APPENDIXES

APPENDIX A

Alaska Power Authority
Board of Directors
Inception to Date

Description of Members	4/77	1/79	6/80	9/81	1/83	6/83	7/83
At Large Members:							
Member	Charles Conway			(reappointed)		Lee [illegible] Nunn	
Member	Frank Murkowski	Arnold Espe		John Schaeffer			David Allison
Member	Jack Wick		Dr. Robert Weeden	(reappointed)	Robert Hufman		
Member	Robert Ward	Charles Behlke	Thomas Kelly				
Ex-Officio Members:							
Commissioner, Dept. of Commerce & Econ. Dev.	H. Phillip Hubbard	Charles Webber			Richard Lyon		
Director, Div. of Budget & Management				Dr. Ron Lehr	Peter McDowell		
Commissioner, DOT/PF				Robert Ward	Daniel Casey		
Commissioner, Dept. of Environmental Con.				Ernst Mueller			
Commissioner, Dept. of Natural Resources					Esther Wunnicke		

Note 1: Ch. 278 SLA 1976 effective 9/28/76 establishes constitution of the Board as the Commissioner of Commerce and Economic Development and four public members.

Note 2: Ch. 156 SLA 1978 effective /13/78 adds the Commissioners of Community and Regional Affairs, Natural Resources, Transportation and Public Facilities and Revenue as non-voting members.

Note 3: Ch. 118 SLA 1981 effective 7/1/81 changes the constitution of the Board to the Director, Div. of Budget and Management, the Commissioners of three principal executive departments as appointed by the governor, and three public members. All terms of existing directors expired and a new Board was named.

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APPENDIX B

Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
A.E.L.P.					
Chapter 152, SLA 1977	$ 500,000	$ 500,000	$ -0-	$ -0-	A.E.L.P. has applied for the remaining funds. The Board of Directors approved the loans in their July, 1983 meeting.
Chapter 80, SLA 1979	200,000	200,000	-0-	-0-	
Chapter 54, SLA 1980	1,500,000	1,000,000	-0-	500,000	
Chapter 90, SLA 1981	4,000,000	4,000,000	-0-	-0-	
Chapter 90, SLA 1981	3,000,000	-0-	-0-	3,000,000	
Chapter 141, SLA 1982	4,000,000	-0-	-0-	4,000,000	
Total A.E.L.P.	13,200,000	5,700,000	-0-	7,500,000	
Akutan					
Chapter 90, SLA 1981	500,000	416,013	83,987	-0-	Construction of electrical transmission lines is 85 percent complete. Expected to be completed by September, 1983.
Chapter 141, SLA 1982	127,000	125,641	-0-	1,359	
Total Akutan	627,000	541,654	83,987	1,359	
Anchorage-Fairbanks Intertie					
Chapter 50, SLA 1980	3,000,000	3,000,000	-0-	-0-	Construction of an electrical transmission system to connect the railbelt. Construction began in May, 1983.
Chapter 92, SLA 1981	36,000,000	6,568,174	29,432,018	(192)	
Chapter 92, SLA 1981	40,000,000	501,000	15,463,161	24,035,839	
Chapter 107, SLA 1983	25,000,000	-0-	-0-	25,000,000	
Total Anchorage-Fairbanks Intertie	104,000,000	10,069,174	44,895,179	49,035,647	
Anchorage Energy Pooling					
Chapter 80, SLA 1979	120,000	99,670	-0-	20,330	Completed study on the reliability of the Anchorage area electrical transmission system.
Anderson Coal					
Chapter 101, SLA 1982	50,000	-0-	-0-	50,000	Community does not want the funds.
Angoon Power Alternatives					
Chapter 120, SLA 1980	250,000	11	35,000	214,989	Feasibility study of the energy alternatives at Angoon is ongoing.

Note 1: The information presented is from the Alaska Power Authority records. This information has not been audited by us and, accordingly, we express no opinion.

APPENDIX B

Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
Bethel Regional Study					
Chapter 80, SLA 1979	$ 80,000	$ 80,000	$ -0-	$ -0-	Regional study incorporating the areas of Bethel and the Kuskokwim River. A draft report was issued January, 1983.
Chapter 90, SLA 1981	1,000,000	979,169	7,080	13,751	
Chapter 90, SLA 1981	1,000,000	1,000,000	-0-	-0-	
Chapter 141, SLA 1982	500,000	17,445	10,800	471,755	
Total Bethel Regional Study	2,580,000	2,076,614	17,880	485,506	
Black Bear					
Chapter 80, SLA 1979	745,000	744,014	1,067	(81)	Feasibility studies near completion. Economic analysis to update FERC licence application ongoing. Design on hold until findings presented to the Board of Directors.
Chapter 90, SLA 1981	1,400,000	1,309,871	87,439	2,690	
Chapter 141, SLA 1982	1,000,000	31,947	200,648	767,405	
Total Black Bear	3,145,000	2,085,832	289,154	770,014	
Bradley Lake					
Chapter 80, SLA 1979	80,000	79,790	-0-	210	Project has been authorized for construction. Design contract to be negotiated by December, 1983.
Chapter 92, SLA 1981	5,000,000	160,399	1,643,018	3,196,583	
Chapter 92, SLA 1981	10,000,000	4,778	-0-	9,995,222	
Chapter 141, SLA 1982	3,000,000	-0-	20,300	2,979,700	
Total Bradley Lake	18,080,000	244,967	1,663,318	16,171,715	
Brevig Mission					
Chapter 50, SLA 1980	50,000	50,000	-0-	-0-	Grant provided to the community for construction of a distribution system. Construction has been completed.
Bristol Bay Area					
Chapter 80, SLA 1979	80,000	80,000	-0-	-0-	Regional study incorporating the areas of Dillingham, Lake Elva and Tazimina Lake. Project has been put on hold pending legislative action.
Chapter 50, SLA 1980	500,000	500,000	-0-	-0-	
Chapter 120, SLA 1980	40,000	29,000	-0-	11,000	
Chapter 120, SLA 1980	50,000	36,674	-0-	13,326	
Chapter 120, SLA 1980	300,000	300,000	-0-	-0-	
Chapter 120, SLA 1980	550,000	546,218	-0-	3,782	
Chapter 90, SLA 1981	961,000	961,000	-0-	-0-	
Chapter 90, SLA 1981	2,000,000	1,700,298	242,981	56,721	
Chapter 141, SLA 1982	15,000	15,000	-0-	-0-	
Total Bristol Bay Area	4,496,000	4,168,190	242,981	84,829	

APPENDIX B

Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
Cantwell					
Chapter 101, SLA 1982	$ 75,000	$ 24	$ -0-	$ 74,976	Community cannot decide if construction of transmission lines is warranted.
Central					
Chapter 120, SLA 1980	200,000	-0-	-0-	200,000	Loan. Community wants 0% interest. APA now authorized to loan monies at 0%.
Chakachamna					
Chapter 90, SLA 1981	1,000,000	995,061	-0-	4,939	Feasibility studies ongoing. Susitna funding Chapter 101, SLA 1982 being utilized.
Chester Lake					
Chapter 90, SLA 1981	1,000,000	338,673	51,250	610,077	Feasibility study completed. Findings and recommendations to be presented to the Board of Directors.
Chilkat Hydro					
Chapter 80, SLA 1979	50,000	50,319	-0-	(319)	Reconnaissance study completed. Report available.
Cordova Energy Supply Alternatives					
Chapter 49, SLA 1979	250,000	-0-	-0-	250,000	Reconnaissance study completed.
Chapter 80, SLA 1979	500,000	466,206	2,018	31,776	Feasibility studies are ongoing.
Chapter 90, SLA 1981	700,000	559,191	104,921	35,888	Studies to be completed by March,
Chapter 90, SLA 1981	700,000	155,217	512,513	32,4	1984. In addition, Chapter 49,
Chapter 90, SLA 1981	300,000	301,886	-0-	(1,8	SLA 1979 appropriated monies to be
Total Cordova Energy Supply Alternatives	2,450,000	1,482,500	619,452	348,0	loaned to Cordova for hydro studies. Cordova, however, wants to use the funds to purchase a diesel generator. Decision pending.

APPENDIX B

Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
Craig-Klawock					
Chapter 90, SLA 1981	$ 750,000	$ 666	$ -0-	$ 749,334	Local utilities unsuccessful in negotiating power sales agreement. Per APA no agreement in sight.
Crooked Creek					
Chapter 90, SLA 1981	62,500	-0-	-0-	62,500	Negotiating a grant agreement with the community for a waste heat project.
Delta Agriculture					
Chapter 90, SLA 1981	2,155,000	1,921,847	179,737	53,416	Design and construction of a 3-phase distribution line. Construction completed.
Discretionary Funds					
Chapter 120, SLA 1980	75,000	73,948	1,052	-0-	Funds used to cover costs of various projects.
Eagle Village					
Chapter 101, SLA 1982	25,000	21,561	3,439	-0-	Generator purchased and is online.
Elfin Cove					
Chapter 101, SLA 1982	25,000	-0-	-0-	25,000	Draft report of the energy needs of the community is being reviewed.
Elim Village					
Chapter 120, SLA 1980	25,800	25,747	-0-	53	Reconnaissance study completed. Report available.
Fairbanks District Heat					
Chapter 50, SLA 1980	35,000	35,000	-0-	-0-	Feasibility study 75 percent complete. Expected to be completed in September, 1983 at which time APA will extend the city a loan for $4 million to engineer and design a boiler system.
Chapter 90, SLA 1981	440,000	277,879	123,991	38,130	
Chapter 90, SLA 1981	4,000,000	-0-	-0-	4,000,000	
Total Fairbanks District Heat	4,475,000	312,879	123,991	4,038,130	

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Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
False Pass					
Chapter 107, SLA 1983	$ 600,000	$ -0-	$ -0-	$ 600,000	New appropriation effective July 29, 1983.
Gartina Creek					
Chapter 80, SLA 1979	270,000	32,142	1,417	236,441	Feasibility study completed. No additional funds have been requested.
Goodnews Bay					
Chapter 120, SLA 1980	45,000	29,016	-0-	15,984	Reconnaissance study completed. Based on the results no further work is expected.
Grant Lake					
Chapter 80, SLA 1979	40,000	40,000	-0-	-0-	Feasibility studies ongoing. A draft report issued February, 1983 is currently being reviewed by APA.
Chapter 90, SLA 1981	1,000,000	995,287	227	4,486	
Chapter 141, SLA 1982	1,000,000	386,352	218,307	395,341	
Total Grant Lake	2,040,000	1,421,639	218,534	399,827	
Green Lake					
Chapter 92, SLA 1981	85,000	45,041	-0-	39,959	Originally appropriated $45 million for the acquisition. Repealed by Chapter 141, SLA 1982.
Chapter 141, SLA 1982	15,000,000	15,000,000	-0-	-0-	
Total Green Lake	15,085,000	15,045,041	-0-	39,959	
Gunnuk Creek					
Chapter 80, SLA 1979	140,000	103,214	35,802	984	Feasibility study for an alternative to the Kake-Petersburg Intertie. Study is ongoing.
Haines-Skagway					
	10,000	10,000	-0-	-0-	Feasibility study completed. Report available.
Hoonah Wood Study					
	30,000	30,000	-0-	-0-	Feasibility study completed. Funds provided by the U.S. Forest Service.

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Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
Kake-Petersburg					
Chapter 90, SLA 1981	$ 500,000	$ 226,350	$ 104,150	$ 169,500	Feasibility study ongoing and is expected to be completed by December, 1983.
Kaltag					
Chapter 120, SLA 1980	20,000	24,000	-0-	(4,000)	Reconnaissance study completed. Report available.
Kiana					
Chapter 120, SLA 1980	38,400	38,400	-0-	-0-	Reconnaissance study completed. Report available.
King Cove					
Chapter 50, SLA 1980	200,000	200,000	-0-	-0-	Feasibility study completed. Report available.
Kobuk-Shungnak					
Chapter 90, SLA 1981	200,000	200,128	-0-	(128)	Reconnaissance study completed. Report available.
Kodiak Island					
Chapter 90, SLA 1981	100,000	81,232	9,100	9,668	Project complete and the report is available.
Kodiak Waste Heat					
Chapter 90, SLA 1981	N/A	219	-0-	(219)	Originally appropriated $2.5 million. Repealed by Chapter 141, SLA 1982.
Kotzebue District					
Chapter 120, SLA 1980	60,000	54,440	3,085	2,475	Feasibility study of energy alternatives at Kotzebue completed. Report available.
Chapter 90, SLA 1981	120,000	119,121	-0-	879	
Chapter 90, SLA 1981	100,000	97,341	100	2,559	
Total Kotzebue District	280,000	270,902	3,185	5,913	

APPENDIX B

Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
Larsen Bay					
Chapter 80, SLA 1979	$ 80,000	$ 80,000	$ -0-	$ -0-	Reconnaissance study completed.
Chapter 120, SLA 1980	200,000	14,449	9,875	175,676	Stream guaging proceeding as part of the ongoing feasibility study.
Total Larsen Bay	280,000	94,449	9,875	175,676	
McGrath					
Chapter 90, SLA 1981	150,000	150,000	-0-	-0-	Grant provided to the community for a waste heat system. Project completed.
Nikolski					
Chapter 107, SLA 1983	200,000	-0-	-0-	200,000	New appropriation effective July 29, 1983.
Nome-Kotzebue Assessment					
Chapter 80, SLA 1979	80,000	79,951	-0-	49	Feasibility study completed in May, 1980. Report available.
North Slope Gas					
Chapter 141, SLA 1982	250,000	211,597	34,654	3,749	Feasibility study as an alternative to Susitna is presently ongoing.
Northwest Coal					
Chapter 120, SLA 1980	250,000	249,025	-0-	975	Feasibility study completed. Report available.
Nushagak					
Chapter 120, SLA 1980	150,000	150,000	-0-	-0-	Grant provided to the community for a waste heat system. Project completed.
Old Harbor					
Chapter 120, SLA 1980	950,000	31,829	-0-	958,171	Reconnaissance study completed. Additional funds to be requested for fiscal year 1985.

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Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
Organic Rankine					
Chapter 90, SLA 1981	$ 500	$ 206	$ -0-	$ 294	Originally appropriated $5 million for the acquisition of two generators. Repealed by Chapter 141, SLA 1982.
Ouzinkie Waste Heat					
Chapter 90, SLA 1981	250,000	55,099	167,492	27,409	Construction of a waste heat system completed. Monitoring to be completed July, 1983.
Pedro Bay					
Chapter 101, SLA 1982	200,000	-0-	-0-	200,000	Reconnaissance study to begin during fiscal year 1984.
Chapter 107, SLA 1983	500,000	-0-	-0-	500,000	
Total Pedro Bay	700,000	-0-	-0-	700,000	
Pelican					
Chapter 90, SLA 1981	42,000	42,000	-0-	-0-	Feasibility study completed. Report available.
Rural Community Feasibility					
Chapter 90, SLA 1981	4,600,000	1,465,697	154,957	2,979,346	Feasibility studies being performed at twenty-eight communities.
Rural Community Reconnaissance					
Chapter 90, SLA 1981	560,000	545,410	100	14,490	Reconnaissance studies at thirty-six villages completed. Report available.
Rural Energy Construction					
Chapter 141, SLA 1982	5,000,000	230,004	2,597,145	2,172,851	Monies being used as loans or grants to construct waste heat systems.
Rural Waste Heat					
Chapter 120, SLA 1980	500,000	497,015	-0-	2,965	Construction of a waste heat system completed.

APPENDIX B

Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
Saint Mary Waste Heat					
Chapter 90, SLA 1981	$ 30,000	$ 4,013	$ -0-	$ 25,987	Construction of a waste heat system completed.
Savoonga					
Chapter 120, SLA 1980	24,100	24,050	-0-	50	Reconnaissance study completed. Report available.
Scammon Bay					
Chapter 50, SLA 1980	100,000	38,779	524	60,697	Feasibility studies completed. Results show that hydro potential is marginal.
Shungnak					
Chapter 120, SLA 1980	10,600	39,446	-0-	(28,846)	Reconnaissance study completed. Report available.
Skagway Wind					
Chapter 120, SLA 1980	100,000	81,492	18,508	-0-	Construction of a wind demonstration unit completed.
Solomon Gulch					
Chapter 92, SLA 1981	53,000,000	42,451,600	57,267	10,491,133	Construction completed. Project in operation since September, 1982.
Susitna					
Chapter 76, SLA 1979	8,178,000	8,178,000	-0-	-0-	Feasibility study completed.
Chapter 76, SLA 1979	150,000	150,000	-0-	-0-	Application has been submitted to the
Chapter 50, SLA 1980	7,000,000	6,863,238	136,762	-0-	Federal Energy Regulatory Commission
Chapter 120, SLA 1980	3,095,800	3,095,800	-0-	-0-	for licensing approval.
Chapter 7, SLA 1981	2,540,000	2,540,000	-0-	-0-	
Chapter 90, SLA 1981	18,100,000	18,364,811	461,563	(726,374)	
Chapter 101, SLA 1981	25,600,000	18,605,715	6,951,283	43,002	
Chapter 107, SLA 1983	28,000,000	-0-	-0-	28,000,000	
Total Susitna	92,663,800	57,797,564	7,549,608	27,316,628	

APPENDIX B

Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
Swan Lake					
Chapter 111, SLA 1978	$ 335,000	$ 335,000	$ -0-	$ -0-	Project is under construction.
Chapter 49, SLA 1979	3,115,000	3,115,000	-0-	-0-	
Chapter 25, SLA 1980	616,000	616,000	-0-	-0-	
Chapter 54, SLA 1980	18,000,000	18,000,000	-0-	-0-	
Chapter 92, SLA 1981	43,000,000	42,942,533	18,219	39,248	
Chapter 92, SLA 1981	10,000,000	9,557,898	142,940	299,162	
Total Swan Lake	75,066,000	74,566,431	161,159	338,410	
Takatz Creek					
Chapter 90, SLA 1981	50,000	50,000	-0-	-0-	Reconnaissance study completed. Report available.
Tanana Power Study					
Chapter 50, SLA 1980	35,000	35,000	-0-	-0-	New appropriation for a power line extension effective July 29, 1983.
Chapter 106, SLA 1983	145,000	-0-	-0-	145,000	
Total Tanana Power Study	180,000	35,000	-0-	145,000	
Tenakee					
Chapter 101, SLA 1982	200,000	200,000	-0-	-0-	Construction of a distribution system completed.
Terror Lake					
Chapter 111, SLA 1978	100,000	100,000	-0-	-0-	Project is under construction.
Chapter 89, SLA 1979	90,000	90,000	-0-	-0-	
Chapter 49, SLA 1979	2,000,000	2,000,000	-0-	-0-	
Chapter 54, SLA 1980	1,050,000	1,050,000	-0-	-0-	
Chapter 54, SLA 1980	200,000	200,000	-0-	-0-	
Chapter 92, SLA 1981	1,400,000	174,039	11,691	1,214,270	
Chapter 92, SLA 1981	71,000,000	57,102,000	8,827,034	5,070,916	
Chapter 92, SLA 1981	10,500,000	2,891,588	6,436,999	1,171,443	
Total Terror Lake	86,340,000	63,607,587	15,275,774	7,456,629	
Tetlin					
Chapter 101, SLA 1982	50,000	15,000	35,000	-0-	Construction of a waste heat system is ongoing.

APPENDIX B

Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
Thayer Creek					
Chapter 80, SLA 1979	$ 100,000	$ 61,547	$ -0-	$ 38,453	Feasibility study completed. Report available.
Tyee Lake					
Chapter 152, SLA 1977	40,000	40,000	-0-	-0-	Project is under construction.
Chapter 111, SLA 1978	65,000	65,000	-0-	-0-	
Chapter 49, SLA 1979	2,000,000	1,999,788	344	(132)	
Chapter 80, SLA 1979	60,000	60,000	-0-	-0-	
Chapter 120, SLA 1980	15,000,000	14,653,789	74,534	271,677	
Chapter 92, SLA 1981	40,000,000	35,962,586	2,144,116	1,893,198	
Chapter 92, SLA 1981	5,000,000	4,381,548	627,143	(9,091)	
Chapter 141, SLA 1982	20,000,000	19,373,815	139,501	486,684	
Total Tyee Lake	82,165,000	76,537,026	2,985,638	2,642,336	
Unalakleet					
Chapter 120, SLA 1980	100,000	71,631	28,369	-0-	Construction of a wind system demonstration unit has been completed.
Unalaska					
Chapter 120, SLA 1980	100,000	91,778	8,222	-0-	Exploratory drilling geothermal energy is ongoing.
Chapter 90, SLA 1981	380,000	45,860	334,140	-0-	
Chapter 90, SLA 1981	5,000,000	2,137,322	2,556,393	306,285	
	44,259	-0-	19,260	24,999	
Total Unalaska	5,524,259	2,274,960	2,918,015	331,284	
Various Villages					
Chapter 120, SLA 1980	200,000	197,016	-0-	2,984	Reconnaissance studies at eighteen villages completed. Report available.
Village Electrification					
Chapter 120, SLA 1980	125,000	125,000	-0-	-0-	Completed study on the feasibility of a transmission system. Report available.

APPENDIX B

Alaska Power Authority
Project Status and Balances
Inception to Date

Project	Authorizations	Expenditures	Encumbrances	Balance	Project Status
West Creek					
Chapter 120, SLA 1980	$ 400,000	$ 399,981	$ -0-	$ 19	Feasibility study ongoing. APA is studying the feasibility of utilizing an existing Canadian transmission system.
Chapter 90, SLA 1981	1,000,000	998,238	-0-	1,762	
Chapter 141, SLA 1982	200,000	75,960	18,237	105,803	
Total West Creek	1,600,000	1,474,179	18,237	107,584	
White Mountain					
Chapter 120, SLA 1980	24,100	24,000	-0-	100	Reconnaissance study completed. Report available.
Total Projects	$590,180,059	$371,450,233	$80,590,930	$138,138,896	

APPENDIX C

Status of Recommendations by Price Waterhouse (PW)
in Management Report Dated 12/10/82

PW Recommendation	Status as of 04/01/83	Comments
RECOMMENDATION 1: **		
Consideration should be given to the development of an integrated financial management and reporting system.		
The State of Alaska's financial reporting system which includes Alaska Power Authority's appropriations and related expenditures is primarily operated on a centralized basis with the major effort being carried out in Juneau. As commented upon in Recommendation No. 2, the State's system is primarily directed to overall financial control over general government expenditures and, therefore, the type of information generated is not directed toward providing the type of management reports required to enhance management of commercial type activities such as the construction and management of power generating facilities.	Partial capability to address this recommendation will be available through APA's new automated G/L system on April 15, 1983.	The new automated system will be an expenditure and funding tracking system for APA energy projects. It will produce accounting reports but it will not produce management reports such as those mentioned in this PW recommendation. The system is an accounting system not a management information or financial management system.
Further, the reports are prepared on the basis of expenditures and encumbrances with no recognition being accorded accounts receivable, accounts payable or other elements of the financial statements of the Alaska Power Authority. In addition, the cut-off date for data included in the reports is based upon a budget year rather than established to facilitate preparation of monthly or annual accrual basis financial statements. The above factors make the usefulness of the reports limited primarily to cash disbursements and budgetary control.	Not being addressed at the present time.	See Recommendation No. 4.
Further, during Fiscal Year 1982 the Authority issued $115,000,000 and $50,000,000 of variable rate demand notes for the Terror Lake and Tyee Lake Hydroelectric Projects, respectively. Under terms of the variable rate demand note resolutions, the Authority established special funds with the trustee into which the proceeds of the notes were deposited and subsequently invested. As discussed in Recommendation 13, these accounts are not afforded general ledger control.	Capability will be available 04/15/83.	See Recommendation No. 13.
During Fiscal Year 1982, the Authority acquired the Swan Lake Hydroelectric Project and retained the City of Ketchikan to act as agent to complete construction of the Project. The City has complete control over the proceeds from project financing arrangements, power project loans and State appropriations for construction, and maintains all accounting records for the project.		
In order to prepare financial statements in accordance with generally accepted accounting principles, the three recordkeeping systems identified above (State of Alaska General Fund expenditures, trustee accounts andthe City of Ketchikan's Swan Lake Project records) must be merged to generate a trial balance of all of the Authority's financial activities. Further, as each system is actually a cash basis record, detail accruals must be prepared and transactions reversed at each reporting period.		Trial balances are being run only as the data is input into the computer system. No manual trial balances have been run since PW ran theirs in December. A manual general ledger system has been posted since PW's review but trial balance statements have not been prepared.

** - Same Recommendations made in prior year management letter dated 10/26/81.

PW Recommendation	Status as of 04/01/83	Comments
RECOMMENDATION NO. 1 (cont'd)		
During our current year examination, we noted that management is unable to generate the following basic financial information without significant manual efforts:	Partial capability will be available 04/15/83 when new automated G/L system is scheduled to come on-line.	The points mentioned in this recommendation will generally be addressed by the new automated G/L system. However, the system will not provide all the information needed for some of these reports. For instance, one will be able to retrieve information of the expenditure history of a particular construction project. But the system will not produce all the information management needs to ascertain what the status of a construction project is. Thus, construction work-in-progress status reports will not be produced by the system. Furthermore, even the expenditure information on construction received from the system may not be correct due to the discrepancies caused by the lack of an accurate accrual system (see Recommendation No. 4).
- General ledger trial balances showing all assets, liabilities, revenues and expenses as of any particular date for the Authority's activities as a whole		
- Monthly or quarterly financial statements		
- Annual financial reports		
- Financial status reports for the Board of Directors' monthly meetings		The system will have the capability to produce monthly and quarterly financial statements and financial status reports for the Board of Directors' monthly meetings. However, management has not instituted contractor billing requirements which are needed to assure an accurate accrual-based accounting system. Thus, these financial statements and reports may not be produced because there is insufficient data in this system to assure the accuracy of the system-produced reports.
- Deferred project cost status reports		
- Construction work in progress status reports		
- Contract status reports		
- Power project loans (payable and receivable) trial balances including interest accruals		
- Invested cash and related interest accruals for various bank accounts restricted by terms of note resolutions		
- Trial balances of accounts payable, contract retainages and payroll related liabilities		
- Status of the Swan Lake Construction funds, investments and interest earnings as maintained by Ketchikan Public Utilities		
- Inventory and fixed asset reporting	Subsystem is currently being planned to address this. The system development project has just begun and no implementation data has been established.	See Recommendation No. 3.
Accordingly, we stress the need for a comprehensive reporting system based upon the accrual method of accounting which would facilitate the establishment of rates to be charged to prospective users of electrical power as well as provide key reports to management for planning and control. We envision the following to be examples of the output of such a system:	Capability will be available 04/15/83.	
- Reporting of financial results by major power generating facility.		See Recommendation No. 2.
- Reporting in detail, of costs of operation of departments within major responsibility areas (e.g., generation, transmission, maintenance, administration, etc.).		
- Budgetary guidelines and control at all of the above levels.	Not addressed.	Will not be addressed by planned system.
- Key item reporting of statistical and other data (e.g., kilowatt hours of power generated and used, overtime hours, equipment usage hours, etc.).		

PW Recommendation	Status as of 04/01/83	Comments
RECOMMENDATION NO. 1 (cont'd)		
Because of the factors described in the opening paragraphs of this recommendation, we believe that the present manual efforts could soon become inadequate for the Authority's purposes. Necessarily, therefore, consideration must also be given to the data processing method which will provide adequate interface with the State's accounting requirements. In this respect, it should be kept in mind that a number of desirable subsystems should be provided for. As more fully discussed in the recommendations following, it would be highly desirable to develop and/or computerize the following information needs:		
- Fixed asset data base, including equipment maintenance schedules, cost and life cycle cost analysis.	Not being addressed.	See Recommendation No. 3.
- Deferred project costs and construction work in progress.	Capability available 04/15/83	See comments on deferred status reports stated above.
- Inventory control, including economic order quantities, automatic reorder capabilities, etc.	Not being addressed.	See Recommendation No. 3.
- Accounts receivable and billing functions.		See Recommendation No. 4.
- Accounts payable, including encumbrances.		
Our discussions with management have disclosed that a system is presently being installed and that disbursements reflected by the State's accounting system are being captured for record-keeping purposes. We applaud these efforts but stress the need to integrate all of the Authority's activities under one system on an accrual basis in accordance with generally accepted accounting principles.	APA will have these capabilities on 04/15/83 when new system is scheduled to be operational.	The new system will have the capability to implement an accrual based system. Management will have to dictate whether or not that accrual-based system is adopted (see Recommendation No. 4).
Further, as half of Fiscal Year 1983 has already transpired, we urge the Board to assess the present system's capabilities in terms of anticipated growth of the Authority and commit sufficient resources to the continued development and implementation of an integrated financial management system.	Unknown.	It was beyond the scope of our audit to assess the anticipated growth of the Authority in order to determine the system's capability to addressing this growth.
RECOMMENDATION NO. 7: **		
As the Authority begins to operate and maintain generation facilities, consideration should be given to developing enterprise fund accounting and budgeting methods.	This capability will be available to APA through its new system on April 15, 1983.	There is only one operating entity under APA's control now. There were insufficient system generated reports to thoroughly determine whether or not all the points addressed in this recommendation will be included in the system. However, we generally feel that operating entities will be adequately accounted for through the FERC system on which the new G/L system is based.
The current accounting and budgeting systems have an appropriation or governmental fund accounting and budgeting orientation. As the Authority becomes more involved in the operation and maintenance of various projects, consideration should be given to adopting budgeting and accounting methods designed to serve the needs of government owned enterprises.		

FW Recommendation	Status as of 04/01/83	Comments
RECOMMENDATION NO. 2 (cont'd)		
Enterprise funds are generally established to account for the operation of self-supporting activities of governmental units which render revenue-producing services to customers. Regardless of the organizational pattern or the exact nature of the services rendered, the significant attribute of enterprise activities is that they are primarily financed by charges to customers and the accounting for them must make it possible to show whether they are operating efficiently and at a profit similar to comparable private enterprises. In this regard, all accounting should be done via one set of accounts or fund for each power generating facility operated (i.e., one enterprise fund or general ledger should be used to account for all transactions). Additional funds or accounts should be established to account for the Power Project Loan Fund, the Power Development Fund, the Power Cost Assistance Fund, the Rural Electrification Revolving Loan Fund, the Grant Fund, and the Operating Fund of the Authority. Below is a brief explanation of the accounting and budgeting method which should be employed in accounting via an enterprise fund.		
Enterprise Fund Accounting		
Accounting for governmental enterprise funds, like that for private profit-making business, should be on an accrual basis. This means that revenues should be recorded when earned and expenses recorded when liabilities are actually incurred. At the present time expenses are recorded when funds are paid or encumbered with appropriate audit adjustments at year-end dates.		The system will have the capability to accrue; whether or not that practice will be adopted is a management decision. (see Recommendation No. 4).
Enterprise Fund Budgeting		
Since enterprise funds are self-supporting, operational and commercial in nature, expenditures should not be controlled by means of detail or rigid appropriations. Due to the nature of the activities being performed, the expenditures will vary with the timing and demand for services. If expenditures are rigidly controlled, necessary expansion of activities and satisfactory performance may be impeded, or in anticipation of budget shortages, officials are likely to ask for a larger appropriation than is actually needed. In the interest of managerial flexibility and practicality it is recommended that formal budgetary appropriations be prepared; however, the flexible budgeting concept should be used so that modifications, based on changes in circumstances or project scopes, can be integrated into the budget process.		

PW Recommendation	Status as of 04/01/83	Comments
RECOMMENDATION NO. 3: **		
Fixed asset records and controls should be established. At the present time, detail financial accounting records for fixed assets are maintained on worksheets for all assets related to power projects or used in the administrative process. While all of the Authority's property is presently contributed by the State, a more complete accounting system for fiscal assets should be established, if desirable accountability and control are to be attained. Further, a system for calculating depreciation is a prerequisite in establishing appropriate 1. Items acquired and disposed of or replaced are properly recorded. 2. The status of construction in progress is readily determinable. 3. Construction in progress is transferred to fixed assets in a timely manner. 4. Lives assigned to assets are reasonable. 5. Assets are properly classified (as between land, power structures and improvements, production plant equipment, transmission and distribution equipment, special equipment items, etc.). 6. Supporting documentation for costs of all asset additions and authorization for disposals and transfers is easily obtainable. 7. Costs are properly allocated between assets purchased from State contributed monies and operating revenues. 8. Depreciation is properly calculated on a timely basis. 9. Transferred assets are properly documented, authorized and accounted for. 10. A physical inventory of fixed assets shouldbe taken periodically and compared to detail property records. 11. A general policy regarding capitalizing or expensing of fixed asset expenditures should be formalized.	System development project to address this recommendation has been initiated. Scheduled implementation date of this system is September, 1983.	The planned system which will address this recommendation is not as comprehensive as Price Waterhouse would like it to be. It will include neither equipment maintenance schedules with cost and like cycle cost analysis nor inventory control functions such economic order qualities, automatic reorder capabilities, etc. (see Recommendation No. 1). The system advocated by PW seems to be an inventory/fixed asset financial management system. The planned system will only be a tracking system of fixed assets. The specific system requirements recommended by PW (items 2, 3, 4, 9, 10, and 11) will not be addressed by the planned system. Items 2 & 3 would probably be products of a financial revenue rates. management system. Items 4, 9, 10, 11 are policy decisions which must be made by APA management and The system should ensure that: then integrated into the planned system design if management elects to do so.

PW Recommendation	Status as of 04/01/83	Comments
RECOMMENDATION NO. 4: **		
Procedures should be established to provide accurate and timely accounts payable accruals.	Has not been implemented at this time.	The system will have the capability to address the concern of PW relating to an accrual basis. Management has not established a formal policy requiring contractors to get bills into APA in a timely manner. This policy will be required to establish an accrual based accounting system. Until that policy is established, it does not really matter what the system's capabilities are. It is a management decision whether or not to initiate an accrual-based system; the system will accommodate this decision.

The current accounting system does not provide for an accurate cut-off or generate a complete accounts payable accrual at the end of the fiscal year. The State's accounting system provides that operating disbursements made in July or August related to the fiscal year ended on the preceding June 30th can be charged to the preceding year's appropriation. However, as the Authority's expenditures are primarily related to capital projects, no accrual is effectively made.

We recommend that the Authority utilize the State's disbursement reports as the source data for preparation of a monthly or annual accounts payable accrual (depending on frequency of in-house financial statement preparation). The procedures should ensure that:

1. An accurate cut-off of accounts payable, expenses or construction work in process is made to facilitate monthly or annual financial statement preparation.

2. Accounts payable are properly identified by vendor or account.

3. Contract retainages are properly accrued.

4. Payables are properly classified as to current and long-term liabilities.

5. Trial balances of the accounts payable subsidiary ledger are periodically reconciled to the general ledger control and such reconciliations are reviewed and approved by an appropriate accounting official.

PW Recommendation	Status as of 04/01/83	Comments
RECOMMENDATION 5: A formal accounting policy procedures manual should be prepared and utilized in connection with an integrated accounting system. Preparation of this manual should be performed with the direct participation of those employees responsible for financial systems and will ensure that employees understand financial systems. Use of a policy and procedures manual prevents duplication of work, overlapping or omission of important functions, misunderstandings, and other situations which might result in weakening internal accounting controls and inefficiencies. In addition, training new employees would be facilitated. Some of the items that are normally included in an accounting manual are: a. description of the basic account coding structure, a chart of accounts and a description of items to be included in the respective accounts; b. accounting policies including procedures for recording 1. items of a routine nature, 2. items of an unusual nature, 3. journal entries including required approval c. flowcharts of major accounting applications and a description of how each transaction should be documented and recorded; d. examples of computer printouts and documentation of how these reports work together.	Expected completion date, June 30, 1983.	APA personnel have started preparing a formal accounting policy and procedures manual. The manual is expected to be completed by June 30, 1983.
RECOMMENDATION NO. 6: The Authority should strive to generate monthly or quarterly financial statements. After an integrated financial management system is in place, the Authority will have the capability of issuing monthly financial statements. Monthly financial reporting is considered essential to management's effective control of the organization and necessary in light of the Authority's intent to issue long-term revenue bonds at project completion. Current audited financial statements are routinely included in the official statements related to such bond offerings. Additionally, the Authority may offer such revenue bonds with the assistance of an underwriting syndicate. Underwriter's routinely request "comfort letters" from the issuer's independent accountants which serve to assist the underwriters in their investigation of financial and accounting data reported by the issuer. In order to prepare offering circulars and related comfort letters it is essential that the accounting records be maintained on a current basis and subject to an adequate system of internal accounting and management controls.	Plan to be capable of generating quarterly reports by April 15, 1983.	The APA plans to be capable of producing quarterly financial reports as of April 15, 1983, when their general ledger system is operational. Because of late contractor billings, APA does not feel monthly reports are practical If APA's system is capable of producing accurate quarterly reports then providing bond underwriters with "comfort letters" should not be a major problem.

PW Recommendation	Status as of 04/01/82	Comments
RECOMMENDATION NO. 7:		
The Board of Directors should consider the merits of receiving interim reports of financial activity from the Finance Department.	APA management does not plan to implement.	APA does not intend to implement this recommendation as presented. It is APA's opinion that ad hoc information can be provided to the Board on major projects which will meet the Board's needs. APA is also looking to Board subcommittees regarding their needs.
We recommend that consideration be given to providing the Board with summary key information on a monthly basis such as investment activity, construction work in progress and deferred project cost status, and budget to actual comparisons of revenue and expenditures. Such information should be prepared on an accrual basis and will facilitate the Board's review of available project funding and decision making regarding timing of proposed bond issues or requests from the State for additional project funding.		
RECOMMENDATION NO. 8:		
The Authority should consider obtaining a high level operational review of the data processing function in light of expected growth of the Authority.	Has not been implemented at this time.	APA has used a piecemeal approach. APA officials recognize the need for this review and would like to expand the scope of PW's recommendation to include all future operational needs. In addition, there is a need to look at what they have currently.
As the Authority continues to grow and its various power generating facilities become operative, the Authority will, by necessity, increasingly rely on the use of electronic data processing methods. Accordingly, we believe that the Authority should consider obtaining a high level operational review of the data processing function to ensure that the system being developed is compatible with the anticipated growth of the Authority. Such a review is intended to highlight major areas for improvement, prioritize specific areas which should be modified, and prove useful in assisting the Authority in identifying and obtaining additional services as required. Such a review is generally termed a computer installation effectiveness review and generally would focus on the following points:		
Computer Operations -		
• Physical arrangement of facilities • Approach to job scheduling • Approach to data control • Backup capabilities • System/data security controls • Disaster recovery plans • Separation of duties		
Application Systems Effectiveness -		
• Satisfaction of user requirements • Timeliness, accuracy, and reliability of reported information • Cost/effectiveness of systems utilization • Access to/control over master file information		
Hardware and System Software -		
• Capacity to meet future needs • Capacity for average and peak loads • Adequacy of system performance • Adequacy of systems documentation.		
In summary, such a review would assist management in evaluating user needs, prioritizing systems development and modification, enhance cost/benefit performance, and assist in identifying long-range necessities and goals in light of the ever expanding needs of the Power Authority. Additionally, it could ensure that financial reporting is accurate or highlight potential problem areas prior to the annual audit or preparation of the annual report.		

PW Recommendation	Status as of 04/01/82	Comments
RECOMMENDATION NO. 9: Consideration should be given to segregating the accounting department into functional groups. At the current time, all accounting personnel are primarily responsible for contract maintenance. As the Authority begins to develop and implement a comprehensive reporting system, consideration should be given to segregating the contract maintenance and accounting and reporting functions. To accomplish this, we recommend that the Authority establish the following independent accounting groups: a. Invoice Processing - Responsible for contract disbursements including review and approval in accordance with contract terms. b. Financial Reporting Group - Responsible for generating all financial statements and reports and general ledger maintenance. c. Cost Control Group - Responsible for monitoring project costs in relation to project status. Implementation of this recommendation would serve to clearly delineate employee responsibilities and adequately segregate duties in the areas of approval and recordkeeping functions. We understand the Authority is presently considering obtaining an organizational review, which we envision would include a review of the finance and accounting departments' organizational structure.	Recommendation a. and b. complete. No plans to implement c. unless additional positions can be obtained.	Recommendations a. and b. have been implemented. Recommendation c. has not been implemented. APA officials recognize the need to establish a cost control group, but feel more staff would be required.
RECOMMENDATION NO. 10: Consideration should be given to employment of an internal auditor to monitor adherence to accounting and operational policies and procedures. We believe that the number of project locations and expanding operations of the Authority may well justify the employment of an internal auditor. The duties of an internal auditor should include such functions as periodic reviews and testing of accounting records and operational procedures associated with the Power Authority's various hydroelectric projects, agency and operation agreements, loans and grants. In addition, the activities of the internal auditor should include monitoring the Power Cost Assistance Fund and determining that grantees are in compliance with grant agreements. The internal auditor should have the ability to report directly to the Board of Directors; however, on a day-to-day basis, should function at the direction of the Executive Director.	Has not been implemented at this time.	APA has no plans to hire an internal auditor. APA management does recognize the need for an internal auditor. It is APA's position that the internal auditor's scope of responsibility should be expanded beyond PW's recommendation.

PW Recommendation	Status as of 04/01/83	Comments
RECOMMENDATION NO. 11:		
Procedures should be established to ensure that disbursements from the Power Cost Assistance Fund are monitored.	Recommendation partially implemented at this time.	This recommendation has been partially implemented. The monitoring and qualifications of program recipients is accomplished by an accountant rather than an internal auditor. Perform desk audits but no on site audits which APA feels are unnecessary.
Disbursements from the Power Cost Assistance Fund, as indicated on the monthly expenditure journals generated by the State of Alaska's financial reporting system, should be compared to the Authority's detail disbursement records by individual recipient to ensure that disbursements have been recorded properly. We recommend that the accounting department assume the resporsibility of upkeeping the Power Cost Assistance detail accounting records and, as commented upon in Recommendation No. 10, that an internal auditor monitor this fund and the qualifications of program recipients, at least on a test basis. Management has informed us that the accounting department subsequently assumed the recordkeeping function as of November 1, 1982.		
RECOMMENDATION NO. 12:		
Certain detailed responsibilities assumed by the controller should be delegated to other appropriate individuals.	Has not been implemented at this time.	This recommendation has not been implemented. APA's rationale for not implementing the recommendation is a shortage of accounting staff. We were told an additional two accountants would be needed before the controller could effectively delegate all routine accounting functions and conduct advanced planning.
The expanding operations and resulting increased volume of transactions have made it necessary to give more concentrated attention to key operating and accounting matters by responsible and knowledgeable individuals in the areas that will continue to require focused attention as the Power Authority undertakes advanced planning and subsequent implementation of accounting and related system changes to accommodate the expanding volume and complexity of transactions. Delegation of routine accounting functions presently performed by the controller could provide additional time for this planning function.		
RECOMMENDATION NO. 13:		
All investments and bank accounts should be held in the Authority's name, or held jointly in the case of agency agreements, and subject to general ledger control.	Except for Solomon Gulch plan to implement by April 15, 1983.	The APA's general ledger system is capable of controlling all investment and bank accounts. It is APA's plan to account for all cash disbursement and investment activities in sufficient detail for monthly reconciliations. The only exception will be the Swan Lake Project which will be reflected in APA's general ledger as total expenditures. The APA feels the City of Ketchikan is the appropriate agency to maintain detail general ledger control of the Swan Lake Project.
Presently, there are various trust accounts associated with the Solomon Gulch, Terror Lake, Swan Lake, and Lake Tyee Hydroelectric Projects that are not afforded general ledger control. To ensure that all cash disbursements and investment activities are recorded and monitored and to ensure that all cash balances are recorded and monitored, and to ensure that all cash balances are reflected in the financial statements of the Authority, we recommend that all activity be recorded in a general ledger. Further, routine account reconciliations should be prepared at least on a monthly basis by staff accountants and reviewed by appropriate supervisory personnel.		

PW Recommendation	Status as of 04/01/83	Comments
In connection with our review of procedures surrounding the Swan Lake Hydroelectric Project we offer the following specific recommendations:		
RECOMMENDATION NO. 1:		
Alaska Power Authority should take joint custody of cash and invested assets of the Swan Lake Construction Fund now administered solely by KPU.	APA management does not plan to implement.	Touche Ross audited thru 1981. PW audited in 1982. Monthly reports are submitted to APA. Board agrees with this relationship. Was a Ketchikan project from the start. APA management feels KPU is a responsible public entity.
In our opinion, adequate segregation of duties does not presently exist in that the Finance Director of KPU has complete control over the safekeeping of securities and the execution and recording of security transactions. Additionally, the Finance Director is an authorized check signer and approver of the majority of KPU's (and the Swan Lake Construction Fund) disbursements and reviews all bank and general ledger account reconciliations. Thus, the Finance Director is responsible for the execution and recording of transactions, custody of assets and is secondarily responsible for the reporting of information to APA, which as indicated above, has not been accurate in the past. Additional control over APA's project funds would be ensured by requiring that all bank accounts and investment be held in the joint custody of APA and KPU. The implementation of other control procedures at KPU may not be feasible; the size of the organization may preclude segregation of certain duties.		
RECOMMENDATION NO. 2:		
Project disbursements should be made from the Swan Lake Construction Fund only.	APA management disagrees with dual approval of project expenditures.	See comments above.
Presently, project disbursements are made from the City's General Fund (on behalf of KPU) and the City is reimbursed periodically by a transfer from the Swan Lake Construction Fund. Project disbursements should be segregated from KPU's operating disbursements to provide for an adequate segregation of funds. Additionally, we recommend that APA consider co-signing disbursement checks with expenditures.		
RECOMMENDATION NO. 3:		
Accounting records related to the Swan Lake Hydroelectric Project should be prepared on an accrual basis.	APA management agrees but its doubtful KPU has implemented.	
Presently, all records related to the project are maintained on the cash basis except at KPU's year-end (December 31st) when accruals are made. We recommend that project disbursements, interest income and interest expense be recorded on an accrual basis to facilitate APA's review of project statusand available funding.		

PW Recommendation	Status as of 04/01/83	Comments
RECOMMENDATION NO. 4:		
Cash invested on behalf of APA in KPU's "Note Fund" should be segregated and transferred to the Swan Lake Construction Fund.	Has not been implemented at this time.	
It is our understanding that KPU's "Note Fund" investments represent the unexpended cash remaining from Power Project Loans made by APA to KPU, which under terms of the acquisition agreement was to be applied to pay project costs (excluding an amount attributable to the SCADA grant made to automate existing facilities). We recommend KPU identify and transfer non-SCADA related fund to the Swan Lake Construction Fund to full segregate APA's funds from KPU's funds.		
RECOMMENDATION NO. 5:		
APA should perform periodic audits of the accounts and records of the Swan Lake Hydroelectric Project maintained by KPU.	Has not been implemented at this time.	APA plans on sending down at least one, if not two people in early May for a review.
We recommend that APA perform or obtain an independent audit of the Swan Lake Project at least annually (preferably as of June 30th to facilitate the annual audit of APA's accounts) to ensure the propriety of information reported to KPU. We understand that APA is in the process of establishing procedures to perform this function in-house, with which we concur. Additionally, APA should request and evaluate the financial statements and any related management recommendation letters related to KPU's independent annual audit.		
RECOMMENDATION NO. 6:		
APA should determine the allowability of interest expense incurred on a loan from the City of Ketchikan to KPU in connection with the project.	Has not been implemented at this time.	See above Comments.
A short-term loan of $3,850,930 was made by the City of Ketchikan to KPU in 1981 and related interest expense of $133,607 has been charged to the Project. Apparently the source of the loan to the City was from a State Agency; however, we are uninformed as to the need for or the circumstances surrounding the loan to KPU and, therefore, the propriety of the interest expense incurred by the Project.		
RECOMMENDATION NO. 7:		
APA should obtain sufficient detailed information from KPU on a monthly basis in order to summarize the activity and record the transactions in the accounts of APA.	APA is presently receiving more detail from KPU, but still getting less detail than from other projects.	APA presently receives a monthly statement updating expenditures, both direct/indirect, and interest income.
Swan Lake project activity is not currently reflected in the accounts of APA. The monthly project status reports sent by KPU to APA should be sufficiently detailed to allow APA to record all project activity on a monthly basis including cash disbursements, accounts payable, investment activity, interest income, and expense.		
Bringing all project transactions under general ledger control will facilitate control of project funds, monitoring project status and preparation of monthly financial statements.		

Background

During the summer of 1982, the Alaska Power Authority developed and implemented a General Ledger Accounting System. The Authority undertook the project because its manual accounting system was not meeting the needs of the Authority. Since 1980, the Authority has realized the need to establish a more sophisticated accounting system.

Reasons for Automation and System Benefits

The reasons for establishing the automated General Ledger System and the benefits of the new system are discussed below:

Prior to automation, the accounting functions of the Power Authority were performed exclusively through the State system, with supporting manual schedules prepared by APA. The State accounting system is set up to account for each authorization. Alaska Power Authority had a need to account for each project, not authorization. With the new General Ledger System, accounting will be by project. All authorizations, appropriations and expenditures will be tracked by the energy project for which it applies.

The Power Authority needs to account by project for each and all authorizations and expenditures which are accumulated through the various phases of each project. The expenditures are classified as deferred costs. If a project is proved not feasible and the pertinent deferred costs are written off and expended; if a project is feasible and construction of the project is approved, all feasibility and construction costs are deferred through completion and then capitalized.

The manual accounting system was growing too cumbersome to be used as an accurate historical tracking system. The Power Authority is currently managing 85 projects funded by 170 State authorizations totalling approximately $570 million and note proceeds totalling another $200 million. The note proceeds could not be accounted for using the State system.

Projects such as Terror Lake, Swan Lake, Tyee Lake, Susitna, Bradley Lake, Cordova, and Bristol Bay are each funded through 5-7 State authorizations. The Power Authority had done its best to maintain cumulative manual schedules for each project showing, by project, each authorization and pertinent expenditures. This manual accounting system, even if accurate, did not

respond to the need for immediate reporting at any given time because of the lag time between invoice processing and manual posting to project schedule. The computerization of an internal system will allow for immediate posting to project ledgers at the time an invoice is processed.

The State system used prior to automation was not set up to maintain records over a long-range period. Authorization balances and expenditures are brought forward on a fiscal-year basis in the State system. It is difficult to track expenditures pertinent to a particular authorization if the authorization balance was expended during prior fiscal years.

APA needed a system which could track all authorizations and expenditures for a particular project over a span of 5-7 years. This is the average time required to carry a project from feasibility through construction. The new automated General Ledger System will meet this need that the State system could not meet.

APA is just beginning accounting practices aimed at operating entities rather than feasibility and construction projects it has managed in the past. In expanding its management responsibilities to operating entities, APA needed an accounting system which adhered to generally accepted accounting principles for public utilities. Thus, a system using the Federal Energy Regulatory Commission (FERC) chart of accounts was necessary. FERC's chart of accounts is the chart most used by the electric utilities and represents the standard accounting language of the industry.

The FERC chart of accounts for operating entities is far more detailed than the chart of accounts used in the former manual accounting system. It would not have been feasible if automation had not been initiated.

To summarize the preceding paragraphs, the benefits accruing to the Authority from the implementation of the new system will include:

1. Ability to track expenditures and appropriations by project. Using the State system, this was only available through extensive manual efforts.

2. There will now be a method of accounting for non-State sources of funding, such as bond proceeds. All sources of funding for a particular project will be accounted for. The State system used prior to automation only accounted for State appropriations; extensive manual efforts were required to account for non-State funding.

3. Will create the base for reporting of revenue and expenditure on any project at any time.

4. Will facilitate accounting methods required of operating entities in compliance with generally accepted accounting principles for utilities.

Structured Methodology Was Not Followed in Development of System

The Alaska Power Authority did not follow structured development standards in the development of its automated General Ledger System. As a result, the System may not be able to meet future requirements of the Authority. Additionally, its use as a management tool is impeded by a lack of system capabilities.

There was no feasibility study, needs assessment, general design or detailed design prepared for the automated General Ledger System. If these development steps had been accomplished, future requirements of the System would have been identified. We were told by APA officials that this system would not handle a project of the scale of the proposed Susitna Hydroelectric Project. There is no long-range plan which established data processing requirements and system development/implementation contingencies in the event that Susitna is initiated. This should have been fully and formally explored prior to any automation.

Inadequate Long-Term Needs Analysis Led to Development of Incomplete System

There was no formal needs analysis done for the system. The system developers, prior to submitting a proposal, spent time talking to APA accounting officials and determined what was wanted and needed from an accounting standpoint. No formal data processing needs for the Authority as a whole has been done.

The System is primarily a historical record of appropriations and expenditures on APA projects. The System does not have an accounts receivable function which would facilitate billings for power sales by operating entities and administering of loans. APA officials stated that this function was not needed because APA had so few operating entities for which it would generate power sales invoices. For that reason, it was decided prior to system development that the accounts receivable functions would remain manual.

We believe that the decision to keep manual accounts receivable functions may not have been wise. In late 1984, there will be enough operating entities under APA's control to render the current manual accounts receivable method too cumbersome to manage without automation. Although APA officials have stated that an accounts receivable program can be

interfaced into the current General Ledger System, we have seen no evidence that this can be done or that the programs will meet all of the Authority's accounts receivable requirements or that the program interface will be cost effective. We believe that, if indeed, APA management planned to interface accounts receivable (and accounts payable) functions into the System at a later date, a long-range plan with anticipated costs should have been developed before the General Ledger System was developed. This would have given management the tools to decide if the System would meet future needs within acceptable cost limits.

Inadequate Needs Analysis Led to Development of System Which is Limited for Management Reporting

The automated General Ledger System is a historical record of expenditures and revenues. Expenditures for a project are recorded at the time that the invoice is processed at APA. There is no accounts payable system which records when the actual payment is made by the Department of Administration. Thus, all financial statements for APA's activities reflect encumbered expenses for APA projects, not actual expenses. Management must keep this in mind when interpreting project cost statements and APA financial statements.

Furthermore, the project cost information may not be a true representation of costs on that project. This is because there is no accrual function in the System. Accruals are made once a year and posted by journal entry. APA contract reporting procedures are lacking in that their firms and sub-contractors until several months after the work has been performed. Thus, for the major part of the year, the project accounting ledgers do not reflect the status of the project. A construction project may be 1/2 complete; yet, the project financial activity could show 1/10 of the appropriate funds have been expended. An accrual method of accounting, at least on a quarterly basis, should be established to eliminate these discrepancies.

System Cost

The total system cost and cost components for the development, installation and operation of the General Ledger Accounting System to date is shown below:

1.	Hardware and Installation Costs	$35,692.95
2.	Maintenance and G E Time-Sharing Costs	64,835.36
3.	APA Personnel Costs Relative to Development and Implementation	16,984.00
	Total Cost To Date	$117,512.31

These costs have been incurred to date in the development and installation of the System. The hardware and installation costs (#1) are one-time costs which include the terminal, printer and other hardware costs as well as contract costs of $21,400 paid to the System developers. This figure also includes $8,500 expended to purchase an IBM Personal Computer. This computer will be used for initial input for data. Any data that needs to be edited or purged will be done while it is in the IBM system before being sent to the G E Time-Sharing System. APA officials told us that this will save storage and line time in the G E System.

The maintenance and G E Time-Sharing costs (#2) include monthly charges for the line time necessary to process data for the General Ledger System. It also includes a periodic maintenance fee for hardware. These costs are ongoing costs. The period covered by this analysis ranged from April of 1982, to February of 1983. The ongoing monthly operating costs varied from $7.56 in May of 1982 to $28,089.54 in February of 1983. Because the system is not yet operational, it is difficult to predict what the average monthly costs will be.

The APA Personnel Costs (#3) include the costs of APA accounting personnel in the development and implementation of the System. Not included in this cost analysis are the personnel costs which will be needed to operate and maintain the System once it is operational. APA officials estimate that the System will require approximately 6-8 days per month for the data processing clerk as well as two weeks at the end of each fiscal year. Additionally, approximately one week per month will be required of the General Ledger Accountant. This additional expenditure required for future operations totals approximately $15,000 annually.

Cost-Benefit Analysis Was Not Accomplished Prior to System Development

For the month of February, 1983, G E Time-Sharing costs for the General Ledger System totalled $28,745.52. We realize this was a high-use month due to comprehensive data input activity. However, we are concerned that future costs of the System have not been thoroughly analyzed. As the APA project activity grows, we are unsure that the G E Time-Sharing System will be the most cost-effective system. A thorough cost-benefit analysis may have shown that an in-house mini computer would have been more cost-effective in the long-range.

JAY S. HAMMOND, GOVERNOR

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

Pouch 7-028
Anchorage, Alaska 99510
274-9681

February 1, 1983

Mr. Eric P. Yould
Executive Director
Alaska Power Authority
334 West 5th Avenue
Anchorage, Alaska 99501

Dear Mr. Yould:

The Division of Geological and Geophysical Surveys, Department of Natural Resources has just completed a preliminary appraisal of the undiscovered oil and gas resource potential of the Cook Inlet Basin. The area assessed is outlined in Attachment "A". Attachment "B" presents the resource distributions for oil, gas and their sum, barrels of oil equivalent (BOE), in place. That is, these "in place" distributions reflect total quantities of fluids trapped in reservoir rock; no adjustment is made to account for any economic considerations such as what proportion of in place resources in a reservoir are actually recoverable.

However, in response to your request, in the November 5, 1982 letter to Commissioner Katz, for estimates of "economically recoverable" resources we have developed a method for adjusting the in place resource distributions to approximate what proportion might be economically recoverable. This approximation method applys two assumptions regarding what proportion of the resources in a reservoir would actually be recovered and what size a reservoir would have to be to be commercial. By assumption we have used recovery factors of 0.5 for oil and 0.9 for gas and minimum commercial deposit sizes of 50 million bbl. for oil and 200 billion cubic feet for gas. Based on these assumptions Attachment "C" presents our preliminary estimate of the undiscovered but economically recoverable oil and gas resources in the Cook Inlet Basin. Summarizing Attachment "C", the expected (average) amount of undiscovered but economically recoverable natural gas remaining in the Cook Inlet Basin is two trillion cubic feet, with a 5 percent chance that it could be as much as five trillion cubic feet.

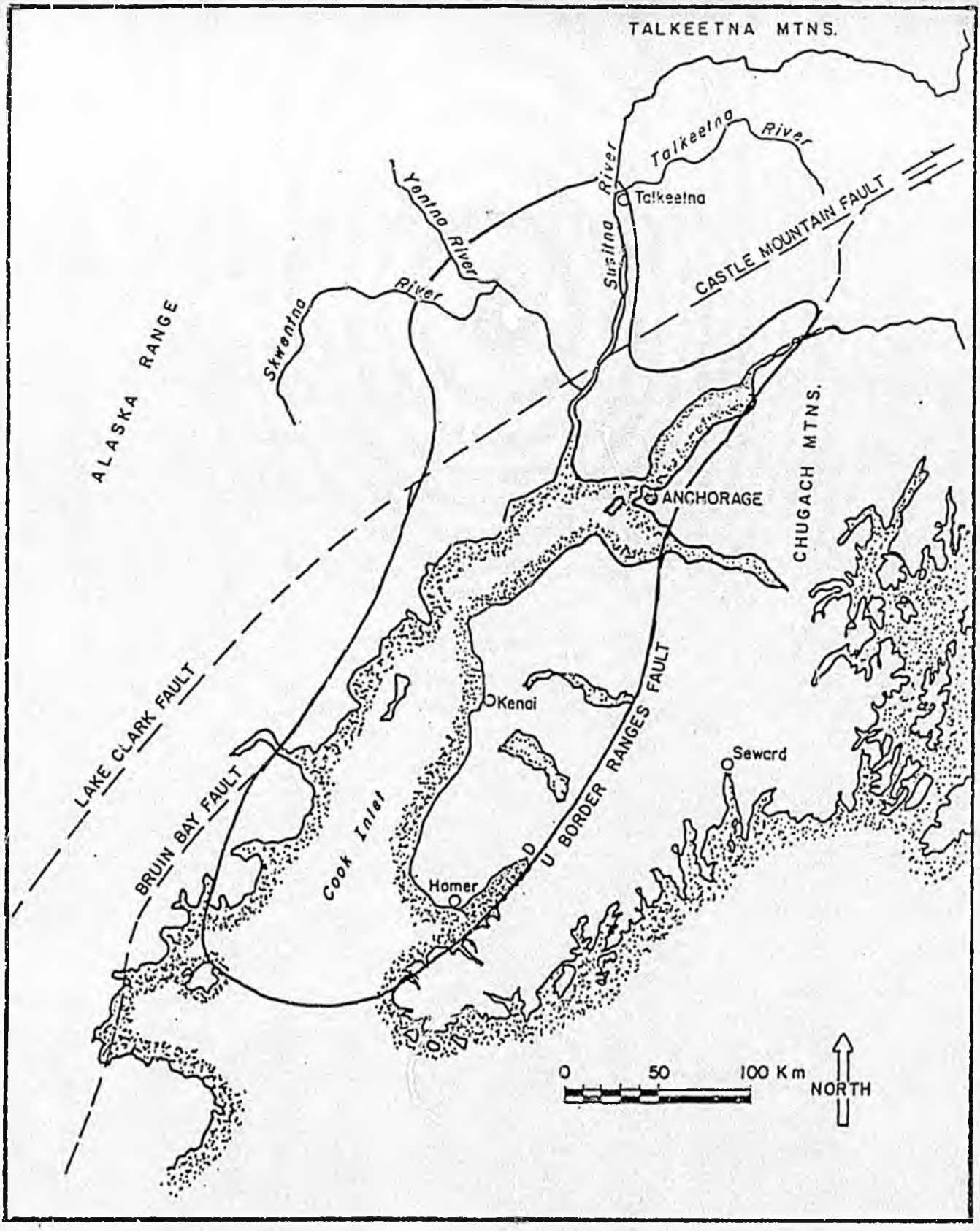
A full report on these assessments is in preparation and will be published as a DGGS Open File Report in the near future. Should you have any questions regarding these preliminary assessments please contact Red White of my staff.

Cordially yours,

Ross G. Schaff
State Geologist

cc: Commissioner Wunnicke, DNR

RGS/plc


TALKEETNA MTNS.
Talkeetna River
Susitna River
Talkeetna
Yentna River
CASTLE MOUNTAIN FAULT
Skwentna River
ALASKA RANGE
ANCHORAGE
CHUGACH MTNS.
LAKE CLARK FAULT
Kenai
BRUIN BAY FAULT
Cook Inlet
BORDER RANGES FAULT
Seward
Homer
0 50 100 Km
NORTH

ATTACH "I B"

PRELIMINARY ESTIMATES OF UNDISCOVERED OIL AND GAS RESOURCES IN PLACE

FOR THE COOK INLET BASIN

Division of Geological and Geophysical Surveys
Department of Natural Resources
State of Alaska
January 28, 1982

RESOURCES IN PLACE[a] (barrels of oil equivalent)		DEPOSIT SIZE[b]		OIL IN PLACE		GAS IN PLACE[a]	
Probability that quantity is at least the given value (%)	Billions of barrels of oil equivalent	Conditional probability that size is at least the given value (%)	Billions of Cubic Feet	Probability that quanity is at least the given value (%)	Billions of barrels	Probability that quanity is at least the given value (%)	Trillions of cubic feet
99	.13	99	1.5	99	.00	99	.47
95	.28	95	5.2	95	.00	95	.93
90	.38	90	9.6	90	.03	90	1.24
75	.61	75	26.8	75	.13	75	1.98
50	.96	50	76.0	50	.36	50	3.07
25	1.43	25	203.3	25	.73	25	4.38
10	2.02	10	475.2	10	1.20	10	5.84
5	2.49	5	761.7	5	1.62	5	6.93
1	3.76	1	1688.2	1	2.72	1	9.06
Average BOE	1.12	Average Deposit Size	191.6	Average Oil	0.53	Average Gas	3.36

[a]Because the distribution of each resource is estimated independently, "Gas in Place" after conversion to barrels of oil equivalent, cannot be added to "Oil in Place" to get "Resources in Place (barrels of oil equivalent)" at any probability level except at the expected value (average).

[b]Conditional upon the existence of oil and gas deposits in the Cook Inlet Basin, this column presents the estimated distribution of deposit size measured in cubic feet of gas.

ATTACHMENT C

PRELIMINARY ESTIMATES OF UNDISCOVERED OIL AND GAS ECONOMICALLY RECOVERABLE RESOURCES

FOR THE COOK INLET BASIN

Division of Geological and Geophysical Surveys
Department of Natural Resources
State of Alaska
January 28, 1983

ECONOMICALLY RECOVERABLE RESOURCES[a] (barrels of oil equivalent)		DEPOSIT SIZE[b]		ECONOMICALY RECOVERABLE OIL		ECONOMICALLY RECOVERABLE GAS[a]	
Probability that quantity is at least the given value (%)	Billions of barrels of oil equivalent	Conditional probability that size is at least the given value (%)	Billions of Cubic Feet	Probability that quanity is at least the given value (%)	Billions of barrels	Probability that quanity is at least the given value (%)	Trillions of cubic feet
99	.00	99	202	99	.00	99	.00
95	.09	95	211	95	.00	95	.22
90	.15	90	223	90	.00	90	.43
75	.28	75	266	75	.00	75	.93
50	.50	50	373	50	.14	50	1.76
25	.78	25	597	25	.32	25	2.78
10	1.12	10	993	10	.55	10	4.04
5	1.39	5	1358	5	.78	5	4.90
1	2.01	1	2353	1	1.31	1	6.83
Average BOE	0.58	Average Deposit Size	525	Average Oil	0.22	Average Gas	2.04

[a]Because the distribution of each resource is estimated independently, "Economically Recoverable Gas" after conversion to barrel of oil equivalent, cannot be added to "Economically Recoverable Oil" to get "Economically Recoverable Resources" (barrels of oil equivalent)" at any probability level except at the expected value (average).

[b]Conditional upon the existence of oil and gas deposits in the Cook Inlet Basin region, this column presents the estimated distribution of deposit size measured in cubic feet of economically recoverable gas.

ALASKA
REVIEW OF SOCIAL AND ECONOMIC CONDITIONS

UNIVERSITY OF ALASKA, INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH, FEBRUARY 1983, Vol. XX, No. 1

Sustainable Spending Levels from Alaska State Revenues

INTRODUCTION

In November 1982 the citizens of Alaska, fearing that state government was growing out of control, passed a referendum limiting state spending. This spending limit, which will become law in fiscal year 1984, puts a ceiling on the state budget and limits its growth to changes in population and prices. The initiative sponsors felt that limiting the growth of state spending would eliminate the problems associated with an overwhelming dependence on the soon-to-be-depleted tax base of Prudhoe Bay petroleum.

However, falling world oil prices during the past 18 months and an anticipation of stable prices for the next several years, have rapidly reduced, if not eliminated, whatever effectiveness the spending limit may have had in holding the level of spending below total revenues. The state, therefore, knowing that the current revenue level is derived largely from a dwindling tax base and cannot be sustained, must again address the question of how best to limit spending of current revenues.

This *Review* demonstrates that the spending limit as presently structured will be ineffective in either (1) producing savings out of current revenues

Shortly after the state began collecting revenues from production of Prudhoe Bay oil, an issue of the *Review* entitled "Alaska's Revenue Forecasts and Expenditure Options" (1978) showed that the then-prevailing trend in the growth of state spending would result in a current account deficit in 1989 and the elimination of the general and permanent fund balances by 1993. That *Review* laid out the policy options available to the state for dealing with the eventual decline in petroleum revenues.

Between 1979 and 1981, estimates of expected petroleum revenues increased dramatically, primarily because of the increase in oil prices. State spending for existing and new programs correspondingly increased, causing the state to become even more dependent on oil revenues for the support of government programs and the provision of jobs in the private sector than in 1978. Thus, despite dramatic oil price increases since 1978, the fiscal outlook for the state has not improved; in fact, unless new spending policies are enacted, it will have worsened.

In illustrating Alaska's dependence on oil, the following tabulation shows that no other state economy comes close to being as petroleum dependent as Alaska:

Percent of State Revenues Provided Directly by Petroleum

	Severance Taxes, Rents, Royalties	Corporate Petroleum Property Tax	Total
Texas (1978)	19.6	NA	NA
Louisiana (1978)	29.2	NA	NA
Oklahoma (1978)	15.0	NA	NA
Alaska (1982)	66.8	19.7	86.5

NA: Not available.

This dependence upon petroleum revenues is of particular concern due to the projections of falling revenues which have become the pattern in the last year. This *Review* re-examines long-run state spending options in light of changing conditions affecting state revenues and expenditures. It discusses the implications of the newly passed spending limit initiative, contrasting it with a sustainable spending limit and, in so doing, demonstrates the range of spending options available to the state as petroleum revenues decline.

ALASKA REVIEW OF SOCIAL AND ECONOMIC CONDITIONS

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FEATURE

Scott Goldsmith Sustainable Spending Levels from Alaska State Revenues

Scott Goldsmith is an associate professor of economics with the Institute of Social and Economic Research in Anchorage.

or in (2) preventing a substantial long-term decline in government services and associated economic activity when oil revenues begin to fall. Since state expenditures must not exceed revenues over the whole cycle of petroleum extraction, it is the level of petroleum revenues measured over this cycle which should guide the establishment of a spending limit. Because petroleum revenues will decline in the next decade, even with new discoveries, a spending policy which will avoid severe budget reductions in the future must allow for the current investment of substantial revenues to cushion the decline. Consequently, the amount of future spending which can be supported depends not on an arbitrarily established limit, but on future petroleum revenues and a policy for current savings and investment.

After reviewing revenues from petroleum and other traditional and potential sources, this *Review* examines the future effects of the spending limit voted into law in 1982. It clearly demonstrates that because the limit is not based on anticipated levels of revenues and will not produce any significant savings or investment, it will not work. Indeed, it cannot work because revenues in the next few years will just about equal the current limit, and in later years will fall substantially short.

If the current spending limit will not work, then what, if anything, will? The author suggests an alternative spending rule based upon sustainable revenues. Specifically, his proposed limit would base allowable spending upon the sum of renewable revenues plus one annual real earnings of state assets. Under this rule, after an initial downward adjustment, state expenditures would be insulated from the decline in petroleum revenues. This rule would require both a substantial cutback in the state budget to approximately $1.5 billion and a large ongoing program of savings and investment of petroleum revenues over and above those currently flowing into the Permanent Fund.

The present spending limit and the proposed alternative set the bounds within which future state spending may occur. Contrasting the two clearly demonstrates the tradeoff Alaskans face when current spending exceeds the level which can be sustained in the long run.

ALASKA STATE REVENUES

For reasons set forth below, Alaska petroleum revenues will peak in the late 1980s and steadily decline throughout the 1990s. This will cause an accelerating loss of revenue and by the end of the decade pose a serious fiscal crisis, the solution to which must be reached within the next few years.

Petroleum

Revenues collected by Alaska state and local governments come overwhelmingly from the production of crude oil. Between 1977, the initial year of production from the Prudhoe Bay field on the North Slope, and 1982, petroleum revenues rose from 54 percent to 87 percent of total state general fund revenues. In recent years, transfers from the state general fund have become an increasingly important element of local revenues. Consequently, petroleum revenues support a large portion of local government as well as state government activity.

About 95 percent of Alaska crude oil production in recent years has come from a single "super giant" field[1]—the Prudhoe Bay field on Alaska's North Slope. This field ranks as the twelfth largest field ever discovered in the world and the largest ever discovered in North America (Table 1). The 10 billion barrels of recoverable oil at Prudhoe Bay make it a super giant. By comparison, only two other fields discovered in the United States—East Texas and Wilmington—initially held recoverable reserves in excess of 2 billion barrels. Except for these two, more oil has been removed from the Prudhoe Bay field during its first 4.5 years of production than any other North American field.

The Cook Inlet basin has accounted for the remainder of Alaska crude oil production since statehood. Production levels since statehood from Cook Inlet and Prudhoe Bay are shown graphically in Figure 1. Soon after the Prudhoe Bay field began production in 1977, the state production total jumped over 600 percent. Nearly 1 billion barrels of oil have been produced from Cook Inlet in the 23 years between statehood and the end of 1981. It now takes less than 2 years to produce the same amount of oil from Prudhoe Bay.

Less dramatic than the increase in total production in the late 1970s, but just as important, has been the decline in production from the Cook Inlet basin during the same period. This decline reflects the fact that every oil province follows a foreseeable cycle of growth, peak, and eventual decline. In 1981, Cook Inlet production had declined to 40 percent of its peak attained in 1970.

This pattern of growth, stabilization, and decline in annual production is characteristic of petroleum-producing areas as well as individual fields. It can be

[1]A "giant" oil field in North America is defined as containing at least 100 million barrels of recoverable oil. Although giant oil fields contain about 75 percent of all reserves, they are relatively rare because only about 1 percent of fields are large enough to be classified as giants. Yet, the "super giant" Prudhoe Bay field is 100 times larger than a giant.

Table 1

Prudhoe Bay Oil Field in Perspective

A. World's Largest Oil Fields

Name	Location	Size (Billions of Barrels)
Burgan	Kuwait	68.980
Ghawar	Saudi Arabia	60.278
Safania	Saudi Arabia	17.851
Kirkuk	Iraq	16.320
Samotlokskoye	USSR	14.600
Romashkino	USSR	14.040
Rumaila	Iraq	13.835
Gachsaran	Iran	11.435
Marun	Iran	10.887
Laquinllas	Venezuela	10.782
Agha Jari	Iran	10.084
Prudhoe Bay	USA	10.014

B. North America's Largest Oil Fields

Name	Location	Size (Billions of Barrels)
Prudhoe Bay	USA	10.014
Chiapas	Mexico	6.513
East Texas	USA	5.999
Wilmington	USA	2.418
Poza Rica	Mexico	2.028
Pembina	Canada	1.742
Midway Sunset	USA	1.683
Yates	USA	1.600
Wasson	USA	1.508
Kern River	USA	1.453
Panhandle	USA	1.415
Swan Hills	Canada	1.315
Ebano Panuco	Mexico	1.304
Sho-Vel-Tum	USA	1.300
Elk Hills	USA	1.296
Naranjos, Cerro Azul	Mexico	1.177
Huntington Beach	USA	1.076
Santa Ynez	USA	1.000

Source: "The Search Goes on for Giant Fields," *Oil and Gas Journal*, August 1977, p. 102. Since this table was compiled, significant discoveries made in Mexico have increased the estimated ultimately recoverable reserves from some fields. One field, Chicontepec, could rival Prudhoe Bay in size, but there is some controversy over the official Pemex estimate of its recoverable reserves of 10.96 billion barrels. See "World Oil Flow Slumps, Reserves Up," *Oil and Gas Journal*, December 29, 1980, pp. 75-82; and "Giant Chicontepec Given 42 Percent of Mexican Oil Reserves," *Oil and Gas Journal*, August 20, 1979, pp. 82-85.

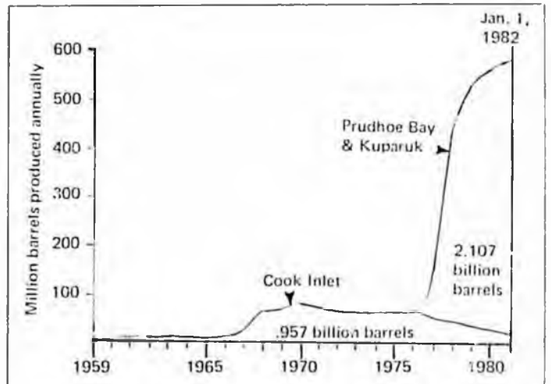


Figure 1. Historical Production from Alaskan Oil Fields

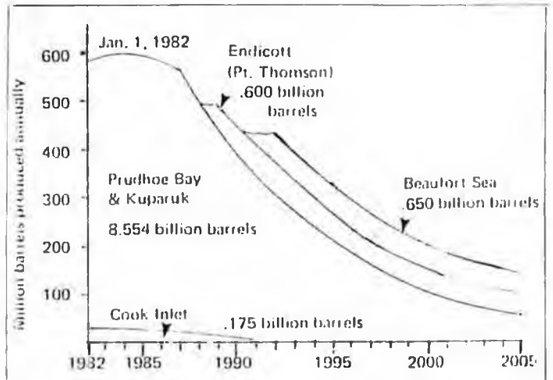


Figure 2. Projected Production from Proved Alaskan Oil Reserves

identified in every major oil-producing state. Texas, which has historically had the highest production rate of any state, by 1981 was producing at about 73 percent of the post-World War II peak it reached in 1972. Oklahoma is producing at 70 percent of its peak. In Louisiana, current production is now only about 48 percent of its peak. In Kansas and New Mexico the percentages are 53 percent and 55 percent, respectively. The same pattern holds in the other major producing states, except for California, which in 1981 surpassed its previous peak year of 1968 by 2 percent.

Because one supergiant field overwhelmingly dominates current Alaska production, the eventual production decline may be more abrupt in Alaska than elsewhere. Based upon current levels of proved reserves, including (in addition to Prudhoe Bay) Kuparuk, Endicott (Point Thomson), and state leases in the Beaufort Sea as well as Cook Inlet, the production peak will occur in the mid-1980s, and the subsequent decline will be rapid. This is illustrated in Figure 2, which projects through 2005 oil production from proved reserves in Alaska.

This projection illustrates two important points. First, Prudhoe Bay production will fall to one-third of its current level in little more than 10 years. Second, the introduction of proved reserves from new fields such as Kuparuk (which, at 1.125 billion barrels, is itself a large "giant" by North American standards) will have only a modest impact on either the number of years over which peak production can continue or the subsequent slope of the decline in aggregate oil production. Both are dominated by the absolute size of Prudhoe Bay. Thus, a field containing an estimated 600 million barrels of reserves, such as Endicott (Point Thomson), will provide only enough oil to fill the Alyeska pipeline for one year, or to postpone the production decline by one year.

We underestimate ultimate recoverable reserves by basing projections upon estimates of proved and probable reserves on currently leased state lands because the process of exploration and development is ongoing in the relatively unexplored Alaska frontier regions. Proved reserves are, in a sense, only the current inventory of the oil industry. Additions to that inventory continuously occur through exploration and development which both bring new fields into production and increase the ultimate production of existing fields.

A crude oil inventory including proved reserves and an estimate of recoverable undiscovered resources is shown in Table 2. As of January 1, 1982, proved reserves were 8.729 billion barrels, located mostly on the North Slope at Prudhoe Bay and Kuparuk, both of which are now producing. Additional state lands (Endicott and the Beaufort Sea) which are currently under lease and where exploration activity is ongoing are estimated to contain 1.250 billion barrels. These areas are also on the North Slope. Estimates of potential reserves in areas of the state currently not yet leased, both onshore and offshore, are speculative in nature. The most recent estimate for these unexplored regions is 21.5 billion barrels, the majority of which is estimated to be on federal lands on the North Slope or offshore in the Beaufort Sea.

Long Lead Time for New Discoveries

The amount of oil which will be discovered and ultimately produced from these regions depends upon the expected cost of field development in relation to the expected market price of the oil, both of which must be estimated many years into the future because

Table 2

Alaskan Crude Oil Resources Inventory

	Billion Barrels
Cumulative Production since 1959 (Jan. 1, 1982)	3.034
Prudhoe Bay	2.107
Cook Inlet	.957
Proved Reserves[a] (Jan. 1, 1982)	8.729
Prudhoe Bay	7.429
Kuparuk	1.125
Cook Inlet	.175
Probable Reserves on Currently Leased State Lands[a] (July 1982)	1.250
Endicott (Point Thomson)	.600
Beaufort Sea	.650
Economic Undiscovered Resources[b] (Dec. 1981)	21.5
North Slope onshore	2.1
Beaufort Shelf	8.2
Arctic National Wildlife Refuge	2.3
National Petroleum Reserve Alaska	2.1
Central Chukchi Shelf	1.6
Navarin Basin Shelf	2.3
St. George Basin	1.1
Bristol Basin	.6
Norton Basin	.3
Onshore South of Brooks Range & Offshore South of Aleutian Chain	.9

[a]State of Alaska, Department of Natural Resources, Proved and Probable Oil and Gas Reserves, North Slope, Alaska, July 1982.

[b]National Petroleum Council, *U.S. Arctic Oil and Gas*, December 1981 was utilized for estimates north of Aleutian Chain offshore and north of the Brooks Range onshore. Economic undiscovered oil was based upon an economic evaluation of recoverable reserves using a 10 percent real rate of return, p. 89. Other Alaska reserves were taken from U.S. Department of the Interior, U.S. Geological Survey, 1981.

of the very long lead times required for field development in the Arctic, estimated to be 10 to 15 years. Consequently, although it is safe to say that production from currently undeveloped fields will occur, it is impossible to project when it will occur and in what volumes. Smaller fields, fields requiring new technologies, and fields farther from existing pipelines will be more expensive to develop than Prudhoe Bay. Some discoveries may remain undeveloped if the costs are too high, even though they may be "giant" fields. The pace at which future discoveries are converted into production will slow down as more frontier provinces are explored. Consequently, the oil industry agrees that continued exploration and production from new fields will be unlikely to close the gap left by the decline of Prudhoe Bay production. Exploration chief Roger Hererra of the Sohio Alaska Petroleum Company, in discussing the decline in Prudhoe Bay production beginning after 1988, has stated, "We would need to find a new field each year to make up the difference . . . That's not very likely, and that's when the crunch may come."[2]

Importance of Oil Field Location

State revenues from petroleum also depend upon where that petroleum is located. Currently, virtually all proved reserves of crude oil lie under state lands. From this production, the state receives a royalty share and collects taxes on production and profits. In addition, it taxes petroleum-related property. Table 2 shows that most of the oil yet to be discovered is believed to lie onshore under federal lands or offshore under the outer continental shelf. Although the state will be able to tax petroleum production, property, and profits on federal onshore lands, it will receive only a share of the federal royalties earned. Offshore, beyond the 3-mile limit, the state has no taxing authority and will collect no royalties. Property taxation of shore-based exploration, development, and production facilities is currently the only method by which the state could collect revenues from outer continental shelf production. As a result, the state will be receiving a smaller share of the revenues from the development of most new fields.

The state's exact share is impossible to estimate accurately since the "rules of the game" for dividing the profits are always changing. Experience in dividing the profits from Prudhoe Bay production suggests that there will be continuing negotiations among the parties[3] over the distribution of profit shares, because the reward for changing the allocation formula is so great.[1] Consequently, it may be misleading to try to predict future revenues under current distribution rules. It is safe to say, however, that the oil compan-

[2]Alaska Growth Policy Council, 1981 Report to the Governor, p.24.

[3]In the case of Prudhoe Bay, the federal government, state government, local governments, and the oil companies.

[1]Rewriting the corporate income tax law, placing a ceiling on the severance tax, etc.

ies and federal government will not be predisposed to change the rules governing the sharing of outer continental shelf revenues to favor the state of Alaska.

In summary, nearly all Alaska production and revenues come from the single largest "super giant" field ever discovered in North America. A decline in production from this field will begin in 5 years and continue into the next century. Production from proved reserves in other fields and new discoveries will not be sufficient to fill the gap left by the declining Prudhoe Bay production. The decline in state revenues will proceed more rapidly than the production decline because a large portion of new reserves is likely to be located on the federally controlled outer continental shelf where the state has no taxing authority.

Petroleum as a Nonrecurring Tax Base

Prudhoe Bay oil can appropriately be viewed as an asset worth $36 billion in 1982 dollars.[5] *At current rates of expenditure, Alaska is rapidly depleting this asset, and it has no equivalent asset to meet future needs.*

The preceding analysis suggests that the overwhelming dominance of crude oil production in the Alaska tax base is a transitory phenomenon. If one element of the state's tax base is nonrecurrent, it should be explicitly identified as such and revenues derived from that base treated differently from recurring revenues from a permanent tax base.

State oil revenues are proceeds from the sale of a part of the state's tax base—the state government's tax and royalty "share" of the oil. Of the five major categories of petroleum revenues, lease bonuses and royalty income most clearly represent the sale of a state asset. The other three revenue sources—the severance tax, the corporate income tax, and the property tax on oil and gas production and transportation-related property represent taxation of a nonrenewable resource. The state will receive these revenues only as long as oil is being produced and sold. In contrast, most other industries do not depend on a dwindling resource base. For them, current production does not preclude future production; they can generate a continuous flow of revenues from a continuous level of production. In the oil industry, however, if reserves are produced today, they will not be available as a tax base in the future.

[5]When comparing the value of any asset at different points in time, the use of nominal dollars not corrected for inflation can yield very misleading results. Consequently, in the text of this report, all figures are presented in 1982 dollars unless specifically identified otherwise.

Petroleum as a Capital Asset

Oil in the ground, therefore, particularly in such unusually large and likely unique fields as Prudhoe Bay, represents a capital asset owned by the state, similar to money in the general fund, state-owned land, or a state-owned office building. A rough estimate of the value of this capital asset can be calculated by multiplying the proved reserves of oil (at the start of the fiscal year) by the current per-barrel level of petroleum revenues. Thus, if as was true at the beginning of the 1983 fiscal year (July 1, 1982), there were 7.007 billion barrels of proved reserves of oil in the ground at Prudhoe Bay, and the current per-barrel state revenue from all petroleum taxes and royalties was $5.40, then the value of the state's share of the oil in the ground at that time was $37.838 billion (Table 3).

This estimate entails two simplifying assumptions. First, we assume that real per-barrel revenues in future years will be the same as they are today. Second, we assume that there is no discounting of those revenues which will not be collected until some future year. Inflation aside, a dollar received today is worth more than a dollar received in the future, because the dollar received today can be invested to earn a positive return, and consequently will be worth more than one dollar next year. To compare a dollar received in the future with a dollar received today, we must discount the future dollar by the earning potential of the dollar invested today. The discounted value is that amount which one would be willing to pay today in return for receiving a dollar at some time in the future. Banks, businesses, and individuals commonly apply discount rates to future revenue streams based on their investment opportunities, and the state should do the same. If the state can earn an average 2 percent annually (after accounting for inflation), then the future petroleum revenue stream should be discounted at that rate. This reduces the present value of the Prudhoe Bay tax base at the start of the 1983 fiscal year to about $34 billion, which represents the value today of the future stream of revenues the state will receive.

Changing Value of State's Share

The value of the state's share of the oil in the ground at Prudhoe Bay changes annually because (1) oil is being withdrawn from the field at the rate of 547 million barrels per year, (2) the real market value of oil fluctuates, (3) tax law modifications change the per-barrel tax liability, and (4) inflation changes the price of oil. The combination of these factors has caused the value of Prudhoe Bay oil in the ground to vary dramatically from year to year.

Table 3

Value to the State of Oil in the Ground at Prudhoe Bay

Fiscal Year (ending in calendar year)	Initial Oil in Place (billion barrels)	Production (billion barrels)	Production Related Petroleum Revenues (billion $) (Current $)	(1982 $)	State Revenues per Barrel (Current $)	(1982 $)	Undiscounted Value to the State of Oil in the Ground at Prudhoe Bay (billion $) (Current $)	(1982 $)
1978	9.356	.314	.630	.892	2.01	2.84	18.806	26.650
1979	9.042	.433	.979	1.259	2.26	2.91	20.435	26.288
1980	8.609	.508	2.141	2.499	4.21	4.92	36.244	42.311
1981	8.101	.547	2.914	3.126	5.33	5.71	43.178	46.325
1982	7.554	.547	3.998	3.998	7.30	7.30	55.144	55.144
1983 (est.)	7.007	.547	2.956	2.763	5.40	5.05	37.838	35.362
1984 (est.)	6.460	.547	3.010	2.629	5.50	4.81	35.530	31.033

Source: Oil in Place from Alaska Oil and Gas Conservation Commission, *Statistical Report*, annual, converted to fiscal year basis, Prudhoe Bay field only.
State Revenues per Barrel is calculated as total production related petroleum revenues including Permanent Fund contributions and ANCSA payments (Royalty, Severance Tax, Property Tax, Oil and Gas Income Tax from Alaska Department of Revenue, *Revenue Sources*, annual) divided by annual production. The reserves tax is netted out of 1977 and the credit added into 1978 and 1979. These figures are a slight overestimate since they include Cook Inlet Oil Revenues. Bonuses are not included for 1980.
Value of state share of Prudhoe Bay oil is calculated as oil in place multiplied by per barrel tax revenues.
Anchorage consumer price index for 1982 assumed to be 265. Inflation from 1982 to 1984 assumed to be 7 percent annually.

The components of the year-to-year change in the asset value of Prudhoe Bay oil are presented individually in Table 4. At the start of each year, the initial value is determined as the product of quantity in place and average per barrel revenues. As the market price for oil fluctuates and the laws change, average per-barrel revenues increase or decline. This changes the value of oil in place (inventories). Over the course of the year, oil is withdrawn from the field; this generates revenues for the state. These revenues can be divided into the sale of assets and the conversion of assets. The sale of assets is that portion of petroleum revenues which goes into the general fund and is subsequently spent. Conversion of assets consists of that portion of petroleum revenues which is converted into a different form of asset—either physical or financial capital.

Looking at year-to-year changes in the real asset value of Prudhoe Bay oil in the ground, we see that holding wealth in the form of oil was a good investment from 1978 until late 1981 because, in spite of the annual withdrawal of 547 million barrels, the real value of oil in the ground grew from $28.96 billion in 1978 to $59.17 billion in 1981. Since then, however, the reverse has been true. The asset value of the state share of Prudhoe Bay oil fell by more than 20 billion dollars between 1981 and 1982 to $37.84 billion. This is primarily the result of a fall in per-barrel revenues from $7.30 to $5.05. In 1983, the value of the oil will decline by more than $2 billion, primarily because of the withdrawal of 547 million barrels from the field.

Prudhoe Bay oil is not the only component of state wealth. Other assets consist of natural resources on state lands and in state waters, both renewable and nonrenewable; and capital, both physical and financial. The monetary value of each asset in the state portfolio is equal to the present value of the future revenues expected to flow from it. The value of the state's natural resources and physical capital is not currently known. On the other hand, the value of the financial capital of the state is equal to its current balance. The Alaska Permanent Fund and the state general fund are the main elements of state financial capital. The net worth of semi-autonomous state agencies such as the Alaska Housing Finance Corporation and the Alaska Power Authority represent another element of the financial wealth of the state.

Table 4 includes the conversion of petroleum assets into financial assets in the Permanent Fund. This underestimates total asset conversion and overestimates the sale of oil in the ground because it does not show conversions to resources which do not have readily quantifiable values—such as the net worth of public agencies and additions to physical capital. However, it is clear that in each year since production began at Prudhoe Bay, the conversion of petroleum assets into alternative assets of readily identifiable value has been modest. In the early years,

Table 4

Components of Change in Undiscounted Value to the State of Oil in the Ground at Prudhoe Bay
Billion $

	Fiscal Year (ending in)						
	1978	1979	1980	1981	1982	1983	1984
Value of Oil in Ground (July 1)							
Current $	18.806	20.435	36.244	43.178	55.144	37.838	35.530
1982 $	26.650	26.288	42.311	46.325	55.144	35.362	31.033
Add: Change in Value of Inventories[a]							
Current $	2.259	16.788	9.074	14.880	−13.326	.648	NA
1982 $	3.201	21.596	10.593	15.966	−13.326	.606	NA
Deduct: Total Sale & Conversion of Assets (Petroleum Revenues)							
Current $	.630	.979	2.140[b]	2.914	3.980	2.956	3.010
1982 $	.893	1.259	2.498	3.126	3.980	2.763	2.629
Net Sales of Assets[c]							
Current $	.580	.895	1.910	1.629	2.771	2.317	NA
1982 $	.822	1.151	2.229	1.748	2.771	2.165	NA
Conversion of Assets[d] (Contributions to Permanent Fund)							
Current $	.050	.084	.230[b]	1.285	1.209	.639	.326
1982 $	.071	.108	.269	1.379	1.209	.597	.285
Equals: Value of Oil in Ground (June 30)							
Current $	20.435	36.244	43.178	55.144	37.838	35.530	NA
1982 $	28.959	46.625	50.406	59.170	37.838	33.206	NA

[a]Change in value of reserves due to changes in both crude oil market price and state tax laws (calculated as the residual of year end value plus sales and conversions minus year start value).

[b]Lease sale bonus revenues not included.

[c]Total petroleum revenues net of Permanent Fund contributions.

[d]$4 million contributed to the Permanent Fund in fiscal year 1977 is not included here. Includes the amounts transferred in 1981 through 1983 under the special appropriations made in 1981 and 1982.

Source: Petroleum revenues consist of royalties, severance taxes, property taxes, and oil and gas income tax including Permanent Fund contributions and ANCSA payments. The reserves tax is netted out of 1977 and added into 1978 and 1979 figures. Petroleum revenues are on a fiscal year basis.

transfers into the Permanent Fund averaged less than 10 percent of petroleum revenues. When special Permanent Fund appropriations were made in fiscal years 1981, 1982, and 1983, the conversion to financial assets still averaged only 32 percent of petroleum revenues.

Historical Fluctuation in State Wealth

By defining state wealth to include both the state's share of oil in the ground at Prudhoe Bay and the balance in the Alaska Permanent Fund, we can trace the historical fluctuation in total state wealth (Table 5). We see that in 1978, the combined value of these two assets was $29.035 billion, essentially all in the form of oil in the ground. In January 1983, state wealth was estimated to be $36.585 billion, with the proportion held in the Alaska Permanent Fund close to 10 percent. The growth of the Permanent Fund balance has been dramatic. When viewed in dollars corrected for inflation, however, we see that, absent further special appropriations to the Permanent Fund, its real value will increase much more slowly in future years. If nominal earnings are withdrawn from the Permanent Fund, a substantial portion of

new, regular fund contributions will be required just to maintain the real value of the fund.[6] Assuming withdrawal of all earnings, the Permanent Fund balance is estimated to increase by only $64 million in 1982 dollars between 1983 and 1984 in spite of a contribution of $285 million over that period. Most of the fund contribution will be needed just to offset inflation which continuously erodes the real value of the Permanent Fund balance.

The Recurring Tax Base

Recurring state revenues are miniscule compared to current levels of state spending and cannot be realistically viewed as an answer to the state's impending fiscal crisis, unless a radically new approach is taken to the savings and investment of current state revenues.

State general fund revenues can be divided into six categories—four major and two minor. The first two—the sale of assets and income from investments—relate primarily to petroleum and have already been discussed. Recurring revenues collected from individuals and businesses constitute the other two major categories. The personal and corporate income taxes have historically been the most important of these recurring revenues. A small proportion of general fund revenues comes from the two remaining sources—federal transfers and user fees. Federal transfers are usually restricted to particular purposes such as capital investments for transportation and health projects or transfers to individuals. Ferry system receipts constitute the largest revenue in the category of user fees, which also includes court fees.

Table 6 presents a historical review of recurring state revenues in relation to nonrecurring petroleum revenues and investment earnings. Business revenues consist of the corporate income and gross receipts tax as well as business licenses. Revenues from individuals are defined as nonbusiness taxes plus nonbusiness licenses. The miscellaneous category includes both federal shared revenues and user fees as well as other small categories of government receipts.

In the current fiscal year of 1983, fully 86 percent of revenues are directly from nonrecurring petroleum activity; 7 percent of general fund revenues come from recurring revenues not directly related to petroleum. An equal proportion is contributed by investment earnings. However, most of the reported Permanent Fund earnings are more appropriately classified as the sale of an asset since earnings are calculated before inflation. The real earnings are just

[6]Under current law, a portion of Permanent Fund earnings must be retained for the purpose of capital preservation. This increases the estimated growth in the Permanent Fund balance. Current interpretation of the law, however, appears to define retained earnings as net of distribution of 50 percent of the fund earnings under the Permanent Fund dividend program. Consequently, at historical inflation rates, the real value of the fund will still decline without continuous large contributions.

Table 5

Combined Asset Value: Undiscounted State Share of Prudhoe Bay and Alaska Permanent Fund
(In billions of 1982 $)

	Fiscal Year (ending in calendar year)						
	1978	1979	1980	1981	1982	1983	1984
July 1, Assets							
Oil in Ground	$26.650	$26.288	$42.311	$46.325	$55.144	$35.362	$31.033
Perm. Fund Bal.	.006	.069	.161	.518	1.768	2.782	3.158
Total	$26.656	$26.357	$42.472	$46.843	$56.912	$38.144	$34.192
Change in Assets							
Oil in Ground	$2.309	$20.337	$8.095	$12.845	$−17.306	$−2.156	NA
Perm. Fund Bal.	.071	.108	.403*	1.379	1.209	.587	.285
Total	$2.380	$20.445	$8.498	$14.224	$−16.097	$−1.839	NA
June 30, Assets							
Oil in Ground	$28.959	$46.625	$50.406	$59.170	$37.838	$33.206	NA
Perm. Fund Bal.	.076	.178	.564	1.897	2.977	3.379	3.443
Total	$29.035	$46.802	$50.970	$61.067	$40.815	$36.585	NA

Note: All Permanent Fund earnings (nominal as well as real) transferred to General Fund.
*Includes proceeds of $114 million from Beaufort Lease Sale.

Table 6

Sources of State Revenues
(millions of 1982 dollars)

Year	UNRESTRICTED GENERAL FUND REVENUES							TOTAL PETROLEUM REVENUES[g]	CONVERSION OF ASSETS	
	Investment Earnings		Petroleum Revenues			Business[b] Revenues (non-oil)	Individual[c] Revenues	Misc.[d] Revenues		
	Before Inflation	After Inflation[e]	Total	Sale of Assets	Conversion of Assets[f]				Petroleum Revenues[h]	Gross Fund Withdrawals
1974	$83	$21	$159	$159	$0	$54	$150	$66	$159	$0	$62
1975	68	17	154	154	0	71	213	78	154	0	51
1976	52	13	628	628	0	106	312	56	628	0	39
1977	53	13	720	720	0	122	331	55	726	6	40
1978	63	16	609	609	0	116	266	61	680	71	47
1979	76	19	1,053	1,053	0	109	293	75	1,161	108	57
1980	140	35	2,630	2,630	0	67	167	69	3,032	402	105
1981	244	61	3,540	2,573	967	88	43	74	3,952	1,379	183
1982 (pre.)	323	81	3,556	2,756	800	91	55	80	3,965	1,209	242
1983 (est.)	220	55	2,778	2,498	280	86	51	85	3,095	597	165
1984 (est.)	87	NA	2,514	2,514	0	85	49	69	2,789	285	NA
1985 (est.)	82	NA	2,366	2,366	0	85	48	66	NA	NA	NA

[a]Includes Native Land Claims payments in 1978 through 1980. In 1984 and 1985 Permanent Fund dividends not included in general fund revenues.
[b]Corporate income tax, gross receipts tax, business licenses.
[c]Non-business taxes, non-business licenses.
[d]Federal shared revenues, state resource revenues excluding petroleum (composed primarily of ferry charges, miscellaneous user fees, and sales of state property).
[e]General fund and permanent fund earnings net of amounts required to maintain real value of these funds. We assume that, due to inflation, 75 percent of nominal earnings is necessary to maintain asset value.
[f]Special Permanent Fund contributions.
[g]Including mandatory Permanent Fund contributions.
[h]Total Permanent Fund contributions.
[i]General and Permanent Fund earnings before inflation minus earnings after inflation. (This ignores general fund deposits in some years which may have an offsetting effect.)

Source: Alaska Department of Revenue, *Revenue Sources*, annual.

a small portion of the nominal return.

In contrast, almost 53 percent of revenues in 1974 were collected from individuals, nonpetroleum businesses, and miscellaneous sources. Over the last several years, primarily because of the elimination of the personal income tax, there has been a dramatic fall in both the real amount as well as the percentage of revenues derived from individuals, and this has occurred at a time of rapid population and income growth. In 1983, only an estimated $51 million will be collected from individuals, compared with $381 million as recently as 1977. Similarly, there has been a decline in real revenues from non-oil-related business, but it has not been as precipitous as the decline in individual revenues. Whereas taxes and other revenues collected from individuals were more than double those collected from non-oil businesses in 1977, non-oil business receipts were almost double those of individuals by the early 1980s. The expansion of investment earnings during this period has only partially offset the decline in revenues from individuals and non-oil businesses. After correcting for inflation, we find that real investment earnings remain a modest source of revenues.

Future Revenues: Actual and Potential

Even if Alaska's personal income tax is reinstated and its corporate tax rate increased, Alaska's revenue gap—the difference between projected revenues and state expenditures under the current spending limit—will approach $1 billion by 1991.

Figure 3 shows a projection of future revenues based upon likely petroleum production (including natural gas) from leased areas as well as current trends in recurring (individual, non-oil business, and miscellaneous) general fund revenues. A revenue gap appears in 1989 at about the time production from Prudhoe Bay begins to decline. Revenues then fall during each succeeding year. Neither investment earnings nor business, individual, or miscellaneous revenues will be large enough by 1990 to offset the fall in petroleum revenues.

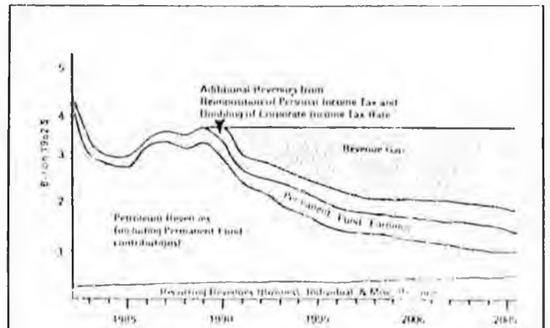


Figure 3. Projected State Revenues: General Plus Permanent Fund

Several strategies have been suggested for dealing with this projected revenue gap:

1. **Increase the flow of petroleum revenues.** This could result from raising the per-barrel tax rate or increasing production on state lands. However, tax increases could only temporarily compensate for declining production and could accelerate it. To fully replace the revenue which the state will lose from the decline in the Prudhoe Bay field would require development of a new field on state lands every year. We have shown, and all knowledgeable sources agree, that this is virtually impossible.

2. **Rely on the development of nonpetroleum natural resources.** Comparing the value of natural resource industry outputs in Alaska indicates that no alternatives could expand enough in a few years to generate the level of sales necessary to provide a tax base comparable to petroleum (Table 7). In 1981, petroleum (crude oil plus natural gas) accounted for 92.5 percent of natural resource sales; seafood contributed 5.9 percent. All others combined totaled only 1.6 percent.

   For example, just to match the value of petroleum output, the fishing industry would need to expand 1,600 percent. Profitability in the industry would also need to increase. The resource base will not allow this.

   Alternatively, coal, of which Alaska has large reserves, is often suggested as a successor to petroleum. Many deposits are not now economically attractive because of their location, but fields such as the Beluga and Nenana have a definite potential for development and expansion during the coming decade. If the state royalty and related taxes were to total $1 per ton of coal (which is higher than current state revenues per ton of coal produced), then an annual production of 4 billion tons would be required to equal the nearly $4 billion in petroleum revenues collected by the state in fiscal year 1982. Four billion tons is about 4,000 times current production and is also approximately the total demonstrated reserves in these fields.[7]

[7]Alaska Department of Natural Resources, Open File Report, No. 51, 1975.

Table 7

Market Value of Unprocessed Alaska Natural Resources, 1981

	Million $	Percentage
Crude Oil	$12,396	91.9%
Seafood	792	5.9
Timber	120	.9
Natural Gas	83	.6
Gold	54	.4
Coal	18	.1
Agriculture	12	.1
Furs	6	.1
Other Minerals	4	
Total	$13,485	100%

Note: Petroleum value calculated at wellhead. All others calculated at Alaska market price.

Source: Crude oil, natural gas, and gold from Division of Budget and Management, Office of the Governor, *Alaska Statistical Review*, 1982. Coal, other minerals, furs, timber, estimated by author by extrapolation. Seafood from Alaska Department of Fish and Game (preliminary). Agriculture from *Alaska Agricultural Statistics*, 1982.

Thus, it would be physically impossible to generate the same amount of revenues from coal as from oil. Development of the coal industry may produce a stable number of jobs and a flow of revenues, but it cannot replace the magnitude of revenues generated by petroleum.

3. **Rely on downstream processing of, or value added to, Alaskan resources.** Currently, revenues from such downstream processing are primarily obtained from the corporate income tax. At current tax rates, the corporate tax base would need to grow to over 100 times its current size to replace the revenues from petroleum in 1982.

4. **Reimpose the personal income tax and increase corporate tax rates.** Reimposing the personal income tax and doubling the corporate income tax rate would increase individual and business taxes only modestly, as shown in Figure 4. This strategy would fill the revenue gap for only one year and would subsequently reduce it by only a small percentage.

Clearly, no one of these strategies is capable of filling the gap. In addition, adopting all of them would likely yield revenues no higher than those estimated to result from increased taxation of income, because tax increases tend to restrict the growth of the tax base. The revenue gap thus presents the state with a difficult choice regarding future expenditures. On the one hand, the revenue gap can be ignored. This would mean adjusting to continuously declining revenues beginning in 5 years. On the other hand, investment strategies using a portion of current revenues could be devised to provide a future stream of earnings to replace declining petroleum revenues.

THE SPENDING LIMIT

By 1988, state revenues will fall below the state spending limit and set the stage for a run on the state's accumulated surpluses, including the Permanent Fund.

Beginning with the fiscal year 1984 budget, the state will limit expenditures by placing a ceiling on appropriations which changes from year to year with population and inflation. The ceiling, established at $2.5 billion for the base fiscal year 1982, exempts only debt service, Permanent Fund dividend payments, voter-approved capital expenditures and supplementary Permanent Fund appropriations. The limit also specifies that at least 3 percent of appropriations must be allocated to capital expenditures and loans.

The spending limit of $2.5 billion will not be a real constraint on appropriations in any future year because general fund revenues are projected to at most equal or fall short of allowable spending under the formula limit every year (Figure 4). This projection is based upon the assumptions summarized in Table 8.[8] Spending up to the limit can occur during the first 4 years, beginning in FY 1984, only by drawing upon the accumulated balances in the general fund. Rather than generating savings by limiting spending, the limit permits the liquidation of the modest general fund balance.

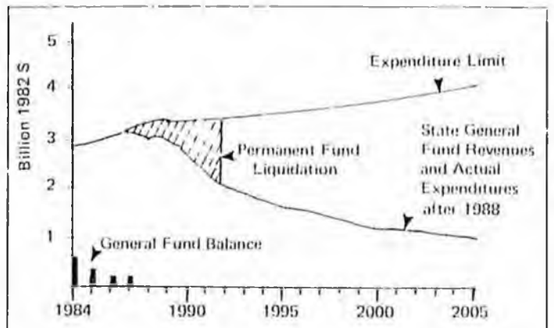


Figure 4. State Fiscal Situation: $2.5 billion Constitutional Spending Limit*

*The expenditure limit grows in constant 1982 dollars due to population growth which is projected at the rate of 2 percent annually. Without population growth, the expenditure limit ceiling would be a flat line.

By 1988, the spending limit ceiling will have become ineffective because the rising ceiling will have surpassed revenues. By 1991, revenues will have fallen $1 billion below the limit, and in subsequent years, the revenue gap will continuously increase (Figure 5). By 1995 it will equal $2 billion—half the level of 1982 revenues. Although the growth of this gap between spending and revenues will subsequently slow down, in 10 more years it will still reach $3 billion. This gap represents the amount of revenues that would be required from new sources to keep state spending up to the ceiling defined by the limit formula.

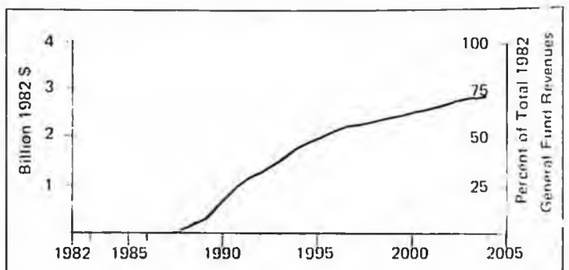


Figure 5. Revenues From New Sources Necessary to Fill Revenue Gap Under Spending Limit

The Permanent Fund is the only financial asset which the state could draw upon to fill the revenue gap created by falling revenues and a growing spending limit ceiling. When revenues fall below the ceiling, however, the Permanent Fund balance will be about $4.5 billion, a modest amount because of the annual

[8]The projection also assumes that oil and gas exploration, development, and production remain important basic activities, and growth occurs in fish harvesting and processing, mining, timber, manufacturing, and tourism. The state budget is divided as follows: capital spending is assumed to be one-third of the total and to be divided equally between construction projects and subsidies to housing and industry. All capital expenditures are paid from the general fund. Consequently, the only expenditure items not covered by the ceiling consist of Permanent Fund dividends at the rate of one-half of nominal Permanent Fund earnings and debt service payments which decline each year as outstanding bonds are paid off. The Permanent Fund receives its constitutionally mandated share of petroleum royalties and bonus payments, while all other excess current account revenues remain in the general fund where they earn interest until spent.

Table 8

Principal Assumptions of Projections

STATE REVENUES

Petroleum

Royalties	Approximate Dept. of Revenue, Dec. 1982, 50% probability forecast with 2% annual decline after 1998.
Severance Tax	Approximate Dept. of Revenue, Dec. 1982, 50% probability forecast with 2% annual decline after 1998.
Corporate Tax	20% of severance tax.
Property Tax	Dept. of Revenue, June 1982 forecast with 4% annual growth after 1984.
Bonuses	Zero.

Recurring Revenues

All Revenues determined by MAP econometric model at currently existing tax rates.

RETURN ON INVESTMENT

Real rate of return on general fund balances	2% annually.
Real rate of return on Permanent Fund balance	3% annually.

SPENDING LIMIT

Inflation	7.4 percent long-run average annual rate.
Population	2 percent annual growth.

Royalties and severance taxes are the June 1982 30-percent probability forecast of the Department of Revenue. The undiscounted sum of petroleum revenues as projected by the Department of Revenue were 8 percent lower in September 1982 than in June and are expected to be again lower in December. Thus, we estimate the 30-percent probability forecast of June to approximate the December 50-percent probability forecast.

withdrawal of both real and nominal earnings to fund the Permanent Fund dividend program and to supplement general fund revenues.[9] Because of these withdrawals, the real value of the accumulated balance in the Permanent Fund (before annual contributions) will have been eroding about 7.4 percent annually (the inflation rate), and contributions from royalties and bonuses equal to 7.4 percent of the accumulated balance will be necessary each year just to keep abreast of inflation.

Although the Alaska constitution prohibits withdrawal of principal from the Permanent Fund, the emergence of a revenue gap would generate tremendous pressure to open it up. If the Permanent Fund were opened at this time to maintain spending levels, it would be completely spent within 4 years. At the end of that time, the state would find itself with no sources of funds with which to replace falling revenues, and state expenditures would have to be cut sharply and abruptly.

The spending limit will not serve to avoid a revenue gap because it will ineffectively restrict spending in the early years. It establishes no framework for determining the proper levels of investment out of petroleum revenues and, consequently, will generate an insufficient level of recurrent earnings from investment. The major asset the state will have as revenues fall is the Permanent Fund, the earnings and principal of which will be insufficient to fill the gap for long.

Figure 6 shows that with the present spending limit in place, the assets of the state, defined as the sum of oil in the ground plus the Permanent Fund, will rapidly dissipate. (Other assets such as home mortgages are not included because we have no information on the current or projected state holdings of these assets. Regardless, even a portfolio of these assets worth $5 billion would not significantly alter the picture.) Petroleum cannot be converted to other forms of wealth quickly enough under the present spending limit to maintain the asset portfolio from which earnings are generated. Thus, as the state portfolio declines, so will asset earnings.

In the coming years, public sector demands for providing basic services in education, health, social services, resource management, public protection, and transportation will continue to grow with the economy and real incomes. However, by the end of the century only about $1 billion annually (1982 dollars) will be available to fund all government programs. The cutbacks required to live within a $1 billion budget constraint will be drastic and will

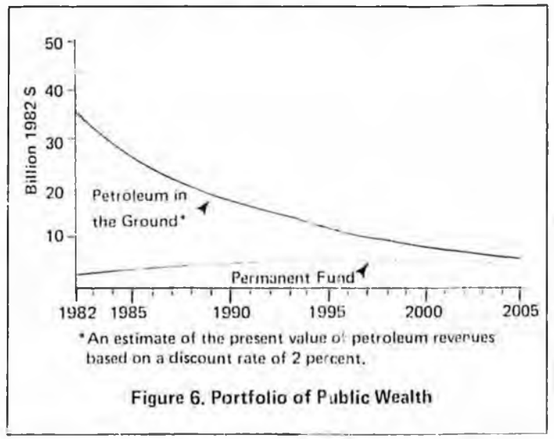


Figure 6. Portfolio of Public Wealth

undoubtedly eliminate many programs considered necessities.[10]

A second consequence of a cutback in state spending will be a large economic contraction, resulting from decreased government spending in the economy. Currently, operating budget appropriations are used to pay the wages and salaries of over 15,000 state government employees as well as support a large number of the 24,000 local government employees through various local revenue transfer programs. Thus, about one in six of the 200,000 jobs in the state economy directly result from state operating appropriations. In addition, the capital budget directly provides employment to a significant portion of the construction industry. Also, the Permanent Fund dividend program and state loan programs pump income into the economy on a scale similar to the payroll of a major industry like construction or manufacturing. Overall, about one-third of current personal income can be traced, directly or indirectly, to state government spending. Like other industries, state spending has a "multiplier" effect in the trade, service, finance, and other support sector industries of the state. A forced reduction in spending would cause a contraction of private support sector activity because the "multiplier" works in a negative as well as in a positive direction.

A more optimistic projection of petroleum revenues does not appreciably alter our conclusions. This becomes evident when we compare the accumulated balances in the general fund in 1988 under present

[9]Reinvestment of Permanent Fund earnings would only marginally change the conclusions.

[10]Future expenditure flexibility is further limited by the spending limit requirement that at least one-third of appropriations be for capital projects, about twice the historical proportion. The operation and maintenance of this new capital stock will place added demands on shrinking revenues in future years.

revenue projections with higher revenue projections. Under current projections, the general fund balance in 1988 would be $68 million. A 20-percent increase in petroleum revenues (an approximate increase from $20 to $25 billion in nominal dollars) would result in the accumulation of $2.4 billion (in 1982 dollars) in the general fund. This would fill the revenue gap until 1992.[11]

By lowering the spending limit ceiling, we can reduce and delay the revenue gap but not eliminate it. If the initial ceiling were set at $1.5 billion, state expenditures would more closely balance with revenues (Figure 7). The state would be able to sustain a surplus on current account in the general fund through 1995. Through the accumulation and investment of these surpluses, the general fund would grow dramatically to a peak of $8 billion (1982 dollars) by 1992.[12] In this case, when the decline in petroleum revenues reduced current account revenues below the expenditure limit, the general fund balance could be used to cover the revenue gap and sustain spending. Withdrawals would not exhaust the general fund until 2003. At this point there would again be tremendous pressure to open up the Permanent Fund, despite a state constitutional prohibition. If the state were to withdraw from the Permanent Fund, its balance would be used up in about 4 years. Thereafter, the state would again be facing a revenue gap with no means of filling it.

The lower spending limit would help the state to both live within its means and accumulate a fund which could be drawn upon to sustain spending for 10 years after petroleum revenues begin to decline. However, it would not eliminate the revenue gap problem, only postpone it. Because state spending under this limit would be allowed to grow more rapidly than nonpetroleum revenues, the growth of spending would eventually outstrip the growth of nonpetroleum revenues. This problem can be handled only by restructuring the spending limit.

THE SUSTAINABLE STATE EXPENDITURE LEVEL

A spending rule that would hold annual appropriations at or below the level of sustainable revenues would allow the state to live within its means and avoid the future need for sharp and massive cuts in expenditures as oil revenues decline.

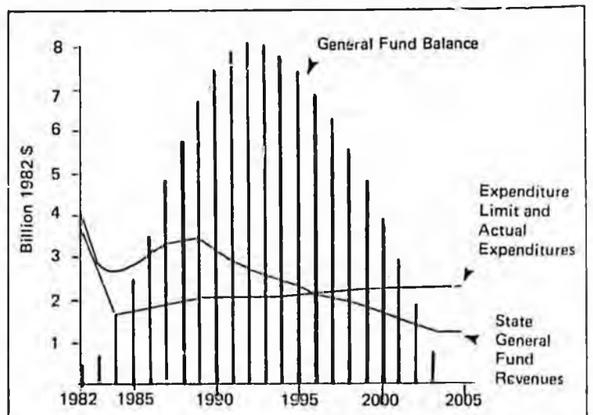


Figure 7. State Fiscal Situation: $1.5 billion Constitutional Limit

Because the current spending limit does not generate savings outside the Permanent Fund, public services must fall dramatically when petroleum revenues decline. Preferable therefore would be an alternative spending rule that prevents a precipitous decline in government spending with its attendant negative impact on the private sector. One possibility would be a level of spending that could be sustained in the future independent of year-to-year fluctuations in petroleum revenues.

A sustainable expenditure level is one which can be maintained at a constant or growing level in "real" terms (corrected for inflation) when petroleum revenues decline. It must incorporate two elements. First, each year a savings/investment decision must be made simultaneously with the spending decision rather than treating savings as the residual left after spending. In other words, spending each year should be guided by long-range fiscal considerations rather than by the amount of revenues available for the current year. Second, spending must not grow faster than recurring revenues—revenues independent of dwindling resources.

Implementing this strategy first requires that the level of sustainable revenues be calculated, because this will determine the sustainable spending level. Sustainable revenues consist of the sum of all recurring revenues[13] plus the earnings on the

[11]Which is approximately comparable to a movement from the 50-percent to 70-percent level of the cumulative frequency distribution of the Department of Revenue petroleum revenue forecasts.

[12]During the interval from 1993 to 1995, a positive general fund current account balance would be increasing the nominal value of the general fund balance, but not fast enough to offset the erosion of real value due to inflation.

[13]In practice, there is no clear distinction between a recurring and a nonrecurring revenue because, on the one hand, revenues

(Footnote 13 continued)

portfolio of state wealth. While it is relatively easy to estimate recurring revenues based upon past trends in nonpetroleum business and personal taxes as well as miscellaneous revenues, it is more complicated to estimate the value of the state portfolio of wealth. However, there is no doubt that it now consists primarily of Prudhoe Bay oil and the Permanent Fund balance (Table 5). The annual real return on these assets, which consists of a portion of annual petroleum revenues and real fund earnings, is the earnings on the state portfolio.

The real monetary earnings on the assets held by the state in 1982, both in the form of oil in the ground at Prudhoe Bay and in financial assets, totaled approximately $750 million. This was the earnings, at a 2.5 percent real rate of return, on assets with a present value of $30 billion. Recurrent revenues were about $450 million, including petroleum revenues from fields other than Prudhoe Bay. Thus, total sustainable revenues equaled about $1.2 billion.[14] In nominal dollars, this would be about $1,475 billion in 1984 (Table 9).

These revenues of $1,475 billion in 1984 would cover not only operating and capital expenditures, but also debt service and Permanent Fund distributions (which are outside the current spending limit). The difference between actual revenues collected and sustainable revenues spent under the limit would go into savings/investment for maintenance of the sustainable revenue level in future years. As the level of recurring revenues, inflation, and earnings on the portfolio of state assets changed, the spending limit ceiling would also change.

The result of implementing the sustainable spending strategy without reimposing the personal income tax is illustrated in Figure 8.[15] We assume

Table 9

Calculating Sustainable Spending

A. Components of Annual Sustainable State Revenues (million 1982 $)

Recurring Revenues		$450
Recurring Petroleum (excluding Prudhoe Bay)	$250	
Current Nonpetroleum	200	
Investment Earnings (see below)		750
Total Sustainable Annual Revenue Flow		$1,200
Equals: Total Sustainable Annual Expenditures		$1,200
Total Sustainable Annual Expenditures (1984 fiscal year)		$1,475

B. Investment Earnings Matrix (million 1982 $)

Real Return on Investments	Present Value of State Investment Holdings (Prudhoe Bay plus Fund Balances) (billion 1982 $)					
	$10	$20	$30	$40	$50	$60
0%	$0	$0	$0	$0	$0	$0
1%	100	200	300	400	500	600
1.5%	150	300	450	600	750	900
2%	200	400	600	800	1,000	1,200
2.5%	250	500	750	1,000	1,250	1,500
3%	300	600	900	1,200	1,500	1,800
3.5%	350	700	1,050	1,400	1,750	2,100
4%	400	800	1,200	1,600	2,000	2,400

that expenditures would gradually fall over a 3-year period from their current level to the sustainable limit, after which they would grow indefinitely with recurring revenues. State general fund spending would be less than general fund revenues from the initiation of this strategy until 2005. Each year, revenues in excess of recurring revenues would be saved and invested. We assume this savings would go into the general fund, although it could go into the Permanent Fund. In a short time, the general fund would grow larger than the Permanent Fund. Earnings from the general fund would become an increasingly important component of total revenues. After 1997, the general fund balance would begin to fall in real

[13](Continued)
from depletable resources may continue for such a long time that they become, in effect, recurrent; and recurrent revenue sources may disappear with shifts in economic activity. The most obvious example of a dwindling revenue is the proceeds of a one-time bonus lease sale. Consequently, in this analysis, we treat Prudhoe Bay revenues as a one-time windfall that is dwindling and other petroleum revenues as well as all revenues from other sources as recurring. In fact, our analysis is relatively insensitive to a shift in the definition of other petroleum revenues between recurring and nonrecurring.

[14]Reimposing the personal income tax could raise this limit by about $200 million.

[15]We phase out the Permanent Fund dividend program, local government grants from the capital budget, and all loan subsidization over a period of three years through 1986. A downward adjustment of the economy occurs in 1984 in response to the imposition of the sustainable spending limit. Expenditure growth after 1984 is determined by the rate of inflation and by the absolute growth in recurring revenues. Because

[15](Continued)
recurring revenues are projected to grow slowly under current tax laws, the growth of expenditures is much slower than in the case of the spending limit formula.

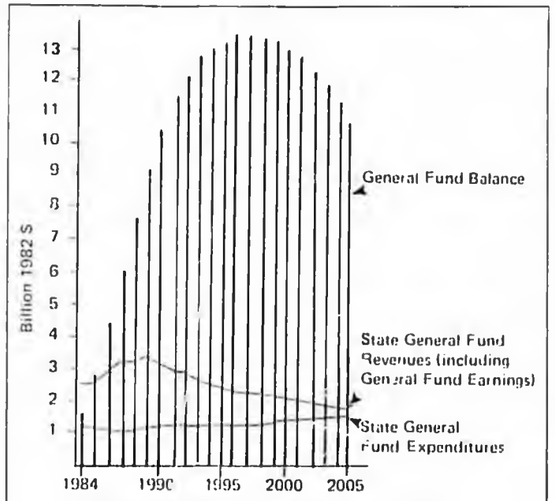
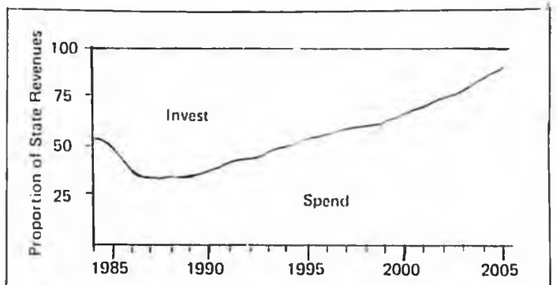


Figure 8. State Fiscal Pattern: Sustainable Spending Strategy



Note: Constitutionally mandated Permanent Fund contributions not included.

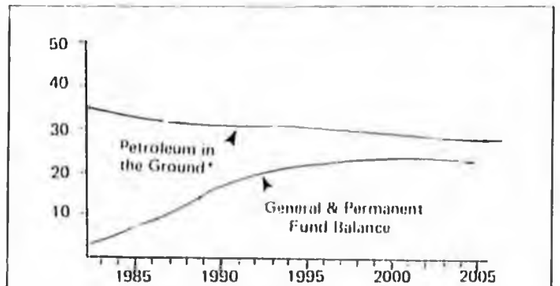
Figure 9. Proportions of General Fund Revenues Invested and Spent in Sustainable Spending Strategy

dollars, due to withdrawals, even though it continued to grow in nominal dollars. Because we assume in this case that Permanent Fund earnings would be reinvested until needed, the value of the fund would grow much more rapidly than in the previous examples. In 2005, the balance would be $12.1 billion rather than $5.3 billion (in the case where all earnings are withdrawn). Eventually, the real earnings of the Permanent Fund would become the main source of state revenues. At some point after 2000, as Prudhoe Bay petroleum revenues ran out, actual revenues would be no greater than sustainable revenues, and at that time, expenditures would be set to equal actual revenues.

This strategy provides both a savings and a spending formula. The savings and investment necessary to maintain the level of sustainable revenues in future years is the difference between actual revenues and sustainable revenues. The year-by-year allocation between spending and savings/ investment is shown graphically in Figure 9. In the early years, savings and investments, not including investments in the Permanent Fund, must be greater than spending if a sufficient asset base is to be built up to avoid the revenue gap.

The portfolio of public wealth would evolve over time, as shown in Figure 10. As the value of oil in the ground declined with extraction, it would be replaced by a growing value of financial capital in the form of the general and Permanent funds. Earnings from financial assets would replace petroleum revenues as the primary funding source for state government. This conversion plan and its maintenance would require a particular type of discipline and restraint. The state portfolio of assets would be composed of discretionary assets rather than the current nondiscretionary oil reserves; maintenance of the asset value would require considerable prudence and orientation to long-term needs.

After the initial expenditure adjustment, dramatic year-to-year variations in spending and the attendent dislocations could be eliminated under this plan. Recurring revenues change modestly from year to year. The earnings potential of assets in the state's portfolio would vary from year to year, for example, due to proceeds from a lease sale, from adjustments in the value of existing assets, or from an adjustment in the real rate of return on the portfolio. Although each of these factors could significantly affect earnings in the short run and create considerable uncertainty in the long run, prudence suggests using some combination of past values for these variables in



*An estimate of the present value of petroleum revenues using a discount rate of 2 percent.

Figure 10. Portfolio of Public Wealth: Sustainable Spending Strategy

estimating earnings from assets. This would smooth out any year-to-year variation.

The amount of sustainable spending in any year is primarily a function of three variables. They are (1) the real return on state assets, (2) the level of petroleum revenues, and (3) the level and growth of revenues from recurring sources.

The real return on state assets is the most important determinant of the sustainable spending level. This can be seen clearly in Table 9, part B, which shows, for various state portfolio levels and real rates of earnings, the annual contribution to sustainable spending (real earnings) from the asset portfolio. For example, we have assumed a real return of 2 percent on the general fund and 3 percent on the Permanent Fund, for a combined rate of approximately 2.5 percent. At this rate, a $30 billion portfolio would produce $750 million in sustainable spending annually. A change in the interest rate of .5 percent would change sustainable spending by $150 million.

About 90 percent of state assets are currently held as petroleum (Table 5). If the present value of petroleum revenues is double current estimates (the estimated December 1982 50-percent confidence level of the Department of Revenue), then annual spending of $1.5 billion rather than $750 million could be sustained from them, and the spending ceiling could be raised to $1.95 billion (1982 dollars). Smaller portfolios would produce smaller annual earnings.

When petroleum revenues are received is also important. The rate of return on oil in the ground is the increase in its value as its real price rises. Projections of petroleum revenues in past years assumed the real price at the wellhead to be rising about 2 percent annually. In such a case, the state would gain as much by holding its assets as oil in the ground as it would by holding them in the form of a financial asset earning a 2-percent real return. However, if the oil in the ground is not increasing in value each year, the state should prefer to hold its wealth in the form of a financial asset earning a 2-percent real annual return. Of course, the state has relatively little control over the timing of Prudhoe Bay oil production, but it must recognize that if it holds an asset which earns no positive rate of return, the present value of that asset is less; consequently, the level of sustainable revenues is less.

The sustainable spending strategy is independent of the rate of population growth, unlike the recently enacted spending limit. The advantage of this independence is that the revenue gap does not appear sooner if population growth accelerates as would be the case under the present spending limit. It is a disadvantage because government services are primarily provided to individuals, and a larger population requires a larger budget if it is to receive the same quality of public services.

The Investment Portfolio

Sustainable revenues from a state portfolio of investments are only possible if those assets generate a positive net flow of revenues into the general fund.

Implementation of a state spending strategy linked to sustainable revenues would require very substantial savings/investments over the next 10 years. Up to this point, for simplicity, we have analyzed that portfolio in terms of only two alternatives—oil in the ground and financial assets (the Permanent and general funds). In reality, there is a broad range of assets in which the state could invest. The primary consideration in any investment choice is the earning potential of the investment because sustainable revenues depend upon real positive earnings, as was demonstrated in Table 9.

To judge its appropriateness as an investment for generating sustainable revenues,[16] the rate of return on any asset—be it a natural resource or a piece of physical capital—can be measured against the return available on financial capital. For this purpose, the proper measure of the rate of return is the net flow of revenues into the general fund. For example, if general fund investments earn a 10-percent return (of which 8 percent is the result of inflation and 2 percent represents a real return on investment), then to be equivalent, a state investment of $1 billion in infrastructure would need to produce at least $20 million in recurring state tax revenues annually over and above operations, maintenance, and replacement costs. Accordingly, all state investments earning anything less represent a cost and should be viewed as such.

State investment policy may have objectives other than maximizing asset earnings, such as subsidizing certain activities or creating jobs. Without addressing the question of the most appropriate means for meeting these objectives, it is clear that a state portfolio consisting of such investments could not sustain the maximum flow of annual revenues.

Suppose, for example, that the state chose to invest the general fund in a portfolio of investments consisting of subsidized loans, earning a positive nominal but zero real rate of return. It would find

[16] Public capital expenditures are normally made not to produce public revenues but to serve a public purpose. All such capital purchases are defined in this analysis as spending since they do not represent the creation of a revenue-producing asset.

that an otherwise sustainable spending level of $1.475 billion could not be maintained because the investment portfolio would return its initial value in inflated dollars but would provide no positive return and thus could contribute nothing to sustainable revenues.[17]

Figure 11 shows the combined balance in the general and Permanent funds at different real rates of return on fund balances with adoption of the sustainable spending strategy. If the portfolio of state investments were earning a below-market rate of return, fund withdrawals would reduce the portfolio value and the spending level would be found to have been set too high. In the extreme, if the real rate of return on the combined general and Permanent Fund balances were zero, then no sustainable revenues would be generated from the asset portfolio. Figure 11 shows that the danger of holding assets which generate no real earnings would not become apparent until the 1990s, when asset earnings would become the primary revenue source. During the 1980s, when the primary source of spending was petroleum revenues, which were unaffected by the level of financial earnings, the gap between the value of the portfolio at market rates and at subsidized rates would be small.

Policy Initiatives for Attaining Sustainable Spending

As recently as 1980, the state's budget was under the sustainable limit, and a rollback to that level would be easier today than the elimination of essential services in the future.

Figure 12 compares the pattern of future general fund spending under the current spending limit with

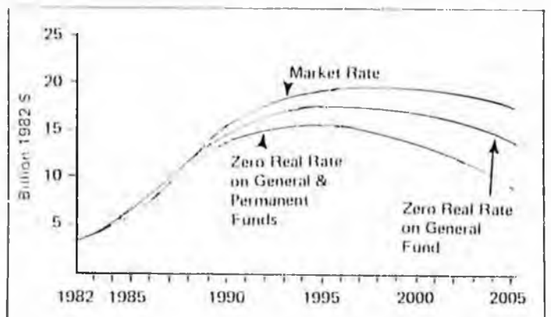


Figure 11. Combined Fund Balances Resulting from Different Rates of Return on State Asset Portfolio

[17] A further consideration is that the maturation dates on these investments would need to be chosen so that they could be liquidated in the sequence necessary to fund operations when petroleum revenues declined.

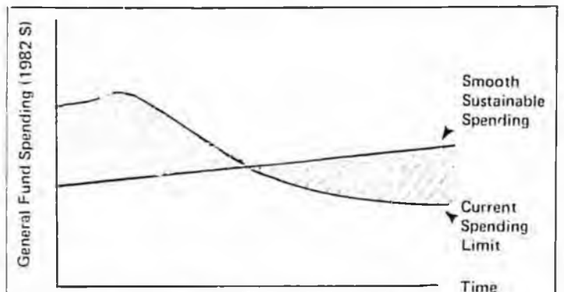


Figure 12. The Range of General Fund Spending Options

our sustainable spending alternative. These two alternatives define the range of options available for structuring state expenditures in future years.

The current spending limit allows considerably more spending in the near term and less in the future, as spending in early years is determined by the limit and in later years by declining revenues. With the sustainable spending strategy, however, spending starts lower and rises slowly over time as recurring revenues grow. Between these two extremes, a large number of alternatives is possible, representing different amounts of current savings consistent with increased spending in future years.

The tradeoff between present and future public spending implicit in the current spending limit is clearly illustrated. If spending in any year exceeds the sustainable level by, say, $1 billion, then in some future year spending must be under the sustainable limit by $1 billion. For example, if we choose a current $2.5 billion budget instead of a $1.5 billion one, then we must pay for that $1 billion difference with a future budget reduced from $1.5 billion to $0.5 billion. If on the other hand, we establish a sustainable baseline budget of $1.5 billion, then future budgets could continue at or above that level indefinitely.

Because the current budget contains many nonessential items, a one-time rollback in current government spending by $1 billion would be much easier to accomplish today than would annual budget reductions over a period of decades during the era of declining petroleum revenues. In fact, as recently as 1980, state spending was within the sustainable budget level, and it has been only in the last 3 years, primarily due to new programs, that appropriations have exceeded the sustainable level.

In the wake of higher oil prices which increased state revenues over 200 percent between 1979 and 1981, state spending expanded dramatically, and a

number of new programs were initiated. Precise figures for actual and projected spending for these programs are not yet available. Preliminary figures presented in Table 10 confirm, however, that the most rapid growth has not been in the traditional components of the budget, but rather in a series of newly instituted programs. The operating budget grew by 50 percent, from $1.2 billion to $1.8 billion between 1980 and 1982, and was level between 1982 and 1983. Personnel expenditures have grown less rapidly than either the operating or the total budget. In 1981 they comprised only 19 percent of expenditures (net of special Permanent Fund contributions) compared to 40 percent in 1971. In contrast, debt service expenditures grew more rapidly than the total operating budget.

The traditionally defined capital budget is currently about one-sixth the size of the operating budget—the same proportion it maintained in the early 1970s. Real capital expenditures grew slowly through the decade of the 1970s (excluding the 1979 appropriation for rural school construction) but expanded rapidly in response to higher oil revenues.

Permanent Fund contributions, both those constitutionally mandated at 25 percent of royalties and bonuses and the special appropriations in 1981, 1982, and 1983, have been the second most important use of state funds since 1980. (In addition, in 1982, $350 million was placed in a "rainy day" account within the general fund.)

There are three new components of the nonoperating budget. The largest consists of a number of newly established or greatly expanded loan programs, of which the housing mortgage loan program is the largest. Also included in this category are industrial development loan programs, such as the mining loan program and the Alaska Industrial Development Authority. Money allocated to these loan programs can be divided into two categories. A portion of the loan program appropriations represents long-term investments by the state on which a monetary return is expected. Because these loans are made at subsidized rates in order to stimulate certain activities, the return will, in general, be lower than the monetary return expected from funds held in the general fund or invested in the Permanent Fund. The remainder of the appropriations is for the operation of the loan programs and subsidies actually paid and, as such, does not represent an investment. No breakdown between investment and cost of program operation is currently available for these programs.

The second new component of the nonoperating budget consists of a large array of energy-related loans, grants, and transfers. The most important component of these programs is funding for hydroelectric projects throughout the state. As with the housing and other special loan programs, it is not possible to determine the proportions of these programs that are, respectively: investment, subsidy, and operations. The third element of the nonoperating budget is municipal grants for capital projects.

A spending rollback in the direction of a sustainable level would logically concentrate on the reduction of new programs instituted in the last three budgets. Their lower priority is clearly indicated by the fact that they did not exist in earlier years when revenues were lower and fewer programs could be funded. The reduction of some of these programs could be accomplished with relative ease. For example, loan programs for housing are less urgent when housing mortgage rates are falling as is currently the case. Capital expenditures for hydroelectric projects can end when all economically viable projects have been funded. This is not to say that budget cuts will be easy to make, even in cases where the program has served its purpose. Constituencies both in government and the private sector rapidly develop in support of any government program. Still, it is clear that significant rollbacks are possible, particularly in light of the size of the 1980 budget.

CONCLUSIONS

Future state revenues from petroleum may be more or less than have been projected in this analysis, and sustainable revenues, consequently, more or less. Whatever their level, there is a sustainable level of expenditures which, if exceeded, means program cuts will be necessary in future years. If current revenue projections are correct, eventual program cuts would be very large if the present spending limit continues to guide state fiscal policy.

Any discussion of the proper state response to declining petroleum revenues transcends economic considerations. There are at least two broader social questions. The first is, to what extent should the present generation of Alaskans worry about the fiscal problems which the next generation may inherit from us?[18] The more we think they should "fend for themselves," the more we feel we can afford to spend today. The projections in this study indicate, however, that the problems of the "next generation" are only a few years distant.

The second question is, what are the economic, social, and cultural implications of the state acting as a *rentier*[19]—a situation in which the public sector would live primarily off the earnings of the state's assets. There are no precedents for such a fiscal structure among the states. In this, Alaska would be breaking new ground.

[18] Or, what is the proper rate at which to discount the future?

[19] One who derives a fixed income from returns on investments.

Table 10

Uses of State Revenues[a]
(millions of 1982 dollars)

	GENERAL FUND APPROPRIATIONS — TOTAL			GENERAL FUND APPROPRIATIONS — OPERATING BUDGET						GENERAL FUND APPROPRIATIONS — NON-OPERATING BUDGET — New Programs[l]			PERMANENT FUND CONTRIBUTIONS[m]
	Nominal $[b]	1982 $	Net of Special Perm. Fund Contributions[c]	Total[d]	Personnel[e]	Debt Service[f]	Permanent Fund Dividends[g]	Local Govt. Transfers[h]	Total[i]	Regular Capital Projects[k]	Housing & Business Loans	Energy Loans, Grants, Transfers	Local Govt. Capital Grants	
1971	$299	$701	$701	$610	$282	$35	—	$9	$91	$91				
1972	314	717	717	649	325	44	—	27	68	68				
1973	364	804	804	680	366	52	—	28	124	124				
1974	374	751	751	729	378	53	—	28	22	22				
1975	528	927	927	800	407	53	—	38	127	127				
1976	627	1,020	1,020	928	410	57	—	45	92	92				
1977	735	1,119	1,119	1,023	447	64	—	48	96	96				6
1978	834	1,182	1,182	1,064	481	71	—	45	118	118				41
1979	1,080	1,389	1,389	1,142	500	77	—	47	247	247				108
1980	1,135	1,325	1,325	1,208	534	88	—	53	117	117				402
1981 (pre.)	3,342	4,230	2,887	1,478	556	105	—	122	1,409	214	829	52		1,379
1982 (pre.)	4,563	4,663	3,863	1,810	NA	102	148	152	2,053	775	634	429	215	1,209
1983 (est.)	3,175	2,969	2,689	1,861	NA	132	260	127	828	341	299	94	94	597

[a] 1981-1983 data estimated from final appropriations bill as well as *Executive Budget*. Data in different columns may be inconsistent beginning in 1981 because of different sources treating individual items differently.

[b] Office of the Governor, *Executive Budget* 1983, book 2, page 10. 1981 to 1983 from appropriations bills.

[c] Net of special permanent fund contributions in 1981 and 1982 and rainy-day account contributions in 1981.

[d] Office of the Governor, *Executive Budget*, annual, through 1981. Subsequent estimates from appropriations bills.

[e] Total personnel expenditures funded from all operating budget sources. Office of the Governor, *Executive Budget*, annual.

[f] Office of the Governor, *Executive Budget*, 1983, book 2, page 10.

[g] Funds originally appropriated in 1981 were not paid. Funds appropriated in 1982 were paid in 1983. 1983 estimate based upon $1,000 payment per capita.

[h] Sum of shared taxes, municipal assistance, and municipal revenue sharing. Office of the Governor, *Executive Budget*, annual.

[i] Total general fund appropriations minus operating budget through 1980. 1979 includes rural school construction appropriation of $141 million. 1981 total includes ANCSA payment of $314 million. Subsequent to 1980 is the sum of non-operating items.

[k] Through 1980 equal to total non-operating budget. Subsequent estimates from appropriations bills.

[l] Compiled from appropriations bills.

[m] Includes special contributions in 1981 and 1982.

* * * *

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ISER investigates such issues as the economics of natural resource development, principally petroleum and fisheries, and multiple-use land management; the social and economic impacts of resource developments such as oil and gas pipelines, petrochemical facilities, and hydroelectric projects; the state's transportation and energy requirements; the development of human resources; and the effects of modernization on Alaska Native peoples and cultures and on the quality of life in Alaska.

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- *Provide professional assistance to public and private organizations to help meet socioeconomic needs of Alaska's population.* Staffmembers serve as advisors to or members of the Alaska Native Foundation, the Cook Inlet Native Foundation, the Women's Resource Center, the Alaska Permanent Fund, and the Alaska Census Advisory Committee.

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* * * *

Dear Reader,

For Alaska, the 1980s may best be characterized as a decade of critical policy choices. Our state is regarded by many to be the most promising, albeit largely unexplored, energy storehouse in the nation. Thus, policies guiding the exploration and development of Alaska's energy resources, mostly oil and gas, will continue to be of prominent concern throughout the eighties. And anticipated shortages in the nation's supply of energy sources ensure that national interest will continue to be an important factor in the state's energy development.

The State of Alaska, eager to achieve a measure of long-term economic security, will focus many of its policy debates on the management of its natural resources and oil wealth: how fast should Alaska exploit its nonrenewable resources and how can it convert oil revenues into sustaining sources of economic activity? Alaska Native organizations, multi-national oil companies, labor unions, and national and local environmental organizations—all of which have a direct interest in these policies—will be active participants in these debates.

It is within this context that the Institute of Social and Economic Research (ISER) pursues its primary goals of studying the important issues confronting the state's economy, population, and social and political institutions and informing both public and private decisionmakers and Alaskans in general of our research efforts.

Lee Gorsuch

Lee Gorsuch
Director

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(revised 2-18-83)

Senate Bills 68, 69, 70, and 71

February 24, 1:30-5:00, Court Room A, Court Building, Juneau. BACKROUND BRIEFING. Review and analysis of processes and considerations involved in the development of hydroelectric projects.

-- Eric Yould, Executive Director, Alaska Power Authority: APA's role in developing projects, determining feasibility and capital costs, financing plans, construction schedules, marketing, and operational costs; summary of projects' status and plans

-- Ernst Mueller, Environmental Services, Lmtd. and former APA board member: history of the APA

-- Governor's Office: Administration policies and proposals

-- William Wakefield, FERC: federal review process

-- Dept. of Law: interim financing

-- all participants, including OMB and representatives of the cities of Petersburg and Wrangell: Tyee -- case study of a project

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February 26, 9:00-4:00, Anchorage Westward Hilton, Alaska Room, Anchorage. PUBLIC HEARING ON SUSITNA AND HYDRO DEVELOPMENT IN GENERAL. Those who wish to testify are asked to sign up in advance at the Anchorage Legislative Information Office. Public testimony will follow introductions by Mr. Yould and bill sponsors.

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March 1, 1:30-5:00, Senate Finance Room, Capitol, Juneau. INVITED TESTIMONY -- SUSITNA. This meeting will be teleconferenced to all major sites for listening only.

George W. Rogers: Strategies, parameters, and criteria that might be considered by the legislature in examining Susitna and other major hydroelectric projects.

SUSITNA FEASIBILITY: What factors are involved in determining feasibility? How sensitive is the feasibility to changes in those factors? What have the Susitna feasibility and alternative studies shown? How accurate is the $5.2 billion cost estimate? How do different Susitna dam configurations compare with Watana/Devil Canyon? How have recent developments in oil and gas prices and in economic growth affected feasibility? How are those developments being factored into the Susitna update and FERC application?

-- Eric Yould and a representative from Acres American: summary of the feasibility findings and on-going work

-- Gregg Erickson, Erickson & Associates: review of the Acres study and recent developments

-- Office of Management and Budget: review of studies, alternatives, demand forecasts

SUSITNA FINANCING: What is the best financing plan for Susitna? How much state appropriation is necessary to ensure the marketability of Susitna power? What do the plans presented in SB 68 and SB 70 represent in terms of commitments of state funds, and how would they affect the cash flow available for other capital projects? What would the effect be of the bonding plan in SB 71 on the state's credit and ability to bond for other projects? What should the timing be for appropritions and bonds? How will the bond market respond to Susitna revenue or "double-barrel" bonds? Will the bonds qualify as tax-deductible? How equitable, in terms of state subsidy, are the plans presented?

-- APA financial/bonding advisors: review of Acres plan, recommendations

-- Eileen Titmuss, bond analyst: considerations in the bond market, factors affecting public power bonds

-- Milt Barker, Legislative Finance: relationship of capital requirements to projected revenues

-- Dept. of Revenue: relationship of capital requirements to state bonding capacity and credit rating

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March 3, 1:30-5:00, Senate Finance Room, Capitol, Juneau. INVITED TESTIMONY, CONTINUED. This meeting will be teleconferenced to all major sites for listening. If time allows, public testimony will be taken following the scheduled witnesses.

SUSITNA MARKETABILITY: Will Susitna power be marketable? What factors might affect marketability? What costs/rate structures are contemplated? How will marketability be ensured? What type of power purchase commitments can be obtained prior to construction? What is the role of the APUC? Might available power attract new industry?

-- Yould and APA marketing advisor: status of marketing situation

-- Harrison Call, marketing specialist: power sales agreements

-- Alaska Public Utilities Commission: its role in approving contracts and rates

-- utility representatives who wish to address the issue

-- Office of Management and Budget: review of the SRI study of the effect of electricity price and availability on industrial development

SUSITNA READINESS: Has the Governor's "Susitna checklist" been followed? What further requirements must be met, and in what order? Has the sequence laid out in statute been followed? Have the FERC requirements been met? Are land ownership conflicts resolved? Have the utilities agreed to purchase Susitna power?

-- Governor's Office: presentation of the "checklist"

-- David Rogers (Senate Advisory Council) and Yould: review of identified "obstacles" and how they are being addressed

-- Yould: schedule for proceeding, incorporating new data

STATE OF ALASKA

THE LEGISLATURE

BUDGET AND AUDIT COMMITTEE

FINANCE DIVISION
POUCH WF–STATE CAPITOL
JUNEAU, ALASKA 99811
PHONE: (907) 465-3795

February 23, 1983

M E M O R A N D U M

TO: Honorable Vic Fischer, Chairman
Senate State Affairs Committee

FROM: Milt Barker MB
Fiscal Analyst

SUBJECT: SB 70

As requested by you, I have prepared the attached tables which show:

1. the annual contributions to the Alaska Energy Dividend Fund, in both actual and FY 1984 dollars (Table I);

2. the number of per capita grants those amounts would fund, taking account of annual escalation of grant amounts for inflation though not taking account of variation in grant amounts for regional cost differences (Table I);

3. state funding for Susitna under "Option D" of the January 1983 Acres financing plan, in both actual and FY 1984 dollars (Table I);

4. the amount that would be available for capital projects that have been proposed excluding power projects (Table II and graph).

The attached Legislative Finance computer runs labelled SB 70 show the entire fiscal picture for the State under SB 70 in both actual and FY 1984 dollars. It should be noted that under the assumptions used, general fund deficits would be incurred in FY 1990 and all subsequent years even without any capital budget. Should these conditions prevail, it might be difficult to maintain funding for the Alaska Energy Dividend Program.

If the Alaska Energy Dividend Program were discontinued after FY 1989, the amount of funding that would have accrued for the program would be $1,965.0 million (or $1,635 in FY 1984 dollars). These amounts are less than the State funding called for under "Option D" of Acres for Susitna.

All of the above analysis is based on the January 1983 revenue estimates of the Department of Revenue and could be subject to major revision depending on oil price developments.

SB 70

You have also requested an estimate of the impact of Section 2 of SB 70.

It is impossible to project the impact, not knowing what "energy project service districts" will be formed, what projects undertaken, their scale, their financing, the residential share of power consumption, the retail price of electricity and its effect on monthly residential consumption, etc. However, as an example of how Sec. 2 might work, the Sitka utility district and their Green Lake project are analyzed.

If one assumes that in the absence of SB 70, Green Lake would have been financed 90% with 35 year debt at 10% interest and 10% with equity which earned 12%, then the capital charges for Green Lake would have been $6.2 million per year. [1] With sales from Green Lake estimated at 59 million kwh annually,[2] the capital charges would have been 10.5¢ per kwh for Green Lake at the busbar.

It is implicitly the intent of SB 70 that no charges for recovery of Energy Dividend Fund grants be included in electricity rates. This should probably be stated in the bill.

It is also the intent of SB 70 that no charges for recovery of any other invested funds or return thereon be allowed in the residential rate for the first 1,000 kilowatt hours. The legislation needs to clarify that neither return of nor return on invested funds will be allowed.

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1. $59 million cost for Green Lake excluding any transmission costs multipled by (.9 X .10369, the debt service per dollar borrowed at 10% for 35 years + .1 X .12).

2. 37.8 million kwh generated from Green Lake for first seven months at FY 83 extrapolated to 12 months and multiplied by 91% for line losses, utility's consumption, etc.

The effect of these two elements of intent would be that the residential customer pays no charges for the capital cost of a project if there is any grant money at all in the project. Other customers would pay the entire charges for invested funds (though nothing for grant funds).

Assuming residential customers would have borne their pro-rata share of capital charges in the absence of SB 70,[3] SB 70 in this case would result in a 10.5¢ per kwh savings to residential customers on their first 1,000 kwh's. With current average monthly consumption in Sitka of 783 kwh per residential customer, the average customer's benefit would be $82 per month or $986 per year. Sitka has 2,480 residential customers and a population of 8,221. Thus, the average benefit per person would be $297 per year.

For commercial and industrial customers, there could be either an increase or a decrease in rates depending on the amount of grant funds in a project. Commercial and industrial consumption in Sitka is currently 71.8% of total consumption. If these customers picked up all Green Lake capital charges (in the absence of any SB 70 grants), their cost per kwh would increase from 10.5¢ to 14.6¢. A grant of $16.6 million would keep commercial and industrial charges at 10.5¢. If Sitka got $5,000 for each of its 8,221 persons it would have received a grant of $41 million which would have lowered commercial and industrial charges for Green Lake to 4.5¢ per kwh. Of course, a grant covering 100% of project costs results in a 10.5¢ per kwh saving for all customers, commercial and industrial as well as residential.

If Sec. 2 should result in an increase in commercial rates, businesses may well pass on the cost increase through price hikes. Should this occur, it would mean some dilution of the direct benefits to residential customers.

You have asked for an assessment of the efficiency of SB 70 as a mechanism for distribution of state wealth to residents. With a grant of $16.6 million which would keep commercial and industrial users at their existing rate, SB 70 provides a benefit estimated above at $297 per person. This benefit can be compared to the possible earnings on $16.6 million divided among the 8,221 people. This would be $202 per person if the funds earned 10% interest. SB 70 provides a greater benefit to residential customers for the money because of the subsidy from commercial and industrial customers paying the project costs not funded by grants.

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3. Some utilities, of which Sitka is one, provide a rate break to residential customers vis-a-vis commercial and industrial customers. Others may give a better rate to commercial and industrial users often through declining block rates.

If keeping commercial and residential rates constant while letting residential customers off the hook is the test, then this example would argue for $2,000 per capita grants. Of course, one can be even more efficient by giving even smaller grants, still letting residential customers off under Sec. 2 and hitting commercial and industrial users for the capital costs. Or one could just pass a bill forbidding residential charges for capital costs under any circumstances for the first 1,000 kwh per month.

At the $5,000 per capital level, the Green Lake example would suggest that individuals could receive more if the grants were invested. They would then receive $500 at 10%. At the $5,000 grant level in the Green Lake example much of the benefits goes to reduce commercial and industrial rates as shown above.

If the benefit under SB 70 is compared to the amount that individuals would receive under the Permanent Fund dividend program, the SB 70 benefits would look more favorable because individuals only receive 50% of the five year average income. But that is a matter of policy; individuals could be given the entire earnings off amounts deposited in the Permanent Fund. The full amount of earnings represents the opportunity cost of using funds for other purposes, such as SB 70 grants. Note too, that because of inflation-proofing, Permanent Fund dividends increase over time in nominal terms while the capital charges the electricity customer forgoes under SB 70 are a fixed amount for the life of the project.

attachments

cc: Senator Halford

MB:ro

TABLE I
ALASKA ENERGY DIVIDEND FUND (SB 70)

Fiscal Year	(1) Annual Contribution to Energy Dividend Fund (50% of Permanent Fund Income) ($ Millions)	(2) Thousands of Per Capita $5000 Grants	(3) State Funding for Susitna "Option D" ($ Millions)	(4) Annual Contribution to Energy Dividend Fund (Millions FY 84 $)	(5) State Funding for Susitna "Option D" (Millions FY 84 $)
1984	226	47.2	--	236	--
1985	268	50.1	806.8	251	658.0
1986	304	53.1	413.3	265	318.0
1987	342	55.8	475.3	279	345.0
1988	385	58.7	552.1	294	378.0
1989	430	61.3	156.4	310	101.0
1990	480	64.0	--	320	--
1991	540	67.3	--	330	--
1992	590	68.7	--	340	--
1993	650	70.7	--	350	--
1994	700	71.2	--	360	--
1995	760	72.2	--	360	--
1996	830	73.7	--	370	--
1997	890	73.9	--	370	--
1998	970	75.2	--	370	--
1999	1040	75.3	--	380	--
2000	1120	75.9	--	380	--
	10535	1114.3	2403.9	5565.0	1800.0

Notes: 1 & 4. From attached Legislative Finance computer runs labelled "SB 70";
2. Col. 1 + (5 x 1.07N) where N = Fiscal Year - 1984; grants increased 7% per annum for inflation;
3 & 5. "Option D" from Susitna Hydroelectric Financing, Task11: Financing Options, Acres, January 1983; from Table 4 and Table 3 respectively; FY 83-85 summed and shown as FY 85.

PREPARED BY:
LEGISLATIVE FINANCE
2-22-83

TABLE II
FUNDS AVAILABLE FOR CAPITAL PROJECTS
UNDER SB 70
($ Millions)

	(1)	(2)	(3)	(4)	(5)	(6)
	Funds Available for Capital Projects					
	General Funds	GO Bonds	Total	Loan Program Appropriations	Governor's Six Year Capital Budget	Total Capital Projects
FISCAL YEAR						
Actual Dollars						
1985	546.0	--	546.0	300.0	2035.0	2335.0
1986	580.0	300.0	880.0	300.0	742.9	1042.9
1987	415.0	90.0	505.0	300.0	961.2	1261.2
1988	481.0	125.0	606.0	300.0	1066.2	1366.2
1989	250.0	--	250.0	300.0	?	300.0+
1990	--	50.0	50.0	300.0	?	300.0+
1991	--	140.0	140.0	300.0	?	300.0+
1992	--	--	--	300.0	?	300.0+
1993	--	--	--	300.0	?	300.0+
Total	2272.0	705.0	2977.0	2700.0	4805.3	7505.3+
FY 1984 Dollars						
1985	511.0	--	511.0	280.0	1901.9	2181.9
1986	507.0	262.0	769.0	262.0	648.9	910.9
1987	339.0	73.0	412.0	245.0	784.7	1029.7
1988	367.0	95.0	462.0	229.0	813.4	1042.4
1989	180.0	--	180.0	214.0	?	214.0+
1990	--	33.0	33.0	200.0	?	200.0+
1991	--	87.0	87.0	187.0	?	187.0+
1992	--	--	--	175.0	?	175.0+
1993	--	--	--	163.0	?	163.0+
Total	1904.0	550.0	2454.0	1955.0	4148.9	6103.9+

PREPARED BY:
LEGISLATIVE FINANCE
2-22-83

TABLE II

Notes: 1. From attached Legislative Finance computer run labelled "SB 70";

2. From Table 1, Susitna Hydroelectric Project, Task 11; Financing Options, Acres, January 1983;

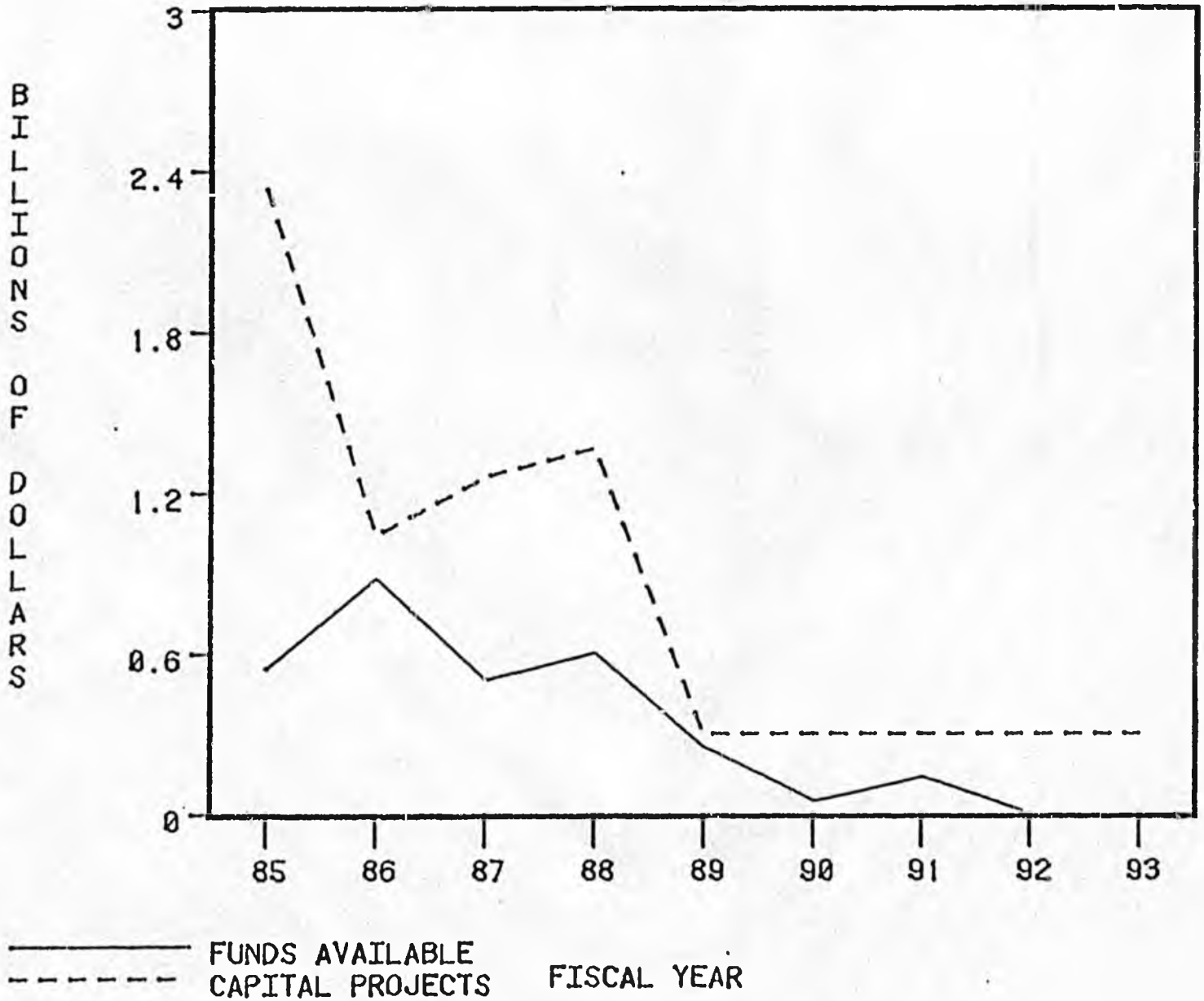
4. Assumes loan appropriations at roughly the Governor's FY 84 budget level, $294.5 million;

5. Total of general fund capital projects (including voter approval) contained in Executive Budget, Book 2, Capital Budget and Six Year Capital Program, FY 83, Jay Hammond, Governor; FY 85 amount is sum of FY 83-85 amounts less amounts appropriated for capital and loans for FY 83 and less the amount of capital projects proposed by Governor Sheffield for FY 84.

FY 84 $ amounts are based on a 7% inflation factor: the Acres Susitna numbers appear to be on a calendar year basis and are thus adjusted for an extra 1/2 year.

PREPARED BY:
LEGISLATIVE FINANCE
2-22-83

FUNDS AVAILABLE FOR CAPITAL PROJECTS
UNDER SB 70



STATE OF ALASKA
LEGISLATIVE FINANCE WORKING DOCUMENT
BUDGET FORECASTING MODEL

*** ACTUAL DOLLARS IN MILLIONS ***

JAN 83 DEPT OF REVENUE ESTIMATES
OPERATING BUDGET AT SPENDING LIMIT
SPENDING LIMIT INCREASES 10% PER ANNUM
SURPLUS SPENT ON CAPITAL
INFLATION 7% PER ANNUM
DIVIDENDS GO TO ALASKA ENERGY DIVIDEND FUND
PERMANENT FUND INFLATION-PROOFED
PERMANENT FUND EARNS 12% PER ANNUM
GO BONDS PER ACRES JAN 83 SUSITNA FINANCING PLAN

FISCAL YEAR	REVENUE	INTEREST	TOTAL REVENUE	OPERATING BUDGET	CAPITAL BUDGET	DEBT SERVICE	PERMANENT FUND DIVIDENDS	TOTAL BUDGET	SURPLUS OR DEFICIT	PERM-ANENT FUND	GENERAL FUND END OF YEAR	REVENUE REQ FOR GF BAL OF$ 0 MIL
1983										3790	88	
1984	2703	370	3072	1987	770	167	236	3161	-88	4321	0	0
1985	2775	389	3164	2185	546	164	268	3164	0	4892	0	0
1986	3029	422	3451	2404	580	163	304	3451	0	5532	0	0
1987	3112	456	3568	2644	415	166	342	3568	0	6222	0	0
1988	3456	499	3954	2909	481	179	385	3954	0	6998	0	0
1989	3540	540	4080	3200	250	190	430	4080	00	7860	00	00
1990	3300	580	3870	3520	00	190	480	4190	-320	8750	00	320
1991	3000	620	3620	3870	00	180	540	4580	-960	9650	00	960
1992	2890	670	3560	4260	00	160	590	5000	-1440	10600	00	1440
1993	2700	740	3430	4680	00	160	650	5490	-2050	11570	00	2050
1994	2610	810	3420	5150	00	130	700	5990	-2560	12590	00	2560
1995	2520	880	3390	5670	00	130	760	6560	-3170	13650	00	3170
1996	2380	950	3330	6240	00	120	830	7190	-3850	14760	00	3850
1997	2440	1030	3470	6860	00	80	890	7830	-4360	15950	00	4360
1998	2510	1120	3630	7540	00	60	970	8570	-4940	17210	00	4940
1999	2660	1210	3870	8300	00	40	1040	9380	-5510	18570	00	5510
2000	2800	1310	4110	9130	00	30	1120	10280	-6170	20040	00	6170
TOTAL	48410	12590	61000	80550	3050	2300	10550	96440	-35440			35350

STATE OF ALASKA
LEGISLATIVE FINANCE WORKING DOCUMENT
BUDGET FORECASTING MODEL

*** FY 1984 DOLLARS IN MILLIONS***

JAN 83 DEPT OF REVENUE ESTIMATES
OPERATING BUDGET AT SPENDING LIMIT
SPENDING LIMIT INCREASES 10% PER ANNUM
SURPLUS SPENT ON CAPITAL
INFLATION 7% PER ANNUM
DIVIDENDS GO TO ALASKA ENERGY DIVIDEND FUND
PERMANENT FUND INFLATION-PROOFED
PERMANENT FUND EARNS 12% PER ANNUM
GO BONDS PER ACRES JAN 83 SUSITNA FINANCING PLAN

FISCAL YEAR	REVENUE	INTEREST	TOTAL REVENUE	OPERATING BUDGET	CAPITAL BUDGET	DEBT SERVICE	PERMANENT FUND DIVIDENDS	TOTAL BUDGET	SURPLUS OR DEFICIT	PERM-ANENT FUND	GENERAL FUND END OF YEAR	REVENUE REQ FOR GF BAL OF$ 0 MIL
1983										3790	88	
1984	2703	370	3072	1987	770	167	236	3161	-88	4321	0	0
1985	2594	364	2957	2042	511	154	251	2957	0	4572	0	0
1986	2645	369	3014	2100	507	143	265	3014	0	4832	0	0
1987	2540	372	2913	2159	339	136	279	2913	0	5079	0	0
1988	2636	380	3017	2219	367	137	294	3017	0	5338	0	0
1989	2520	390	2910	2280	180	140	310	2910	00	5610	00	00
1990	2200	380	2580	2350	00	130	320	2790	-210	5830	00	210
1991	1870	380	2260	2410	00	110	330	2850	-600	6010	00	600
1992	1680	390	2070	2480	00	90	340	2910	-840	6170	00	840
1993	1470	400	1870	2550	00	90	350	2990	-1120	6290	00	1120
1994	1330	410	1740	2620	00	70	360	3040	-1300	6400	00	1300
1995	1190	420	1610	2690	00	60	360	3120	-1500	6490	00	1500
1996	1060	420	1480	2770	00	60	370	3190	-1710	6560	00	1710
1997	1010	430	1440	2850	00	30	370	3250	-1810	6620	00	1810
1998	970	430	1410	2930	00	20	370	3320	-1920	6670	00	1920
1999	960	440	1400	3010	00	10	380	3400	-2000	6730	00	2000
2000	950	440	1390	3090	00	10	380	3480	-2090	6790	00	2090
TOTAL	30330	6800	37130	42520	2680	1550	5580	52320	-15190			15100

MSNG

MSG 83-00012026 PRTY 1 03/01/83 17:08:36 ORIG: LF20 IN= 0009 OUT= 0005
FROM: LYNDA/FBX TO: JNU T/C
TARGET: LJ20 SUBJ: FINAL STATS FOR JNT ST AFFAIRS T/C (3/1) PAGE 0001

IN FAIRBANKS TO OBSERVE:
1. DENISE DANIELLO, 143 CLARKSON DR. APT. 60 FBX. ÷479-3005
2. JIM OLNEY, 1009 SECOND AVE., FBX. ÷452-6551
3. RON POUCHIONE, TANANA CHIEFS CONF., 201 FIRST ST., FBX. ÷452-8251
4. DOUG MCKEE, 221 PINE ST.,FBX. ÷456-6420
5. JEFF WELTZIN, 143 CLARKSON DR. APT.60, ÷479-3005
ALSO, ONE OF THESE PARTICIPANTS WOULD LIKE A COPY OF THE WRITTEN TESTIMONY SUBMITTED BY A NEW YORK BOND CONSULTANT (DREXEL??) WHICH WAS TO BE SUBMITTED TO THE COMMITTEE, IF POSSIBLE, REGARDING THE WASHINGTON STATE POWER SUPPLY SYSTEM. PLEASE LET ME KNOW IF YOU CAN SEND ME A COPY. THANKS.
----------EOM

NXT MSG U/R/S _ PREV MSG U/R/S _ RESEND _ CANCEL _

MSG 83-00011963 PRTY 1 03/01/83 14:59:16 ORIG: LA08 IN= 0014 OUT= 0013
FROM: INEZ IN ANCHORAGE TO: TIM IN JNU
TARGET: LJ20 SUBJ: JOINT H & S STATE AFFAIRS COMM T/C PAGE 0001

WE HAVE ANOTHER OBSERVER
2. JERRY BURRELL 3716 WESLEYAN , ANCHORAGE 99504 333-9658
----------EOM

NXT MSG U/R/S _ PREV MSG U/R/S _ RESEND _ CANCEL _

MSG 83-00011930 PRTY 1 03/01/83 13:37:00 ORIG: LA08 IN= 0011 OUT= 0015
FROM: INEZ IN ANCHORAGE TO: TIM IN JNU
TARGET: LJ20 SUBJ: JOINT S & H STATE AFFAIRS COMM T/C PAGE 0001

TO OBSERVE
1. JUDY ZINICHI / NAEC 833 GAMBELL ST. ÷B,ANCHORAGE, 99501 277-2134
----------EOM

NXT MSG U/R/S _ PREV MSG U/R/S _ RESEND _ CANCEL _

STATE OF ALASKA

THE LEGISLATURE

BUDGET AND AUDIT COMMITTEE

FINANCE DIVISION
POUCH WF-STATE CAPITOL
JUNEAU, ALASKA, 99811
PHONE: (907) 465-3795

M E M O R A N D U M

DATE: February 21, 1983

TO: Honorable Vic Fischer
Chairman
Senate State Affairs Committee

FROM: Milt Barker, MB Fiscal Analyst
Legislative Finance Division

SUBJ: Funds Available for Capital Projects

Through the end of the next decade, under current law, total capital projects are almost four times the amount available for capital. Even if Permanent Fund earnings were to be entirely utilized for capital, total projects would still exceed the amount available by almost 50%.

The amount proposed for Susitna alone would consume all funds available under current law. Together with other hydro projects, hydro would require over half of the funds available if Permanent Fund dividends and inflation-proofing are repealed.

Tables I and II (attached) compare the amount of general funds and general obligation bonds available for capital projects with proposed capital projects. The "amount available for capital projects" from the general fund is assumed to be all funds remaining after providing for the operating budget. These amounts were calculated in the attached computer runs using the Department of Revenue's January 1983 revenue estimates at the 30th percentile.

The only difference between Tables I and II is in the amount available for projects. The main source of this difference is that Table I assumes no change in current statutes while Table II shows more funds available as a result of repealing Permanent Fund dividends and inflation-proofing. Table II reflects the entire amount of Permanent Fund earnings in arriving at the amount available figure.

-Q1LH

Two other differences between Table I and II are:

1) Table I assumes operating budgets at the spending limit ($1986.7 million in FY 84) while Table II assumes the Governor's FY 84 budget of $1911.8 million (including longevity bonus and municipal aid); operating budgets are assumed to increase 10% per annum in both cases;

2) because of greater unrestricted revenues in Table II, a greater amount of G.O. bond issues are assumed; the amounts of G.O. bonds in both tables are based on the statements of APA's financial advisers in the January 1983 Susitna financing plan (see footnotes to Tables).

The amount of capital projects shown in the Tables includes traditional capital projects, in the form of the last year's Governor's Six Year Capital Budget, only through FY 88. No amounts have been estimated for legislative capital projects nor has any amount been included for purchase of the Alaska Railroad or cashing out interim financing on Tyee, Swan, and Terror Lakes ($200 million).

attachments

MB:ro

cc: Honorable Al Adams
Honorable John Sackett
Honorable Don Bennett

FUNDS AVAILABLE FOR CAPITAL PROJECTS UNDER CURRENT LAW ($ Millions)

FISCAL YEAR	(1) FUNDS AVAILABLE FOR CAPITAL PROJECTS: GENERAL FUND	(2) FUNDS AVAILABLE FOR CAPITAL PROJECTS: GO BONDS	(3) FUNDS AVAILABLE FOR CAPITAL PROJECTS: TOTAL	(4) SB 68 STATE FUNDING FOR SUSITNA	(5) OTHER APA CAPITAL PROJECTS	(6) TOTAL HYDRO PROJECTS	(7) LOAN PROGRAM APPROPRIATIONS	(8) GOVERNOR'S SIX YEAR CAPITAL BUDGET	(9) TOTAL CAPITAL PROJECTS
ACTUAL DOLLARS									
85	593.0	--	593.0	403.7	244.5	648.2	300.0	2035.0	2983.2
86	611.0	300.0	911.0	472.7	282.3	755.0	300.0	742.9	1797.9
87	447.0	90.0	537.0	479.7	125.8	605.5	300.0	961.2	1866.7
88	503.0	125.0	628.0	499.5	--	499.5	300.0	1066.2	1865.7
89	280.0	--	280.0	938.3	--	938.3	300.0	?	1238.3+
90	--	50.0	50.0	738.4	--	738.4	300.0	?	1038.4+
91	--	140.0	140.0	--	--	--	300.0	?	300.0+
92	--	--	--	--	--	--	300.0	?	300.0+
93	--	--	--	--	--	--	300.0	?	300.0+
Total	2434.0	705.0	3139.0	3532.3	652.6	4184.9	2700.0	4805.3	11690.2+
FY 84 DOLLARS									
85	554.0	--	554.0	364.5	228.5	593.0	280.0	1901.9	2774.9
86	534.0	262.0	796.0	398.9	246.6	645.5	262.0	648.9	1556.4
87	365.0	73.0	438.0	378.3	102.7	481.0	245.0	784.7	1510.7
88	384.0	95.0	479.0	368.2	--	368.2	229.0	813.4	1410.6
89	200.0	--	200.0	646.4	--	646.4	214.0	?	860.4+
90	--	33.0	33.0	475.4	--	475.4	200.0	?	675.4+
91	--	87.0	87.0	--	--	--	187.0	?	187.0+
92	--	--	--	--	--	--	175.0	?	175.0+
93	--	--	--	--	--	--	163.0	?	163.0+
Total	2037.0	550.0	2587.0	2631.7	577.8	3209.5	1955.0	4148.9	9313.4+

(Notes to Table I on next page.)

NOTES TO TABLE I

1. From attached Legislative Finance computer run labelled "current law"; beginning GF balance based on 2/9/83 schedule of amount available per Senate Finance of $918.3 million reduced by $230 million for the Rainy Day Fund and $600 million for the Permanent Fund that has been appropriated but was included in the $918.3 million; includes Permanent Fund undistributed income;

2. From Table I, Susitna Hydroelectric Project, Task II: Financing Options, Acres, January 1983; amount of GOB's based on statement of First Boston Corporation, John Nuveen & Co., and First Southwest Co. which assumed higher projected revenues at the 30th percentile than the current January 1983 Department of Revenue estimates; thus the estimate of GOB's must be somewhat high;

4. From Table 18.4.7, Susitna Hydroelectric Project, Task II Reference Report, Acres; this is the $2.3 billion (January 1982 $) state contribution case; SB 68 proposes $2.3 billion in January 1983 dollars; if the Acres funding schedule is intended it would be necessary to adjust SB 68; otherwise the estimated Susitna costs shown here would be 4% to 7% too high as measured by various "Engineering News Record" construction cost indices;

5. From Table I, "Acres", January 1983;

7. Assumes loan program appropriations remain at roughly the Governor's FY 84 budget level, $294.5 million;

8. Total of general fund capital projects (including voter approval) contained in Executive Budget, Book 2, Capital Budget and Six Year Capital Program, FY 83, Jay Hammond, Governor; FY 85 amount is sum of FY 83-85 amounts less amounts appropriated for capital and loans for FY 83 and less the amount of capital projects proposed by Governor Sheffield for FY 84.

FY 84 $ amounts are based on a 7% inflation factor: the Acres Susitna numbers appear to be on a calendar year basis and are thus adjusted for an extra 1/2 year.

FUNDS AVAILABLE FOR CAPITAL PROJECTS
WITH REPEAL OF DIVIDENDS & INFLATION-PROOFING
($ Millions)

FISCAL YEAR	(1) FUNDS AVAILABLE FOR CAPITAL PROJECTS: GENERAL FUND	(2) FUNDS AVAILABLE FOR CAPITAL PROJECTS: GO BONDS	(3) FUNDS AVAILABLE FOR CAPITAL PROJECTS: TOTAL	(4) SB 68 STATE FUNDING FOR SUSITNA	(5) OTHER APA CAPITAL PROJECTS	(6) TOTAL HYDRO PROJECTS	(7) LOAN PROGRAM APPROPRIATIONS	(8) GOVERNOR'S SIX YEAR CAPITAL BUDGET	(9) TOTAL CAPITAL PROJECTS
ACTUAL DOLLARS									
85	1196.0	350.0	1546.0	403.7	244.5	648.2	300.0	2035.0	2983.2
86	1281.0	190.0	1471.0	472.7	282.3	755.0	300.0	742.9	1797.9
87	1157.0	95.0	1252.0	479.7	125.8	605.5	300.0	961.2	1866.7
88	1269.0	235.0	1504.0	499.5	--	499.5	300.0	1066.2	1865.7
89	1110.0	50.0	1160.0	938.3	--	938.3	300.0	?	1238.3+
90	580.0	25.0	605.0	738.4	--	738.4	300.0	?	1038.4+
91	--	160.0	160.0	--	--	--	300.0	?	300.0+
92	--	35.0	35.0	--	--	--	300.0	?	300.0+
93	--	170.0	170.0	--	--	--	300.0	?	300.0+
Total	6593.0	1310.0	7903.0	3532.3	652.6	4184.9	2700.0	4805.3	11690.2+
FY 84 DOLLARS									
85	1118.0	327.1	1445.1	364.5	228.5	593.0	280.0	1901.9	2774.9
86	1119.0	166.0	1285.0	398.9	246.6	645.5	262.0	648.9	1556.4
87	944.0	77.5	1021.5	378.3	102.7	481.0	245.0	784.7	1510.7
88	968.0	179.3	1147.3	368.2	--	368.2	229.0	813.4	1410.6
89	790.0	35.6	825.6	646.4	--	646.4	214.0	?	860.4+
90	390.0	16.7	406.7	475.4	--	475.4	200.0	?	675.4+
91	--	99.6	99.6	--	--	--	187.0	?	187.0+
92	--	20.4	20.4	--	--	--	175.0	?	175.0+
93	--	92.5	92.5	--	--	--	163.0	?	163.0+
Total	5329.0	1014.7	6343.7	2631.7	577.8	3209.5	1955.0	4148.9	9313.4+

NOTES:
1. From attached Legislative Finance computer run labelled "Repeal of Dividends and Inflation-Proofing"; see note 1 to Table I;
2. See note 2 to Table II; amount of GOB's based on estimates of revenues at the 50th percentile made prior to the current January 1983 estimates; those revenues are higher than the January 1983 estimates even including monies that would have been used for dividends and inflation-proofing; thus, the estimate of GOB's is somewhat high;

For other items see notes to Table I.

FUNDS AVAILABLE FOR CAPITAL PROJECTS

CURRENT LAW