

**WESTERN ALASKA FUEL
COOPERATIVE, INC. (WAFC)**

BUSINESS PLAN

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WESTERN ALASKA FUEL COOPERATIVE, INC. (WAFC)
BUSINESS PLAN

I. STATEMENT OF PURPOSE

Certain individuals and businesses are investigating the establishment of a bulk fuel buying cooperative to supply fuel to members at the best possible fuel price.

II. BUSINESS PURPOSES AND ORGANIZATIONAL BACKGROUND

The Company:

The business will operate as a nonprofit member-owned cooperative organized under IRC Section 501(c)(12) and staffed in Dillingham, Alaska. The function of the business will be assisting in identification of fuel needs, coordinating fuel purchases, and storing the fuel for the benefit of its members. Delivery of fuel to the members is also a possibility, depending on the success of the Cooperative.

Management Team:

Office administration for the Cooperative will initially be contracted to Nushagak Electric Cooperative (NEC). It is also anticipated that NEC will assist members in obtaining fuel from a fuel rack located near the NEC tank facility. Operations will be monitored by a five member board of directors and, initially, a volunteer general manager. Once operations have proven profitable, the general manager will be hired part time. Eventually the manager is expected to be a full-time employee and an administrative assistant will be hired to handle administrative duties.

Business Strategy:

Nushagak Electric Cooperative has successfully reduced the price of its fuel through the coordination of bulk fuel purchases with other Western Alaska electrical cooperatives. That success indicates the feasibility of a bulk fuel cooperative and its desirability by the community of Dillingham and surrounding villages.

Using the advantages of bulk fuel purchases through competitive bidding, the Cooperative plans to reduce the cost of fuel to its members. The Cooperative will initially contract its members' fuel delivery to an independent contractor or have the members arrange delivery or pickup of the fuel. The individual members will be the ultimate buyers and will be responsible for payment to the Cooperative. The Cooperative will charge each member a profit margin as part of the price of fuel per gallon. Accumulated profits will be used for expansion of services, possible purchase of delivery vehicles, collateral for loans, if necessary, and, ultimately, a return of patronage capital to the members.

Startup of the Cooperative is anticipated to be as simple as possible. Growth is expected to occur as the Cooperative develops experience and the confidence of its members. WAFC plans to initially contract labor with Nushagak Electric Cooperative for administration, maintenance and operations. This will save labor and training costs for employees until the organization is fiscally in a position to hire an individual(s) to perform these duties.

The Cooperative anticipates renting a fuel storage tank from NEC and constructing its own fuel rack. This strategy will allow the Cooperative to keep capitalization requirements and administrative overhead to a minimum.

Initial capitalization of the Cooperative will consist of a \$300,000 legislative grant from the State of Alaska, \$100 membership fees in the Cooperative, and potential low interest rate loans from the National Rural Electric Cooperative Finance Corporation for capital additions. The legislative grant will be used for assistance in building a fuel rack at an estimated cost of \$100,000. The remaining \$200,000 in grant funds are anticipated to be used for the purchase of a fuel tank in the future. As discussed in the financial forecast section, this grant may cause WAFC to be deemed a taxable Cooperative in the year of receipt of the grant funds.

WESTERN ALASKA FUEL COOPERATIVE
III. FINANCIAL FORECAST ASSUMPTIONS

Table 3.1 summarizes projected financial operations on an annual basis for WAFC. In addition a break-even analysis is included to illustrate the break-even price per gallon assuming a sales volume of 450,000 gallons per year and the break-even volume required if the a price of \$1.20 per gallon is charged. Assumptions used in the projected operations are as follows:

INCOME STATEMENT :

Sales - As discussed in the ISER analysis, sales volume is based on a number of factors, many outside the control of the Cooperative management. For purposes of the analysis in the first year of operation, an estimated sales volume for the year was determined to be 450,000 gallons, approximately half the capacity of the fuel tank. WAFC was assumed to be able to capture 25 to 50% of the market in the first year of operations at a sales price determined to be \$1.20 per gallon. Initial purchase of inventory will need to be financed through advances by members or an outside commercial loan or line-of-credit.

Cost of Sales - Direct landed cost of fuel is estimated at 85 cents per gallon. Delivery charges are assumed to be the responsibility of the member purchasing the fuel. Insurance expense of \$30,000 is based on the Cooperative's reimbursing Nushagak Electric Cooperative (NEC) for additional insurance liability obtained for operations (see below) and for WAFC fuel stored on its property. This estimate was obtained through discussions with officers of the Cooperative and discussions with an insurance broker. No commitment from NEC has been obtained to assume this additional responsibility as of the date of this report. If NEC does not wish to enter into this type of arrangement, the cost of the insurance premium necessary to satisfy State of Alaska regulations for pollution control will be substantial and possibly unavailable.

Direct depreciation is based on an estimated cost of a fuel rack of \$100,000 with a 10 year estimated life. The fuel rack is expected to be completed and in service for half of the first year. Additional funding will be needed to construct a tank facility for the actual cost of construction less the legislative grant available after construction of the fuel rack.

The performance of operations, maintenance and administrative tasks will be initially be contracted to Nushagak Electric Cooperative based on an estimated cost of 15 cents per gallon of sales. This estimate is developed from individuals familiar with the operations of NEC and the Dillingham area and is expected to approximate the cost of operations and maintenance if WAFC was performing the tasks internally.

Other Operating Expenses - No salaries and wages are estimated in the initial year of operations since all duties will be performed by NEC personal. Telephone and utilities are

assumed to be \$500 per month. Travel covers 2 trips to Anchorage and per diem. Accounting fees are estimated assuming the Cooperative will be required to have State of Alaska single audit performed based on the legislative grant receipts exceeding the \$150,000 threshold (see below).

Grant income - Because the business is organized as a non-profit Cooperative, 85% of its revenue must be derived from members in order to remain tax exempt. A portion or all of the available \$300,000 legislative grant may be determined to be unrelated business income, which would require the Cooperative to file a tax return as a taxable entity. No analysis has been performed on the taxability of this grant or future grants, however, the board of directors and others involved in the operations of the Cooperative should consider the impact on the business operations before accepting any funding that could jeopardize the taxability of the Cooperative.

In addition, Cooperative management should be aware that a State of Alaska single audit is required whenever State financial assistance exceeds \$150,000 in cash receipts in any one year. Audit costs approximate \$2,000 to \$5,000 depending on the conditions of the grant agreements. No audit is required as long as cash receipts fall below the \$150,000 threshold.

Organizational costs of \$25,000 are first year costs covered by the State of Alaska grant for the same amount. Grant revenue of \$100,000 is included in the first year to recognize the draw on the State of Alaska grant for the fuel rack construction.

BALANCE SHEET:

Accounts receivable: Due to the limited availability of cash, outside funding is assumed to be obtained for the initial purchase of fuel. The Cooperative will be required to pay a market rate of interest until the members pay for fuel purchases. Delays in payments from members will also affect the Cooperative's ability to pay its debts in a timely manner. The Cooperative board of directors will be responsible for monitoring cash collections and investigating delays in payment.

Fixed assets - This analysis assumes the Cooperative will construct a fuel rack to distribute fuel from tanks rented from NEC. Cost of the facility is estimated at \$100,000 with a 10 year life. WAFC will require additional capital or financing to obtain sufficient funds to construct its own facility. In addition, routine maintenance expenses will increase over time as the facilities age.

Long-term and short-term financing - For purposes of this analysis, a long-term interest expense has not been included in the initial year of operations since the construction of a tank facility is not expected until the third or fourth year of operations. Short-term financing is expected to be obtained from National Rural Electric Cooperative Finance Corporation

to obtain the initial supply of fuel. The loan is expected to be collateralized by the fuel. Interest rate is assumed to be 5% for purposes of estimating interest expense. An average outstanding balance of \$400,000 is assumed for purposes of estimating short-term interest expense.

Western Alaska Fuel Cooperative, Inc.
 Forecasted Statements of Operations
 Table 3.1

	ANNUAL	BREAKEVEN BASED ON SALES PRICE	BREAKEVEN BASED ON SALES VOLUME
EXPECTED SALES BY GALLONS	450,000	450,000	390,000
SALES PRICE	\$1.2000	\$1.1733	\$1.2000
Fuel Sales:	\$540,000	\$528,000	\$468,000
Cost of Sales:			
Landed cost of Fuel (85 cents/gallon)	\$382,500	\$382,500	\$331,500
Direct Depreciation- 1/2 year	\$5,000	\$5,000	\$5,000
Direct Insurance	\$30,000	\$30,000	\$30,000
ADMINISTRATIVE SERVICES (15 CENTS)	\$67,500	\$67,500	\$58,500
Total Cost of Sales:	\$485,000	\$485,000	\$425,000
Gross Margin:	\$55,000	\$43,000	\$43,000
Other Operating Expenses:			
Telephone	\$6,000	\$6,000	\$6,000
Travel	\$1,500	\$1,500	\$1,500
Professional Fees - Accounting	\$4,000	\$4,000	\$4,000
Professional Fees - Legal	\$500	\$500	\$500
Board Meetings	\$1,000	\$1,000	\$1,000
Office Supplies	\$6,000	\$6,000	\$6,000
Other Operating Expenses	\$4,000	\$4,000	\$4,000
Total Operating Expenses:	\$23,000	\$23,000	\$23,000
Other Income (Expenses):			
Organizational Grant Revenues	\$25,000	\$25,000	\$25,000
Organizational Costs-grant expenses	(\$25,000)	(\$25,000)	(\$25,000)
Interest Income	\$0	\$0	\$0
Interest expense - short term	(\$20,000)	(\$20,000)	(\$20,000)
Interest Expense - long term			\$0
Construction Grant Revenue	\$100,000	\$100,000	\$100,000
Total Other Income (Expenses):	\$80,000	\$80,000	\$80,000
Net Earnings:	\$112,000	\$100,000	\$100,000

IV. MARKET CONDITIONS

The most important market condition facing the Western Alaska Fuel Cooperative is the amount of fuel that it can sell. In this section, we describe the current total demand for diesel fuel #1 in Dillingham and estimate the share of this demand that might be filled by the Cooperative.

A. The Total Demand for Diesel Fuel #1 in Dillingham

1. The current demand for fuel

We estimate the current demand for diesel #1 in Dillingham between 800,000 and 1,200,000 gallons per year (based on interviews with Moody's, members of the Cooperative, and sales tax reports). Residential customers purchase about half of the fuel; the public sector purchases another quarter, and the remaining quarter goes to commercial customers.

Annual residential demand ranges between 500,000 to 600,000 gallons per year. These estimates are based on an estimate of 691 occupied housing units (1990 Census estimate). About half (334) are rented and the remainder (357) are owned. The annual consumption of fuel in a house ranges from 1000 to 2500 gallons per year, but the majority of the non-rented housing consume about 1000 to 1200 gallons per year. We approximate rented apartments consume half the fuel of a house. We estimate residential fuel consumption by multiplying the number of each type of housing (owned or rented) by the annual fuel consumption of each type. (from *U.S. Census of Population*, on-site interviews 7/6/93, and *Electricity Demand Forecast for the Bristol Bay Regional Power Plan*, Scott Goldsmith et. al., ISER Report, 1982).

Consumption of fuel by the public sector is about 285,000 gallons per year. This demand includes 215,000 gallons used annually by the hospital and about 60,000 gallons per year used by the City of Dillingham. The schools in Dillingham use only about 10,000 gallons per year since waste heat from the Nushagak Electric Cooperative is used to heat the school buildings.

The largest commercial user we interviewed reported 60,000 to 70,000 gallons used in 1992 and about half of that in 1993. Other commercial users consume anywhere from 10,000 to 40,000 gallons each per year (on-site interviews, 7/5/93). Since we do not have complete data on the demand of each commercial user, we estimate commercial demand as residual after we subtract residential and public sector demand from total demand. Using this method, we estimate total commercial demand at about 150,000 to 250,000 gallons per year.

2. The demand for fuel over the next five years

The growth of population, the economy, and government spending in Dillingham are the most important factors determining changes in demand for fuel. The residential component of

demand is determined primarily by the number and size of occupied housing units. The number of occupied housing units is determined primarily by the growth of population in Dillingham. The demand by commercial customers is determined primarily by the growth of the Dillingham economy. Public sector demand is determined primarily by the level of state and local government spending in the area.

The growth of population, the economy, and government spending are closely related. The growth of population is determined primarily by the growth in jobs in the economy: as more year-round jobs become available in the economy, more people choose to live in Dillingham. The growth of the Dillingham economy is determined primarily by the growth of the fishing industry and state government spending in the area.

The fishing industry comprises about 40% of the jobs in Dillingham. Over the past ten years, the fishing industry in Dillingham has fluctuated with the variations in the harvest and price of salmon from Bristol Bay. Over the last few years, the price of salmon has decreased, the harvest of salmon has increased, and the total value of salmon harvested has declined. (*Alaska Salmon Markets*, Gunnar Knapp, ISER report, May 1992 and Dillingham information sheet, Department of Community and Regional Affairs, 1987).

Government spending in rural areas grew dramatically during the early 1980s as state oil revenues were spent throughout the state. State government spending slowed after 1986 and is likely to continue to decline over the next five years due to the anticipated decline in state oil revenues. Offsetting this decline is a substantial state capital budget for Fiscal Year 1993 which is expected to bring about \$60 million dollars to the Bristol Bay region spread over several years (on-site interviews, 7/6/93). Some, but not all, of this money may be spent directly in the Dillingham economy for construction and other services. As an approximation, we assume annual state government spending in Dillingham will remain constant over the next five years.

Changes in the fishing industry and state government spending has affected the rest of the economy in Dillingham. From 1981 through 1991 the economy of the Dillingham Census Area, not including fish harvesting, has experienced growth in wage and salary employment of about 1.4 percent annually. Most of this growth in employment occurred in the City of Dillingham.

In recent years, the number of people living in Dillingham has declined about 1.5 percent annually, from 2141 in 1986 to 2017 in 1990. In contrast, during the early 1980s Dillingham population grew from 1563 in 1980 to 2141 in 1986 (about 5.3 percent annually). Over the entire period from 1980 through 1990, population grew on average 2.3 per cent annually. These fluctuations in population are likely due to the swings in activity in the fishing industry: more people came to work in Dillingham when the fishing is good as was the case in the mid 1980s. (from *U.S. Census of Population* and Dillingham information sheet, Department of Community and Regional Affairs. We use the 1990 Census figures which are for April 1990 instead of the preliminary population numbers for July 1991. We believe the April 1990 estimate is a more reliable indicator of year-round population than the July 1991 provisional estimate).

These changes in population, the fishing industry, and state spending have driven the changes in the demand for fuel in Dillingham. We do not have detailed information about the changes in fuel demand in recent years, and so we are unable to analyze in detail how fuel demand has changed in response to changing economic conditions in Dillingham.

As an alternative, we approximate that each component of demand will grow at the same rate as the most important determinant of its growth. We assume that residential demand will grow at the same average annual rate as population observed over the past ten years (2.3%). We assume commercial demand will grow at the same average annual rate as the growth of wage and salary employment observed in the Dillingham Census Area over the last ten years (1.4%). We assume public sector demand will remain constant as state government spending in the area remains constant.

We apply these average annual growth rates to the current levels of each component of demand to project the level of each component of demand five years in the future. Our estimates of current demand for diesel fuel #1 and the projected levels of demand five years from now are summarized in Table 4.1. Notably, residential demand is the largest component and grows at the highest rate of all three components.

**TABLE 4.1: Estimated Total Demand for Diesel Fuel #1
in Dillingham in 1993**

Component of Demand	Demand First Year	Demand Fifth Year	Average Annual Growth Rate
Residential	600,000	682,163	2.6%
Commerical	250,000	267,340	1.4%
Government	285,000	285,000	0.0%
Total	1,135,000	1,234,503	1.7%

B. Market Share of Western Alaska Fuel Cooperative

Currently Delta Western is the only wholesale supplier of diesel fuel #1 in Dillingham. Both Delta Western and Moody's are retail distributors. If the fuel Cooperative were to enter the market, they would compete with Delta Western for a share of the existing wholesale fuel market. The choices made by customers, Delta Western, the fuel distributors, and the Cooperative would determine the share of total demand secured by the Western Alaska Fuel Cooperative.

1. Choices made by fuel customers

The most important determinant of the Cooperative's market share is whether the customers choose to buy from Delta Western or from the Cooperative. When choosing a supplier, customers would likely consider a number of factors. Some buyers may be concerned about the reliability of the suppliers and their ability to remain in business over time. Large buyers may consider the availability of special discounts for bulk purchases. Customers would likely consider the cost of a membership fee as part of the expense of buying fuel from the Cooperative. Some customers may have multi-year contracts which limit their ability to switch from Delta Western to the Cooperative. Government agencies may be constrained by law to choose the supplier who offers the lowest price for fuel.

Among all of these factors, the most important consideration for most customers would be the delivered price of fuel. The current quoted price for 200 gallons of heating fuel delivered today is \$1.58 per gallon (average of Delta Western and Moody's quotes for delivered fuel on 7/12/93). The price for larger deliveries and regular customers is lower due to specially negotiated prices. We learned in our on-site interviews that many customers currently pay \$1.30 to \$1.40 per gallon while the largest buyers pay about \$1.25 per gallon. These prices vary considerably from month to month and year to year. Over the past five years, the delivered price of fuel for various sized deliveries has been as high as \$2.00 (during the gulf war) and as low as \$1.15.

If the Cooperative's price were consistently lower than Delta Western's price, then customers would likely buy from the Cooperative instead of Delta Western. As a result, the price charged by the Cooperative relative to the price charged by Delta Western is the most important determinant of the Cooperative's market share. The price that might be charged by Delta Western is discussed below while the price that could be charged the Cooperative is discussed in Section V.

2. Choices made by Delta Western

The price charged by Delta Western over the next five years will be determined by their competitive strategy and their cost of supplying fuel. As any other competitive business, Delta

Western likely considers their competitive strategy with respect to potential competitors (who are considering entering the market) and current competitors (who have already entered the market).

The threat of a potential competitor entering the market may lead Delta Western to consider "barriers to entry" which would prevent or dissuade the potential competitor from entering the market. The most effective barrier to entry into the market would be to lower the price of fuel below the cost at which the potential entrant could supply the fuel. If the new entrant is persuaded that Delta Western can sustain this lower price, then the entrant may choose not to enter the market.

It is possible that Delta Western has initiated this strategy with the Southwest Region Schools. The Southwest Region Schools currently has a contract for delivered fuel from Delta Western at \$1.13 per gallon while the price they paid last year was \$1.22 per gallon (this price is for very large volume deliveries to the villages). This price is considerably lower than the price charged for most other deliveries in Dillingham. This price may reflect a strategy to discourage a competitor from entering the market to sell oil in the villages.

If another competitor were to enter the Dillingham market, Delta Western could engage in several different competitive strategies. First, it could compete "very aggressively," by lowering the price below the cost at which the new entrant could supply fuel. If Delta Western were able to sustain this lower price over a long period, the competitor would be forced out of business. If Delta Western were able to compete very aggressively, the market share of the Cooperative could be very low.

Second, Delta Western could compete "fairly" by charging the price of fuel "at cost." The price of fuel would include only the cost of the fuel, transportation, delivery, and a mark-up to cover fixed costs. If this price were about the same as the price charged by the Cooperative, the two competitors would likely share the market roughly equally; each would attract about a fifty percent market share.

Third, Delta Western could choose to relinquish the market. If the Dillingham market is currently unprofitable for Delta Western or if the costs of replacing bulk storage is too costly, they may choose to keep their price at current levels. If the Cooperative could supply fuel at lower cost than the current price, customers would switch to the Cooperative. Under these conditions, the Cooperative could attract most or all of the market.

Which of these strategies Delta Western chooses depends critically on Delta Western's costs of supplying fuel. If their average cost per gallon of supplying fuel is lower than the current price, then they would have greater flexibility in choosing a competitive strategy. Several components of average costs would determine Delta Western's ability to compete with a new competitor.

First, if Delta Western is already charging a price higher than the cost of supplying the

fuel to the market, then they have some flexibility to lower the price and still remain competitive. Second, they may be able to supply fuel at a lower cost than the Cooperative due to economies of scale in transporting, storing, and delivering fuel for many areas in Western Alaska. Third, because Delta Western supplies fuel to a wide area in Western Alaska, they may be able to sustain losses for short time in Dillingham while making up the losses in other areas.

Offsetting this flexibility to lower the price are Delta Western's fixed costs. These fixed costs include debt payments, insurance expenses, the cost of replacement of tanks, and environmental regulation costs. If Delta Western has substantial fixed costs which must be covered by a mark-up on each gallon of fuel sold, they would be limited in their ability to lower the price of fuel.

We do not have detailed information about Delta Western's costs of providing fuel to the Dillingham area or other areas in Western Alaska. Without this information, we cannot determine which of these competitive strategies Delta Western may follow, and we cannot determine how effective these strategies might be.

3. Choices made by the retail fuel distributor

Besides the customers, Delta Western, and the Cooperative, Moody's (the retail fuel distributor in Dillingham) also plays a role in determining the market share of the Cooperative. As a competitive business, the retail distributor is interested in finding the least costly way to distribute fuel. If the Cooperative were to enter the market, the Moody's would be able to choose to buy fuel wholesale either from Delta Western or the Cooperative. When making this choice, he would consider a number of factors: 1) his contractual obligations to Delta Western; 2) the price which he is able to negotiate with Delta Western to buy all of the different types of fuels he distributes (not just the price of diesel #1); 3) the profit margin on each gallon of fuel delivered; and 4) the delivery cost per gallon for different sized deliveries. The choices made by the retail distributor could increase or decrease the market share of the Cooperative.

4. The Cooperative's market share

The choices made by customers, Delta Western, the retail distributor, and the Cooperative will collectively determine the market share of the Cooperative over the next five years. Because we do not have reliable information on the costs of operation of Delta Western, we cannot reliably project the competitive strategy of Delta Western, which is the most important determinant of market share.

However, we can project a range of possible market shares which account for the range of possible strategies Delta Western might choose. On the "high" end of this range, we assume that Delta Western chooses to compete "fairly" and charges a price equal to its cost of supplying fuel to Dillingham. We assume this price is the same as cost per gallon facing the Cooperative

if it were able to secure fifty percent of the market. We also assume that the Cooperative is able to negotiate with the distributor to distribute fuel at the same cost that he currently distributes fuel for Delta Western. Under these assumptions, the two competitors would be able to charge the same price. Under these price conditions, the market would be split roughly evenly between the two competitors: they might each receive a fifty percent market share.

At the low end of the range, we assume that Delta Western is more competitive and able to charge a price lower than the Cooperative for a variety of reasons: 1) Delta Western may be able to operate at a loss in Dillingham and distribute losses to other areas; 2) they may be able to exploit economies of scale in transport, storage, and delivery that are not accessible to the Cooperative; 3) they may be able to negotiate lower prices with existing large customers who choose to remain with their current supplier.

Under these more competitive conditions, Delta Western may be able to negotiate with most of the large government and commercial customers to sell fuel at a price lower than the Cooperative. As a result, Delta Western may capture all of the commercial and public sector components of the market. If Delta Western also chooses to compete more aggressively in the residential market, the Cooperative may only be able to attract half of the residential fuel market. Under these competitive conditions, the Cooperative may receive none of the commercial and government markets and only half of the residential market. As a result they may receive only twenty-five percent of the total diesel fuel #1 market.

This range of market shares -- 25 percent to 50 percent -- is the most likely range that the Cooperative may receive. Market shares much higher or much lower are possible, but less likely. If Delta Western were to choose a much more aggressive competitive strategy, they may attempt to charge a very low price for a short period, attract most of the market, and drive the Cooperative out of business. Alternatively Delta Western could choose to relinquish the market, not lower their price at all, and let the Cooperative attract most or all of the market. These more extreme competitive strategies are much less likely than the more moderate competitive strategy of sharing some of the market with the Cooperative.

Using this "most likely" range of market shares, we estimate the volume of fuel that the Cooperative could sell by multiplying its projected market share by the projected total demand for fuel in the first and fifth years of operation. In Table 4.2, we summarize our projections of the sales volume of diesel fuel #1 sales that might be sold by the Cooperative. Total sales volume in the first year is projected to be between 284,000 and 568,000 gallons per year, depending on the market share. In the fifth year, total sales volume is estimated to range between 309,000 and 617,000 gallons per year.

**TABLE 4.2: Estimated Total Demand for Diesel Fuel #1
Filled by Fuel Coop in Dillingham in 1993**

Component of Demand	Sales Volume of Coop during first year		Sales Volume of Coop during fifth year		Average Annual Growth Rate
	Range of Possible Sales Volume		Range of Possible Sales Volume		
	High Share: 50%	Low Share: 25%	High Share: 50%	Low Share: 25%	
Residential	300,000	150,000	341,081	170,541	2.6%
Commerical	125,000	62,500	133,670	66,835	1.4%
Government	142,500	71,250	142,500	71,250	0.0%
Total	567,500	283,750	617,251	308,626	1.7%

V. COST PROJECTIONS

As discussed in Section IV, one of the important factors determining the Cooperative's market share is the price at which it can sell fuel to customers now and over the next five years. The costs facing the Cooperative in the first year of operation were prepared by Deloitte & Touche and are presented in the financial forecasts in Section III of this report. In this section we use these financial forecasts to project the delivered cost of fuel in the first and fifth years of operation.

A. Projections of Delivered Price of Fuel in First Year of Operation

We have developed projections of the delivered cost of fuel for both high volume and low volume sales. As discussed in Section IV, the high end of the sales volume range assumes that Delta Western chooses a competitive strategy in which the Cooperative and Delta Western share the market equally. The sales volume of the Cooperative would amount to about 568,000 gallons per year at the high end of the range. The low end of the sales volume range assumes that Delta Western chooses a more aggressive competitive strategy which limits the Cooperative's sales volume to 284,000 gallons per year.

In Tables 5.1 and 5.2 we summarize our projections of the costs of fuel delivered from the Cooperative's bulk storage tanks for the high and low sales volume. The left part of the tables shows the volume of fuel sold and the cost of delivered fuel during the first year of operation. All dollar figures are in constant 1993 dollars, which means they are adjusted to remove the effects of inflation.

The annual costs during the first year of operation are taken from the financial projections developed by Deloitte and Touche. We have added the annual cost of delivery to these accounts in order to determine the total annual cost of all delivered fuel during the year. We estimate the average cost per gallon of delivered fuel by dividing the total annual cost of all delivered fuel by the total number of gallons sold during the year. We have not added any mark-up or profit margin to the delivered price of fuel.

At the high end of the sales range, with sales volume of 568,000 gallons, we project that the average cost of delivered fuel at \$1.26 per gallon (from Table 5.1). At the low end of the sales range, with sales volume of 284,000 gallons, the cost of delivered fuel would be higher (\$1.39 per gallon) because fixed costs would have to be covered by fewer gallons sold (from Table 5.2). If the Cooperative were able to secure nearly all of the market and sell as much as 850,000 gallons, the delivered cost of fuel would be about \$1.21 per gallon.

Figure 5.1 shows how the Cooperative's costs affects the price it can charge for fuel. The curved line on the graph depicts the average cost per gallon of delivered fuel as a function of different sales volumes. This line can be interpreted as the Cooperative's supply curve (or average cost curve) for fuel. As sales volume increases, the average cost at which the fuel can be supplied declines because the fixed cost of operation can be spread over a greater sales

volume.

The shaded area on Figure 5.1 shows the current range of prices for diesel fuel #1. The lower edge of the range is the price charged for large buyers who make regular purchases (about \$1.25 per gallon). The upper part of the range is the current quoted price for a 200 gallon delivery today (\$1.58 per gallon). Most customers pay a price somewhere in this range (We learned in our on-site interviews, that many customers pay between \$1.30 and \$1.40 per gallon).

In order to be competitive, the Cooperative would need to charge a price within the shaded area of the graph or below. In order to charge a price in this range, the Cooperative would need to achieve sales volume of at least 170,000 gallons per year. This volume implies a market share of about fifteen percent. With this market share, the Cooperative would need to charge \$1.58 per gallon to remain in business and may only attract the smallest buyers.

If the Cooperative were able to attract a fifty percent market share with sales volume of 568,000 gallons volume per year, the delivered price per gallon would need to be no greater than \$1.26 for the Cooperative to remain in business. This price falls near the lower end of the current range of prices. At this price, the Cooperative would attract many of the residential and medium-size customers. However, some of the largest buyers may choose to continue to buy fuel more cheaply from Delta Western.

If the Cooperative were able to secure sales volume above 600,000 gallons per year it would be able to lower the price of fuel below the current range. In order for the Cooperative to sell more than 600,000 gallons per year, the Cooperative would need to secure more than half of the market. The Cooperative could secure more than half the market only if Delta Western chooses a competitive strategy which relinquishes more than half of the market to the Cooperative.

B. Projections of Delivered Price of Fuel During Fifth Year of Operation

In order to project how the delivered price changes over the first five years of operation, we investigated the growth of each component of costs. These projections are summarized in the right columns of Tables 5.1 and 5.2.

The most important component of these costs is the cost of purchasing the product in Anacortes. The cost per gallon of purchasing fuel in Anacortes is assumed to grow at 2.3% annually in the high scenario and 0.7% annually in the low scenario. These annual growth rates are the projected real growth rates of the price crude oil as projected for the Alaska Energy Authority in 1991. (Economic Analysis of Coal-Fired Power Plants to Serve Nome, Kotzebue, and the Red Dog Mine, Alan Mitchell and Steve Colt, for Arctic Slope Consulting Group, for Alaska Energy Authority, Table 5.8, p. 5-48). The projected total cost of buying fuel in Anacortes is the product of projected total gallons sold times the projected cost per gallon.

For the freight and delivery components of costs, we projected how the cost per gallon

for each of these costs components would change over the next five years. We determined what fraction of each of costs are for wages and salaries, fuel, and other costs. The wage and salary component of freight costs is assumed to grow at the same rate as the real average annual wages and salaries in deep sea freight transportation over the past five years. The wage and salary component of delivery costs is assumed to grow at the same rate as real average annual wages and salaries in the Dillingham Census Area economy over the last ten years. The fuel component of each of these cost items is assumed to grow at the same rate as the real price of crude oil as discussed above. The remaining components of these costs are assumed to be constant.

The administrative services cost component is for paying Nushagak Electric Cooperative to operate the bulk storage tanks. We assume that this is a variable cost which varies with the amount of fuel sold. We approximate that half of these cost per gallon would be for wages and salaries. The wage and salary component of bulk storage cost per gallon is assumed to change at the same average annual rate as the real average annual wages and salaries in the Dillingham Census Area observed over the past ten years. The remaining fifty percent of bulk storage cost per gallon is assumed to be constant. The total cost of bulk storage is the product of the cost per gallon times the total number of gallons sold.

All other cost are assumed to be fixed costs which do not vary with the amount of fuel sold and do not change over time once the effects of inflation are accounted for. As a result, the costs of insurance, depreciation, interest are assumed to remain constant over the next five years after adjusting for the effects of inflation.

Notably, the projected delivered cost of fuel is projected to be only slightly higher after five years of operation. Over time, the real average cost per gallon of buying and storing fuel increases slightly. However, offsetting this slight increase in the average cost per gallon is an increase in total volume sold. As volume increases, fixed costs can be spread over greater volume and the average cost per gallon decreases. The net effect of increasing cost per gallon and increasing volume is a small increase in the delivered cost per gallon. Most of that increase can be attributed to the higher cost per gallon of the product purchased in Anacortes.

TABLE 5.1: Projections of Demand and Supply Conditions Facing the Western Alaska Fuel Coop
 Constant 1993 Dollars
HIGH SALES SCENARIO ASSUMPTIONS
 "Fair" Competition: Delta Western and Coop Split the Market
 Low growth in crude oil prices

	First Year of Operation		Fifth Year of Operation		Average Annual Growth Rate
	per gallon	per year	per gallon	per year	
DEMAND CONDITIONS: HIGH SCENARIO					
Gallons of Diesel #1 Sold					
Residential		567,500		617,251	1.7%
Commercial		300,000		341,081	2.6%
Government		125,000		133,670	1.4%
		142,500		142,500	0.0%
Revenues from Sales of Product to Customers	\$1.26	\$713,600	\$1.27	\$784,165	1.9%
Revenues received by Fuel Distributor	\$0.12	\$68,100	\$0.12	\$73,906	1.6%
Revenues received by Bulk Storage Operator	\$0.15	\$85,125	\$0.15	\$91,582	1.5%
Revenues received by Fuel Coop	\$0.99	\$560,375	\$1.00	\$618,677	2.0%
SUPPLY CONDITIONS: HIGH SCENARIO					
Product Cost	\$0.72	\$408,600	\$0.75	\$460,195	0.7%
Freight Transportation	\$0.13	\$73,775	\$0.13	\$80,482	0.1%
Direct Depreciation		\$5,000		\$5,000	0.0%
Direct Insurance		\$30,000		\$30,000	0.0%
Administrative Services (Bulk Storage)	\$0.15	\$85,125	\$0.15	\$91,582	-0.2%
Other Operating Expenses		\$23,000		\$23,000	0.0%
Interest Expense		\$20,000		\$20,000	0.0%
Delivery (not paid by Coop)	\$0.12	\$68,100	\$0.12	\$73,906	-0.0%
Total Cost of Delivered Fuel	\$1.26	\$713,600	\$1.27	\$784,165	0.7%

TABLE 5.2: Projections of Demand and Supply Conditions Facing the Western Alaska Fuel Coop

Constant 1993 Dollars
LOW SALES SCENARIO ASSUMPTIONS
 Intense Competition: Coop gets 25% of market
 High growth in crude oil prices

	First Year of Operation		Fifth Year of Operation		Average Annual Growth Rate
	per gallon	per year	per gallon	per year	
DEMAND CONDITIONS: LOW SCENARIO					
Gallons of Diesel #1 Sold		283,750		308,626	1.7%
Residential		150,000		170,541	2.6%
Commercial		62,500		66,835	1.4%
Government		71,250		71,250	0.0%
Revenues from Sales of Product to Customers	\$1.39	\$395,800	\$1.46	\$450,502	2.6%
Revenues received by Fuel Distributor	\$0.12	\$34,050	\$0.12	\$37,160	1.8%
Revenues received by Bulk Storage Operator	\$0.15	\$42,563	\$0.15	\$42,100	-0.2%
Revenues received by Fuel Coop	\$1.12	\$319,188	\$1.20	\$371,242	3.1%
SUPPLY CONDITIONS: LOW SCENARIO					
Product Cost	\$0.72	\$204,300	\$0.81	\$248,968	2.3%
Freight Transportation	\$0.13	\$36,888	\$0.13	\$40,583	0.2%
Direct Depreciation		\$5,000		\$5,000	0.0%
Direct Insurance		\$30,000		\$30,000	0.0%
Administrative Services (Bulk Storage)	\$0.15	\$42,563	\$0.15	\$42,100	-0.2%
Other Operating Expenses		\$23,000		\$23,000	0.0%
Interest Expense		\$20,000		\$20,000	0.0%
Delivery (not paid by Coop)	\$0.12	\$34,050	\$0.12	\$37,160	0.1%
Total Cost of Delivered Fuel	\$1.39	\$395,800	\$1.46	\$450,502	2.3%

FIGURE 5.1
Delivered Cost per Gallon of Diesel Fuel #1
in Dillingham Market by Western Alaska Fuel Coop

