 | 7659.38 | 956.912 |
| 1991 | 1852.42 | 1568.81 | 70.258 | 213.352 | 7916.64 | 905.497 |
| 1992 | 1781.67 | 1501.59 | 68.893 | 211.189 | 8159.67 | 865.625 |
| 1993 | 1699.56 | 1424.94 | 65.894 | 208.729 | 8419.63 | 823.188 |
| 1994 | 1572.33 | 1298.29 | 62.679 | 211.361 | 8658.47 | 775.192 |
| 1995 | 1445.17 | 1169.82 | 59.016 | 216.328 | 8873.63 | 726.906 |
| 1996 | 1331.98 | 1059.16 | 55.333 | 217.483 | 9062.78 | 683.372 |
| 1997 | 1241.78 | 967.043 | 56.026 | 218.707 | 9227.26 | 642.907 |
| 1998 | 1170.42 | 900.759 | 52.727 | 216.938 | 9377.4 | 607.017 |
| 1999 | 1094.92 | 824.862 | 49.776 | 220.28 | 9506.13 | 572.115 |
| 2000 | 1036.23 | 768.311 | 46.921 | 220.994 | 9615.98 | 542.007 |
| 2005 | 834.935 | 575.931 | 35.889 | 223.115 | 9955.93 | 415.059 |
| 2010 | 692.498 | 433.422 | 27.881 | 231.195 | 10157.4 | 323.903 |

DSET A5.11, Variables: DF.RSGFB, DF.RP9SG, DF.RSIN, DF.RSENG,
DF.BALPF, DF.BALGF

Figure 1. "Business As Usual"
 General Fund Revenues: Future Years Relative to 1986



1986 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08 09 10

133 313 169 130 155 71 82 127 127 114 90 71 76 58

DROP IN REVENUES FROM PREVIOUS YEAR

9 Inflation corrected ↓

These revenues will permit expenditures at the levels shown in Table 2. Although General Fund expenditures (net of debt service) stop falling in 1992, in real (inflation-adjusted) dollars the decline is continuous. As a consequence, state population and employment stagnate for seven to eight years after the current backlog of state capital expenditures is spent and current North Slope field development expenditures are completed (Table 3).¹

¹The decline appears to be somewhat underestimated due to the lack of contraction of local government in the simulation.

TABLE 2. STATE APPROPRIATIONS NET OF DEBT SERVICE

| | Total (million \$) | Spending Limit Minus Appropriations (million \$) | Real Total (million 1984 \$) | Real Per Capita (1984 \$) | Real Per Capita Operations (1984 \$) | Real Per Capita Capital (1984 \$) |
|------|-----------------------|---|---------------------------------|---------------------------------|---|--|
| 1985 | \$2918.61 | \$212.329 | \$2857.91 | \$5354.96 | \$3935.9 | \$1419.07 |
| 1986 | 2738.65 | 578.648 | 2585.1 | 4742.58 | 3794.07 | 948.516 |
| 1987 | 2718.95 | 728.457 | 2465.34 | 4530.76 | 3624.61 | 906.152 |
| 1988 | 2508.75 | 1083.7 | 2164.48 | 4011.6 | 3209.28 | 802.321 |
| 1989 | 2448.37 | 1341.85 | 2011.34 | 3710.89 | 2968.71 | 742.177 |
| 1990 | 2427.26 | 1574.78 | 1899.01 | 3484.08 | 2787.26 | 696.815 |
| 1991 | 2372.05 | 1836.61 | 1767.27 | 3237.78 | 2590.23 | 647.557 |
| 1992 | 2430.15 | 2009.42 | 1719.32 | 3144.57 | 2515.65 | 628.914 |
| 1993 | 2438.1 | 2288.74 | 1638.9 | 2963.17 | 2370.53 | 592.633 |
| 1994 | 2358.44 | 2706.26 | 1506.63 | 2675.14 | 2140.11 | 535.028 |
| 1995 | 2244.47 | 3155.27 | 1362.43 | 2387.87 | 1910.29 | 477.573 |
| 1996 | 2154.66 | 3587.59 | 1242.63 | 2155.59 | 1724.47 | 431.118 |
| 1997 | 2125.05 | 4014.24 | 1157.03 | 1988.48 | 1590.78 | 397.695 |
| 1998 | 2122.79 | 4499.04 | 1091.57 | 1841.65 | 1473.32 | 368.33 |
| 1999 | 2107.02 | 5008.95 | 1023.08 | 1701. | 1360.8 | 340.2 |
| 2000 | 2133.36 | 5540.95 | 978.295 | 1596.98 | 1277.58 | 319.396 |
| 2005 | 2300.78 | 8524.25 | 792.247 | 1221.01 | 976.811 | 244.203 |
| 2010 | 2620.04 | 12827.6 | 678.872 | 974.362 | 779.489 | 194.872 |

DSET A5.11, Variables: EXLIMOK, RSGFGAP, DF.EXLOK, DFP.EXLK, DFP.APGO, DFP.APGC

TABLE 3. STATE EMPLOYMENT
(thousands)

| | Total | Basic | State/Local Government | Support | Infrastructure |
|------|---------|--------|---------------------------|---------|----------------|
| 1985 | 266.908 | 80.02 | 46.905 | 96.729 | 43.254 |
| 1986 | 271.996 | 84.79 | 46.709 | 98.176 | 42.32 |
| 1987 | 267.965 | 86.272 | 44.821 | 96.913 | 39.959 |
| 1988 | 261.952 | 85.392 | 42.331 | 95.341 | 38.888 |
| 1989 | 264.533 | 88.034 | 41.129 | 96.229 | 39.141 |
| 1990 | 266.886 | 89.1 | 40.423 | 97.887 | 39.476 |
| 1991 | 266.559 | 88.268 | 39.635 | 99.009 | 39.646 |
| 1992 | 267.025 | 87.22 | 39.578 | 100.175 | 40.052 |
| 1993 | 274.322 | 89.815 | 39.389 | 103.517 | 41.601 |
| 1994 | 284.385 | 93.814 | 38.896 | 108.374 | 43.302 |
| 1995 | 288.883 | 94.594 | 38.339 | 112.029 | 43.921 |
| 1996 | 291.642 | 94.383 | 37.71 | 115.259 | 44.291 |
| 1997 | 293.459 | 93.879 | 37.209 | 117.715 | 44.657 |
| 1998 | 302.538 | 97.204 | 37.016 | 122.304 | 46.014 |
| 1999 | 305.984 | 96.557 | 36.776 | 125.712 | 46.94 |
| 2000 | 313.327 | 98.205 | 36.757 | 130.094 | 48.271 |
| 2005 | 324.862 | 93.057 | 35.853 | 143.585 | 52.368 |
| 2010 | 348.789 | 93.361 | 33.955 | 162.94 | 58.533 |

DSET A5.11, Variables: EM99, EM9BASE, EM9GOV, EM9SUPRT, EM9INFR

Revenue Augmentation

The secular fall in revenues will probably result in policy changes to augment the flow of revenues into the General Fund. We examine the combined effect of three measures in a second simulation. These measures are as follows:

- (1) Termination of Permanent Fund Dividends after FY 1986 and subsequent redirection of that portion of earnings into the General Fund.
- (2) Reimposition of the personal income tax in calendar year 1988.
- (3) Transfer of all Permanent Fund earnings annually to the General fund.

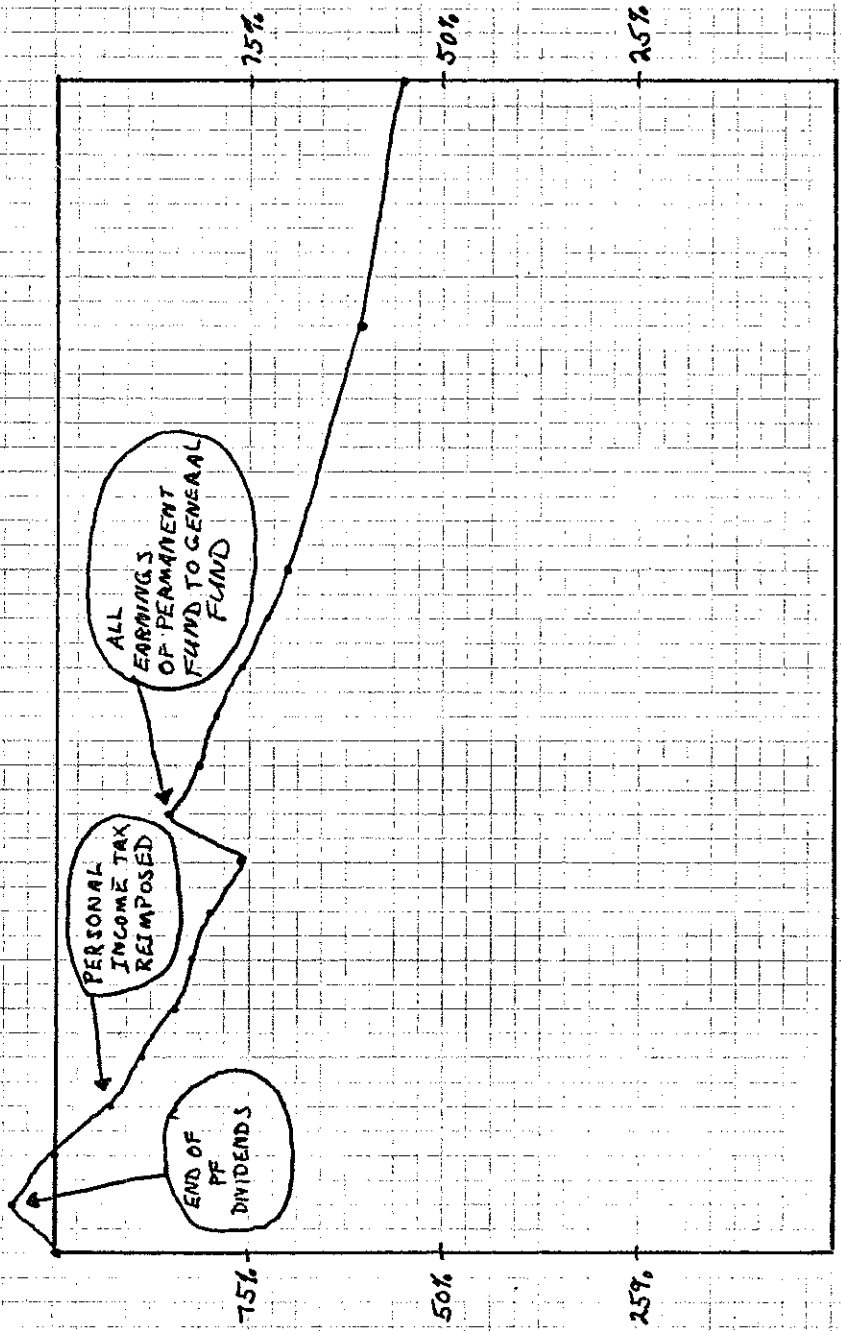
The effect of these measures is to forestall but not to prevent the decline in revenues and with it the decline in government production and services. This is shown in Tables 4 through 6. Figure 2 shows the year-to-year change in revenues in this case.

TABLE 4. STATE REAL GENERAL FUND REVENUE AND FUND BALANCE
(1984 million \$)

| | Revenues | | | | Funds | |
|------|----------|-----------|----------|-------|-----------|---------|
| | Total | Petroleum | Earnings | Other | Permanent | General |
| 1985 | \$3024 | \$2678 | \$122 | \$223 | \$6185 | \$1395 |
| 1986 | 2752 | 2440 | 86 | 226 | 6519 | 1196 |
| 1987 | 2866 | 2316 | 324 | 226 | 6804 | 1107 |
| 1988 | 2740 | 2003 | 369 | 368 | 7038 | 570 |
| 1989 | 2568 | 1766 | 325 | 478 | 6938 | 318 |
| 1990 | 2448 | 1645 | 316 | 487 | 7123 | 199 |
| 1991 | 2304 | 1500 | 315 | 490 | 7314 | 187 |
| 1992 | 2254 | 1435 | 332 | 487 | 7489 | 187 |
| 1993 | 2193 | 1361 | 340 | 492 | 7681 | 182 |
| 1994 | 2096 | 1239 | 348 | 509 | 7854 | 173 |
| 1995 | 2338 | 1116 | 695 | 527 | 7666 | 212 |
| 1996 | 2230 | 1010 | 681 | 539 | 7467 | 203 |
| 1997 | 2177 | 922 | 707 | 548 | 7217 | 200 |
| 1998 | 2101 | 859 | 684 | 559 | 6972 | 194 |
| 1999 | 2019 | 786 | 660 | 573 | 6727 | 188 |
| 2000 | 1952 | 732 | 637 | 584 | 6483 | 185 |
| 2005 | 1683 | 548 | 524 | 612 | 5317 | 166 |
| 2010 | 1506 | 411 | 430 | 665 | 4339 | 160 |

DSET A5.12, Variables: DF.RSGFB, DF.RP9SG, DF.RSIN, DF.RSENG,
DF.BALPF, DF.BALGF

Figure 2. "Revenue Augmentation"
 General Fund Revenues: Future Years Relative to 1986¹



| | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|------|-----|-----|-----|-----|----|----|----|------|-----|----|----|----|-----|----|----|----|----|----|----|----|----|----|------|--|
| 1986 | 81 | 83 | 87 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 2010 | |
| | +114 | 126 | 172 | 120 | 144 | 50 | 61 | 97 | +202 | 148 | 53 | 76 | 82 | 67 | | | | | | | | | | | |

DROP IN REVENUES FROM PREVIOUS YEAR

¹ Inflation corrected \$.

TABLE 5. STATE APPROPRIATIONS NET OF DEBT SERVICE

| | Total (million \$) | Spending Limit Minus Appropriations (million \$) | Real Total (million 1984 \$) | Real Per Capita (1984 \$) | Real Per Capita Operations (1984 \$) | Real Per Capita Capital (1984 \$) |
|------|-----------------------|---|---------------------------------|---------------------------------|---|--|
| 1985 | \$2919 | \$212 | \$2858 | \$5355 | \$3936 | \$1419 |
| 1986 | 2739 | 579 | 2585 | 4743 | 3794 | 949 |
| 1987 | 3450 | 0 | 3128 | 5745 | 3849 | 1896 |
| 1988 | 3609 | 0 | 3113 | 5744 | 3849 | 1896 |
| 1989 | 3114 | 845 | 2448 | 4518 | 3321 | 1197 |
| 1990 | 3134 | 1042 | 2345 | 4310 | 3448 | 862 |
| 1991 | 3111 | 1268 | 2215 | 4081 | 3264 | 816 |
| 1992 | 3211 | 1398 | 2170 | 4002 | 3201 | 800 |
| 1993 | 3263 | 1629 | 2095 | 3832 | 3066 | 766 |
| 1994 | 3266 | 1956 | 1992 | 3593 | 2875 | 719 |
| 1995 | 3851 | 1724 | 2231 | 3968 | 3174 | 794 |
| 1996 | 3868 | 2060 | 2128 | 3748 | 2999 | 750 |
| 1997 | 3989 | 2352 | 2071 | 3614 | 2891 | 723 |
| 1998 | 4067 | 2765 | 1994 | 3420 | 2736 | 684 |
| 1999 | 4144 | 3186 | 1918 | 3248 | 2598 | 650 |
| 2000 | 4271 | 3620 | 1866 | 3110 | 2488 | 622 |
| 2005 | 4860 | 6156 | 1591 | 2534 | 2028 | 507 |
| 2010 | 5874 | 9717 | 1444 | 2165 | 1732 | 433 |

DSET A5.12, Variables: EXLIMOK, RSGFGAP, DF.EXLOK, DFP.EXLK, DFP.APGO, DFP.APGC

TABLE 6. STATE EMPLOYMENT
(thousands)

| | Total | Basic | State/Local Government | Support | Infrastructure |
|------|---------|--------|---------------------------|---------|----------------|
| 1985 | 266.908 | 80.02 | 46.905 | 96.729 | 43.254 |
| 1986 | 271.996 | 84.79 | 46.709 | 98.176 | 42.32 |
| 1987 | 268.417 | 86.272 | 45.921 | 96.101 | 40.123 |
| 1988 | 264.759 | 85.392 | 45.503 | 93.614 | 40.25 |
| 1989 | 263.269 | 88.034 | 41.896 | 92.818 | 40.522 |
| 1990 | 265.046 | 89.1 | 42.616 | 93.467 | 39.863 |
| 1991 | 262.698 | 88.268 | 41.689 | 93.565 | 39.176 |
| 1992 | 261.902 | 87.22 | 41.442 | 93.948 | 39.293 |
| 1993 | 267.42 | 89.815 | 41.158 | 96.327 | 40.12 |
| 1994 | 275.618 | 93.814 | 40.754 | 100.24 | 40.81 |
| 1995 | 282.61 | 94.594 | 42.991 | 103.86 | 41.166 |
| 1996 | 286.07 | 94.383 | 42.299 | 107.169 | 42.22 |
| 1997 | 288.502 | 93.879 | 41.813 | 109.67 | 43.141 |
| 1998 | 296.791 | 97.204 | 41.332 | 113.984 | 44.27 |
| 1999 | 299.258 | 96.557 | 40.802 | 117.008 | 44.891 |
| 2000 | 305.566 | 98.205 | 40.484 | 120.884 | 45.994 |
| 2005 | 311.89 | 93.057 | 37.92 | 131.765 | 49.147 |
| 2010 | 332.294 | 93.361 | 35.223 | 148.707 | 55.004 |

DSET A5.12, Variables: EM99, EM9BASE, EM9GOV, EM9SUPRT, EM9INFR

SUMMARY OF MAP ECONOMIC MODEL ASSUMPTIONS
 APRIL 1985 PROJECTIONS WITH NO REVENUE AUGMENTATION (S85.B5)

- o MARCH 1985 REVENUE PROJECTIONS
- o 1984 OCS ASSUMPTIONS

| <u>ASSUMPTIONS</u> | <u>DESCRIPTION(a)</u> |
|---------------------------------------|--|
| NATIONAL VARIABLES ASSUMPTIONS | |
| U.S. Inflation Rate | Consumer prices rise at an annual rate of 7.25 percent from 1986 to 1990, 7.4 percent from 1991 to 1995, and 8.15 percent thereafter. |
| Real Average Weekly Earnings | Growth in real average weekly earnings averages 1 percent annually. |
| Real Per Capita Income | Growth in real per capita income averages 1.5 percent annually after 1984. |
| Unemployment Rate | Long-run rate of 6 to 6.5 percent. |
| INDUSTRY ASSUMPTIONS | |
| Trans-Alaska Pipeline | Operating employment remains constant at 990 through 2010 (TAP.F84). |
| North Slope Petroleum Production | Petroleum employment increases through the early 1990s to a peak of 4.6 thousand and subsequently tapers off gradually. Construction employment is eliminated by the late 1990s. This case presumes no significant change in current oil price trends (NSO.84B). |
| Upper Cook Inlet Petroleum Production | Employment in exploration and development of oil and gas in the Upper Cook Inlet area declines gradually beginning in 1983 by approximately 2.5 percent per year (UPC.F84). |

(a) Codes in parentheses indicate ISER names for MAP Model SCEN_ case files.

| | |
|--------------------------------|--|
| OCS Development | Exploration and development activity grows through the mid-1990s, and direct employment continues through the following decade at a slightly reduced level of approximately 7,000 (OCS.CM3(-3)). |
| Oil Industry Headquarters | Oil company headquarters employment in Anchorage rises by 1,150 between 1983 and 1986 to remain at around 4,600 through 2010 (OHQ.F84). |
| Beluga Chuitna Coal Production | Development of 4.4 million ton/year mine for export beginning in 1990 provides total employment of 524 (BCL.O4T(-4)). |
| Healy Coal Mining | Export of approximately 1 million tons of coal annually will add 25 new workers to current base of 100 by 1986 (HCL.84X). |
| U.S. Borax | The U.S. Borax mine near Ketchikan is brought into production with operating employment of 790 beginning in 1989 and eventually increasing to 1,020 (BXM.F84). |
| Greens Creek Mine | Production from the Greens Creek Mine on Admiralty Island results in employment of 150 people from 1988 through 2003 (GCM.F84). |
| Red Dog Mine | The Red Dog Mine in the Western Brooks Range reaches full production with operating employment of 428 by 1993 (RED.F84). |
| Other Mining Activity | Mining employment not included in special projects increases from current level at 1 percent annually (OMN.F84). |
| Agriculture | Moderate state support results in expansion of employment in agriculture by 4 percent per year (AGR.F83). |

| | |
|---|--|
| Logging and Sawmills | Employment expands to over 3,200 by 1990 before beginning to decline gradually to about 2,800 after 2000 (FLL.F84). |
| Pulp Mills | Employment declines at a rate of 1 percent per year after 1991 (FPU.F84). |
| Commercial Fishing-Nonbottomfish | Employment levels in traditional fisheries harvest remain constant at 7,500 through 2010 (TCF.F84). |
| Commercial Fish Processing - Nonbottomfish | Employment in processing traditional fisheries harvests remains at the level of the average figure for the period 1978-1982, or around 7,300 (TFP.F84). |
| Commercial Fishing-Bottomfish | The total U.S. bottomfish catch expands at a constant rate to allowable catch in 2000, with Alaska resident harvesting employment rising to 733. Onshore processing capacity expands in the Aleutians and Kodiak census divisions to provide total resident employment of 971 by 2000 (BCF.F83). |
| Federal Military Employment | Employment declines at 1 percent per year, consistent with the long-term trend since 1960 (GFM.F84). |
| Light Army Division Deployment | A portion of a new Army division is deployed to Fairbanks and Anchorage beginning in 1986, augmenting active-duty personnel by 2,600 (GFM.JPR) |
| Federal Civilian Employment | Rises at 0.5 percent annual rate consistent with the long-term trend since 1960 (GFC.F84). |
| Tourism | Number of visitors to Alaska increases by 30,000 per year to over 1.3 million by 2010 (TRS.J85). |
| State Hydroelectric Projects | Construction employment from Alaska Power Authority projects peaks at over 700 in 1990 for construction of several projects in Southcentral and Southeast Alaska (SHP.F83). |

STATE REVENUE ASSUMPTIONS

| | |
|--------------------------------|---|
| Severance Taxes | Based on 50 percent probability projections published by the Alaska Department of Revenue in March 1985. After 2001, values remain constant in nominal dollars (DOR.M85). |
| Royalties | Based on 50 percent probability projections published by the Alaska Department of Revenue in March 1985. After 2001, values remain constant in nominal dollars (DOR.M85). |
| Bonuses | Based on projections published by Alaska Department of Revenues in March 1985 <u>Revenue Sources</u> (DOR.M85). |
| Property Taxes | Based on projections published by Alaska Department of Revenues in March 1985 <u>Revenue Sources</u> (DOR.M85) and OCS taxes (OCS.CM3(-3)). |
| Petroleum Corporate Income Tax | Based on projections published by Alaska Department of Revenues in March 1985 <u>Revenue Sources</u> (DOR.M85). |

STATE FISCAL BEHAVIOR ASSUMPTIONS

| | |
|---|--|
| State Appropriations | If funds available, ceiling established by Constitutional Spending Limit; otherwise appropriations equal revenues. |
| Capital/Operations Split | Two-thirds operations if Spending Limit in effect; four-fifths operations otherwise. |
| General Obligation Bonds | Bonding occurs up to point where debt service is 5 percent of state revenues. |
| State Loan Programs | New capitalization terminated in FY 1989. |
| Municipal Capital Grants | Funding terminated in FY 1987. |
| Permanent Fund/Other Appropriations in Excess of Spending Limit | None |

Permanent Fund Dividend

Dividend continued indefinitely.

Use of Permanent Fund
Earnings

Continuation of current policy of
reinvestment of all earnings not
distributed.

Permanent Fund Principal

Continuous accumulation.

Personal Income Tax

No change from current policy.