Maximum Sustainable Yield: A Fiscal Road Map for Alaska

Alaska State Senate
Senate Finance Committee
Juneau, Alaska
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University of Alaska Anchorage

With Generous Financial Support From

Northrim Bank
Customer First Service
10 Year Fiscal Plan: Hints at the Problem

Scenario 3: Governor’s FY2014 Budget with 4% Annual GF Expenditure Growth beginning in FY2015

GF Revenue versus Appropriations FY13 to FY23
Fall 2012 Revenue Forecast GF Spending growth (all components) at 4% annual rate through FY2023 (Scenario 3)
Looking Beyond 10 Years

ALASKA 10-YEAR FISCAL PLAN

- CASH RESERVE
- NEW OIL
- DOR OIL REVENUES
- NON OIL
- GF SPENDING: 4.5%

LOOKING BEYOND THE 10-YEAR HORIZON

- CASH RESERVE
- NATURAL GAS
- NEW OIL
- DOR OIL REVENUES
- NON OIL
- GF SPENDING: 4.5%
Non-Petroleum Strategies for the Future?

• Natural Resource Development
• Value Added Processing
• Economic Diversification
• Infrastructure Investments in Power and Transportation
• Footloose Industry
• Renewable Energy
Non Petroleum GF Revenues

General Fund Revenues not Directly From Petroleum (Real Per Capita)

2011 $
How Can We Sustain a Healthy Level of Public Services in the Future?

MAXIMUM SUSTAINABLE YIELD
Management of our biggest asset—Petroleum.

1) How Big is Our Nest Egg?
2) How Should We Manage It?
3) How Should We Spend it?
Petroleum Wealth in our Infrastructure

Physical Capital

Human Capital
<table>
<thead>
<tr>
<th><strong>Petroleum Wealth in the Bank (Billion $)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
<tr>
<td>Permanent Fund</td>
</tr>
<tr>
<td>CBR (Constitutional Budget Reserve)</td>
</tr>
<tr>
<td>SBR (Statutory Budget Reserve)</td>
</tr>
<tr>
<td>GF (General Fund)</td>
</tr>
</tbody>
</table>
Table 2: Arctic Alaska Petroleum Provinces

<table>
<thead>
<tr>
<th>Province</th>
<th>Estimated Economically Recoverable Oil Resources (Billion Barrels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central North Slope</td>
<td><strong>TOTAL</strong> 13.0-16.0 5.1 9.5 .6 0-6.8 28.2-38.0</td>
</tr>
<tr>
<td>Beaufort OCS</td>
<td>1002 4.5-6.5</td>
</tr>
<tr>
<td>Chukchi OCS</td>
<td>4.3-6.3 3.1</td>
</tr>
<tr>
<td>NPRA</td>
<td>435 4.5-6.5</td>
</tr>
<tr>
<td>ANWR 1002</td>
<td>449 4.5-6.5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>7-9.5 3.5-4.5 17.5-24.5 28-38.5</td>
</tr>
</tbody>
</table>

Source: ISER Estimate.
# Revenue Potential Constrained

<table>
<thead>
<tr>
<th></th>
<th>Production Tax</th>
<th>Royalty</th>
<th>Corporate Income Tax</th>
<th>Property Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATE LAND</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Conventional Marginal</td>
<td>?</td>
<td>?</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Unconventional</td>
<td>?</td>
<td>?</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>NPRA</td>
<td>Y</td>
<td>$\frac{1}{2}$</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>ANWR</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>OCS</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>
Future Petroleum Revenue: Value Today (Billion $)

Discounted Net Present Value = $89

Cumulative Nominal = $536
Petroleum Wealth of the “Owner State”

<table>
<thead>
<tr>
<th>TOTAL</th>
<th>$149 Billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Bank</td>
<td>$60 Billion</td>
</tr>
<tr>
<td>In the Ground</td>
<td>$89 Billion</td>
</tr>
<tr>
<td>Known Conventional Oil</td>
<td>$67 Billion</td>
</tr>
<tr>
<td>Other Oil and Gas</td>
<td>$22 Billion</td>
</tr>
</tbody>
</table>

$200,000 for each current resident
HOW SHOULD WE MANAGE THE NEST EGG (Asset, Endowment)?

For Maximum Long Run Return
HOW MUCH OF THE NEST EGG SHOULD WE SPEND?

DRAW each year at a rate that will conserve the value of the Nest Egg for future generations of Alaskans—the Maximum Sustainable Yield.
## Maximum Sustainable Yield: Calculation

<table>
<thead>
<tr>
<th>Nest Egg</th>
<th>$149 Billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment Return (After Inflation)</td>
<td>5%</td>
</tr>
<tr>
<td>Population Growth</td>
<td>1%</td>
</tr>
<tr>
<td>MSY Draw Rate</td>
<td>4% = (5% - 1%)</td>
</tr>
<tr>
<td><strong>MSY Draw</strong></td>
<td>$6 Billion = ($149 * 4%)</td>
</tr>
</tbody>
</table>
Maximum Sustainable Yield: Mechanics

NEST EGG

Oil & Gas Revenue: $7.3

4% Draw: $6

Financial Earnings: $4.5

Nest Egg Cash Flow: $6

Saving & Reinvestment: $5.8

Total Maximum Sustainable Yield: $6
Maximum Sustainable Yield: Disposition

Total Maximum Sustainable Yield $6

- Permanent Fund Dividend $1
- General Fund $5
- GF Non Petroleum Revenues $.5

$5.5 GENERAL FUND MAXIMUM SUSTAINABLE YIELD
Maximum Sustainable Yield: Nest Egg Growth
Maximum Sustainable Yield: General Fund Growth
## FY 2013 General Fund Spending (Billion $)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>GF Actual Spend (Billion $)</td>
<td>$7.6</td>
</tr>
<tr>
<td>GF Maximum Sustainable Yield Draw*</td>
<td>$5.5</td>
</tr>
<tr>
<td><strong>GF Over Spend</strong></td>
<td>$2.1</td>
</tr>
</tbody>
</table>

**GF Over Spend**
Fiscal Burden & Asset Erosion

- After subtracting endowment spending on the PFD and adding in non-petroleum revenues.
- To get on a MSY path, save all revenues above this amount.
Maximum Sustainable Yield: Implementation

- Gradual transition to GF Maximum Sustainable Yield level
- Protection of financial assets
- Active participation in management of petroleum in the ground thru alignment
- Establish monitoring system to track Nest Egg value, set MSY target for each budget, and track progress towards sustainability
Maximum Sustainable Yield: Challenges to Implementation

IT CAN’T WORK

✓ Confusion about the concept
✓ Uncertainty about portfolio size, rate of return, population growth, risk aversion
✓ Institutional constraints
✓ Political challenge of constraining current spending level
✓ Fragility of social contract (trust)
✓ Suppression of individual positive discount rate
✓ Speculative/Opportunistic migrants

IT SHOULDN’T BE TRIED

✓ Aversion to Public Savings Accounts
✓ Negative effects of “Rentier Society” or “Trust Fund Babies”
✓ Indifference to future generations of Alaskans
✓ Past good luck will continue
✓ Life was better before petroleum
✓ Future generations preferences unknowable
✓ Money in the bank is not working for Alaska economy
MSY Sensitivity to Assumptions

The chart illustrates the sensitivity of the Nest Egg (in billions of dollars) to assumptions about other petroleum revenue relative to the base case. The chart is divided into bars representing different assumptions:

- **1X (Base)**: $5.5
- **2X**: $6.5
- **3X**: $7.4
- **4X**: $8.3

- **Other Oil and Gas**
- **Known Conventional Oil**
- **Financial Assets**
Future Petroleum Revenues Have Lower Current Value

![Chart showing the net present value (NPV) of future revenue streams with different percentage values for each decade.](chart.png)
Better than the Current Fiscal Strategy?

"Please God, give us another oil boom, we promise not to use it away this time."
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