

Our Energy Industry Program ...

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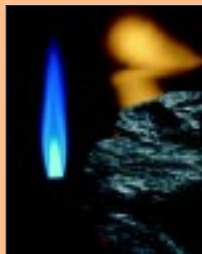
- ◆ Bismarck Public Schools
- ◆ ND Career Resource Network
- ◆ ND State Board of Vocational and Technical Education
- ◆ ND University System
- ◆ ND Petroleum Council
- ◆ ND Energy Managers
- ◆ ND Labor Education Council
- ◆ Basin Electric Power Coop
- ◆ MDU Resources
- ◆ Tesoro Refining
- ◆ Butler Machinery Company
- ◆ ND Industrial Commission
- ◆ ND Geological Survey
- ◆ ND Lignite Energy Council
- ◆ Marketplace of Ideas
- ◆ Marketplace for Kids



Do you know . . .

petroleum feedstocks provide us with more than 3,000 different products. Just a few of these are:

- ◆ Aspirin, bandages, vitamin capsules, soft contact lenses and eyeglasses, anesthetics, hearing aids, heart valves, artificial limbs;
- ◆ Toothbrushes, toothpaste, shampoo, shaving cream, hair coloring, combs, dentures, denture adhesive, deodorant, antiseptics;
- ◆ Permanent-press clothes, detergents, shoes, luggage, transparent tape, pillows, curtains, upholstery, ballpoint pens, and
- ◆ Telephones, cameras, footballs, tennis rackets, tents, fishing rods and lures, skis, boats, parachutes, guitar strings, fan belts, tires, antifreeze, dashboards, sunglasses.



For more information or to schedule your North Dakota Energy Education and Career Awareness Program contact:

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Check out these North Dakota energy industry web sites and their related links that even include classroom materials and virtual tours:

www.api.org/
www.BasinElectric.com/
www.butler-machinery.com/
www.classroom-energy.org/
www.eia.doe.gov/
www.lignite.com/
www.mdu.com/
www.ndoil.org/
www.powerofcoal.com/
www.tesoropetroleum.com/

Thank You to North Dakota Petroleum Council, Basin Electric Power Cooperative, Butler Machinery Company, and North Dakota Lignite Energy Council that donated information, photos and graphics used in this brochure; design by Griffin Communications.

NORTH DAKOTA ENERGY EDUCATION AND CAREER AWARENESS PROGRAM



The North Dakota energy industry has a bright future! New technologies, new discoveries, and new work in older fields have all greatly increased both exploration and efficiency of producing energy from oil, gas, and lignite in the state. A few highlights include:

- ◆ ND is the ninth largest oil producing state in the nation, generating nearly 87,000 barrels of oil per day in 2001, totaling more than 3.1 million barrels annually. All-time ND crude production amounts to more than 1.3 billion barrels according to available 2000 statistics.
- ◆ Lignite-generated electricity is abundant, low-cost, reliable and environmentally compatible. Western ND has enough lignite reserves to supply the state's power plants for more than 800 years. Regional lignite-based power plants generate electricity at a cost significantly below that of all coal, nuclear and natural gas power plants nationwide.
- ◆ There are 17 counties in the state with commercial oil production. Stark County was the top oil producer with 18% of the state's oil production in 2000.
- ◆ Forbes magazine named the MDU Resources Group, Inc., with headquarters in Bismarck, to its "Platinum List of America's 400 Best Big Companies" for the third consecutive year and as one of the "100 fastest growing companies".



- ◆ According to the North Dakota State University Agricultural Economics Department, the lignite industry ranks fifth and the oil / natural gas industry ranks sixth behind government, agriculture, tourism and manufacturing as the state's largest industries.
- ◆ In 2000, ND's natural gas processing plants produced and sold 48.7 billion cubic feet of natural gas — enough to heat 443,000 households in the state for one year.
- ◆ The Tesoro Refinery in Mandan refines a maximum of 60,000 barrels of crude oil per day; nearly 95% of it is produced in ND and much of it is sold in the state.
- ◆ The electricity generated from ND's lignite-based power plants is used by more than 2 million consumers and

businesses in the Upper Midwest, while the Great Plains Synfuels Plant, Beulah, supplies synthetic natural gas made from lignite to 225,000 homes and businesses in the eastern and southeastern United States.



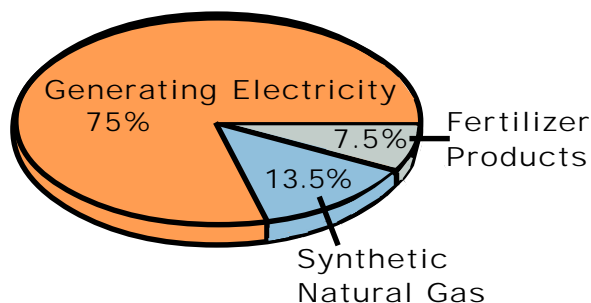
- ◆ 132 oil drilling permits were issued in 2000. The deepest vertical well drilled during 2000 was 13,865 feet. The average depth for a ND well was 10,854 feet in 2000 compared to 4,385 feet nationwide. The average cost of completing a ND oil well was approximately \$1.3 million during 2001. The average cost of completing a well in the United States was just under \$800,000.

ND Energy Employment – Now & Future:

- ◆ ND future career opportunities in the energy industry are outstanding for students! In the next five to ten years, about 50% of the employees in the state's energy industry will retire. The average salary in the oil industry alone is \$44,000+ yearly!
- ◆ The petroleum industry employed nearly 9,000 North Dakotans in 2000 (more than 2,000 direct jobs and the balance were indirect jobs). Each oil rig results in approximately 120 direct and indirect jobs. Other sectors of the petroleum industry include refineries, gas plants, pipelines, retail gasoline stations, wholesalers, and transporters.
- ◆ The ND lignite industry directly employs 3,100 people. For every direct job provided, another five+ jobs (16,450 indirect employees) are needed to supply the industry with goods and services. Translated, total employment is 19,550.



Uses of Lignite



ND Revenues from the Energy Industry:

- ◆ The energy industry (coal mining, coal conversion, and petroleum and natural gas extraction, exploration and refining) accounts for 44.3% of sales for final demand (activities which lead to a net inflow of income wealth from outside the state).
- ◆ Over the past 50 years, the state of ND has received more than \$500 million from oil and gas leases, bonuses, royalties and rentals on state land. In 2000, ND collected \$2.03 million in natural gas taxes. The natural gas tax is four cents per thousand cubic feet (mcf). Nearly \$1.61 million went to the Lands and Minerals Trust and over \$9.13 million to the Board of University and School Lands Trust during 2000.
- ◆ The ND lignite industry expenditures alone are \$525 million. Each dollar spent by the lignite industry circulates through ND's economy another two times, totaling more than \$1.56 billion in business activity for the state. And, the lignite industry generates over \$68 million in state tax revenue annually.

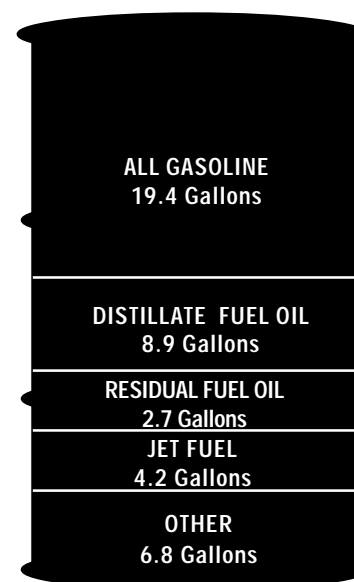


ND Energy Industry & the Environment:

- ◆ The oil industry, in cooperation with the Forest Service, has restored more than 500 wells and 480 miles of roads in the national grasslands, representing more than 5,500 acres returned to vegetation after the oil and gas reserves were removed.
- ◆ ND is one of only 15 states in the country that meets all the United States Environmental Protection Agency's strict federal ambient air quality standards.
- ◆ The Fort Mandan Visitors' Center, Wasburn, is made with coal combustion by-products — primarily fly ash generated by the combustion of lignite coal in a power plant.



Energy Fact



Average gallons of products derived from each barrel of crude oil (42 gallons in a barrel)

Want to know more?

Let us help you and your communities explore ND's energy industry opportunities! Our energy industry program provides information, resources, and support for anyone that has an interest in the energy opportunities in our state. Our presentations are designed for:



- ◆ Students (grades four through adult),
- ◆ Parents,
- ◆ Teachers,
- ◆ Counselors,
- ◆ School administrators, and
- ◆ Community leaders.

Our Energy Industry Program topics cover:

- ◆ What kinds of energy industry careers available;
- ◆ Why oil and gas drilling, production, and refining are important to you and what everyday products are made from petroleum;
- ◆ Where and when ND oil was discovered and what has it meant to the state;
- ◆ How we find the oil, get it out of the ground, make it into gas, and get it to you;
- ◆ What tools are used in the energy industry production and refining processes in ND;
- ◆ Why your local gasoline prices fluctuate;
- ◆ How the OPEC organization affects our ND markets;
- ◆ How the energy industry and the environment can coexist; and
- ◆ What ND requirements on land reclamation are enforced by the ND Industrial Commission and the ND Public Service Commission.

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