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PU 06-482

State Energy Profile - North Dakota

Energy Information Administration - State Energy Profiles

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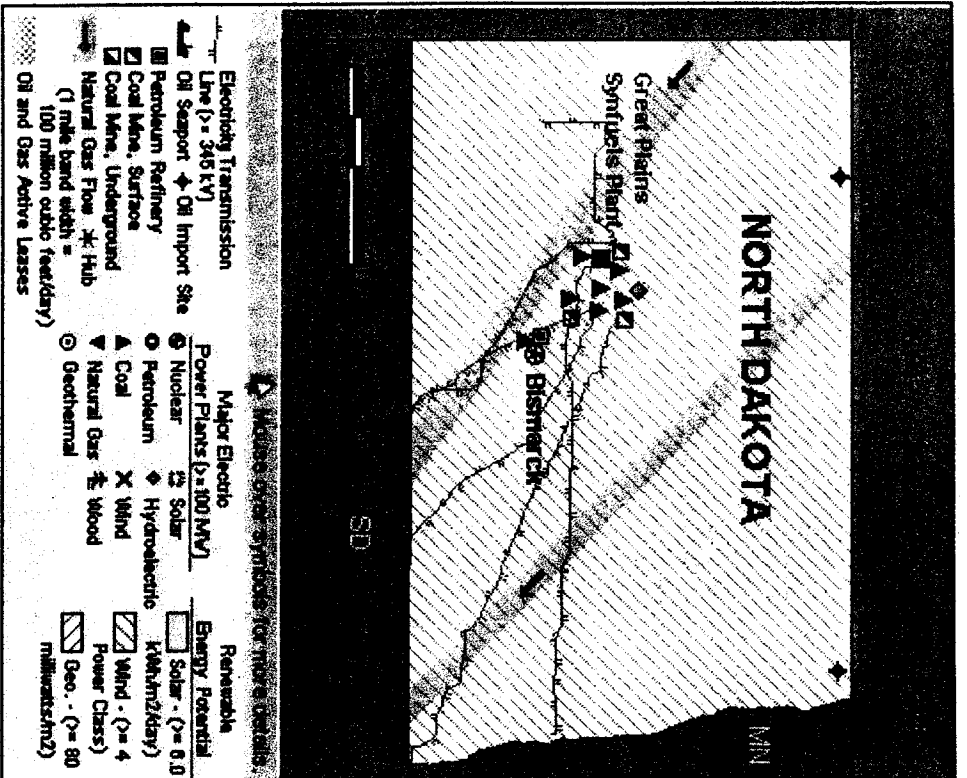
North Dakota



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Last Update: April 17, 2008
Next Update: April 24, 2008

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North Dakota Quick Facts

- North Dakota oil output accounts for about 2 percent of total U.S. crude oil production.
- Due partly to high heating demand in winter, North Dakota's per capita energy consumption is among the highest in the Nation.
- Nearly all of the electricity generated in North Dakota is produced by coal-fired power plants.
- North Dakota is one of the few States that allow the statewide use of conventional motor gasoline. (Most States require the use of specific gasoline blends in non-attainment areas due to air-quality considerations.)

Overview

Resources and Consumption

North Dakota has considerable fossil fuel reserves. Coal is extracted from large surface mines in central North Dakota. Substantial crude oil and natural gas reserves are located in the Williston Basin, in the western part of the State. Although a low population largely accounts for the State's low total energy consumption, North Dakota's per capita energy consumption ranks among the highest in the Nation, in large part due to high demand for heating during cold winters and an energy-intensive economy. Industry accounts for nearly one-half of the State's total energy consumption.

Petroleum

North Dakota is a substantial crude oil-producing State with an output typically equal to roughly 2 percent of total annual U.S. production. The State is also an entrance point for Canadian crude oil transported via pipeline to U.S. Midwest refining markets. A small petroleum refinery near Bismarck refines crude oil extracted from the Williston Basin, which covers eastern Montana and the western Dakotas, as well as a small amount of Canadian crude. The refinery produces transportation fuels primarily for the northern Great Plains States and the Twin Cities area. A small new refinery has been proposed on the Fort Berthold Indian reservation in western North Dakota. If constructed, it would be the first new crude oil refinery in the United States in decades.

Ethanol is produced at four ethanol plants in North Dakota, and a fifth is under construction, giving the State considerable ethanol production capacity. North Dakota is a moderate consumer of ethanol in blended motor gasoline, although it is one of the few States in the Nation that allow the statewide use of conventional motor gasoline. (Most States require the use of specific gasoline blends in non-attainment areas due to air-quality considerations.)

Natural Gas

North Dakota typically produces roughly 1 percent of the Nation's annual natural gas production. The majority of the State's supply is transported via major pipelines originating in Montana and western Canada on their way to U.S. Midwest consumption markets. North Dakota has the distinction of being one of only two States that produce synthetic natural gas. The single largest source of synthetic gas in the United States is the Great Plains Synfuels Plant in Beulah, North Dakota, which annually produces more than 54 billion cubic feet of gas from coal. Overall State usage of natural gas is low, with the industrial sector leading State consumption. Over two-fifths of the households in North Dakota use natural gas as their primary source of energy for home heating.

Coal, Electricity, and Renewables

Electricity generation and demand are both low in North Dakota, commensurate with the State's population. Coal-fired plants provide nearly all of North Dakota's electricity generation. Most of the coal used for power generation is supplied by several large surface mines in the central part of the State. State coal production is substantial, and North Dakota brings in only small amounts of coal from other States. Hydroelectric dams account for most of the State's non-coal-generated electricity. The Garrison Dam, located about 75 miles northwest of Bismarck, is North Dakota's fifth largest plant in electricity generation capability. The vast majority of the State is rich in wind energy potential, a dozen wind power projects are currently operational, and the State has plans for further development. Nearly three-tenths of North Dakota households use electricity as their primary energy source for home heating.

Data

Economy		North Dakota	U.S. Rank	Period
Population and Employment		0.6 million	48	2007
Population		0.4 million	48	2007
Civilian Labor Force		\$34,846	43	2007
Per Capita Personal Income		North Dakota	U.S. Rank	Period
Industry		\$26.4 billion	49	2006
Gross Domestic Product by State		39.3 million acres	7	2002
Land in Farms				
Market Value of Agricultural Products Sold		\$3.2 billion	24	2002

Prices

Petroleum				
<u>Domestic Crude Oil First Purchase</u>	North Dakota		U.S. Avg.	Period
	\$84.86/barrel		\$87.06/barrel	Jan-08
<u>No. 2 Heating Oil, Residential</u>	—		\$3.14/gal	Jan-08
<u>Regular Motor Gasoline Sold Through Retail Outlets (Excluding Taxes)</u>	\$2.604/gal		\$2.545/gal	Jan-08
<u>State Tax Rate on Motor Gasoline (other taxes may apply)</u>	\$0.23/gal		\$0.2144/gal	Jan-08
<u>No. 2 Diesel Fuel Sold Through Retail Outlets (Excluding Taxes)</u>	—		\$2.798/gal	Jan-08
<u>State Tax Rate on On-Highway Diesel (other taxes may apply)</u>	\$0.23/gal		\$0.22/gal	Jan-08
<u>Natural Gas Wellhead</u>	North Dakota		U.S. Avg.	Period
	\$6.52/thousand cu ft		\$6.40/thousand cu ft	2006
<u>City Gate</u>	\$7.66/thousand cu ft		\$8.37/thousand cu ft	Jan-08
<u>Residential</u>	\$9.06/thousand cu ft		\$12.12/thousand cu ft	Jan-08
<u>Coal</u>	North Dakota		U.S. Avg.	Period
<u>Average Open Market Sales Price</u>	\$10.70/short ton		\$25.16/short ton	2006
<u>Delivered to Electric Power Sector</u>	\$ 1.15/million Btu		\$ 1.78/million Btu	Dec-07
<u>Electricity</u>	North Dakota		U.S. Avg.	Period
<u>Residential</u>	6.96 cents/k Wh		10.31 cents/k Wh	Dec-07
<u>Commercial</u>	6.60 cents/k Wh		9.41 cents/k Wh	Dec-07
<u>Industrial</u>	5.12 cents/k Wh		6.25 cents/k Wh	Dec-07

➡ See more Price data for all States

Reserves & Supply

Reserves	North Dakota	Share of U.S.	Period
Crude Oil	412 million barrels	2.0%	2006
Dry Natural Gas	479 billion cu ft	0.2%	2006
Natural Gas Liquids	55 million barrels	0.6%	2006
Recoverable Coal at Producing Mines	1,145 million short tons	6.0%	2006
Rotary Rigs & Wells	North Dakota	Share of U.S.	Period
Rotary Rigs in Operation	8	0.5%	2007
Crude Oil Producing Wells	3,196	0.6%	2007
Natural Gas Producing Wells	200	0.0%	2006
Production	North Dakota	Share of U.S.	Period
Crude Oil	3,917 thousand barrels	2.5%	Nov-07
Natural Gas - Marketed	55,273 million cu ft	0.3%	2006
Coal	30,411 thousand short tons	NA	2006
Capacity	North Dakota	Share of U.S.	Period
Crude Oil Refinery Capacity (as of Jan. 1)	58,000 barrels/calendar day	0.3%	2007
Electric Power Industry Net Summer Capability	4,839 MW	0.5%	2006
Net Electricity Generation	North Dakota	Share of U.S.	Period
Total Net Electricity Generation	2,843 thousand MWh	0.8%	Dec-07
Petroleum-Fired	8 thousand MWh	0.3%	Dec-07
Natural Gas-Fired	1 thousand MWh	0.0%	Dec-07
Coal-Fired	2,669 thousand MWh	1.5%	Dec-07
Nuclear	—	0.0%	Dec-07
Hydroelectric	115 thousand MWh	0.6%	Dec-07
Other Renewables	45 thousand MWh	0.5%	Dec-07
Stocks	North Dakota	Share of U.S.	Period
Motor Gasoline (Excludes Pipelines)	—	—	Jan-08

<u>Distillate Fuel Oil (Excludes Pipelines)</u>	—	—	Jan-08
<u>Natural Gas in Underground Storage</u>	—	—	Jan-08
<u>Petroleum Stocks at Electric Power Producers</u>	W	W	Dec-07
<u>Coal Stocks at Electric Power Producers</u>	W	W	Dec-07
<u>Production Facilities</u>	North Dakota		
<u>Major Coal Mines</u>	Freedom Mine/The Coteau Properties Co., Falkirk Mine/The Falkirk Mining Co., Center Mine/BNI Co. Ltd.		
<u>Petroleum Refineries</u>	Tesoro West Coast (Mandan)		
<u>Major Non-Nuclear Electricity Generating Plants</u>	Coal Creek (Great River Energy), Antelope Valley (Basin Electric Power Coop), Milton R Young (Minnkota Power Coop, Inc), Leland Olds (Basin Electric Power Coop), Garrison (USCE-Missouri River District)		
<u>Nuclear Power Plants</u>	None		

➔ See more Reserves and Supply data for all States

Distribution & Marketing

<u>Distribution Centers</u>	North Dakota
<u>Oil Seaports/Oil Import Sites</u>	Neché, Portal.
<u>Natural Gas Market Centers</u>	None
<u>Major Pipelines</u>	North Dakota
<u>Crude Oil</u>	Belle Fourche, Koch, Lakehead, Little Missouri, Madador, Magellan, Portal.
<u>Petroleum Product</u>	Cenex, Kaneb, Magellan.
<u>Liquefied Petroleum Gases</u>	Alliance, Cochin.

Interstate Natural Gas Pipelines

Alliance Pipeline Co., Northern Border Pipeline Co., Viking Gas Transmission Co., Williston Basin Pipeline Co.

	North Dakota	Share of U.S.	Period
Fueling Stations	930	0.6%	2006
Motor Gasoline	14	0.6%	2007
Liquefied Petroleum Gases	4	0.5%	2007
Compressed Natural Gas	24	1.7%	2007
Ethanol	0	0.0%	2007

See more Distribution and Marketing data for all States

Consumption

per Capita	North Dakota	U.S. Rank	Period
Total Energy	648 million Btu	4	2005
by Source			
Total Energy	North Dakota	Share of U.S.	Period
Total Petroleum	412,155 billion Btu	0.4%	2005
Motor Gasoline	25,665 thousand barrels	0.3%	2005
Distillate Fuel	8,716 thousand barrels	0.3%	2005
Liquefied Petroleum Gases	9,798 thousand barrels	0.7%	2005
Jet Fuel	3,370 thousand barrels	0.5%	2005
Natural Gas	646 thousand barrels	0.1%	2005
Coal	53,338 million cu ft	0.2%	2006
	31,073 thousand short tons	2.8%	2006
by End-Use Sector	North Dakota	Share of U.S.	Period
Residential	63,746 billion Btu	0.3%	2005
Commercial	60,875 billion Btu	0.3%	2005
Industrial	195,363 billion Btu	0.6%	2005
Transportation	92,171 billion Btu	0.3%	2005
for Electricity Generation	North Dakota	Share of U.S.	Period
Petroleum	14 thousand barrels	0.3%	Dec-07
Natural Gas	8 million cu ft	0.0%	Dec-07
Coal	2,246 thousand short tons	2.4%	Dec-07

for Home Heating (share of households)	North Dakota	U.S. Avg.	Period
Natural Gas	43%	51.2%	2000
Fuel Oil	9%	9.0%	2000
Electricity	29%	30.3%	2000
Liquefied Petroleum Gases	16%	6.5%	2000
Other/None	3%	1.8%	2000

➔ See more Consumption data for all States

Environment	North Dakota	Share of U.S.	Period
Special Programs	North Dakota		
Clean Cities Coalitions	Red River Valley (Grand Forks, Winnipeg, Manitoba, Canada)		
Alternative Fuels	North Dakota		
Alternative-Fueled Vehicles in Use	1,521	0.3%	2005
Ethanol Plants	3	2.1%	2008
Ethanol Plant Capacity	100 million gal/year	1.3%	2008
Ethanol Use in Gasohol	10,502 thousand gal	0.3%	2004
Electric Power Industry Emissions	North Dakota	Share of U.S.	Period
Carbon Dioxide	31,266,845 metric tons	1.3%	2006
Sulfur Dioxide	118,664 metric tons	1.2%	2006
Nitrogen Oxide	68,059 metric tons	1.8%	2006

➔ See more Environment data for all States

— = No data reported; NA = Not available; W = Withheld to avoid disclosure of individual company data.

Recent Updates

- **Week of April 17, 2008**
 - Semi-annual update to State tax rates to Jan. 2008 for:
 - Motor gasoline
 - On-highway diesel fuel
- **Week of March 20, 2008**
 - Updated State lists of the top five major non-nuclear electricity generating plants to 2006
 - Updated monthly electricity statistics, including the price of electricity by sector and the amount of electricity generation by fuel, to December 2007
- **Week of March 13, 2008**

State energy consumption data for 2005 for these data elements:

 - Total energy consumption
 - Total energy consumption per capita
 - Total energy consumption by each sector – residential, commercial, industrial, and transportation.
- **Week of March 6, 2008**

Additional infrastructure sites as of 2006 on the State energy maps and on the U.S. maps. (For details, see expanded and updated [Maps Notes and Sources](#).)

The names of U.S. infrastructure sites in context on each State energy map. Just place your cursor over any map symbol to see details.

A delineation of oil and gas active leases offshore in the Gulf of Mexico (see [Alabama](#), [Florida](#), [Louisiana](#), [Mississippi](#), and [Texas](#)).

Map symbols that show the locations of five liquefied natural gas (LNG) import terminals (denoted by ✕) nearing completion in Massachusetts, Texas, and Louisiana, and a new Strategic Petroleum Reserve site in Mississippi.

Related Reports

- State Consumption, Prices and Expenditures (SEDS) tables that display comprehensive State data from as early as 1960 to the present
- State Electricity Profiles tables that provide time series data from 1990 forward for key electricity indicators by State
- State Compendium of Nuclear Power Plants State-by-State reports on the nuclear industry
- Natural Gas Residential Choice Programs written overviews of the status of natural gas industry restructuring in each State, focusing on the residential customer class
- Status of Electricity Restructuring by State annotated map showing details of the status of electricity restructuring in each State
- Regional Energy Profiles reports and maps that explore regional variations in U.S. energy consumption

References

- Notes & Sources: Maps | Data
- State Data Directory
- About State Energy Profiles

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