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Highlights

- Over the past 20 years, the United States has become increasingly dependent upon imported petroleum to meet demand. In 1985, the United States produced 3.3 billion barrels of crude oil, by 2004, domestic crude oil production had dropped to 2.0 billion barrels. Simultaneously, net imports of crude oil increased from 1.1 billion barrels in 1985 to 3.7 billion barrels in 2004. This drop in domestic crude oil production coupled with the rise in net imports resulted in the percentage of the country's crude oil supply accounted for by imports rising from 25.0 percent in 1985 to 64.8 percent in 2004.
- Crude oil production in Utah has been declining for the past several decades. Utah crude oil production peaked at 41.1 million barrels in 1985 and declined to a low of 13.1 million barrels in 2003 before recovering slightly to 14.8 million barrels in 2004. This drop in crude oil production is not unique to Utah. During the past two decades, the only area of the country that has experienced a rise in crude oil production is offshore in the Gulf of Mexico. The 31 oil-producing states and offshore Pacific Coast have all seen declining production.
- Utah's crude oil production is insufficient to meet the state's demand, resulting in imports to the state from other areas. The states five oil refinery's have an annual capacity of about 61 million barrels of crude oil, compared to the state's production of about 15 million barrels. Crude oil is imported from Colorado, Wyoming and Canada, while crude produced in the southeastern portion of the state is exported to New Mexico for refining.
- The recent increase in the price of oil, from a low of $11 per barrel at the end of 1998 to a recent price of in excess of $60 per barrel, is stimulating increased oil production in Utah. Crude oil production in Utah for 2004 was up 13 percent from 2003 levels. Similarly, 229 producing oil wells were drilled in Utah during 2004, up from 112 in 2003 and 39 in 2002.

Utah's Role in the United States Petroleum Industry

Alan E. Isaacson, Research Analyst

Changing worldwide demand for petroleum products over the past several years has produced noticeable effects. Increasing economic growth in Pacific Rim countries, especially China, has altered the world petroleum markets, with China surpassing Japan in 2003 in consumption of petroleum products, second only behind the United States. Over the past four years, China has been responsible for 40 percent of the increase in worldwide petroleum demand. By 2025, the emerging economies of the Pacific Rim are expected to more than double their total petroleum imports while the mature Asian economies are also expected to increase their dependence on Persian Gulf oil. Increased petroleum use in the United States, coupled with lower domestic crude oil production has resulted in higher dependency on petroleum imports. In the future, North America will likely continue to increase petroleum imports from both the Persian Gulf and Latin American producers. The increased worldwide petroleum demand has led many to believe the price increases experienced over the past year will be sustainable into the future and are not a temporary spike in prices.

The U.S. Petroleum Supply and Use

The price of crude oil increased greatly in the past year, briefly touching $70 per barrel in the aftermath of Hurricane Katrina, from a low of just over $10 per barrel at the end of 1998. (Figure 1) This volatility is not unusual, with the price often demonstrating dramatic changes over a year's time. This volatility

Figure 1
Price of Crude Oil (NYMEX Near Month Futures Price)

Source: Energy Information Administration, Petroleum Navigator Data System.

Table 1
United States Crude Oil Supply, 1985-2004
(million barrels)

	Total Supply	Production	Production, % of Total Supply	Imports	Exports	Net Imports	Net Imports, % of Total Supply
1985	4,368	3,274	75.0	1,168	74	1,094	25.0
1986	4,637	3,168	68.3	1,525	56	1,469	31.7
1987	4,698	3,047	64.9	1,706	55	1,651	35.1
1988	4,779	2,971	62.2	1,864	57	1,807	37.8
1989	4,860	2,779	57.2	2,133	52	2,081	42.8
1990	4,796	2,685	56.0	2,151	40	2,112	44.0
1991	4,775	2,707	56.7	2,110	42	2,068	43.3
1992	4,805	2,617	54.5	2,220	32	2,188	45.5
1993	4,941	2,499	50.6	2,477	36	2,441	49.4
1994	4,973	2,432	48.9	2,578	36	2,542	51.1
1995	4,999	2,394	47.9	2,639	35	2,604	52.1
1996	5,060	2,360	46.6	2,740	40	2,700	53.4
1997	5,318	2,355	44.3	3,002	39	2,963	55.7
1998	5,420	2,282	42.1	3,178	40	3,138	57.9
1999	5,290	2,147	40.6	3,187	43	3,144	59.4
2000	5,418	2,125	39.2	3,311	18	3,293	60.8
2001	5,515	2,117	38.4	3,405	7	3,397	61.6
2002	5,430	2,097	38.6	3,336	3	3,333	61.4
2003	5,597	2,074	37.0	3,528	4	3,523	63.0
2004	5,636	1,982	35.2	3,664	10	3,654	64.8

Source: Energy Information Administration, Annual Energy Review 2004.

Table 2
United States Imports of Crude Oil by Country, 2004

Rank	Country	Imports (thousand barrels)	Percent of Imports
1	Canada	591,489	16.0
2	Mexico	585,023	15.8
3	Saudi Arabia	547,125	14.8
4	Venezuela	474,531	12.9
5	Nigeria	394,560	10.7
6	Iraq	239,758	6.5
7	Angola	112,018	3.0
8	Kuwait	88,359	2.4
9	United Kingdom	87,193	2.4
10	Ecuador	84,937	2.3
11	Algeria	78,719	2.1
12	Russia	58,010	1.6
13	Norway	52,365	1.4
14	Gabon	52,061	1.4
15	Colombia	52,049	1.4
16	Argentina	21,499	0.6
	Other	172,367	4.7
	Total	3,692,063	100.0

Source: Energy Information Administration, Petroleum Supply Annual 2004.

is a result of the transparent worldwide market for petroleum, with events on the other side of the globe capable of quickly affecting the price of gasoline and other petroleum products in Utah. Additionally, worldwide demand for petroleum has increased over the past several years, with much of this rise concentrated in developing countries. The Energy Information Administration predicts that by 2025, worldwide petroleum demand will reach 119.2 million barrels a day, up from 82.4 million barrels daily in 2004. A majority of this additional demand for petroleum in expected to occur in developing countries.

Oil Production in the U.S.

While worldwide demand for petroleum has been increasing, domestic production of crude oil has been dropping. (Table 1) United States crude oil production peaked at 3.18 billion barrels in 1970. The low production year since then was 2004, when 1.98 billion barrels were produced. This drop in domestic crude oil production is nationwide, with only offshore areas in the Gulf of Mexico producing more oil over the past 20 years. All onshore areas in the United States and offshore the Pacific Coast have declined in crude oil production over the past two decades. To compensate for this drop in crude production, larger amounts of crude are being imported to the United States. From 1985 to 2004, net imports of crude oil rose from 1.1 billion barrels to 3.7 billion barrels. In 2004, imports accounted for 64.8 percent of the nation's crude oil supply, up from 25.0 percent in 1985.

In 2004, both Canada and Mexico surpassed Saudi Arabia as sources of crude oil for the United States. (Table 2) Saudi Arabia was the leading foreign source of crude oil from 1999 to 2003. During 2004, crude oil imports were reported from 37 different countries, with 70.2 percent originating in the top five, Canada, Mexico, Saudi Arabia, Venezuela, and Nigeria. Canada is the only country that delivers crude oil to the United States via pipeline. All other crude oil imports to the U.S. are delivered via ocean tanker. Petroleum refineries are generally sited near the point of consumption, which takes advantage of the economies of scale of large crude oil tankers. Another factor favoring transporting crude oil internationally versus refined product is the large number of local quality specifications for petroleum products creates demand for many different formulations of refined product.

Domestically, crude oil was produced in 31 states and in federal offshore areas in the Gulf of Mexico and offshore of the Pacific Coast during 2004. (Table 3) The rank of the top five areas has not changed since 1999 which collectively account for over 80 percent of domestic crude oil production.

Table 3
U. S. Crude Oil Production by State, 2004

Rank	State	Production (thousand barrels)	Percent of U.S.
1	Federal Offshore Gulf Coast	531,900	26.8
2	Texas	392,867	19.8
3	Alaska	332,465	16.8
4	California	240,206	12.1
5	Louisiana	83,411	4.2
6	New Mexico	64,236	3.2
7	Oklahoma	62,502	3.2
8	Wyoming	51,619	2.6
9	Kansas	33,858	1.7
10	North Dakota	31,154	1.6
11	Federal Offshore West Coast	27,054	1.4
12	Montana	24,724	1.2
13	Colorado	22,097	1.1
14	Mississippi	17,153	0.9
15	Utah	14,629	0.7
16	Illinois	10,984	0.6
17	Alabama	7,443	0.4
18	Arkansas	6,732	0.3
19	Michigan	6,409	0.3
20	Ohio	5,785	0.3
21	Florida	2,875	0.1
22	Kentucky	2,548	0.1
23	Pennsylvania	2,538	0.1
24	Nebraska	2,507	0.1
25	Indiana	1,755	0.1
26	South Dakota	1,357	0.1
27	West Virginia	1,339	0.1
28	Nevada	463	0.0
29	Tennessee	361	0.0
30	New York	170	0.0
31	Missouri	88	0.0
32	Arizona	52	0.0
33	Virginia	19	0.0
	U.S. Total	1,983,302	100.0

Source: Energy Information Administration, Petroleum Navigator Data System.

U.S. Refineries

Crude oil is refined into various products, including motor gasoline, diesel fuel, heating fuel, jet fuel and numerous other products. The process and equipment present at a refinery are generally dependent on the type of crude oil the refinery was designed to process. Crude oils vary greatly in chemical and physical characteristics. Crude oils are most simply defined by their density and sulfur content. The less dense crude oils ("light" crude) generally have a larger percentage of lighter hydrocarbons that are the primary components of higher value products such as gasoline. The more dense crude oils ("heavy" crude) usually have a higher fraction of heavy hydrocarbons more suitable for producing fuel oil and road oil. Some crude oils have a high sulfur content, which must be removed to meet environmental standards.

The initial process at most petroleum refineries is simple distillation, in which the various hydrocarbons in the crude oil boil off and can be recovered at different temperatures. The lighter components such as petroleum gases and gasoline boil off at the lowest temperatures, followed by intermediate products such as jet fuel, kerosene, diesel fuel and heating fuel. The products recovered at the highest temperature are heavy fuel oils. The simplest refineries consist only of simple distillation. Because the market for petroleum products in the United States favors gasoline, most refineries in the U.S. use additional processes to chemically alter the heavier components into the lighter components ("crack" the molecule) suitable for manufacturing gasoline.

The most common petroleum product produced in U.S. refineries is motor gasoline, which accounts for just under 50 percent of all refinery production. (Table 4) The second-most predominant petroleum product is distillate fuel oil, a catch-all term that includes diesel fuel and heating oil in grades 1 through 4. Just over 20 percent of petroleum products refined in the U.S. are distillate fuel oil. In addition to crude oil, various final and intermediate petroleum

Table 4
U.S. Production of Petroleum Products, 2004
(thousand barrels)

	Domestic Refinery and Blender Production
Total Products	6,382,794
Liquified Refinery/Petroleum Gases	235,975
Finished Motor Gasoline	3,025,128
Finished Aviation Gasoline	6,209
Kerosene-type Jet Fuel	566,164
Kerosene	23,409
Distillate Fuel Oil	1,396,037
Residual Fuel Oil	239,907
Petrochemical Feedstock	150,770
Special Naphthas	16,377
Waxes	5,530
Petroleum Coke	306,065
Asphalt and Road Oil	185,921
Still Gas	257,689
Lubricants	64,115
Miscellaneous Products	23,420

Source: Energy Information Administration, Petroleum Navigator Data System.

products are also imported to the United States. Imported petroleum products supply about 10 percent of U.S. demand.

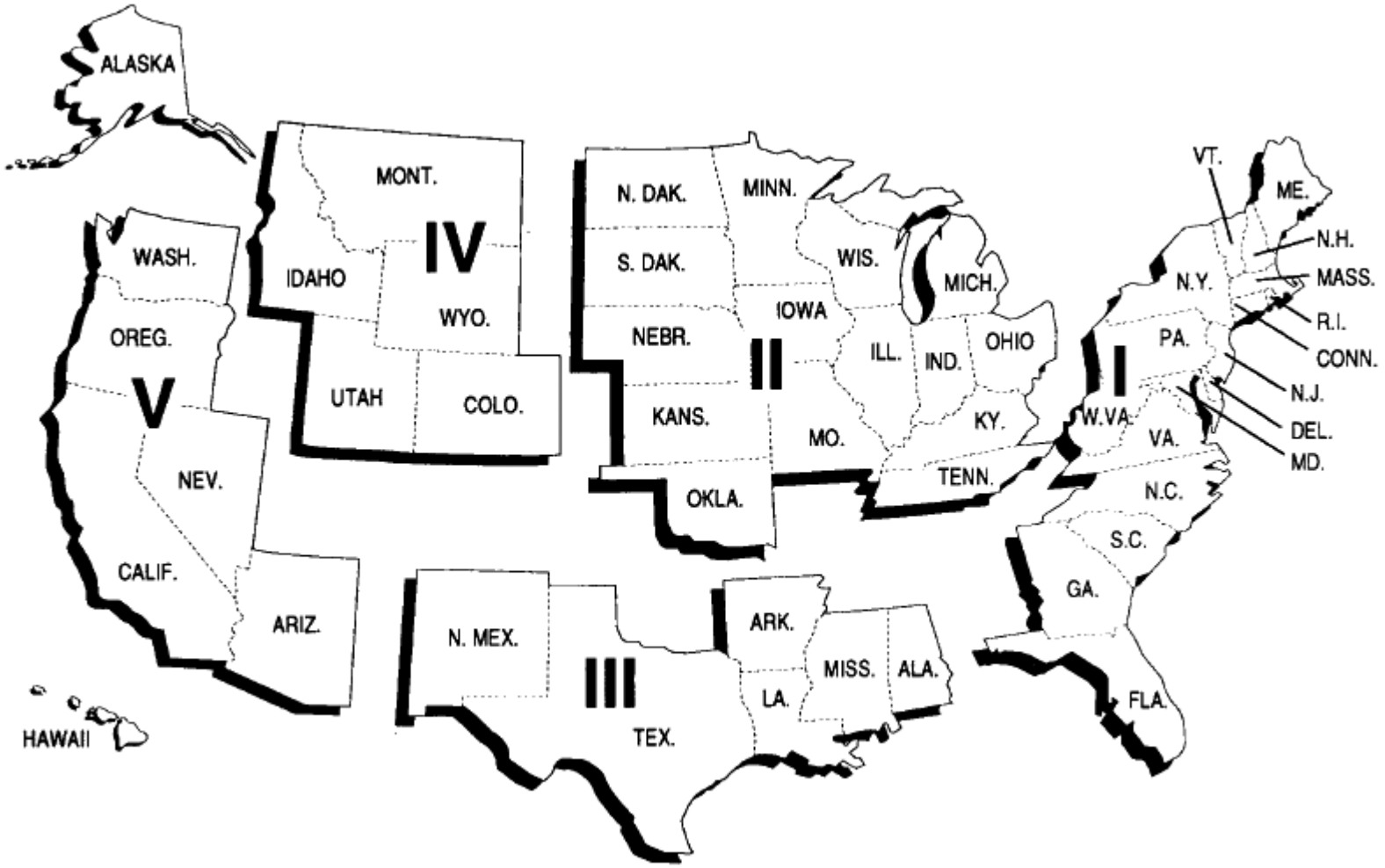
In the United States, there are 151 petroleum refineries located in 33 states, Puerto Rico, and the U.S. Virgin Islands. There are 22 refineries situated in areas that do not produce crude oil. These refineries process crude oil produced in other areas of the country or imported from other countries and are located in Puerto Rico, the U.S. Virgin Islands and eight states: Delaware, Georgia, Hawaii, Minnesota, New Jersey, Oregon, Washington, and Wisconsin. Six states that produce crude oil, Arizona, Florida, Missouri, Nebraska, New York, and South Dakota, do not have refineries within their borders and the oil is shipped to other areas for refining. Total operating capacity (atmospheric crude oil distillation) for the country's oil refineries is 18.7 million barrels per day. Refinery capacity is concentrated geographically, with 53.1 percent of capacity located in three states: Texas (26.1 percent), Louisiana (15.6 percent), and California (11.4 percent). Similarly, 41.4 percent of domestic refinery capacity is located in the coastal regions of Louisiana and Texas.

With a majority of the nation's crude oil supply imported from other countries and refinery capacity concentrated in three states, large amounts of both crude oil and petroleum products flow between different areas of the country. Petroleum flows within the country are reported according to Petroleum Administration for Defense Districts (PADD), which were established during World War II for allocating petroleum.(Figure 2) Most of the inter-regional trade within the United States is between the Gulf Coast (PADD II), and East Coast (PADD I) and Midwest (PADD II). The Rocky Mountains (PADD IV) and the West Coast (PADD V) are more isolated from the remainder of the country in terms of petroleum trade.

As a result of the geographical concentration of the U.S. refining industry, large amounts of petroleum products are transported from the Gulf Coast to the East Coast, the largest petroleum consuming region, and also to the Midwest. In 2004, the East Coast consumed 33.4 percent of finished petroleum products in the U.S., followed by the Midwest (25.8 percent), Gulf Coast (20.9 percent), West Coast (16.3 percent) and the Rocky Mountains (3.5 percent).

Trade in petroleum between the West Coast and the rest of the country is isolated by both geography and environmental laws. California state law requires different compositions for both gasoline and off-highway diesel fuel than in the rest of the country, limiting the amount of petroleum products that can be imported to the state from other portions of the country. Environmental Protection Agency rules requiring reformulated and oxygenated

Figure 2
Petroleum Administration for Defense Districts



Source: Energy Information Administration, Petroleum Supply Monthly.

Table 5
Petroleum Flows Between the Rocky Mountains and Adjacent Areas, 2004
(thousand barrels)

	Crude Oil	Total Petroleum Products	Finished Motor Gasoline	Distillate Fuel Oil
Exports from the Rocky Mountains (PADD IV)				
To Midwest (PADD II)	28,281	22,998	7,498	4,397
To Gulf Coast (PADD III)	2,010	51,614	0	0
To West Coast (PADD V)	0	12,115	10,351	1,572
To Canada	361	613	1	1
Imports to the Rocky Mountains (PADD IV)				
From Midwest (PADD II)	11,862	20,070	7,599	3,439
From Gulf Coast (PADD III)	0	16,896	10,194	2,485
From West Coast (PADD V)	0	0	0	0
From Canada	111,428	8,878	201	3,910
Net Exports from the Rocky Mountains (PADD IV)				
To Midwest (PADD II)	16,419	2,928	-101	958
To Gulf Coast (PADD III)	2,010	34,718	-10,194	-2,485
To West Coast (PADD V)	0	12,115	10,351	1,572
To Canada	-111,067	-8,265	-200	-3,909

Source: Energy Information Administration, Petroleum Navigator Data System.

gasoline in certain areas to attain air quality standards also limits inter-regional transportation of gasoline.

The Rocky Mountain states of Colorado, Idaho, Montana, Utah and Wyoming import crude oil from Canada and export crude to the Midwest and Gulf Coast. (Table 5) The Gulf Coast region (PADD III) includes New Mexico, and a portion of the crude oil exported from the Rocky Mountains to the Gulf Coast is produced in southeastern Utah and shipped to New Mexico for refining. Gasoline is imported into the Rocky Mountain region from the Gulf Coast, with lesser amounts being imported from Canada and the Midwest. As with crude oil, the trade in gasoline between the Rocky Mountain region and the Gulf Coast is a result of New Mexico being included in the Gulf Coast region (PADD III). Gasoline produced in refineries in New Mexico is shipped to the Rocky Mountain region. While gasoline is shipped from the Gulf Coast region to the Rocky Mountains, a similar amount of gasoline is exported from the Rocky Mountain region to the West Coast.

Petroleum in Utah

While prices for Utah crude oil have experienced the same volatility as the oil futures prices, the prices received by production companies in Utah has been about 10 percent higher than the national average for the past 20 years. (Table 6) Despite the slightly higher prices, Utah crude oil production has been declining since reaching a peak of 41.1 million barrels in 1985. (Figure 3) Utah production declined to 13.1 million barrels in 2003 before rebounding 13 percent to 14.8 million barrels in 2004. Of the 31 states and two offshore areas reporting crude oil production in 2004, Utah ranked 15th and was responsible for 0.7 percent of total domestic production.

Table 6
Cost of Crude Oil in the United States
(dollars per barrel)

	Cost of Imported Crude Oil, FOB	First Purchase Price, U.S. Production	U.S. as % of Imported	First Purchase Price, Utah Production	Utah as % of U.S.
1985	25.84	24.09	93.2	23.98	99.5
1986	12.52	12.51	99.9	13.33	106.6
1987	16.69	15.40	92.3	17.22	111.8
1988	13.25	12.58	94.9	14.24	113.2
1989	16.89	15.86	93.9	18.63	117.5
1990	20.37	20.03	98.3	22.61	112.9
1991	16.89	16.54	97.9	19.99	120.9
1992	16.77	15.99	95.3	19.39	121.3
1993	14.71	14.25	96.9	17.48	122.7
1994	14.18	13.19	93.0	16.38	124.2
1995	15.69	14.62	93.2	17.71	121.1
1996	19.32	18.46	95.5	21.10	114.3
1997	16.94	17.23	101.7	18.57	107.8
1998	10.76	10.87	101.0	12.52	115.2
1999	16.47	15.56	94.5	17.69	113.7
2000	26.27	26.72	101.7	28.53	106.8
2001	20.46	21.84	106.7	24.09	110.3
2002	22.63	22.51	99.5	23.87	106.0
2003	25.86	27.56	106.6	28.88	104.8
2004	33.75	36.77	108.9	39.35	107.0
January 2005	35.65	40.18	112.7	44.03	109.6
February 2005	39.07	42.06	107.7	45.47	108.1
March 2005	44.25	47.39	107.1	51.77	109.2
April 2005	43.91	47.23	107.6	50.67	107.3
May 2005	42.79	44.00	102.8	47.37	107.7
June 2005	47.52	49.89	105.0	53.72	107.7

Source: Energy Information Administration, Petroleum Navigator Data System.

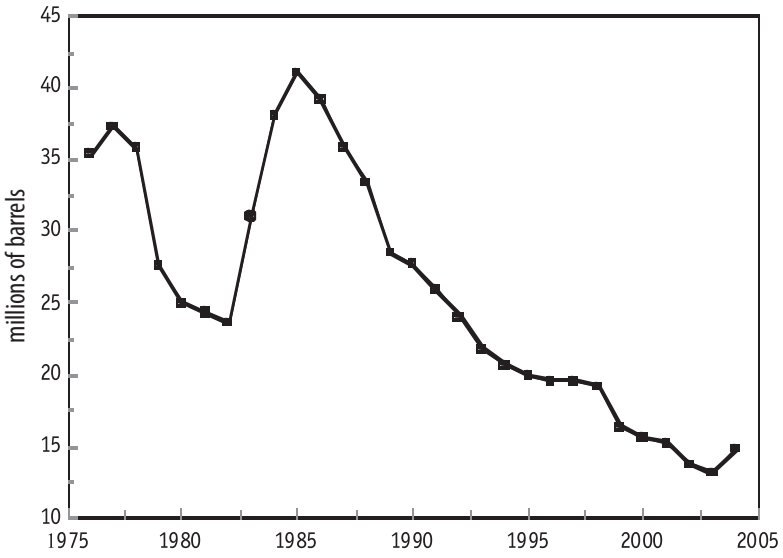
Utah Oil Production by County

During 2004, 103 operating companies reported crude oil production to the Utah Division of Oil, Gas and Mining from 127 oil and gas fields. (Tables 7and 8) Duchesne, San Juan, and Uintah counties dominate crude oil production in Utah, accounting for 91.1 percent of 2004 production. (Table 9) Production in Summit County dropped dramatically over the past 20 years. In 1985, Summit County produced 15.7 million barrels of crude oil, by 2004, production had declined by 96.3 percent to 587,176 barrels. Similar, but less dramatic declines occurred in other major oil-producing counties in Utah. Over the same period (1985 to 2004), production declined by 47.0 percent in Duchesene County, 56.9 percent in Garfield County, 53.6 percent in San Juan County, and 25.1 percent in Uintah County.

The 164,508 barrels produced in Sevier County in 2004 was a result of the Covenant Oil Field coming into production in November, 2004. A total of 389,270 barrels of crude oil have been produced through May, 2005. In February, 2005, Sevier County surpassed Summit County in crude oil production, with 43,876 barrels produced compared to 38,514 barrels produced from Summit County.

Five counties account for over 99 percent of the 1.3 billion barrels of crude oil that have been produced in Utah. San Juan County has been the largest historical producer, responsible for 42.3 percent of the state's production to date, followed by Duchesne (22.8 percent), Uintah (18.1 percent) Summit (14.0 percent) and Garfield (2.0 percent). The other eight Utah counties in which crude oil has been produced, Box Elder, Carbon, Daggett, Emery, Grand, Sanpete, Sevier, and Washington, are responsible for less than 1 percent of total production to date.

Figure 3
Utah Crude Oil Production



Source: Utah Division of Oil, Gas & Mining.

The recent increase in oil prices has definitely had an impact on well drilling activity in Utah. In 2004, 229 producing oil wells were successfully drilled in Utah, compared to 112 producing oil wells drilled in 2003 and 39 producing oil wells drilled in the state in 2002. Drilling activity is focused in the traditional producing areas in the state, with 212 of the 229 producing oil wells drilled in 2004 classified as development wells, 14 classified as extension wells, and two classified as wildcat wells. At the county level, most of the producing oil wells were drilled in Duchesne County (175), followed by Uintah County (51), Sevier County (2) and Grand County (1). There is currently more drilling activity in Uintah County (380 wells drilled in 2004) than Duchesne County (181 wells drilled in 2004). However, in Uintah County, most of the successful wells drilled in 2004 were classified as producing gas wells (296), instead of producing oil wells (51). Wells are classified as either producing gas wells or producing oil wells based on the primary product produced, but both commodities are commonly produced by the same well. Many of the wells classified as producing gas wells also produce some crude oil. As an example, there are no producing oil wells in Carbon County, yet 4,661 barrels of oil were produced in the county in 2004 from producing gas wells.

Utah Refineries and Capacity

As with oil produced in other parts of the country, Utah crude oil is shipped to various refineries for processing into finished products. Crude oil produced in the Uintah Basin is transported by both pipeline and tanker truck to refineries in Salt Lake

Table 7
Crude Oil Production in Utah by Operating Company, 2004

Rank	Operating Company	Production (barrels)	% of Total
1	Inland Production Company	2,818,752	19.0
2	Exxonmobil Oil Corp.	2,365,347	16.0
3	Berry Petroleum Company	1,488,765	10.1
4	QEP Uintah Basin, Inc.	1,168,008	7.9
5	El Paso Production Oil & Gas Co.	1,149,674	7.8
6	Chevron USA Inc.	1,058,825	7.2
7	Devon Energy Production Co. LP	714,229	4.8
8	Citation Oil & Gas Corp.	596,247	4.0
9	Flying J Oil & Gas Inc.	503,246	3.4
10	Petroglyph Operating Co.	430,828	2.9
11	Merit Energy Company	368,645	2.5
12	EOG Resources Inc.	226,002	1.5
13	Intrepid Oil & Gas LLC	200,154	1.4
14	Westport Oil & Gas Co. LP	185,983	1.3
15	Quinex Energy Corp.	170,267	1.2
16	Wolverine Gas & Oil Co. Utah	164,508	1.1
17	Dominion Exploration & Production Inc.	124,640	0.8
18	Resolute Natural Resources	88,909	0.6
19	US Oil & Gas Inc.	84,578	0.6
20	RIM Southwest Corp.	84,409	0.6
21	Journey Operating LLC	77,070	0.5
	Other (82)	730,122	4.9
	Total	14,799,208	100.0

Source: Utah Department of Natural Resources, Division of Oil Gas and Mining.

Table 8
Crude Oil Production in Utah by Field, 2004

Rank	Field	County	Year Discovered	Production (barrels)	Percent of Total
1	Greater Aneth	San Juan	1956	3,670,587	24.8
2	Monument Butte	Duchesne	1964	2,292,580	15.5
3	Bluebell	Duchesne, Uintah	1949	1,966,618	13.3
4	Brundage Canyon	Duchesne	1966	1,531,696	10.3
5	Natural Buttes	Uintah	1940	687,217	4.6
6	Altamont	Duchesne	1952	551,566	3.7
7	Eight Mile Flat North	Uintah	1983	523,488	3.5
8	Red Wash	Uintah	1959	434,641	2.9
9	Antelope Creek	Duchesne	1983	400,802	2.7
10	Wonsits Valley	Uintah	1959	380,570	2.6
11	Anschutz Ranch East	Summit	1980	327,100	2.2
12	Walker Hollow	Uintah	1953	213,336	1.4
13	Upper Valley	Garfield	1964	201,058	1.4
14	Pineview	Summit	1975	182,271	1.2
15	Covenant	Sevier	2004	164,508	1.1
16	Big Flat	Grand	1955	162,791	1.1
17	Gypsum Hills	Uintah	1964	95,190	0.6
18	Uteland Butte	Uintah	1961	86,222	0.6
19	Ashley Valley	Uintah	1929	56,078	0.4
20	Bridger Lake	Summit	1966	47,032	0.3
21	Windy Ridge	Uintah	1984	41,223	0.3
22	Cedar Rim	Duchesne	1965	40,162	0.3
23	Lisbon	San Juan	1960	37,557	0.3
	Other (104)	Various	Various	704,915	4.8
	Total	Various	Various	14,799,208	100.0

Source: Utah Department of Natural Resources, Division of Oil Gas and Mining.

Table 9
Utah Crude Oil Production by County, 1985-2004
(number of barrels)

	Carbon	Daggett	Duchesne	Emery	Garfield	Grand	San Juan	Sanpete	Sevier	Summit	Uintah	Washington	State Total
1985	196	2,512	11,007,673	54,084	466,141	217,624	8,586,399	0	0	15,702,653	5,042,666	227	41,080,175
1986	0	2,452	8,765,074	26,884	380,677	181,345	8,622,206	0	0	16,663,450	4,602,608	0	39,244,696
1987	0	2,546	7,640,759	23,599	348,516	114,599	7,725,908	0	0	15,518,435	4,454,174	0	35,828,536
1988	639	4,563	6,919,415	17,156	398,327	89,128	8,122,363	0	0	13,240,368	4,572,979	0	33,364,938
1989	527	3,031	6,070,367	12,930	359,627	88,289	7,660,883	0	0	9,928,031	4,380,390	0	28,504,075
1990	155	2,846	7,055,369	11,441	335,850	80,457	7,774,204	0	0	8,423,076	4,021,650	0	27,705,048
1991	28	2,618	6,697,210	11,898	333,194	180,183	8,282,947	0	0	6,495,833	3,923,728	0	25,927,639
1992	53	2,237	6,895,374	11,551	310,858	209,299	7,556,334	0	0	5,546,319	3,541,548	0	24,073,573
1993	122	2,539	6,366,835	11,384	282,058	342,981	6,780,431	0	0	4,515,352	3,524,284	0	21,825,986
1994	164	2,616	5,782,606	8,623	273,266	243,491	6,669,388	0	0	4,441,344	3,246,123	0	20,667,621
1995	27	1,312	5,654,825	5,744	260,031	169,097	6,585,400	0	0	3,930,036	3,370,300	0	19,976,772
1996	0	1,828	6,103,552	4,771	250,315	224,456	6,637,068	230	0	3,116,779	3,189,781	0	19,528,780
1997	0	2,271	6,358,598	3,354	239,969	177,423	6,927,831	83	0	2,735,596	3,147,423	0	19,592,548
1998	0	1,949	6,268,634	3,662	222,038	141,786	7,302,937	0	0	2,341,921	2,940,615	0	19,223,542
1999	527	1,898	4,697,532	1,649	220,179	140,599	6,764,639	72	0	1,911,551	2,637,875	0	16,376,521
2000	211	2,696	4,772,096	3,279	214,266	197,559	6,152,940	0	0	1,477,075	2,788,908	0	15,609,030
2001	128	1,308	4,980,167	4,552	206,270	120,176	5,516,970	20	0	1,249,130	3,195,205	0	15,273,926
2002	46	1,464	4,291,457	2,493	210,235	121,091	5,190,786	0	0	936,912	3,016,376	0	13,770,860
2003	1,885	1,644	4,341,306	6,191	203,309	98,975	4,556,274	0	0	819,793	3,069,047	0	13,098,424
2004	4,661	1,448	5,838,429	4,657	201,058	233,686	3,986,802	21	164,508	587,176	3,776,762	0	14,799,208
% of State Total, 2004	0.03	0.01	39.45	0.03	1.36	1.58	26.94	0.00	1.11	3.97	25.52	0.00	100.00

Source: Utah Department of Natural Resources, Division of Oil Gas and Mining.

Table 10
Utah Oil Refineries and Capacity

Refinery	Location	Atmospheric Crude Oil Distillation Capacity	
		Barrels per Calendar Day	Barrels per Stream Day
Big West Oil Co.	North Salt Lake	29,400	30,000
Chevron USA Inc.	Salt Lake City	45,000	49,000
Holly Corp Refining & Marketing	Woods Cross	24,700	26,000
Silver Eagle Refining	Woods Cross	10,250	11,000
Tesoro West Coast	Salt Lake City	58,000	60,000
Total	Various	167,350	176,000

Calendar Day production takes into account maintenance time, emvironmental constraints, and similar factors.
Steam Day refers to running at maximum capacity with no allowance for downtime or other factors.
Source: Energy Information Administration, Petroleum Supply Annual 2004.

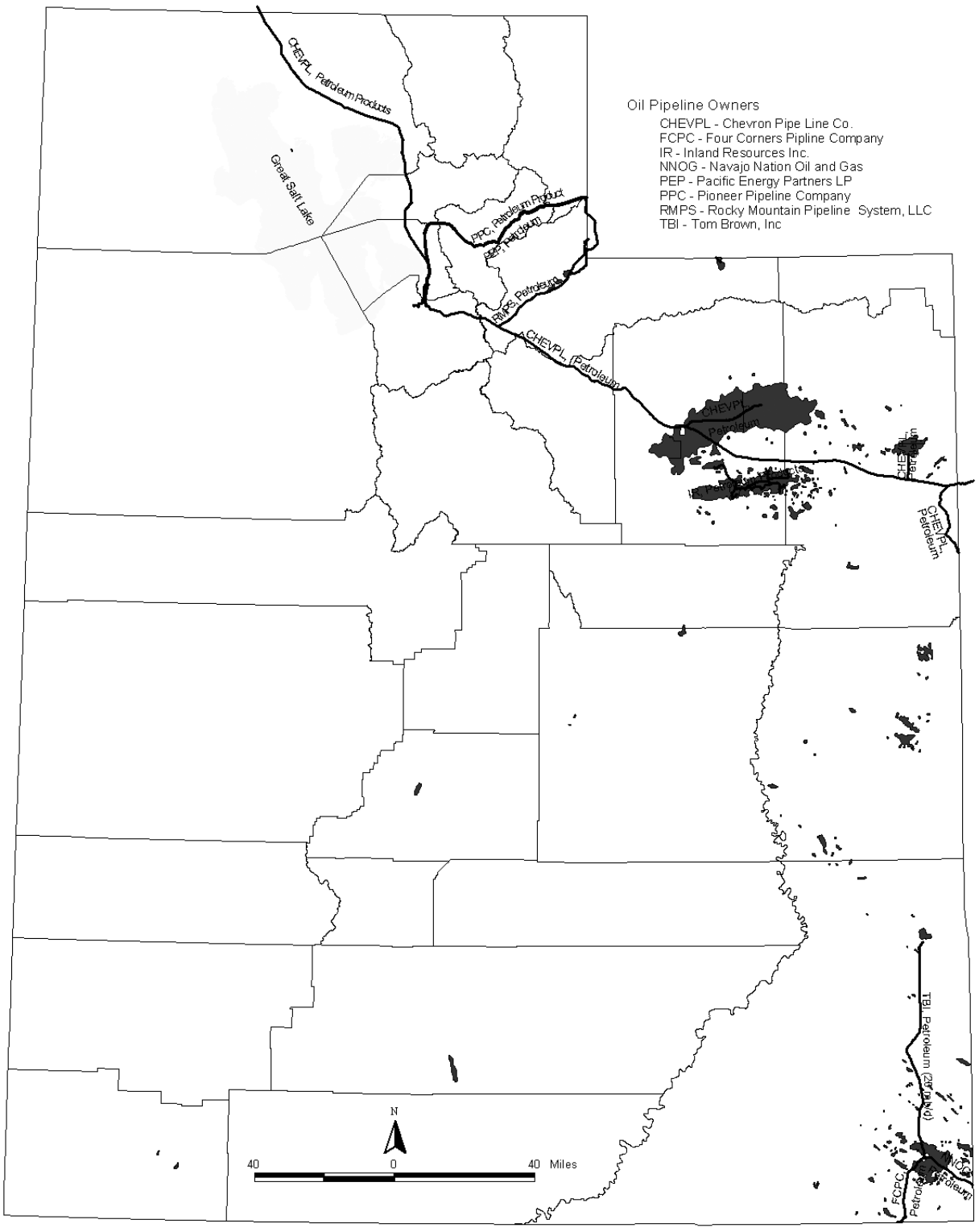
and Davis counties. A major portion of Summit County production is shipped to Wyoming for refining, while crude oil produced in southeastern Utah is sent to refineries in New Mexico. (Figure 4) The Chevron Pipe Line Company line through Duchesne and Uintah counties is connected to other pipelines and producing areas in Colorado and Wyoming. The Rocky Mountain Pipeline System and the Pacific Energy Partners Pipeline connect to a system that delivers crude oil produced in Canada, Montana, and Wyoming to refineries in Montana, Wyoming, and Utah. The pipelines in San Juan County deliver crude oil to refineries in New Mexico. The Pioneer Pipeline Company delivers refined petroleum products from Wyoming to markets along the Wasatch Front, while the Chevron Pipeline Company line that extends northwest through Box Elder County transports refined petroleum products from Utah refineries to markets in Idaho and the Northwest. Several counties in Utah that produce crude oil—"Carbon, Emery, Garfield, Grand, Sevier, and Daggett—"are not served by pipelines. Oil produced in these counties is shipped to refineries via tanker truck.

The five refineries in Utah are all located near the Salt Lake-Davis county line and have a capacity of 167,350 barrels of crude oil daily or 61 million barrels annually. (Table 10) This refining capacity is just under 1 percent of nationwide refinery capacity and 28 percent of refining capacity in the Rocky Mountains (PADD IV).

While gasoline is supplied by the five refineries in Utah, gasoline is also imported to the state. The Pioneer Pipeline transports refined petroleum products to the Wasatch Front from Wyoming. Additionally gasoline is supplied by tanker truck to the southeastern portion of the state from refineries in New Mexico and to the southwestern portion of the state from Nevada. Gasoline is also exported from Utah to Idaho and the Northwest via the Chevron Pipe Line Company petroleum products line.

Volumes of major petroleum products sold in Utah have been increasing over the past 20 years, with volumes of jet fuel and distillate increasing at a faster rate than the volume of motor gasoline. (Table 11) From 1985 to 2004, the amount of motor gasoline sold in Utah increased from 2,245.9

Figure 4
Utah Petroleum Pipeline System



Source: Utah Geological Survey.

Table 11
Sales of Major Petroleum Products in Utah
(thousand gallons per day)

	Motor Gasoline	Kerosene-type Jet Fuel	No. 2 Distillate
1985	2,245.9	324.3	821.8
1986	2,155.8	371.8	784.0
1987	2,170.9	442.5	840.7
1988	2,227.5	431.2	855.8
1989	2,237.6	444.9	905.1
1990	2,259.6	477.4	929.3
1991	2,177.3	502.8	927.6
1992	2,270.5	483.3	953.0
1993	2,250.0	487.7	990.1
1994	2,506.8	467.6	1,032.0
1995	2,722.2	500.8	1,104.8
1996	2,847.5	644.0	1,168.6
1997	3,003.1	652.6	1,166.5
1998	2,889.9	655.9	1,200.9
1999	2,977.9	743.4	1,350.0
2000	2,983.3	744.4	1,323.4
2001	3,062.0	694.9	1,493.5
2002	2,958.4	645.2	1,487.1
2003	2,871.0	645.2	1,403.9
2004	3,006.5	685.4	1,645.5

Source: Energy Information Administration, Petroleum Navigator Data System, Prime Supplier Sales Volumes.

thousand gallons per day to 3,006.5 thousand gallons per day, an increase of 33.9 percent. Of the gasoline sold in Utah, the majority (approximately 75 percent) is regular grade, followed by premium grade (15 percent), and midgrade (10 percent). A small amount of the gasoline sold in Utah (about 2 percent) is oxygenated gasoline, which is required by the Environmental Protection Agency in certain areas that do not meet carbon monoxide limits under the Clean Air Act. No reformulated gasoline, which is required in areas that do not meet ozone limits under the Clean Air Act, is sold in Utah. Nationwide, about one-third of gasoline sold is reformulated gasoline.

In contrast to the gain in gasoline sales, the volume of both distillate and jet fuel sold in Utah has doubled over the past 20 years. Sales of Number 2 distillate increased from 821.8 thousand barrels per day in 1985 to 1,645.5 thousand barrels per day in 2004, an increase of 100.2 percent. Most of the Number 2 distillate sold in Utah (about 80 percent) is low-sulfur Number 2 diesel fuel, which is used primarily in high-speed diesel engines such as automobiles and trucks. Federal environmental regulations require that diesel fuel sold for on-road use contain less than 0.05 percent sulfur. The remainder of the Number 2 distillate sold in Utah is high-sulfur diesel fuel, which is permissible for use in off-road vehicles such as agricultural, construction, and mining equipment. Similarly, sales of jet fuel increased from 324.3 thousand gallons per day in 1985 to 685.4 thousand gallons per day in 2004, an increase of 111.3 percent. The increase in jet fuel sales corresponds with the establishment of the Salt Lake City International Airport as a hub for air travel in the early 1980s and subsequent growth of the airport over the past 20 years.

Summary

The petroleum industry operates on a worldwide basis with a transparent and efficient market. Events affecting the oil industry can quickly alter consumer prices on the other side of the globe due to the integrated nature of the industry and intercontinental trade of crude oil and, to a lesser extent, refined petroleum products. The United States has become more dependent on overseas sources of petroleum over the past two decades with the portion of the country'ís supply of crude oil supplied by imports rising from 25 percent to 65 percent. As with the rest of the country, Utah's petroleum production has been declining over the past several years. Crude oil produced in Utah is

insufficient to supply the five refineries that operate in Utah, resulting in Utah being a net importer of crude from other states and Canada. Utah also plays a integral role in regional trade of refined petroleum products. Gasoline is imported to the southeastern portion of the state from refineries in New Mexico while the southwestern part of Utah is supplied from Nevada. In addition to the five refineries in northern Utah, petroleum products are supplied to the Wasatch Front via pipeline from Wyoming. The Utah refineries also supply refined products to Idaho and the Northwest via pipeline

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Major Petroleum Industry Products

Asphalt - A dark brown-to-black cement-like material containing bitumens as the predominant constituent obtained by petroleum processing; used primarily for road construction.

Aviation Gasoline - A complex mixture of relatively volatile hydrocarbons with or without small quantities of additives, blended to form a fuel suitable for use in aviation reciprocating engines.

Distillate Fuel Oil - A general classification for one of the petroleum fractions produced in conventional distillation operations. It includes diesel fuels and fuel oils. Products known as No. 1, No. 2, and No. 4 diesel fuel are used in on-highway diesel engines, such as those in trucks and automobiles, as well as off-highway engines, such as those in railroad locomotives and agricultural machinery. Products known as No. 1, No. 2, and No. 4 fuel oils are used primarily for space heating and electric power generation.

Kerosene - A light petroleum distillate that is used in space heaters, cook stoves, and water heaters and is suitable for use as a light source when burned in wick-fed lamps. Kerosene has a maximum distillation temperature of 400 degrees Fahrenheit at the 10-percent recovery point, a final boiling point of 572 degrees Fahrenheit, and a minimum flash point of 100 degrees Fahrenheit.

Motor Gasoline - A complex mixture of relatively volatile hydrocarbons with or without small quantities of additives, blended to form a fuel suitable for use in spark-ignition engines. Motor gasoline is characterized as having a boiling range of 122 to 158 degrees Fahrenheit at the 10 percent recovery point to 365 to 374 degrees Fahrenheit at the 90 percent recovery point.

Kerosene-type Jet Fuel - A kerosene-based product having a maximum distillation temperature of 400 degrees Fahrenheit at the 10-percent recovery point and a final maximum boiling point of 572 degrees Fahrenheit. It is used for commercial and military turbojet and turboprop aircraft engines.

Liquified Petroleum Gases - A group of hydrocarbon-based gases derived from crude oil refining or natural gas fractionation. They include: ethane, ethylene, propane, propylene, normal butane, butylene, isobutane, and isobutylene. For convenience of transportation, these gases are liquefied through pressurization.

Petroleum Coke - A residue high in carbon content and low in hydrogen that is the final product of thermal decomposition in the condensation process in cracking. This product is reported as marketable coke or catalyst coke. Coke from petroleum has a heating value of 6.024 million BTU per barrel.

Residual Fuel Oil - A general classification for the heavier oils, known as No. 5 and No. 6 fuel oils, that remain after the distillate fuel oils and lighter hydrocarbons are refined. No. 5, a residual fuel oil of medium viscosity, is also known as Navy Special and is used in steam-powered vessels in government service and inshore powerplants. No. 6 fuel oil includes Bunker C fuel oil and is used for the production of electric power, space heating, vessel bunkering, and various industrial purposes.

Road Oil - Any heavy petroleum oil, including residual asphaltic oil used as a dust pallative and surface treatment on roads and highways. It is generally produced in six grades from 0, the most liquid, to 5, the most viscous.

Bureau of Economic and Business Research
University of Utah
1645 East Campus Center Drive, Room 401
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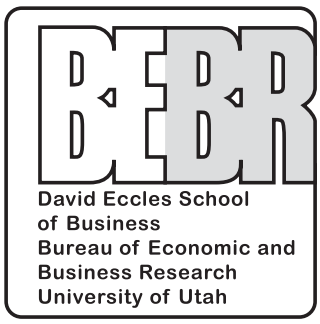

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