

A History of Alaska's Mega Projects

**For the Alaska Conservation Alliance
with funds provided by the Alaska Conservation Foundation
June 2003**

**By Ginny Fay,
*EcoSystems: Economic and Ecological Research***



**1101 Potlatch Circle
Anchorage, Alaska 99503
907/ 333-3568**

email: ginnvfay@montana.com

Alaska Mega Projects

Executive Summary

In the 1980s when oil prices were high and the State of Alaska was awash in windfall revenues, the State ventured into a number of large scale infrastructure projects—predominantly agriculture and energy projects. This report gives an overview of the history, costs and benefits of some of the mega projects undertaken by the State of Alaska.

Fueled by the flow of oil dollars, Alaska launched into expanding the agricultural sector in the late 1970s. The Legislative Finance Division estimated that \$112 million (\$192 million 2002 \$\$) had been appropriated to fund agricultural projects in Alaska from 1978 to 1981. The predominant agricultural projects were the Delta Agricultural Project (Delta I and Delta II), the Seward grain terminal and accompanying railroad cars, Point McKenzie Project, the Agricultural Revolving Loan Fund, and a variety of projects at the University of Alaska Fairbanks and rural agricultural projects.

Similar to agriculture, Alaska entered the arena of energy projects on a big scale. In the late 1970s as oil prices rose as a result of the OPEC energy embargo, State coffers swelled while simultaneously, ratepayers' oil generated electrical power rates climbed. Alaska's approach to energy project development was to use the windfall oil revenues from high prices to finance electrical projects that would be immune to oil price fluctuations, renewable and sustainable. The fondness for hydroelectric projects stemmed from Alaska's abundant water resources and high oil prices—and the misperception that oil prices would continue to climb or at least stay high. The predominant energy projects include the Susitna and Bradley Lake hydroelectric projects, the Four Dam Pool, the Railbelt Electrical Interties, and the Healy Clean Coal project.

In addition to agriculture and energy, two other legislative projects that lost considerable money include the Alaska Seafood International fish processing facility and the Alaska Petrochemical Company.

There are a number of common themes with these projects:

- The disregard for economic feasibility and the belief that an infrastructure project is “economic development;”
- A belief that if subsidized enough, a project will become viable;
- Rather than relying on markets to determine economic feasibility, these projects reflected the “vision” of a small number of “visionaries;”
- The perception that a current windfall would last forever (such as high oil prices in the late 70s and early 80s and the current flow of federal dollars into Alaska by the Alaska delegation); and
- Significant influence by parties with vested interests in a project in its planning and development, thus the lack of an arm's length economic viability test.

None of these projects were market based and without a market test, all lack economic viability and cost the people of Alaska approximately \$1.3 billion (or \$2.4 billion in 2002 dollars). These project funds would be worth approximately \$6.4 billion in 2003 if invested at a conservative 8% annual rate of return (see Table 1).

Table 1.

Alaska Mega Project Expenditures--Value if Invested Rather than Spent		
<i>(millions of dollars, assumes 8% average annual rate of return)</i>		
Project	Amount Spent (nominal \$)	Present Value if Invested
Agriculture	\$112.0	\$657.6
Susitna	\$227.0	\$1,439.5
Four Dam Pool	\$370.4	\$2,174.8
Bradley Lake	\$180.0	\$719.3
Railbelt Interties	\$150.0	\$599.4
Healy Clean Coal	\$35.0	\$95.2
Alaska Seafood	\$125.0	\$269.9
Alpetco	\$60.0	\$443.8
Total	\$1,259.4	\$6,399.4

In a throw back to this earlier era, the Murkowski administration and the Alaska legislature are pushing for large infrastructure projects to prop up Alaska's economy and encourage economic development. Two decades ago, this approach failed. To avoid repeating Alaska's costly mistakes, this analysis attempts to capture the story of some of these most well known projects.

Introduction

As quoted recently at an Anchorage Chamber of Commerce Forum on the question of State of Alaska involvement in the construction of a natural gas pipeline:

“Unfortunately, our State has a sad legacy of failed and near failed projects.”¹

Among Alaskans of all walks of life, place of residence and political persuasion, there seems to be agreement on this point of history.

In a throw back to this earlier era, the Murkowski administration and the Alaska legislature are pushing for large infrastructure projects to prop up Alaska’s economy and encourage economic development. Two decades ago, this approach failed miserably and cost the people of Alaska approximately \$1.3 billion (or \$2.4 billion in 2002 dollars). These project funds would be worth approximately \$6.4 billion in 2003 if invested at a conservative 8% annual rate of return (see Table 1).

A portion of the projects do provide some benefits. What would be considered “wasted” is \$6.4 billion, or the opportunity cost of all the direct expenditures of these projects, minus project benefits. It would require an extensive system analysis to determine the benefits of the functioning electrical power projects. However, given the costs to build these systems and the low cost of in-place alternative generation capacity in the Railbelt, the benefits are small even for the direct electric power users. Therefore, it is safe to say that most of the \$6.4 billion could have been saved or put to better uses.

Table 1.

Alaska Mega Project Expenditures--Value if Invested Rather than Spent		
(millions of dollars, assumes 8% average annual rate of return)		
Project	Amount Spent (nominal \$)	Present Value if Invested
Agriculture	\$112.0	\$657.6
Susitna	\$227.0	\$1,439.5
Four Dam Pool	\$370.4	\$2,174.8
Bradley Lake	\$180.0	\$719.3
Railbelt Interties	\$150.0	\$599.4
Healy Clean Coal	\$35.0	\$95.2
Alaska Seafood	\$125.0	\$269.9
Alpetco	\$60.0	\$443.8
Total	\$1,259.4	\$6,399.4

¹ Houle, LJ, Alaska Support Industry Alliance, *All-Alaska Gas Pipeline Initiative*, Presentation to the Anchorage Chamber of Commerce Forum-Monday, September 23, 2002.

To avoid repeating Alaska's costly mistakes, this analysis attempts to capture the story of some of these most well known projects. Numerous projects come to mind when "mega projects" are catalogued, usually beginning with the State's infamous foray into agriculture—the Delta barley project, MacKenzie dairy farms, Seward grain terminal, grain elevators, railroad grain cars, slaughterhouses and dairies. Also, well known are the energy projects such as the Susitna Hydroelectric Dam, the Four Dam Pool, and Healy Clean Coal. Even more amazing were the discussed but mostly dismissed list of projects such as the nuclear blasting at Cape Thompson, the Rampart Dam, moose farming, glacier ice export, and garden hoses of water to California; these are not included in this analysis.

Alaskans have never lacked creativity where large construction projects are concerned. Maybe the proximity to Russia has given an "owner-state" leaning to economic development. Governor Wally Hickel used the term "owner state" in reference to his economic development vision. As reported in the Anchorage Daily News, December 9, 1990, "Hickel's owner-state concept has plenty of critics. Some environmentalists see it as an extension of the power of resource-gobbling corporations aimed at extracting maximum profits. Some cynics see it as a flimsy rationale for Hickel to do what he most loves doing: building projects, big projects, lots of projects."

There are a number of common themes with these projects:

- The disregard for economic feasibility and the belief that an infrastructure project is "economic development;"
- A belief that if subsidized enough, a project will become viable;
- Rather than relying on markets to determine economic feasibility, these projects reflected the "vision" of a small number of "visionaries;"
- The perception that a current windfall would last forever (such as high oil prices in the late 70s and early 80s and the current flow of federal dollars into Alaska by the Alaska delegation); and
- Significant influence by parties with vested interests in a project in its planning and development, thus the lack of an arm's length economic viability test.

The State's role in spending public money without any market test substantially increased the amount of money expended before projects were halted—there was no private investor risking private resources focused on the "bottom line". Today's global economy is quick to clear markets and punish poor government fiscal policy.

In addition to promoting economically unfeasible projects, Alaska government has failed to recognize the full fiscal impacts of feasible ones. Successful projects create jobs and cause population growth, which in turn increases the demand for schools and other public services.² Alaska still lacks a mechanism to capture the revenues necessary to pay for the costs of successful development from both private and public spending induced growth—the so-called "Alaska Disconnect." In addition, the windfall revenues of the 1970s and

² Goldsmith, Scott and Lee Huskey, *The Alpetco Petrochemical Proposal: An Economic Impact Analysis*, Institute of Social and Economic Research, University of Alaska, April 1978.

early 1980s could have increased Alaska's savings rate and current reserves, which are needed now as Alaska oil fields and revenues diminish. Alaska failed to consider this opportunity cost of project spending.

Alaska has gone from excessive government spending to large budget reductions. In the midst of cutting budgets, the current administration and legislature still hope for mega projects, such as a natural gas pipeline, Knik Arm Bridge and oil development in ANWR, and public infrastructure construction to boost employment and income while eliminating programs such as the Alaska Science and Technology Foundation. The Alaska Science and Technology Foundation might lack the glamour and boom of a mega project, but it offers greater hope of slowly expanding the economic base by supporting innovative small business development. However, neither approach toward economic development can be successful in the long run without a mechanism to support the increased public costs of population and job growth.

The legislature has failed repeatedly to develop any consensus and long-range fiscal policy based on appropriate government support for private sector driven sustainable economic activity. Alaska needs a careful evaluation of appropriate public sector spending and the development of a realistic economic vision. Until this balance is achieved, Alaska will miss viable economic opportunities while chasing unrealistic dreams.

This report gives an overview of the history, costs and benefits of some of the mega projects undertaken by the State of Alaska.

Agricultural Projects

Agriculture in Alaska in the late 19th and early 20th century grew out of the need to supply food for frontier expansion. In addition, during this era agriculture was encouraged by the federal government as part of the policy toward Westward settlement. In the 1950s as transportation to Alaska improved and became less costly, it became more efficient to import food products. This also coincided with the post-industrial maturation of agriculture in the rest of the country that no longer encouraged expansion of agricultural lands but instead paid farmers not to plant crops.³

At the decision making level, there was little understanding in Alaska of agriculture—especially that agriculture tends to be a low margin industry that expands slowly over time.⁴ Fueled by the flow of oil dollars, Alaska launched into expanding the agricultural sector in the late 1970s. In 1981 the Legislative Finance Division estimated that \$112 million (\$192 million 2002 \$\$) had been appropriated to fund agricultural projects in Alaska from 1978 to 1981.⁵ The predominant agricultural projects were the Delta

³ Lewis, Carol E., *The Agricultural Industry in Alaska: A 10-Year Look at a Changing Resource Industry*, University of Alaska Fairbanks, 2002, p. 1.

⁴ Lewis, Carol E., *ibid.*

⁵ Lindstrom, Elmer, *History of Agricultural Appropriations*, Legislative Finance Division, Legislative Affairs Agency, October 16, 1981.

Agricultural Project (Delta I and Delta II), the Seward grain terminal and accompanying railroad cars, Point McKenzie Project, the Agricultural Revolving Loan Fund, and a variety of projects at the University of Alaska Fairbanks and rural agricultural projects.

Most of the components of the 1970s' state agricultural program were the design of the Alaska Agricultural Action Council (AAAC), the entity responsible for planning and coordinating agricultural development in Alaska. Feedlots, slaughter/processing plants, country grain elevators, and a grain export terminal were the infrastructure determined by the AAAC to be necessary to develop a red meat industry in Alaska. The goal of this effort was to create a booming basic agricultural sector that would create jobs and stem the flow of dollars outside Alaska to purchase food, thus, making Alaska less dependent on imports. The State of Alaska became the owner of a number of agricultural businesses through defaults of loans from the Agricultural Revolving Loan Fund. Approximately \$40 million was loaned through this fund of which about \$30 million was never repaid.

Despite this dismal legacy, a small, carefully focused agricultural sector in Alaska is both possible and sustainable. Unfortunately, the experience of the late 1970s and early 1980s gave the notion of farming and ranching in Alaska a "black eye". Agriculture in the Tanana and Mantanuska Valley grew slowly in the last 20 years despite the shift from government over involvement to minimal support.⁶ The value of agricultural production in the Tanana Valley was \$7.5 million in 2001 and 4,500 acres continue to be planted in barley.⁷

This section gives some background on these agricultural projects and approximately how much was spent on each of them. They are essentially a "bundle" of projects all of which failed despite, or maybe as a result of, large State subsidies and economic planning intervention. Unless otherwise noted, dollars are nominal and not adjusted for inflation.

Delta Agricultural Project

In 1975, a report was written for the Federal State Land Use Planning Commission with the recommendation for a large agricultural demonstration project in Alaska to test the feasibility of large scale grain production. Barley was the crop suggested for cultivation. The researchers thought that while operating costs (excluding land costs and returns on land) were about 65% higher in Alaska than the Great Plains, higher yields in Alaska could compensate for higher costs.

Barley, a feed grain crop, was selected because of its strong export market, its higher value per acre than oats, and its better suitability than wheat to Delta Junction growing conditions. In August 1978, the agricultural rights to 60,000 acres were sold to 22 buyers with clearing operations to begin in October 1978. Farmers on the Delta Agricultural Project purchased agricultural rights to State land under provisions of AS 38.05. This allowed farmers to use the land but the State retained all other rights. Three state loan

⁶ Lewis, Carol, E., p. 1.

⁷ Alaska Department of Labor and Workforce Development, Alaska Economic Trends, *The Delta Region: An Economic Profile*, November 2002, p. 10-11.

programs were available to farmers on the Delta project: clearing loans, administered by the Agricultural Action Council in the Governor's Office; operating/development loans from the Agricultural Revolving Loan Fund, and state financing on the sale of agricultural rights.

Farmers were given three years to clear the land for cultivation. In 1979, 300 acres were planted. The goal of the Project was for 45,000 acres of Project and non-Project land to be planted each year (some fields would be rotated and left fallow) in the Delta Junction area providing a yield of 50,000-60,000 tons of barley annually. This was to stimulate a dairy and red meat production industry with excess grain being exported to Asia.

The competitiveness of the Alaska agricultural projects hinged on cheap land and low-cost financing. This was needed to compete with grain available in Alaska from the Puget Sound area and to compete with these same grain producers in export markets. Approximately \$24 million was spent on the Delta projects (\$41.1 million 2002 \$\$). The expected growth in jobs (both direct and indirect) from 60,000 acres under cultivation was 146.6 with an expected population growth of 97 to 113 persons—quite small given the level of state subsidy used in an attempt to jump start the industry.⁸ Most of these original farms failed. The farms currently in production have focused primarily on higher value and/or lower cost niche markets such as vegetables. Another major shift has been from barley to hay production.

Seward Grain Terminal

As mentioned previously, the Seward Grain Terminal was one component of the AAAC's plan for the development of a dairy and red meat industry in Alaska. The purpose of the grain elevator was to facilitate export of grain, in this case barley, that was surplus to local livestock feed needs. Having an export market provides for greater grain price stability because the export quantity can be adjusted based on in-state production and consumption, thus reducing price swings and risk to grain farmers and livestock producers.⁹ The estimated cost for the terminal in Seward was \$8.5 million.¹⁰

Approximately \$6.4 million was spent on construction of the project before it was halted by Governor Sheffield. Some agriculture advocates say halting of this project doomed the Alaska agricultural industry that was dependent on grain export to survive. While others, such as Arlon Tussing and Scott Goldsmith, economists, University of Alaska Anchorage, say that Alaska never could compete in the grain export markets even at highly subsidized rates because of higher costs, weather conditions, and distance from markets for supplies and sales.¹¹ Some argue that Alaska's climate is no more severe than

⁸ DeVries, Anne, *Delta Project for Barley Production*, Alaska State Legislature, House of Representatives Research Agency, Research Memorandum 80.049, April 1, 1980.

⁹ Teal, David, *Seward Grain Terminal*, Alaska State Legislature, House of Representatives Research Agency, Research Memorandum 83.020, February 24, 1983.

¹⁰ DeVries, Anne, *Seward Grain Terminal*, Alaska State Legislature, House of Representatives Research Agency, Research Memorandum 82.031, March 4, 1982.

¹¹ Randall, Gail, *Farming's Future Debated, Experts Disagree about Opportunities in Alaska*, Anchorage Daily News, March 28, 1992, p. B1.

the northern Midwest and Canada but variation in Alaska's seasons from year to year adds more unpredictability and risk to Alaska operations. If the terminal had been completed, it could have processed all the barley grown in Alaska during its peak production year in 4.5 hours.¹² In addition, \$1 million was spent on railroad cars that were to transport grain to the grain terminal and another \$700,000 on Interior grain elevators to store grain.¹³ The 20 grain cars purchased for the Alaska Railroad were resold for a significant loss.

Point MacKenzie Agricultural Project

The 14,000 acre Point MacKenzie Project began in 1982. It is estimated that the State spent about \$25 million on attempted milk production. The State built \$1 million access roads across the undeveloped land surplus by the military and installed \$3 million electrical lines. The Point MacKenzie dairy farms were located on 19 tracts of land that the State sold to private individuals for the development of dairy farms. Buyers were eligible for loans from \$1 million to \$2.4 million each to develop the farms and contracted with the State for a development and production schedule.¹⁴ The land was sold below market value in a lottery to individuals who contracted to develop the land based on a schedule set by the State. Clearing loans were administered by the AAAC and all but five parcels met the first clearing deadline and these were given one year extensions to 1986. Only eight purchasers made it into production. Eventually two thirds of 31 farms ended up back in state hands as the owners defaulted on millions in state loans.¹⁵

By 1991, all of the farms had failed. As a result of a lawsuit by some of the original farmers against the State, the Attorney General's office hired a consultant to analyze the viability of two Point MacKenzie farms and the state owned Matanuska Maid dairy. The consultant, Roy Ferguson, stated that the dairy project was doomed because too much money was put into farms that were too small to recover the investment. Ferguson was convinced that if structured correctly, the dairy industry could be viable.¹⁶ State rules required purchasers of land to start production within three years and farms were limited to 50 cows. The three year development schedule was one of the biggest obstacles because it significantly increased startup costs. Instead of salvaging wood, farmers only had time to bulldoze thousands of acres of timber into piles and burn them. Instead of doing the work themselves, they had to hire contractors. The consultant reported that the small size of the farms was also a fatal flaw because a 50 cow farm in Alaska could not be viable. A number of early farmers argued the same point but were not allowed to consolidate, even after suing the State over the issue. Essentially the farms were doomed by a State imposed design that was not economically feasible.

¹² Jackstadt, Stephen L. and Dwight R. Lee, *Alaska's Other Oil Spill*, The Freeman, a publication of the Foundation for Economic Education, Inc., January 1990, Vol. 40, No. 1.

¹³ Lindstrom, p. 3.

¹⁴ Wohlforth, Charles, *Big Dreams for Farms were Doomed by Reality*, Anchorage Daily News, January 1, 1992, p. A1.

¹⁵ Komarnitsky, S.J., *Point MacKenzie Land up for Sale*, Anchorage Daily News, December 7, 1998, p. B1.

¹⁶ Wohlforth, Charles, *Expert: Dairies Doomed State Plan Blamed*, Anchorage Daily News, June 14, 1990, p. A1.

Matanuska Maid Dairy

The Matanuska Maid Dairy consists of a creamery in Anchorage and a feed mill in Palmer. The dairy was originally created in the 1930s in the Matanuska Valley as a farmers' cooperative and was privately owned until 1984, when a bankruptcy court transferred title and operating authority to the State of Alaska, which was the dairy's major creditor. The Agriculture Revolving Loan Fund owns 100% of the shares of the corporation. The dairy had \$3 million outstanding in loans. In 1986 the dairy was offered for sale. Three offers were made but not accepted because each of the purchase offers wanted State financing with no down payment.¹⁷

A legislative audit completed in 1998 reiterated that the dairy should be sold and the State of Alaska should get out of the milk business. The dairy was retained by the state as a processor for local dairy farms, but at the time Alaska had fewer farms (10) than any other state in the country and about 70% of the milk processed was purchased from out of state. Alaska's total of 1,200 cows was less than most individual farms in the lower 48. In addition, the dairy has been hampered by the state-set minimum price for instate milk, which has historically been higher than the cost of purchasing raw milk from lower 48 farms. In the two years prior to the audit, the dairy had lost over \$700,000.¹⁸ According to the Division of Agriculture, the creamery is currently covering its operating costs.¹⁹

McKee Slaughterhouse

The State of Alaska gained ownership of the McKee Slaughterhouse in October 1986 when the McKee family that owned the business defaulted on their \$2 million AAAC loan. The slaughterhouse was not able to be completed with the amount of funds available from the Revolving Loan Fund. Instead of foreclosing on the slaughterhouse, the state invested the additional \$200,000 needed to complete the facility and offered it for lease. Sale of the facility would result in a debt obligation that would make the facility too costly to operate.²⁰ For over ten years, the main facility has been leased with an option to buy to Interior fish processors. An appraisal is currently underway to complete the lease to sale transaction for purchase by the lease holders.²¹

Mt. McKinley Meats

Mt. McKinley Meats was financed with a \$2 million loan from the AAAC. The slaughter facility, owned by the Donatello family, was operated at a loss for two years before Mr. Donatello advised the state that he would close the facility unless loaned additional money. As a result the state subordinated its loan position and a private bank loaned an additional \$1.4 million. Loan repayments were not able to be made and the bank

¹⁷ Jennings, Mary, *State-Owned Businesses*, Alaska State Legislature, House of Representatives Research Agency, Research Memorandum 87.026, October 15, 1986.

¹⁸ Komarnitsky, S.J., *Report—Dairy's Time Up*, Anchorage Daily News, November 24, 1998, p. A1.

¹⁹ Easley, Candy, Loan Officer, Agricultural Revolving Loan Fund, Alaska Department of Natural Resources, Division of Agriculture, personal communication, May 7, 2003.

²⁰ Jennings, p. 2.

²¹ Easley, May 7, 2003.

foreclosed on the loan. The state bought out the bank's position as it deemed that the only federally inspected slaughter facility in Palmer it was important to the development of agricultural land in the area.²²

The Alaska Department of Corrections was operating the facility until June 30, 2002 as a training facility for inmates. According to the Alaska Farm Bureau, the facility can not be operated competitively under State procurement rules.²³ Attempts to sell the facility during FY02 resulted in no interested private buyers.²⁴ The Department of Corrections continues to operate the facility during FY03 with costs paid for from the Revolving Loan Fund. This operating arrangement is under consideration for FY04 but the Loan Fund can not sustain the over \$300,000 annual cost of the program and continues to look for a private owner for the facility.²⁵

Energy Projects

Similar to agriculture, Alaska entered the arena of energy projects on a big scale. In the late 1970s as oil prices rose as a result of the OPEC energy embargo, State coffers swelled while simultaneously, ratepayers' oil generated electrical power rates climbed. Alaska's approach to energy project development was to use the windfall oil revenues from high prices to finance electrical projects that would be immune to oil price fluctuations, renewable and sustainable. Thus, the fondness for hydroelectric projects stemmed from Alaska's abundant water resources and high oil prices—and the misperception that oil prices would continue to climb or at least stay high.

Again, similar to agriculture, the basic premise might have had a bit of economic logic but the orchestration and scale lacked economic viability. The Susitna hydroelectric dam was "small" in comparison to earlier visions of the Rampart Dam on the Yukon River that would have flooded the entire area of the Yukon Flats National Wildlife Refuge. When it became apparent that the Susitna dam, even heavily subsidized, would be a financial horror for rate payers, the plug was pulled and the unexpended balance re-appropriated to the legislatively created Railbelt Energy Fund.²⁶

The Railbelt Energy Fund was used for the Bradley Lake Hydroelectric project, a series of electrical interties, and the Healy Clean Coal project. The fund also became a regional equity rallying point for the Railbelt area as the State funded the Power Cost Equalization

²² Jennings, p. 2.

²³ Alaska Farm Bureau Update, *AFB Opposes Land Sale, Loss of Meat Processor*, Vol. 1, No. 4, April 2002, p. 1.

²⁴ State of Alaska FY2002 Governor's Operating Budget, Alaska Department of Natural Resources, Division of Agriculture.

²⁵ Easley, May 7, 2003.

²⁶ As a result of retirements, institutional memory is fleeting in agencies where the memory is most warranted. For example, when attempting to ascertain the exact amounts spent on the Susitna Dam project and the balance transferred to the Railbelt Energy Fund, staff at the Alaska Industrial Development and Export Authority, now the home of the Alaska Energy Authority (AEA, previously the Alaska Power Authority (APA)), stated that AEA had no involvement with the Susitna project. More accurately, the AEA was the lead on all the state studies.

program. This program helped to make the astronomically high rural, diesel generated electrical power costs more comparable to the extremely low Railbelt energy costs. The ironic fact of the Railbelt Energy Fund era is that the Anchorage bowl enjoyed (and continues to enjoy) some of the lowest energy prices in the nation as a result of Cook Inlet gas supplies and the State of Alaska's royalty shares that provide extremely low heating and electrical generation costs.

By the original design, energy project financing was to be a combination of State grants and loans or revenue bond sales. In general, 50% of the project was to be funded by grants and the remainder by loans or bonds to provide relatively low, stable power rates to customers. The loans or bonds were to be repaid with utility energy sales. As it turned out, most of the Four Dam Pool loans were never repaid. The Bradley Lakes power sale agreement calls for continued payments to the State of Alaska following bond retirement in 2021 to repay a portion of the State's equity in the facility. At the time of the initial power sales agreement in the early 1990s, the value of these future funds was approximately \$10 million, a fraction of the State's investment.²⁷

Most of these constructed energy projects were plagued with cost overruns. Thus, even with their overly optimistic financial feasibility analyses based on original construction cost estimates, with cost overruns, the projects were at best marginal investments for the state as a whole. As a result of the large subsidies, most of the projects benefit their individual ratepayers or provide electricity at prices comparable to alternative sources. However, given the low energy prices in the Railbelt, at least half the state's population living in the Anchorage bowl would have most likely been better off if the funds had been deposited in the Permanent Fund and dividends increased while utility customers paid low natural gas energy costs. This section provides information on the Susitna and Bradley Lake hydroelectric projects, the Four Dam Pool, the Railbelt Electrical Interties, and the Healy Clean Coal project.

Susitna Hydroelectric Dam

The hydroelectric potential of the Susitna River was studied over many decades.²⁸ The initial studies were done by the Bureau of Reclamation in the early 1950s; in the 1970s the Corp of Engineers studies reconfirmed the feasibility of Susitna River hydropower development. In 1980, the Alaska Power Authority (now Alaska Energy Authority (AEA), part of the Alaska Industrial Development and Export Authority) commissioned Acres America, Inc. to review the studies to date and to conduct a comprehensive feasibility study and determine whether hydropower development on the Susitna River was a viable option.²⁹ Based on these and other studies and the urging of the Alaska

²⁷ Fay, Ginny, *Bradley Lake Power Sales, Service, and Transmission Agreements and House Bill 356*, Alaska House of Representatives Research Agency, Research Request 89.119, January 27, 1988, p. 4.

²⁸ Unless otherwise cited, information on the Susitna hydroelectric project is from: Dzinich, Kurt, *Susitna Hydropower Options*, Alaska State Legislature, Senate Advisory Council, February 26, 1986.

²⁹ The Susitna Hydroelectric project was actually a series of dams on the Susitna River. As the infeasibility of the project became more evident, the scope was incrementally downsized from three to one dam.

Legislature, the AEA submitted a FERC license application in 1983. The license was amended in 1985 for the construction of a two-dam, three phase construction project—more modest than the originally planned project. The estimated cost of that smaller project was \$5.9 billion. In 1986, the proposal was again downsized to a single stand alone dam in the Devil Canyon of the Susitna River.

The estimated cost of electricity from the Susitna project if it were bond financed was approximately \$370 (1982 dollars, or \$585 in 2002 dollars) per family of four per month. Cash payment of a portion of the construction costs was proposed as a means of reducing power costs to customers.³⁰

As a result of the high cost of the project, the relatively low cost of gas fired electrical generation in the Railbelt, and the effect on the state budget of the declining price of oil in the early 1980s, the project was never feasible, although approximately \$227 million was appropriated to the project from FY79-FY86. The project was cancelled in 1986. Extensive biological studies were conducted as the impacts of the project, especially on fish, was estimated to be considerable.

To undertake an expensive project like the Susitna project with so much natural gas and coal available "defies all prudence and logic," University of Alaska Anchorage economist Arlon Tussing said. "Believing projected high oil prices will justify the dams would cause the state to replace the lowest-priced thermal energy in North America-- natural gas and coal -- with about the highest-cost power plant in the world," Tussing said. "The Susitna dams are estimated to cost more than \$20 billion by the time they would be paid for, or about \$5 billion at today's (1985) prices."³¹

Four Dam Pool

The Four Dam Pool projects are four hydroelectric facilities (dams and lake taps projects) built by the State of Alaska in the early 1980s in Kodiak, Valdez/Glennallen, Ketchikan, and Wrangell/Petersburg. The State paid for a portion of the dams and provided loans, through the Power Development Revolving Loan Fund, for the remainder of the cost. At the time of construction, total state funding provided was \$482.7 million (nominal dollars): \$293.4 million in grants and \$189.3 million in loans. Average per capita funding equaled approximately \$16,220 (grants and loans, nominal dollars. The per capita cost for Terror Lake in Kodiak was approximately \$40,000, 1986 dollars.).³²

The projects were originally owned by the State of Alaska, Alaska Energy Authority with electricity sold to local utilities through Power Sales Agreements. In January 2002,

³⁰ Teal, David, *Susitna Feasibility*, Alaska State Legislature Research Agency, Research Request 83.137, May 13, 1983, p. 2. Alaska Department of Labor and Workforce Development, Consumer Price Index, March 2003.

³¹ Epler, Patti, Project Worth Debated : Consultant Questions Susitna Dams' Value, Anchorage Daily News, November 14, 1985, p. D1.

³² Fay, Ginny, *State Funding for Power Cost Equalization and Four-Dam Pool Projects and an Overview of Proposed Railbelt Electrical Inertie Proposals*, Alaska State Legislature Research Agency, Research Request 90.142 (revised), December 6, 1989.

AIDEA loaned up to \$82.1 million to the utilities to acquire the dams from AEA (\$77.1 million for the dams) and spend up to \$5 million to construct an intertie between the Swan Lake Hydroelectric Project and the Lake Tyee Hydroelectric Project to move surplus energy from Wrangel/Petersburg to Ketchikan. The loan interest is 6.5% per annum payable over no more than 25 years through power sales revenue.³³ The Alaska legislature provided for non-payment, or forgiveness, of a non-current loan owed to the AEA upon closing of the bond sale; this was the outstanding balance of the original loans. This resulted in a \$177.9 million loss on the sale of the projects.³⁴

Bradley Lake Hydroelectric Project

The Bradley Lake Hydroelectric project is a 126-megawatt dam constructed by the Alaska Energy Authority on the Kenai Peninsula near Homer, Alaska. The Alaska legislature appropriated \$168.1 million for what was estimated to be a \$244.6 million project. The project, which cost approximately \$328 million (including reserve fund balances), went into commercial operation in 1991. The project includes a 610-foot long, 125-foot high concrete-faced and rock-filled gravity dam, a 3.5-mile power tunnel and steel-lined penstock. The project transmits power to the state's main power grid via two parallel 20-mile transmission lines. Homer Electric Association under contract with AEA now operates the project. Bradley Lake serves Alaska's Railbelt from Homer to Fairbanks as well as the Delta Junction area.³⁵

The Bradley Lake project was constructed on the assumption that it would provide net savings over gas-fire turbines. It was estimated by consultants for the AEA to save \$85.8 million over the gas turbine alternative. The Alaska State Legislature House Research Agency reviewed the economic feasibility of the project. Adjusting for more likely electric demand and electric generating facility retirement dates, they found that the more likely net savings were a *negative* \$126.0 million.³⁶ The House Research Agency analysis to address the question of whether the project should be completed disregarded the already sunk costs of the project. Losses would be higher if the sunk costs were included in the analysis.

The consultant's savings estimates were based on the 1988 assumption of natural gas prices of \$1.60 per thousand cubic feet (mcf) and the assumption that gas prices would increase at a rate of 2% above inflation. In actuality, 2001 Anchorage natural gas prices were approximately 46% lower than this forecast; oil prices are only 44% the original forecast (or 56% below); and inflation was significantly lower than forecasted (Table 1). While a complete system analysis of the Railbelt energy usage over the last decade is beyond the scope of this project, these significantly lower than forecasted assumptions, especially natural gas prices, leave little doubt that the timing of the construction of Bradley Lake facility—before it was needed and during low natural gas prices—was a

³³ Alaska Industrial Development and Export Authority Revolving Fund, Financial Statements, June 30, 2002, p. 22-23.

³⁴ Alaska Energy Authority, Financial Statements, June 30, 2002, p. 15.

³⁵ <http://www.aidea.org/aeaprojects.htm>

³⁶ Fay, Ginny and Gretchen Keiser, *Railbelt Energy Analysis*, Alaska House of Representatives Research Agency, Research Request 87.114, March 18, 1987.

poor investment for the State of Alaska and Railbelt ratepayers. However, because electrical rates are low and Bradley Lake constitutes a small portion of the total Railbelt generating capacity, it most likely has a relatively small impact on power rates. The loss is primarily the opportunity cost for wiser investments or savings for leaner budget years.

Table 2. Bradley Lake Assumptions and Actual Values

Year	Bradley Oil Price		ANS West Coast Actual	Bradley Nat. Gas Prices Assumption	Cook Inlet Nat. Prices Gas Actual	Bradley Inflation Assumption	Inflation Actual
	Assumption-ANS West Coast	ANS West Coast					
1990	21.32	17.22		1.71	1.35	4.58%	2.8%
1991	22.72	21.57		1.82	1.48	4.58%	1.7%
1992	24.21	16.64		1.94	1.41	4.58%	1.0%
1993	25.96	19.83		2.08	1.44	5.23%	1.5%
1994	27.84	14.05		2.23	1.27	5.23%	1.5%
1995	29.85	16.77		2.39	1.63	5.23%	2.7%
1996	32.01	17.74		2.56	1.53	5.23%	2.9%
1997	34.33	20.9		2.75	1.91	5.23%	2.1%
1998	36.87	15.86		2.95	1.30	5.42%	3.1%
1999	39.61	12.73		3.17	1.33	5.42%	3.4%
2000	42.55	23.27		3.40	1.69	5.42%	4.6%
2001	45.71	27.85		3.66	2.02	5.42%	6.2%
2002	49.10	21.78		3.93	2.13	5.42%	2.9%

Source: Alaska Department of Revenue, Spring 2003 Revenue Sources Book, April 10, 2003, p. A4.
 Alaska Department of Revenue, Tax records for annual average wellhead value (\$/mcf) reported for production tax for Cook Inlet natural gas provided by Chuck Logsdon, petroleum economist, May 5, 2003.
 Alaska Department of Labor and Workforce Development, Consumer Price Index, March 2003.

Railbelt Intertie Projects

In 1989, the Alaska Energy Authority contracted for a reconnaissance study of 230 kilovolt (KV) electrical interties between Anchorage and the Kenai Peninsula and Anchorage and Fairbanks.³⁷ The 230 KV lines were not found to be economically feasible because their benefit/cost ratios were less than one; Alaska state statutes require that a feasibility analysis be conducted on energy projects. Because the 230 KV lines were not found to be economically feasible, the Railbelt utilities proposed lower capacity transmission lines and hired the same consultant to analyze their economic feasibility.³⁸ The downsized 138 KV interties would be constructed between Kenai and Anchorage

³⁷ Decision Focus, Inc., *Railbelt Intertie Reconnaissance Study: Benefit/Cost Analysis*, prepared for the Alaska Energy Authority, June 1989.

³⁸ The Railbelt electric utilities include Anchorage Municipal Light & Power (AML&P), Chugach Electric Association (CEA), Fairbanks Municipal Utility System (FMUS), Golden Valley Electric Association (GVEA), Homer Electric Association (HEA) and Matanuska Electric Association (MEA).

(southern line) and Healy and Fairbanks (northern line). The northern line proposal also included a limited upgrade of the existing Anchorage-Fairbanks line.³⁹

The original estimated construction costs for the projects were:

Anchorage-Kenai 138 KV intertie	\$65.6 million
Anchorage-Fairbanks limited upgrade	\$9.4 million
Anchorage-Fairbanks 138 KV intertie	\$58.7 million (includes the limited upgrade)

A number of the assumptions for the 138 KV feasibility analysis were changed from the 230 KV analysis. This in combination with a calculation error, resulted in the following benefit to cost ratios:

Anchorage-Kenai 138 KV intertie	1.3 to 1.8
Anchorage-Fairbanks limited upgrade	4.4
Anchorage-Fairbanks 138 KV intertie	
Total	1.6
Incremental over limited upgrade	1.1
Recalculated by House Research Agency	0.9

However, correcting for the calculation error and using more reasonable assumptions similar to those of the 230 KV analysis, the benefit to cost ratio was reduced from 1.6 to 0.9 when reviewed by the House Research Agency (HRA). This review and the original study, however, did not take into consideration the potential construction of the Healy Clean Coal Project. The operation of that facility would reduce the reliability and capacity sharing benefits of the southern electrical intertie because there would be less need to move the excess electrical power from the Kenai Peninsula and each area (Kenai, Anchorage and Fairbanks) would have less need to share capacity back-up capacity. Again, with construction cost overruns and more reasonable economic assumptions, the projects were at best marginal and a lost opportunity for the state as a whole. AEA estimates that the Northern intertie saves Fairbanks rate payers approximately \$7 million annually through the purchase of lower cost power from Anchorage.⁴⁰ Unless, however, additional low cost natural gas is developed in Cook Inlet, the Fairbanks benefits are primarily a shift of benefits from Anchorage ratepayers to Fairbanks ratepayers.

The construction of the southern intertie between Anchorage and the Kenai Peninsula was put on hold. In early June, the Homer Electric Association said it is dropping its support for a new intertie transmission line between Kenai and Anchorage, dealing a potentially lethal blow to the \$119 million project. The powerline is the last of the big energy projects still on the state's drawing board from the oil-rich days of the 1980s. Despite lingering questions about the benefits to ratepayers, the state-subsidized project retained the enthusiastic backing of most Railbelt utilities until the State withdrew use of

³⁹ Unless otherwise noted, information on the electrical intertie projects are from: Fay, Ginny, *Review of the Economic Feasibility Study of the Railbelt Utilities' Proposed 138 Kilovolt Electrical Interties*, Alaska House of Representatives Research Agency, Research Request 90.165, February 16, 1990.

⁴⁰ <http://www.aidea.org/aeaprojects.htm>

the \$28.5 million in interest that had accumulated in the project fund. The utilities considered suing for use of the funds.⁴¹ The \$28.5 million represents interest accumulated since 1993 on a state construction grant to build the so-called southern intertie.⁴²

Healy Clean Coal Project

Under the original plans, the project was to be a 50 megawatt Usibelli coal mine cogeneration facility used primarily to dry coal for export.⁴³ Approximately 35 megawatts of the plant's annual energy output was to be available for Railbelt electric energy needs. The price per kilowatt hour was expected to be 4.5 cents sold to Fairbanks utility Golden Valley Electric Association (GVEA). The facility was to come on line in the mid-1990s.

Original project financing was to be:

\$30 million state grant

\$55 million federal clean-coal grant

\$45 million state revenue bonds (sold by AIDEA at 10% interest)

\$130 million total construction cost

The cost more than doubled since inception. Construction began in 1995 and was completed in 1997. The current project budget is \$297 million. Project funding includes a \$117.3 million grant from the US Department of Energy (DOE); a \$25 million state grant appropriated in 1990; an \$85 million AIDEA bond sale; and additional funding from interest earnings, power revenues and contributions from project participants.

Participants in the project include AIDEA that administered the state funds and, as the DOE grant recipient and under the Power Sales Agreement (PSA), was designated the project owner. Under the original PSA, the Fairbanks utility, Golden Valley Electric Association (GVEA, who lobbied extensively for the state grant appropriation) was to operate the facility and pay for the power generated. Per the PSA, GVEA would pay AIDEA \$4.4 million annually over a 30-year period. Usibelli Coal Mine, Inc. would provide the coal to GVEA.

Currently the project has been idle since the completion of its 90-day test period in December 1999. Although AIDEA finds that the new technology meets the technical and environmental objectives of the project, GVEA maintains that the plant's present configuration does not meet its requirements in terms of operations and maintenance cost, reliability, and safety.⁴⁴

⁴¹ Kizzia, Tom, *Intertie plan gets jolt from backer*, Anchorage Daily News, June 12, 2003 , p. B1.

⁴² Kizzia, Tom, *Utilities may sue state over intertie*, Anchorage Daily News, June 2, 2003 , p. B1.

⁴³ Fay, Ginny, *Cost of Surplus Electricity from the Healy Coal Cogeneration Project*, Alaska House of Representatives Research Agency, Research Request 89.367, April 28, 1989, p.1.

⁴⁴ Alaska Industrial Development and Export Authority/Alaska Energy Authority, *Project Fact Sheet: Healy Clean Coal Project*, March 19, 2003.

In April 2001, GVEA declined interest in a limited retrofit of the plant but AIDEA continues to pursue all options for getting the facility into operation and selling power. AIDEA's recent \$35 million grant application to DOE was accepted as one of 36 proposals to pass first review by DOE. If awarded the grant would partially fund a limited retrofit and subsidize a three-year test period for the facility.

In 2002, AIDEA determined that the carrying value of the project was too high and wrote it down \$66 million to its estimated fair value of \$56 million based on a future cash flow analysis discounted for risk.⁴⁵

Alaska Seafood International-Seafood Manufacturing Facility

In 1993, the Alaska legislature provided AIDEA with bonding authority to construct and own a seafood manufacturing facility. The manufacturing facility is to provide secondary, value-added processing of bottom fish, surimi and salmon year round and operate fresh fish processing in season.

In 1996, the Alaska Seafood Center (developer and private investors) joined with Central Investment Holdings (CIH), a Taiwan investment company, to form Alaska Seafood International. In 1998, AIDEA and Alaska Seafood International (ASI) signed an agreement for AIDEA to provide interim financing for construction of the manufacturing facility. In 1999, AIDEA purchased the completed 184,000 square foot manufacturing facility, an adjoining cold storage facility, and a 20,000 square foot power plant. The manufacturing facility has the capacity to annually produce 100 million pounds of manufactured seafood products. AIDEA owns the processing facility and leases it to ASI. The total cost of the project is approximately \$125 million, including capital cost of leased equipment.

In 2000, due to a change in political parties in Taiwan, CIH was ordered to "retrench" to Taiwan, and ASI began seeking a new equity investor. This along with a late start up, created financial difficulties for the venture. A third restructuring was completed in October 2002 that provides liquidity to the company until June 2003 to allow time to seek additional customers and equity investors.⁴⁶ In November 2002, AIDEA wrote down \$25 million in the facility because it was no longer valued at what AIDEA had been listing on their financial books and new rules require more accurate listing of asset values by public entities.⁴⁷ AIDEA retains its 29% equity position in ASI and ownership of the seafood processing plant and land underlying the plant.

⁴⁵ Alaska Industrial Development and Export Authority Revolving Fund, Financial Statements, June 30, 2002, p.30.

⁴⁶ Alaska Industrial Development and Export Authority/Alaska Energy Authority, *Project Fact Sheet: Alaska Seafood International-Seafood Manufacturing Facility*, March 19, 2003, p. 1.

⁴⁷ Dobbyn, Paula, *State (Alaska) Writes Down \$91.3 Million in Investments: AIDEA Clean-Coal, Fish Plants Never Produce a Dime for State*, Anchorage Daily News, November 20, 2002.

Currently, ASI is operating on a small scale while attempting to acquire more sales commitment. It is almost \$1 million in arrears on rent payments and legal action has been taken to collect past rent.⁴⁸ In addition, they are being accused by other custom seafood processors of operating with an unfair advantage because of its government subsidies.⁴⁹ The current manager believes that the inefficiencies caused by operating an excessively large facility give them no cost advantage.

ASI was originally approved as result of legislative pressure.⁵⁰ It was predicted at the time that there would be at least two bankruptcies before the third owner might be successful. One of the initial problems was poor business management. In addition, the building is too large and expensive to operate and has extremely expensive equipment, offices and furnishings. There would be a much higher probability of success had it started as a small operation, developed products and markets, and grown slowly, similar to most successful businesses. Instead, without markets, products, or commitment of raw materials, the largest fish processing plant in the US with very expensive computerized equipment was built.

Developing customers was also a challenge because the size of the facility required big customers to handle the required high-volume the plant must produce to work, but such customers want to buy a large amount over a few weeks, then try selling them for a few months, then place another large order. Unless a facility has several such accounts, the production schedule is a challenge, especially when combined with raw material that is seasonal. Finally, not enough energy was devoted to finding efficiencies. With all the energy focused on finding buyers, they could not focus on reducing raw material costs or shipping costs, which is critical in the current seafood market.

It is unlikely that the facility can be successful in its current configuration. What is needed is to subdivide the property and rent out warehouse (location near the airport makes this a viable option) and office space. Perhaps they could even allow some other small manufacturing in the building (one thing they do have is lots of cold-storage, so something like an ice cream maker might be an option). Unfortunately, the amount AIDEA has put into the building means that unless there is a bankruptcy, the cost of rent on the building makes it too expensive for the general market in Anchorage. The most likely scenario is a bankruptcy and a cheap buy by a new owner with a reduced rental rate negotiated with AIDEA, who will have to take a large loss. The new owner will have to start back up as a small operation and grow with their business.

Unfortunately, although ASI has excellent products, they have managed to alienate many customers when they could not meet orders, and their reputation may make it difficult for them to establish a customer base. If an established business was to buy the plant, or perhaps even a new start-up was to take over the facility, it might be more successful. The concept--to produce value-added fish in Alaska--was sound, but the business plan

⁴⁸ Loy, Wesley, *ASI told to pay up or be locked out*, Anchorage Daily News, June 24, 2003, p. F1.

⁴⁹ Loy, Wesley, *Subsidies give ASI unfair edge, packers say*, Anchorage Daily News June 26, 2003, p. A1.

⁵⁰ The following assessment of the ASI problems is from Jeff Bush, previously deputy commissioner, Alaska Department of Community and Economic Development and AIDEA board member, June 2003.

and scale of the facility were severely lacking. Similar to the Healy Clean Coal project, time will tell if any value can be salvaged for the State's investment in this facility.

Alaska Petrochemical Company

At the Anchorage Chamber of Commerce September 2002 forum on the All-Alaska Gas Line Initiative, proposition #3, Larry Houle speaking on behalf of the Alaska Support Industry Alliance in opposition to the proposition had this to say about State of Alaska involvement in private sector projects:

“And let us not forget the “granddaddy” of them all when the 1978 Legislature awarded a 27-year contract to Texas based Alaska Petrochemical Company selling them nearly all of our Royalty Oil. Three years later the company known as Alpetco closed its doors, walked away owing the state nearly \$60 million.”

In 1978, the Alaska State Legislature contracted with the Alaska Petrochemical Company (Alpetco) for the purpose of developing an instate refinery for Alaska's royalty share of North Slope oil. The contract contained 18-month benchmark provisions that required Alpetco to:

- Expend or commit to spend \$10 million on total project costs.
- Negotiate sales terms with perspective buyers for products from the facility, identify products and draft contracts for sale of products.
- Enter into contracts for sale of at least 70% of product output from the petrochemical facility.
- Obtain written commitments for interim financing for construction of the facility.
- Complete and file an Environmental Impact Statement for the facility.
- Complete and file all state, local and federal permit applications.⁵¹

Petrochemical manufacturing was the state government's most vigorously pursued program for economic development between 1977 and 1981. During the first two years of the push for the in-state petrochemical manufacturing, the state targeted the bulk of its North Slope royalty oil as the raw material. It sold most of its oil royalties to Alpetco on long-term contract. Oil sales began almost immediately and continued deliveries hinged on the construction of the facility at tidewater in Southcentral Alaska. When the facility

⁵¹ Brody, Susan, *Alpetco Contract Compliance, 18 Month Benchmark*, Alaska House of Representatives Research Agency, Research Request 80.031, February 20, 1980.

was cancelled, the state was left trying to collect around \$60 million in underpayment for royalty oil purchased before the deal fell through.⁵²

In 1981, Alpetco/Charter Oil abandoned the development of the Valdez oil refinery amidst a massive US oil refinery shut down. In March 1981, more than one-third of US refinery capacity was put out of service because OPEC prices increases and US consumer price resistance reduced product demand. According to economist Arlon Tussing:

The Alpetco project never made economic sense, and it is amazing that idle refining capacity in the United States had to exceed five million barrels per day before the Charter Co./Alpetco recognized that there was no place in the market for an exceptionally expensive new refinery in Alaska. The only justification for the Valdez project was the mystique of a permanent world oil shortage, in which any refinery that had long-term crude oil supplies could make money.....The decision to back out of the project is the first blow to Alaska's economic development plans, which have been based on the premise that a seller's market for oil would always exist.⁵³

This is similar to most of the other Alaska economic development infrastructure projects—they severely lacked economic reality and viability and were based on “hopeful” expectations.

⁵² Barlow, Connie and Arlon Tussing, *Use in Alaska of North Slope Natural Gas*, Alaska Review of Social and Economic Conditions, Vol. XX, No. 2, April 1983, p.6.

⁵³ Tussing, Arlon, *Alpetco's collapse has lessons for budget planners*. Anchorage Daily News, May 23, 1981.

Sources

Alaska Department of Labor and Workforce Development, Consumer Price Index, March 2003.

Alaska Department of Labor and Workforce Development, Alaska Economic Trends, *The Delta Region: An Economic Profile*, November 2002, p. 3-11.

Alaska Department of Revenue, Tax records for annual average wellhead value (\$/mcf) reported for production tax for Cook Inlet natural gas provided by Chuck Logsdon, petroleum economist, May 5, 2003.

Alaska Department of Revenue, *Spring 2003 Revenue Sources Book*, April 10, 2003.

Alaska Energy Authority, Financial Statements, June 30, 2002.

Alaska Industrial Development and Export Authority/Alaska Energy Authority, *Project Fact Sheet: Healy Clean Coal Project*, March 19, 2003.

Alaska Industrial Development and Export Authority/Alaska Energy Authority, *Project Fact Sheet: Alaska Seafood International-Seafood Manufacturing Facility*, March 19, 2003.

Alaska Industrial Development and Export Authority Revolving Fund, Financial Statements, June 30, 2002.

Barlow, Connie and Arlon Tussing, *Use in Alaska of North Slope Natural Gas*, Alaska Review of Social and Economic Conditions, Vol. XX, No. 2, April 1983.

Brody, Susan, *Alpetco Contract Compliance, 18 Month Benchmark*, Alaska House of Representatives Research Agency, Research Request 80.031, February 20, 1980.

Decision Focus, Inc., *Railbelt Intertie Reconnaissance Study: Benefit/Cost Analysis*, prepared for the Alaska Energy Authority, June 1989.

DeVries, Anne, *Seward Grain Terminal*, Alaska State Legislature, House of Representatives Research Agency, Research Memorandum 82.031, March 4, 1982.

DeVries, Anne, *Delta Project for Barley Production*, Alaska State Legislature, House of Representatives Research Agency, Research Memorandum 80.049, April 1, 1980.

Dobbyn, Paula, *State (Alaska) Writes Down \$91.3 Million in Investments: AIDEA Clean-Coal, Fish Plants Never Produce a Dime for State*, Anchorage Daily News, November 20, 2002.

Dzinich, Kurt, *Susitna Hydropower Options*, Alaska State Legislature, Senate Advisory Council, February 26, 1986.

Epler, Patti, *Project Worth Debated: Consultant Questions Susitna Dams' Value*, Anchorage Daily News, November 14, 1985, p. D1.

Fay, Ginny, *Review of the Economic Feasibility Study of the Railbelt Utilities' Proposed 138 Kilovolt Electrical Interties*, Alaska House of Representatives Research Agency, Research Request 90.165, February 16, 1990.

Fay, Ginny, *Cost of Surplus Electricity from the Healy Coal Cogeneration Project*, Alaska House of Representatives Research Agency, Research Request 89.367, April 28, 1989.

Fay, Ginny, *State Funding for Power Cost Equalization and Four-Dam Pool Projects and an Overview of Proposed Railbelt Electrical Intertie Proposals*, Alaska State Legislature Research Agency, Research Request 90.142 (revised), December 6, 1989.

Fay, Ginny, *Bradley Lake Power Sales, Service, and Transmission Agreements and House Bill 356*, Alaska House of Representatives Research Agency, Research Request 89.119, January 27, 1988.

Fay, Ginny, *Interest Rates on the Four Dam Pool and Bradley Lake Hydroelectric Projects*, Alaska House of Representatives Research Agency, Research Request 88.163, February 5, 1988.

Fay, Ginny and Gretchen Keiser, *Railbelt Energy Analysis*, Alaska House of Representatives Research Agency, Research Request 87.114, March 18, 1987.

Frost, George, *Hickel's Vision: The "Owner State"*, Anchorage Daily News, December 9, 1990.

Goldsmith, Scott and Lee Huskey, *The Alpetco Petrochemical Proposal: An Economic Impact Analysis*, Institute of Social and Economic Research, University of Alaska, April 1978.

Houle, LJ, Alaska Support Industry Alliance, *All-Alaska Gas Pipeline Initiative*, Presentation to the Anchorage Chamber of Commerce Forum-Monday, September 23, 2002.

<http://www.aidea.org/aeaprojects.htm>

Hulen, David, *State Takes a New Look at its Role Down on the Farm Ag Director Sees Smaller Part for State*, Anchorage Daily News, April 26, 1987.

Jackstadt, Stephen L. and Dwight R. Lee, *Alaska's Other Oil Spill*, The Freeman, a publication of the Foundation for Economic Education, Inc., January 1990, Vol. 40, No. 1.

Jennings, Mary, *State-Owned Businesses*, Alaska State Legislature, House of Representatives Research Agency, Research Memorandum 87.026, October 15, 1986.

Komarnitsky, S.J., *Point MacKenzie Land up for Sale*, Anchorage Daily News, December 7, 1998.

Komarnitsky, S.J., *Report—Dairy's Time Up*, Anchorage Daily News, November 24, 1998.

Lewis, Carol E., *The Agricultural Industry in Alaska: A 10-Year Look at a Changing Resource Industry*, University of Alaska Fairbanks, 2002.

Lindstrom, Elmer, *History of Agricultural Appropriations*, Legislative Finance Division, Legislative Affairs Agency, October 16, 1981.

Randall, Gail, *Farming's Future Debated, Experts Disagree about Opportunities in Alaska*, Anchorage Daily News, March 28, 1992.

Teal, David, *Susitna Feasibility*, Alaska State Legislature Research Agency, Research Request 83.137, May 13, 1983.

Teal, David, *Seward Grain Terminal*, Alaska State Legislature, House of Representatives Research Agency, Research Memorandum 83.020, February 24, 1983.

Tussing, Arlon, *Alpetco's collapse has lessons for budget planners*. Anchorage Daily News, May 23, 1981.

Wohlforth, Charles, *Big Dreams for Farms were Doomed by Reality*, Anchorage Daily News, January 1, 1992.

Wohlforth, Charles, *Expert: Dairies Doomed State Plan Blamed*, Anchorage Daily News, June 14, 1990.