

Section Six

Alaska Refining Sales and Consumption

Alaska Refineries

Alaska has six refineries owned by four firms that produce nearly all of the fuel consumed in Alaska. As shown in Table VI.1, two small refineries owned by ConocoPhillips operate at the Prudhoe Bay-Kuparuk industrial complex on the North Slope. The remaining four refineries are located in North Pole near Fairbanks, Nikiski on the Kenai Peninsula, and Valdez near the TAPS marine terminal. These refineries serve a variety of residential, commercial, industrial, and transportation sectors across the state.

Table VI.1 Alaska Refineries and Service Stations

Refinery / Retail	Location	Distillation Capacity (Barrels Per Day)
ConocoPhillips	Kuparuk	14,000
ConocoPhillips	Prudhoe Bay	14,000
Petro Star Inc.	North Pole	15,000
Petro Star Inc.	Valdez	46,000
Tesoro Petroleum Corp	Nikiski (Kenai)	72,000
Williams Alaska Petroleum Inc.	North Pole	<u>220,000</u>
Total Distillation Capacity		381,000
Gasline Service Stations	Statewide	337 Outlets

Williams Co. operates a refinery at North Pole, near Fairbanks. In addition, it owns 29 Alaska retail stores, a 700,000-barrel jet fuel terminal in Anchorage and a 20,000-barrel jet fuel terminal in Fairbanks. The North Pole refinery was expanded in 1998 and has a throughput of 220,000 barrels per day of ANS shipped to the refinery via TAPS. The Williams refinery consumes about 64,000 barrels of crude per day to manufacture petroleum products. After removing the lighter components used to make petroleum products, the remaining 146,000 barrels per day of residual oil is returned to the TAPS. Williams pays a quality bank charge for returning the degraded oil to the TAPS stream.

Williams reports they produce the following product slate:

Gasoline & Naphtha	19%
Jet Fuel	57
Diesel	19
Gas Oil	4
Asphalt	<u>1</u>
Total	100%

Naphtha is mostly exported to the Far East. Williams transported about 1.4 million gallons per day of jet fuel during 2001, plus naphtha, and about 3,000 barrels per day of gasoline by rail to South-central Alaska. The North Pole refinery accounts for more than half of Anchorage jet fuel consumption. Williams reports that they exchange gasoline for their Juneau station with an Outside oil company. About half of Williams' gasoline is sold through their branded retail stores throughout the state.

Williams purchases a maximum of 57,000 barrels per day of Alaska royalty oil and the balance of its needs from other North Slope producers. This Royalty-in-Kind (RIK) contract expires at the end of 2003. (See Section V, above for more details on State RIK operations).

In June 2002, Williams declared its intentions to sell its North Pole refinery and its other Alaska assets, including its retail stations and its 3.1-percent interest in the TAPS, as a result of pressure to re-structure its balance sheet.

Tesoro Alaska Co. operates six refineries across North America and produces a total of about 560,000 barrels per day of motor fuels and petroleum products. Tesoro's Nikiski Alaska refinery was built in 1969 and has oil throughput capacity of 72,000 barrels per day. The Tesoro refinery processes all of the oil produced in the Cook Inlet and supplements this supply primarily with Alaska North Slope and foreign crudes. In December 1994, Tesoro completed installation of a vacuum unit at the Nikiski refinery. This unit reduces the volume of bottoms and resid production by approximately half. The Nikiski refinery produces an average of approximately 50,000 barrels per day of petroleum products to serve its 125 Tesoro-branded retail stations and other customers across the state. Tesoro reports that they produce the following product slate:

Gasoline	25%
Jet, Diesel, Fuel Oil	40-45
Bottoms and Residual	30
Total	100%

Process units at the refinery include a hydrocracker that is used to maximize the production of jet fuel for sale at the Anchorage International Airport. Tesoro's refining and marketing operation includes a 75-mile product pipeline, which runs from the refinery in Nikiski to Tesoro's terminal facility located at the Port of Anchorage. The pipeline runs across Cook Inlet and past the airport, where a spur allows direct delivery into the airport's tank farm. The Nikiski refinery serves about 40 percent of total monthly jet fuel demand at Ted Stevens International Airport in Anchorage.

Tesoro makes asphalt, which it sells in Alaska. It exports to other states nearly all of the remaining heavy oil, for which there is no market in the state. The refinery sells all of its summer gasoline production in the state but must ship gasoline out of state during the slower, winter season.

Tesoro currently has no contracts with the state of Alaska to purchase state royalty oil but, as discussed above in Section Five, has purchased State RIK crude oil in the recent past.

Petro Star, Inc. operates refineries in North Pole and Valdez and is owned by the Arctic Slope Regional Corporation. Petro Star was founded in 1984 to process light fuels for heating homes and operating businesses in rural Alaska and built its first refinery at North Pole in 1984. The smaller, North Pole refinery has throughput capacity of 14,000 barrels per day; the Valdez refinery, completed in 1993, processes 40,000 barrels per day. Both refineries are located adjacent to TAPS and process ANS crude oil. Only 25 percent of the throughput is retained as product and refinery fuel with the balance returned to TAPS in a similar manner to Williams' North Pole refinery. Petro Star manufactures jet fuel, diesel, and fuel oil.

Statewide Total Fuel Consumption

Total annual fuel sales by major product type are summarized in Tables VI.2.A and B. The trend in annual fuel sales tends to be increasing for most products, subject to modest downturns in 2000 (gasoline and No. 2 diesel) and in 2001 (jet fuel). Average annual Jet fuel consumption increased 3.4 percent from 1997 to 2000 then declined sharply before rebounding in 2002. The jet fuel decline in 2001 is probably related to the sharp nationwide decline in commercial aviation in the fourth quarter of 2001 and is reflected in the seasonal charts, below. While complete data on jet consumption for the entire 2002 year is not yet available, various reports, including monthly data through October 2002 (below in Figure VI.5), indicate that long-term growth in jet fuel consumption has recovered and is consistent with average annual growth exhibited prior to 2001. Alaska's refineries supply approximately 88 percent of in-state jet

fuel consumed based on EIA data on prime supplier sales.¹ Total motor gasoline gas consumption exhibits a stationary pattern over the past six years. Annual average aviation gasoline consumption has increased slightly.

**Table VI.2.A Prime Supplier Sales for Alaska, 1998 – 2002
(Thousands of Gallons per Day)**

Year	Transportation Fuels				Non-Transport Fuel		
	Total ^a Gasoline	Aviation Gasoline	Jet Fuel ^b	No. 2 Diesel	Total Fuel Sold	No. 2 Heating Oil	No. 2 Distillate
1998	771.4	57.6	2,285.2	427.7	3,541.9	357.4	785.1
1999	784.4	58.7	2,434.4	467.2	3,744.7	295.9	W
2000	744.8	58.7	2,502.9	396.5	3,702.9	287.6	684.1
2001	761.3	61.2	2,461.9	462.5	3,746.9	227.4	689.8
2002	755.2	55.3	2,777.1	512.8	4,100.4	W	639.3

**Table VI.2.B Prime Supplier Petroleum Product Prices for Alaska, 1998 – 2002
(Dollars per Gallon – Taxes Excluded)**

Year	Transportation Fuels				Non-Transport Fuel		
	Regular Gasoline	Aviation Gasoline	Jet Fuel ^b	No. 2 Diesel	Total Fuel Sold	No. 2 Heating Oil	No. 2 Distillate
1998	0.96	NA	0.49	0.91	NA	0.85	NA
1999	0.98	NA	0.61	0.81	NA	0.97	NA
2000	1.31	NA	0.96	W	NA	1.34	NA
2001	1.37	NA	0.81	1.26	NA	1.38	NA
2002	1.27	NA	0.76	1.10	NA	1.09	NA

Table Note:

^a Includes regular, mid-grade, and premium blends of motor gasoline.

^b Includes kerosene and naphtha.

Source: Energy Information Administration, U.S. DOE, *Prime Supplier Sales in Alaska*, (http://www.eia.doe.gov/emeu/states/oilsales_trans/oilsales_trans_ak.html).

¹ Prime suppliers include firms that produce, import, or transport petroleum products across state boundaries and local marketing areas, and sell the products to local distributors, local retailers, or end users. According to the EIA, prime supplier sales within a given state may serve as a proxy for consumption but may not equal actual consumption by the end-users in the state because a product may be sold by a prime supplier in one state and transported by local distributors to another state for final consumption.

Seasonal Transportation Fuel Sales with Forecast for 2003 and 2004

Alaska's extreme seasonal conditions promote a variety of seasonal consumption patterns for various key transportation fuels and for Diesel No. 2 fuel oil. As shown in Figure VI.3, statewide monthly combined sales of regular, mid-grade, and premium motor gasoline generally increases by 30% over the average annual consumption during the summer months and drops by 15-to-20% of the annual average during the winter months. Over time, the trend in annual total motor gasoline sales has remained flat.

Aviation gasoline consumption also exhibits significant seasonal volatility, as shown in Figure VI.4. During the peak summer season, monthly avgas consumption rises to 138,000 gallons per day – double the annual average rate of 58,000 gallons per day. During the off-season, avgas consumption falls to about 1/3 of the annual average rate. The long-term trend appears to be slightly rising.

The seasonal swing in jet fuel prime supplier sales is clearly depicted in Figure VI.5. Peak season jet fuel sales (June – November) rise by 15-20 percent above the yearly average and drop to about 80 percent of the yearly average in the off-season (December – May). The long-term trend appears to be increasing but is subject to the significant commercial aviation shock in late 2001. As indicated above, by late 2002, jet fuel demand had rebounded.

The seasonal pattern of No. 2 diesel prime supplier sales also exhibits a distinct summer peak (Figure VI.6). The data reported by the Energy Information Administration includes diesel used for private and commercial transportation.

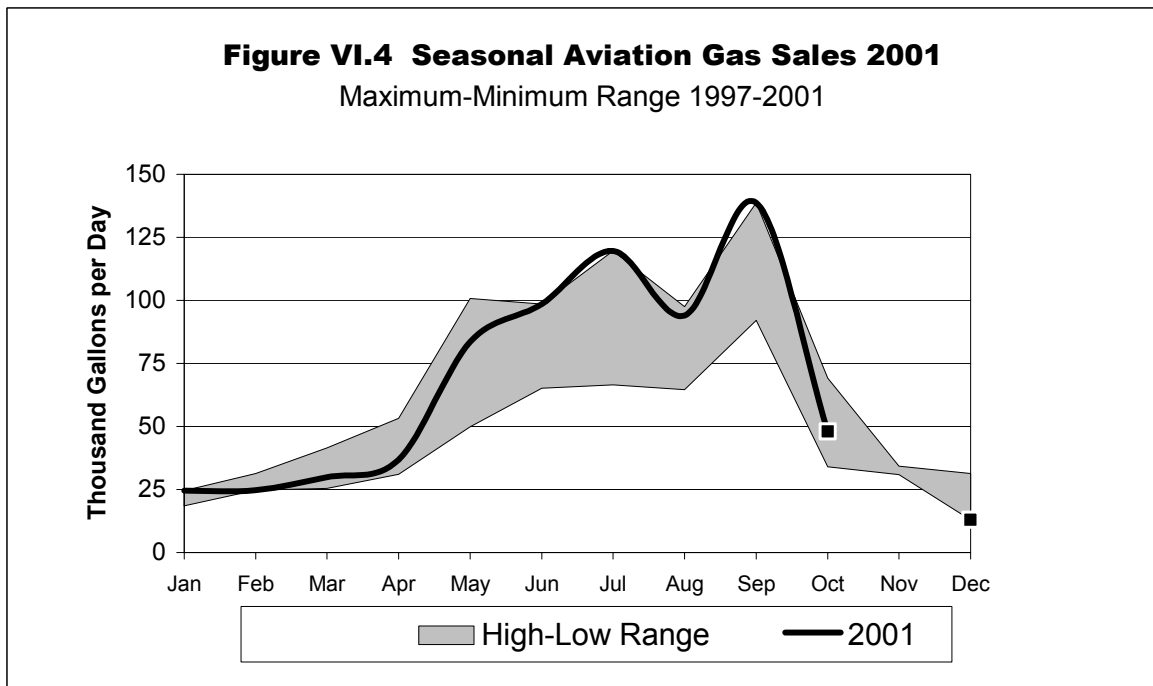
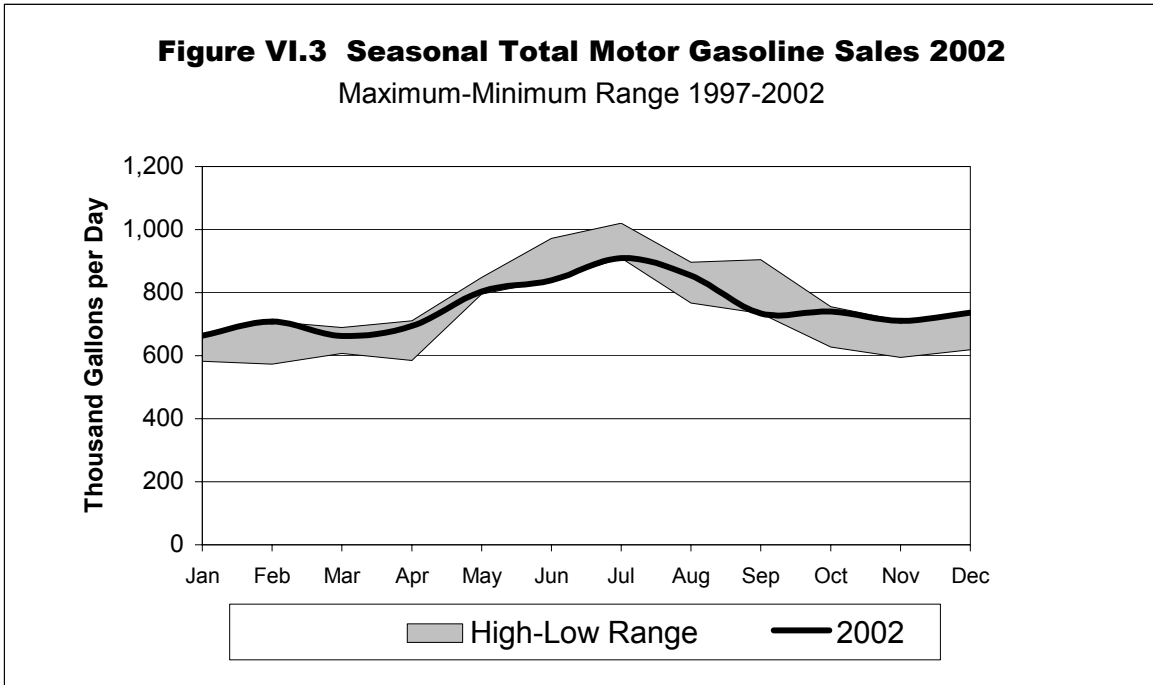
The forecast of prime supplier sales for major transportation fuels is shown in Figures VI.3 – VI.6 and in Table VI.3. The forecast for each fuel type is based on a time-series decomposition (TSD) methodology. The TSD method extrapolates from past behavior by breaking the time series into its component parts – long-term trend, seasonal fluctuations, cyclical patterns, and irregular movements – and reassembling a forecast of these individual components. Details regarding forecasting methods and assumptions are available on request from the Division of Oil and Gas.

Natural Gas Historic Consumption in Cook Inlet by Major Group

Historic gas consumption by major customer classification is shown for the period 1971 through 2001 in Figure VI.11 and for 1991-2001 in the accompanying Table VI.4. Natural gas consumption by major customer group is based in part on production data from the Alaska Oil and Gas Conservation Commission (AOGCC) and on data from producer royalty reports in the Division of Oil and Gas royalty accounting system database, which includes production from both state and federal lands where leases are jointly held. Power generation gas consumption is based on dispositions to Chugach Electric Cooperative Association, Inc. and Anchorage Municipal Light and Power, Inc. Gas utilities consumption is the sum of gas dispositions into the Enstar Natural Gas pipeline distribution system net of those for power and manufacturing (the LNG and ammonia-urea plants). We assume that net gas produced out of storage (after deducting injections during the year) from federal acreage at Swanson River is consumed at the Kenai ammonia-urea plant except for certain quantities received by Marathon and allocated to non-industrial uses. Field Operations refers to gas consumed on the lease for compression, power generation, and space heating. This category is the sum of flared, pilot/purged, and lease operations, as reported by the AOGCC. About 5% of gas consumed in lease operations is sold commercially.

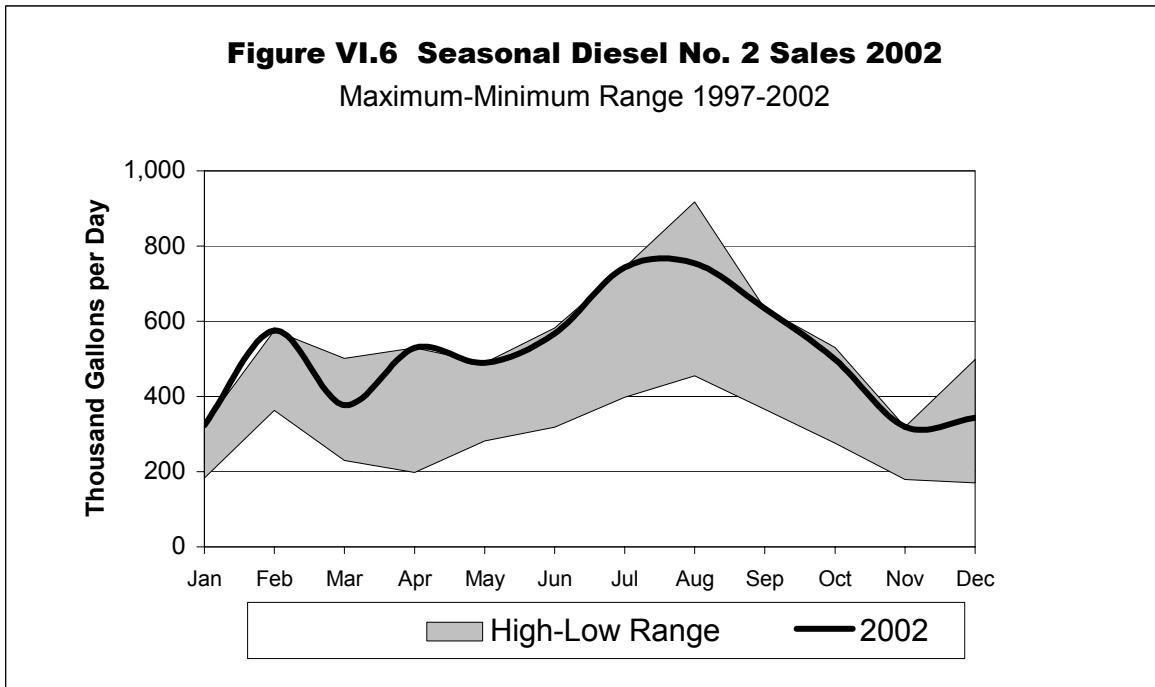
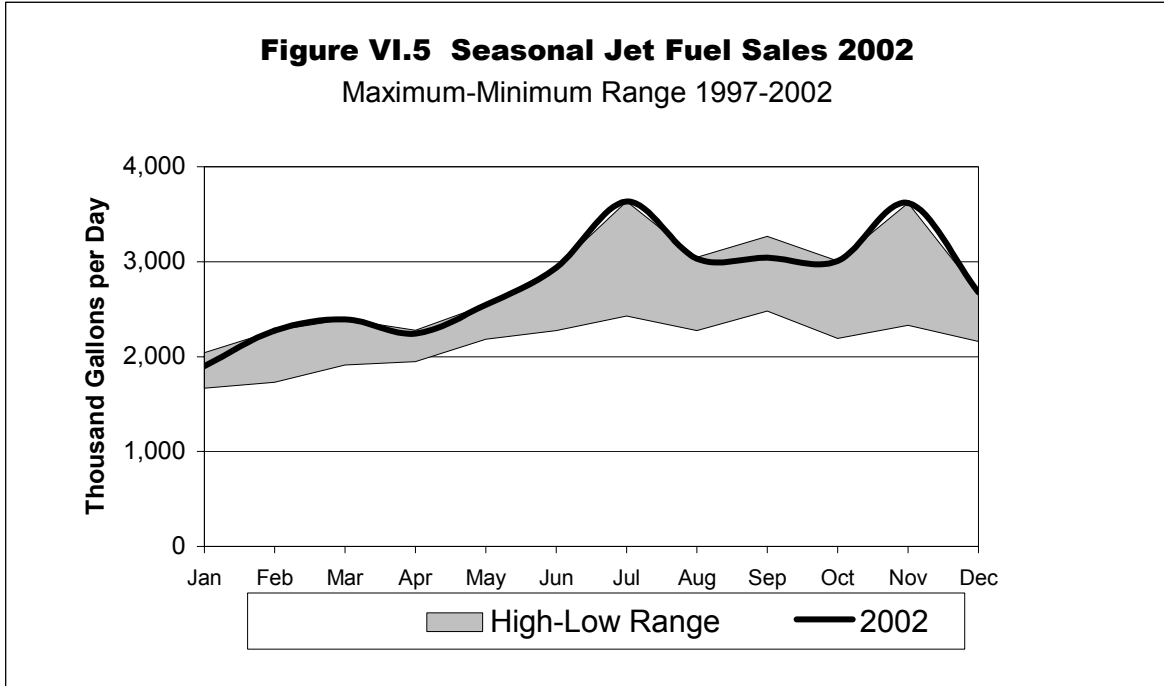
The information in Figure VI.11 and Table VI.4 indicate that gas consumption by major group has been fairly stable over the past decade. Slight increases are reported in gas utility consumption and in the LNG plant. The ammonia-urea plant and field operations exhibit modest decline in the long-term trend. Gas Utilities consumption (primarily residential and commercial space heating) grew 2.7% per year between 1990 and 2001.

Figures VI.3 and 4 Seasonal Motor and Aviation Gasoline Statewide (Thousands of Gallons per Day)



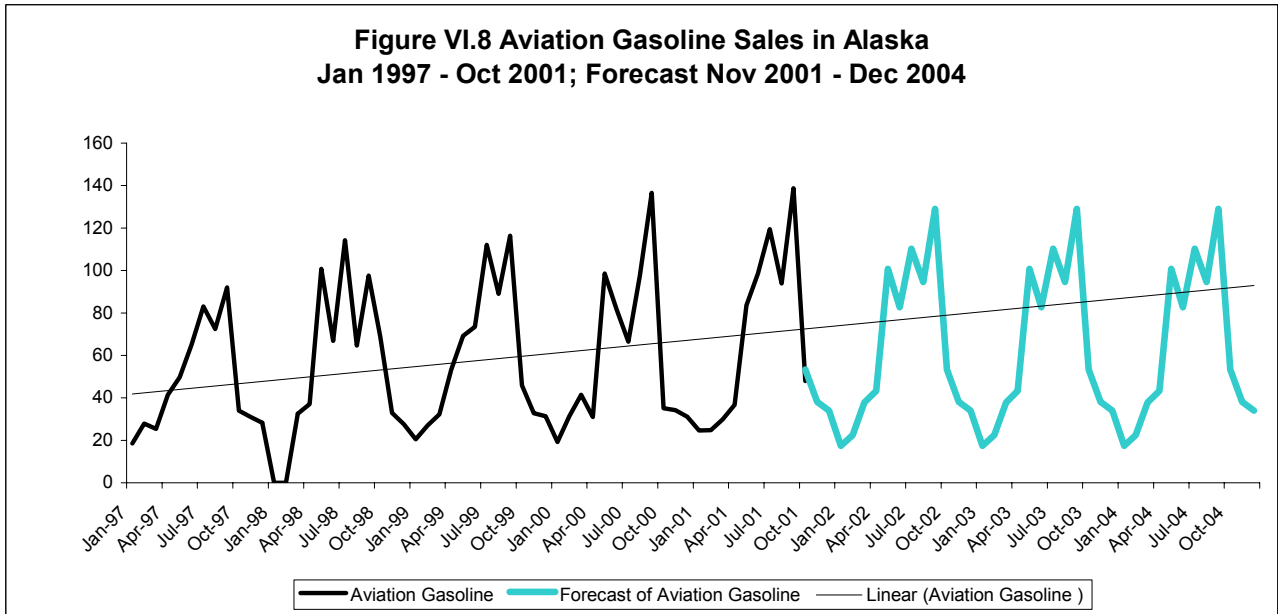
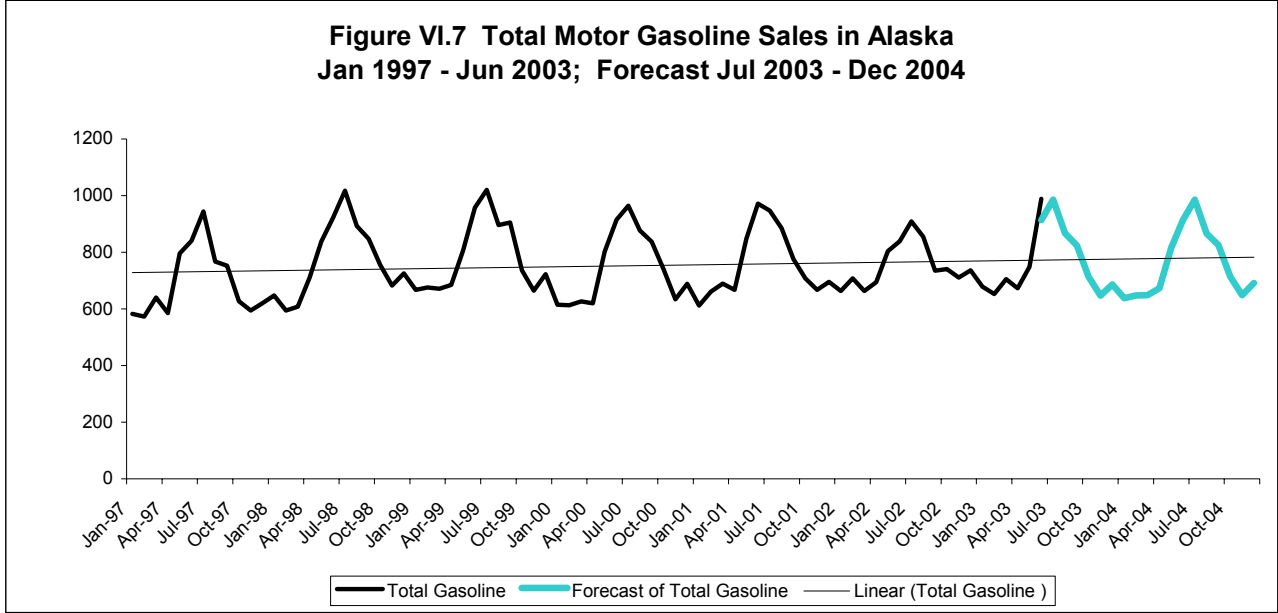
Figures VI.5 and 6 Seasonal Jet Fuel and No. 2 Diesel

Statewide (Thousands of Gallons per Day)



Figures VI.7 and 8 Transportation Fuel Sales & Forecast

Statewide (Thousands of Gallons per Day)



Figures VI.9 and 10 Transportation Fuel Sales & Forecast
Statewide (Thousands of Gallons per Day)

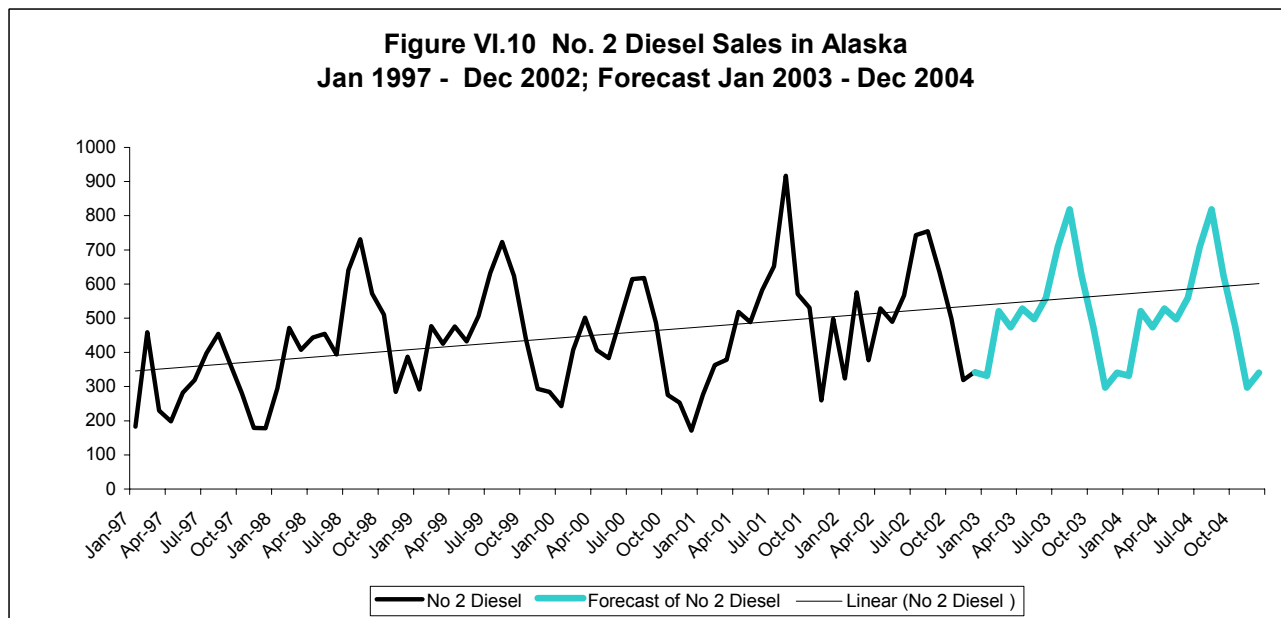
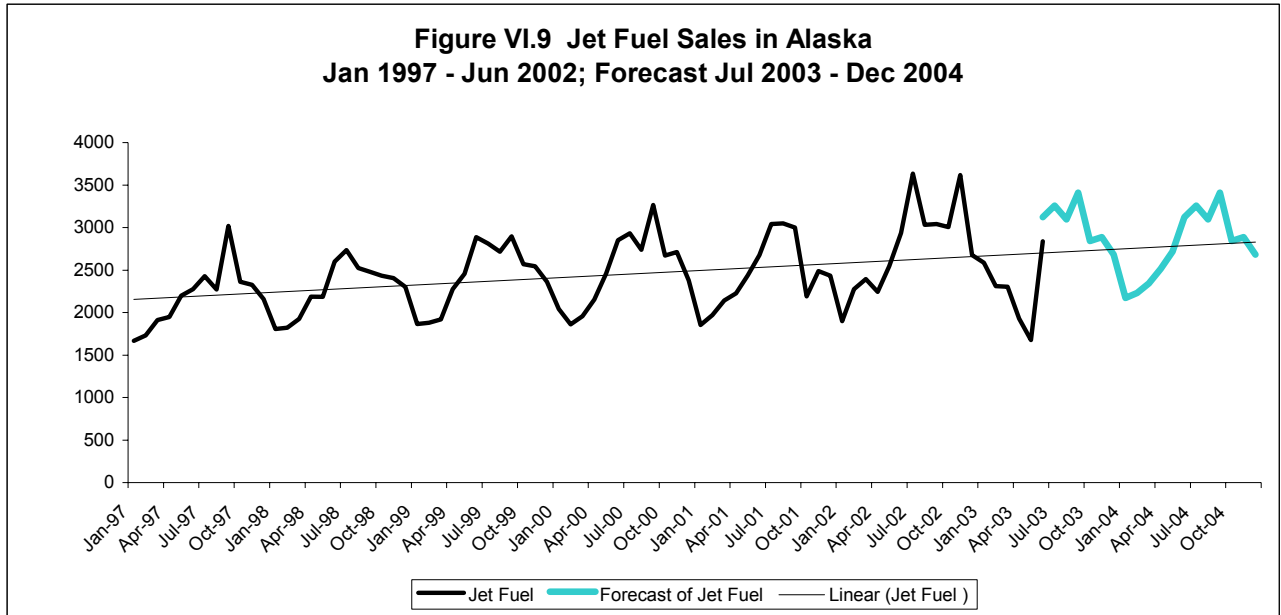


Table VI.3 Transportation Fuel Sales & Forecast

Statewide (Thousands of Gallons per Day)

Prime Supplier Sales in Alaska				
Month	Total Motor Gasoline	Aviation Gasoline	Jet Fuel	No 2 Diesel
Jan-02	663.2	17.4	1,900.5	323.7
Feb-02	707.7	22.4	2,274.2	575.4
Mar-02	662.9	37.8	2,393.6	376.8
Apr-02	694.6	43.3	2,244.3	529.2
May-02	804.0	100.8	2,544.5	489.8
Jun-02	839.0	82.6	2,934.2	567.2
Jul-02	909.1	110.2	3,634.1	743.3
Aug-02	854.3	94.5	3,031.5	754.2
Sep-02	734.7	129.0	3,041.8	633.4
Oct-02	740.5	53.3	3,007.0	498.1
Nov-02	710.9	38.1	3,617.1	319.0
Dec-02	736.0	33.9	2,677.0	343.6
Forecast				
Jan-03	646.0	17.4	2,168.7	331.8
Feb-03	652.6	22.4	2,228.7	520.6
Mar-03	653.4	37.8	2,343.8	473.3
Apr-03	675.5	43.3	2,516.2	528.1
May-03	815.8	100.8	2,719.4	497.3
Jun-03	913.3	82.6	3,123.1	560.7
Jul-03	985.3	110.2	3,259.0	709.1
Aug-03	866.8	94.5	3,096.7	819.0
Sep-03	824.4	129.0	3,410.4	625.9
Oct-03	712.2	53.3	2,840.0	474.0
Nov-03	646.9	38.1	2,887.2	297.1
Dec-03	685.9	33.9	2,683.4	340.9
Jan-04	638.0	17.4	2,171.5	331.3
Feb-04	648.0	22.4	2,229.0	520.6
Mar-04	648.7	37.8	2,343.0	473.3
Apr-04	672.8	43.3	2,515.6	527.8
May-04	816.0	100.8	2,719.4	497.1
Jun-04	914.0	82.6	3,123.3	560.7
Jul-04	985.7	110.2	3,259.2	709.1
Aug-04	866.1	94.5	3,096.7	818.9
Sep-04	825.7	129.0	3,410.4	625.8
Oct-04	713.7	53.3	2,840.0	474.0
Nov-04	648.6	38.1	2,887.2	297.1
Dec-04	691.1	33.9	2,683.4	340.9

Notes: Forecast shown in orange; estimates in blue. Prime supplier sales include sales at major distribution facilities, such as refiners, importers, pipelines, and bulk terminals. Not seasonally adjusted. See Figures VI.3-6.

Source: Energy Information Administration, *Prime Supplier Sales in Alaska, Transportation Fuels*, (http://www.eia.doe.gov/emeu/states/oilsales_trans/oilsales_trans_ak.html) and Alaska DNR.

Figure VI.11 and Table VI.4 Natural Gas Consumption By Major Group

Cook Inlet (Billion Cubic Feet per Year)

Figure VI.11 Cook Inlet Natural Gas Consumption by Major Group 1971-2001

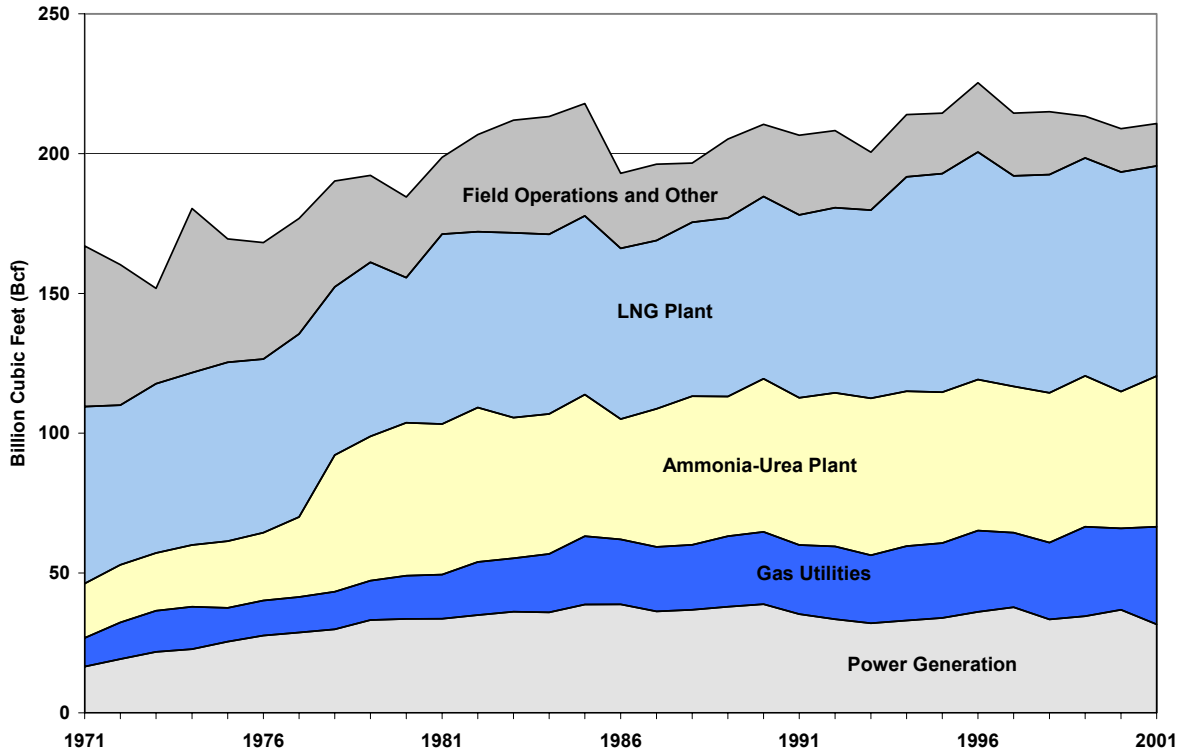


Table VI.4 Cook Inlet Historic Gas Consumption by Major Group, 1991-2001

Billions of Cubic Feet Per Year

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	Average 1990-1996	Average 1997-2001
Power Generation	38.9	35.3	33.5	32.0	33.0	34.0	36.1	37.7	33.4	34.6	36.8	31.6	34.7	34.8
Gas Utilities	25.9	24.7	25.9	24.2	26.6	26.7	29.0	26.6	27.4	32.0	29.1	34.9	26.2	30.0
LNG	65.1	65.4	66.2	67.3	76.7	78.1	81.4	75.4	78.1	78.0	78.5	75.2	71.5	77.0
Ammonia-Urea	54.8	52.6	55.0	56.2	55.4	54.0	54.0	52.3	53.6	53.9	49.0	53.9	54.6	52.5
Field Ops and Other	25.8	28.6	27.6	20.7	22.3	21.6	24.8	22.4	22.5	14.9	15.5	15.2	24.5	18.1
Total	210.4	206.6	208.2	200.5	214.0	214.5	225.4	214.5	215.0	213.4	208.9	210.8	211.4	212.5

Percent of the Total in Each Year (%)

Power Generation	18.5	17.1	16.1	16.0	15.4	15.8	16.0	17.6	15.5	16.2	17.6	15.0	16.4	16.4
Gas Utilities	12.3	12.0	12.5	12.1	12.4	12.5	12.9	12.4	12.8	15.0	13.9	16.6	12.4	14.1
LNG	31.0	31.7	31.8	33.6	35.8	36.4	36.1	35.1	36.3	36.5	37.6	35.7	33.8	36.3
Ammonia-Urea	26.0	25.5	26.4	28.0	25.9	25.2	24.0	24.4	24.9	25.3	23.4	25.6	25.9	24.7
Field Ops and Other	12.3	13.8	13.2	10.3	10.4	10.1	11.0	10.4	10.4	7.0	7.4	7.2	11.6	8.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0