

North Dakota Petroleum Council Energy of North Dakota Program

Contract number: G-042-083

Final Report: December 14, 2018

Applicant: North Dakota Petroleum Council

Principal investigator: Ms. Tessa Sandstrom, Communications
Director

Program overview

The mission of the North Dakota Petroleum Council's Energy of North Dakota program is to transform North Dakotans' diminished, vague indifference toward their state's energy production into a deeply rooted, knowledge-based, prideful conviction. The North Dakota Petroleum Council (NDPC) works to accomplish this through a series of events and communications channels aimed at building partnerships with key stakeholders and developing, delivering, and engaging in public education about oil and gas. The following information includes a brief explanation of program component activities from June 1, 2018 – December 31, 2018. This report also serves as a FINAL report for the grant period, June 2017 – December 31, 2018.

Education

ND Energy Education

ND Energy Education is a program that was started in 2008 with the goal of educating and informing students, teachers, counselors, school administrators and teachers about the jobs and careers available in the energy industry. Contractors achieve this by attending career fairs or other events and making individual classroom visits with information and hands-on activities related to the energy sector.

PHASE 1: July 1, 2017 – October 31, 2017

ND Energy Education activities during Phase 1 of this grant occurred during the fall months of the academic year and centered on regional career fairs including the annual Dakota Association for College Admissions Counseling (DACAC) college fairs. DACAC is made up of college admissions professionals who help students in their college decision making. There were 18 college fairs on this year's ND circuit that were hosted by high schools and colleges. The NDPC contractors promoted career opportunities in the energy industry and the trades and provided students in attendance with information on colleges and training centers where they could learn the skills needed in the energy industry.

ND Energy Education also attended the ND School Board Association Conference and the ND Association of School Administrators Fall Conference in October. Several display items and hands-on activities were available to promote the program and provide both school board members and administrators information on energy-related jobs and careers.

The ND Energy Education programs also made single classroom visits, including a visit to Heart River Elementary in Dickinson, St. John's School in Wahpeton, Lewis and Clark North Shore School in Plaza, Ben Franklin Middle School in Fargo and Erik Ramstad Middle School in Minot. Students learned where North Dakota's electricity comes from, as well as tested their endurance on the bike-powered light bulb generator. Students had to pedal the bike at a consistent speed to generate enough electricity to light up three 60-watt light bulbs. This demonstration shows students the amount of electricity they use to perform everyday tasks. For example, playing a video game on an Xbox uses about 200 watts of electricity. Students found that maintaining a consistent speed and keeping the light bulbs shining proved to be a difficult and strenuous task. In addition to these activities, some classes made blades for wind turbines and tested their blade designs' efficiency and other classes assembled a power plant puzzle.

PHASE 2: November 1, 2017 – May 31, 2018

ND Energy Education activities during Phase 2 of this grant reporting period included career fairs in Kenmare, Mott-Regent, Grand Forks, Fargo and Standing Rock, as well as presentations to thousands of students in Bismarck, Dickinson, Medina, Fargo, Minot, Wahpeton, Lewis & Clark North Shore Plaza, Watford City, Edgeley, Kulm, Willow Bank Colony, Langdon, and Des Lacs-Burlington. Students learned where North Dakota's electricity comes from, as well as tested their endurance on the bike-powered light bulb generator. In addition to these activities, classes also made blades for wind turbines and some assembled a power plant puzzle. The ND Energy Education Program also participated in the Marketplace for Kids program, which was held in eight locations across the state from March to May.

May 2018 was an extremely busy month for the program. Contractors held sessions for more than 1,000 8th grade students in Fargo and West Fargo over a two-week period. In addition, ND Energy Education hosted 200 4th grade students in Bismarck for the Kids' Day held in conjunction with the Williston Basin Petroleum Conference.

FINAL PHASE: June 1, 2018 – December 31, 2018

During the Final phase of this grant reporting period, the ND Energy Education program continued its outreach to schools across North Dakota with classroom visits, school and regional career fairs, student industry tours, teacher in-services and special projects as requested by schools.

The North Dakota Petroleum Council, Lignite Energy Council and the Farm Bureau have initiated a student led advisory group, NextGen ND, exploring student opinions, observations and recommendations about North Dakota's Energy and Agriculture sectors. Along with the NextGen ND initiative, ND Energy Education is developing a day of career exploration for the Watford City Middle School on March 20 / 21, 2019. Students will experience 40-minute classes in career areas focusing on needed skill sets for North Dakota's energy industry.

We continue with our annual six-day long energy industry activities for all the 8th graders in the Fargo Public Schools and statewide Marketplace for Kids learning days.

ShowYourEnergy

PHASE 1: July 1, 2017 – October 31, 2017

The Energy of North Dakota program debuted the #ShowYourEnergy initiative in 2017. The initiative was a partnership between the Governor's Office, the North Dakota Petroleum Council, and the North Dakota Department of Mineral Resources, Oil and Gas Division, and coincided with the National Energy Awareness Month campaign promoted by the Interstate Oil and Gas Compact Commission. Governor Doug Burgum released a video (Appendix A) in early October 2017 to kick off the campaign, which

extended into April 2018. Classrooms were asked to submit videos about oil and gas development for prizes to be awarded to the classes submitting the best videos (Appendix B). #ShowYourEnergy was designed to fulfill several of North Dakota's educational standards, making this a great way for teachers to incorporate fun, creative, hands-on activities into their regular lesson plans while also creating awareness about the sources of energy and their roles in our lives. Many teachers expressed enthusiasm for the project, and several partners worked to continue promoting the campaign, including Watford City Superintendent Steve Holen and North Dakota Superintendent Kirsten Baesler. The first round of videos were due December 1, 2017.

PHASE 2: November 1, 2017 – May 31, 2018

The Energy of North Dakota program wrapped the #ShowYourEnergy initiative in April 2018, with 27 total videos being submitted. Awards were given to one video in the high school division and one video in the elementary school division. Both were recognized at the Williston Basin Petroleum Conference in May.

Community outreach

Bakken Rocks CookFest

PHASE 1: July 1, 2017 – October 31, 2017

The 2017 Bakken Rocks CookFests were held July 18 in Westhope and July 20 in Medora. This continues to be the Energy of North Dakota program's most popular event, and 2017 was among the largest ever held. Well over 2,000 people attended the two events, including more than 300 attending the public information sessions. These sessions featured industry and regulatory leaders who provided information on the basics of oil and gas development.

Fifteen companies participated in Westhope while 29 companies supported the Medora event. Companies and agencies also had education booths available to help

answer any questions or concerns attendees may have. The event continues to receive tremendous feedback from those who filled out surveys, with few offering any changes to the event.

FINAL PHASE: June 1, 2018 – December 31, 2018

The 2018 Bakken Rocks CookFests were held July 17 in Grenora and July 19 in Twin Buttes. This year was unique in that Twin Buttes prepared a cultural session during the BBQ where traditional dances were performed, and explanations were given on their meaning and importance. This continues to be the Energy of North Dakota program's most popular event. Well over 2,000 people attended the two events, including more than 300 attending the public information sessions. These sessions featured industry and regulatory leaders who provided information on the basics of oil and gas development.

In addition to attracting large crowds from the general populace, this event also had huge participation from industry. This provided an excellent opportunity for industry and communities to get to know one another, generate goodwill, and share information about any questions or concerns. Nineteen companies participated in Grenora while 24 companies supported the Twin Buttes event. Companies and agencies also had education booths available to help answer any questions or concerns attendees may have. The event continues to receive tremendous feedback from those who filled out surveys, with few offering any changes to the event.

Townhalls/Public Education Sessions

PHASE 1: July 1, 2017 – October 31, 2017

During Phase 1, Energy of North Dakota sponsored or participated in four townhall educational events, including the CookFest information sessions, an information session held at the North Dakota State Fair, and a session held in conjunction with this year's Petroleum Council Annual Meeting in Grand Forks on September 26-28.

The session held at the State Fair was broadcast live by Scott Hennen and included information about the oil and gas industry, its economic impacts, and the contributions to the state and its communities' tax revenues (Appendix C). The information session held in conjunction with the Annual Meeting in Grand Forks attracted about 320 people. In addition to offering the traditional "Bakken 101" information sessions, a panel titled "Bakken 2.0" delved into the latest technological trends and economic investments impacting the industry and the state. These sessions continue to be popular and important in sharing information about the oil and gas industry to create a better understanding of how it's done, why it is important, and how it will continue to be a driving force in the state for decades to come. Furthermore, it provides an opportunity for individuals to ask questions or share concerns they may have about the industry and its operations.

FINAL PHASE: June 1, 2018 – December 31, 2018

During this final phase of the grant, Energy of North Dakota sponsored or participated in three townhall/public education sessions. These included information sessions at two Cookfests and a Bakken 2.0 public education session during the Petroleum Council's Annual meeting in Fargo on September 24, 2018. Bakken 2.0 had over 250 people in attendance and featured many great industry experts, including Governor Burgum as a last-minute addition to the agenda.

<https://www.backthebakken.org/bakken2-0/>

Charitable Drives

PHASE 1: July 1, 2017 – October 31, 2017

During Phase 1, the Energy of North Dakota program hosted a food and essentials drive in August and September 2017 to help collect items for organizations and people in need. Participating companies collected than 2,000 pounds worth of nonperishable

food items, hygiene products, clothing, and other essentials that were then donated to local food pantries, social services offices, and nonprofit organizations.

PHASE 2: November 1, 2017 – May 31, 2018

During Phase 2, the Energy of North Dakota program hosted a blood drive in February 2018, which attracted more than 223 participants from 24 separate businesses or community-based locations throughout western North Dakota.

FINAL PHASE: June 1, 2018 – December 31, 2018

These charitable drives continue to be an important way to build relationships with stakeholders in the community. During this period, we collected over 500 items of clothing for our winter clothing drive. We also coordinated toy donations for the United Way angel tree.

Pick Up the Patch

PHASE 2: November 1, 2017 – May 31, 2018

During Phase 2 we saw the beginning of the Pick Up the Patch program, which was originally started in 2012 by the North Dakota Petroleum Council and has since taken on a life of its own. This year, industry participated in events in Dickinson, Trenton, Williston, New Town, Crosby and Watford City. The NDPC helped the Trenton School District with their activities by providing safety vests for students to wear when picking up trash.

In addition to holding community-wide clean-up events, NDPC members also work to promote a no litter culture by encouraging companies to include trash disposal in employee training, providing trash bags in company vehicles, and organizing regular clean-up efforts.

Promotion & Marketing

Advertising

PHASE 1: July 1, 2017 – October 31, 2017

The Energy of North Dakota program launched its new messaging campaign, titled “We Want,” in January 2017. The campaign is focused on the economic opportunities created by oil and gas, environmental responsibility, community and the downstream advantages of oil and gas development. The ads aired statewide through September 2017 for three weeks, alongside radio and digital ads. Digital ads continued through the end of November 2017.

PHASE 2: November 1, 2017 – May 31, 2018

During Phase 2, Energy of North Dakota ran three flights of advertising. The “We Want” campaign television ads played for about ten weeks, digital ads began in mid-January and outdoor digital billboards ran for five weeks in March and April. Facebook advertising continued through the summer.

FINAL PHASE: June 1, 2018 – December 31, 2018

During the Final Phase, we picked up TV advertising in November after the election. We also continue with our digital and billboard ads. See Appendix D for most current ads.

Social and Online Media

PHASE 1: July 1, 2017 – October 31, 2017

During Phase 1 of the grant period, social media was among the best forms of communication with and to a large-scale audience. The Facebook page has grown to over 6,800 followers, and posts reached an average of about 1,700 people during that

time. This is higher than many other pages of the Energy of North Dakota's size.¹ The Energy of North Dakota Twitter account also saw an increase of followers with more than 12,500 total impressions (or number of times a tweet was seen) during this reporting period. North Dakotans' usage of Twitter remains relatively low, but the medium remains an important part of sharing messages and information and remaining a part of the conversation.

PHASE 2: November 1, 2017 – May 31, 2018

During Phase 2 of the grant period, social media continued to be a great form of communication for our audience. The Facebook page has more than 6,940 followers, and posts reached an average of about 2,200 people since November 1, 2017. The Energy of North Dakota Twitter account also saw an increase of followers with more than 46,907 total impressions (or number of times a tweet was seen) since November 1, 2017. North Dakotans' usage of Twitter remains relatively low, but the medium remains an important part of sharing messages and information and remaining a part of the conversation.

FINAL PHASE: June 1, 2018 – December 31, 2018

During the Final Phase of this grant period, we have continued to grow our social media following. The Energy of North Dakota Facebook page has 7,777 followers. We've had 17,566 "engagements" on our page, which is how many times a post was liked or shared or commented on. Our Twitter following has also grown, we have 2,802 followers and have had 72,099 impressions since we started the feed. We are looking forward to continuing to engage on these social media platforms and growing our following.

Monthly Newsletter

PHASE 1: July 1, 2017 – October 31, 2017

¹ <https://blog.markgrowth.com/7-ways-to-rise-above-facebooks-declining-organic-reach-1975807b36e4>

During Phase 1 of this grant period, the Energy of North Dakota newsletter was sent monthly to more than 4,000 people. The emails have an average 24 percent open rate, which is in line with average open rates across all industries and above the rates of similar technical industries.² Of those who open the newsletter, about 66 percent of them engaged with one of the articles by clicking through to read or view more of a post.

PHASE 2: November 1, 2017 – May 31, 2018

During Phase 2, the Energy of North Dakota newsletter continued to go out monthly to more than 4,600 people. The emails have an average 25 percent open rate, which is in line with average open rates across all industries and above the rates of similar technical industries. Of those who open the newsletter, about 50 percent of them engaged with one of the articles by clicking through to read or view more of a post.

FINAL PHASE: June 1, 2018 – December 31, 2018

During the Final phase of this grant period, the Energy of North Dakota newsletter was sent out monthly to over 4,900 people. The emails have an average 28 percent open rate. Of those who open the newsletter, about 50 percent of them engaged with one of the articles by clicking through to read or view more of a post. See <https://energyofnorthdakota.com/cat/newsletter/> to view past newsletters.

We are proud to report that we have achieved our stated goals in the previous reports:

- Hosting charitable drives, including the Fueling Fun Toy Drive in December 2017 and the Battle of the Bakken Blood Drive in February 2018;
- Continuing communications and outreach efforts through activities such as town halls held in conjunction with the Williston Basin Petroleum Conference to be held May 22-24, 2018;
- Engaging students in oil and gas activities through our ND Energy Education program;

² <http://www.smartinsights.com/email-marketing/email-communications-strategy/statistics-sources-for-email-marketing/>

- Continuing our ad campaign and the production and dissemination of supplemental videos;
- Continuing our “Pick Up the Patch” efforts to ensure our roads, highways and communities stay clean, especially in the spring; and
- Continuing the conversation and presence on social media sites, including Facebook and Twitter.
- Hosting the Teacher Education Seminar June 18-21;
- Hosting the Bakken Rocks CookFests in Grenora and Twin Buttes on July 17 and 19, respectively;
- Continuing our ad campaign and the production and dissemination of supplemental videos;
- Continuing the conversation and presence on social media sites, including Facebook and Twitter; and
- Completing our public perception research.

The Energy of North Dakota program continues to be an important mechanism for sharing information about the oil and gas industry and building stronger relationships with key stakeholders. Financial support from the Oil and Gas Research Council, as well as the in-kind support from other partners has been instrumental in the success of this program.

Program Budget³

Phase I: July 1, 2017 – October 31, 2017

| Project Associated Expense | NDIC's Share | Applicant's Share (Cash) | Applicant's Share (In-Kind) ⁴ | Other Project Sponsor's Share | Budgeted Amount (Cash) |
|----------------------------------|----------------------|--------------------------|--|-------------------------------|------------------------|
| Outreach | | | | | \$ 77,000 |
| CookFest | \$ 16,459.18 | \$ 16,459.18 | \$ 4,433.78 | | \$ 44,000 |
| Safety & Environment | \$ 0.00 | \$ 0.00 | \$ 11.60 | | \$ 30,000 |
| Education Sessions | \$ 421.19 | \$ 421.19 | \$ 210.00 | | \$ 3,000 |
| | | | | | |
| Education | | | | | \$ 110,000 |
| ND Energy Education | \$ 15,000.00 | \$ 15,000.00 | \$ 0.00 | | \$ 60,000 |
| Teacher Seminar | \$ 5,869.75 | \$ 5,869.75 | \$ 35.00 | | \$ 55,000 |
| ShowYourEnergy | \$ 0.00 | \$ 0.00 | \$ 1,748.64 | | |
| | | | | | |
| Promotion & Marketing | | | | | \$ 755,000 |
| Advertising | \$ 147,840.89 | \$ 147,840.90 | \$ 192.40 | | \$ 732,500 |
| Publications & Documents | \$ 3,807.62 | \$ 3,807.62 | \$ 186.60 | | \$ 22,500 |
| | | | | | |
| Emerging Issues | | | | | \$ 14,000 |
| Workforce recruitment | \$ 6,912.50 | \$ 6,912.50 | \$ 105.00 | | |
| | | | | | |
| TOTAL | \$ 196,311.13 | \$ 196,311.14 | \$ 6,923.02 | | \$ 957,000 |

³ See Appendix E for expenditures.

⁴ See Appendix F for record of in-kind labor.

Program Budget⁵

Phase II: November 1, 2017 – May 31, 2018

| Project Associated Expense | NDIC's Share | Applicant's Share (Cash) | Applicant's Share (In-Kind) ⁶ | Other Project Sponsor's Share | Budgeted Amount (Cash) |
|----------------------------------|----------------------|--------------------------|--|-------------------------------|------------------------|
| Outreach | | | | | \$ 77,000 |
| CookFest | \$ 1,425.00 | \$ 1,425.00 | \$ 986.94 | | \$ 44,000 |
| Safety & Environment | \$ 0.00 | \$ 0.00 | \$ 198.32 | | \$ 30,000 |
| Education Sessions | \$ 0.00 | \$ 0.00 | \$ 35.00 | | \$ 3,000 |
| | | | | | |
| Education | | | | | \$ 110,000 |
| ND Energy Education | \$ 2,527.82 | \$ 1,920.30 | \$ 2710.00 | | \$ 60,000 |
| Teacher Seminar | \$ 3,079.26 | \$ 3,462.79 | \$ 1,645.00 | | \$ 55,000 |
| ShowYourEnergy | \$ 125.00 | \$ 125.00 | \$ 490.00 | | |
| | | | | | |
| Promotion & Marketing | | | | | \$ 755,000 |
| Advertising | \$ 119,575.95 | \$ 119,625.95 | \$ 0.00 | | \$ 732,500 |
| Publications & Documents | \$ 2,390.78 | \$ 3,462.79 | \$ 250.24 | | \$ 22,500 |
| | | | | | |
| Emerging Issues | | | | | \$ 14,000 |
| Workforce recruitment | \$ 0.00 | \$ 0.00 | \$ 0.00 | | |
| | | | | | |
| TOTAL | \$ 129,123.81 | \$ 130,021.83 | \$ 6,315.50 | | \$ 957,000 |

⁵ See Appendix G for expenditures.

⁶ See Appendix H for record of in-kind labor. Does not reflect contributions from ND Energy Education, Marketing or other contractors.

Program Budget⁷

Final Phase: June 1, 2018 – December 31, 2018

| Project Associated Expense | NDIC's Share | Applicant's Share (Cash) | Applicant's Share (In-Kind) ⁸ | Other Project Sponsor's Share | Budgeted Amount (Cash) |
|----------------------------------|----------------------|--------------------------|--|-------------------------------|------------------------|
| Outreach | | | | | \$ 77,000 |
| CookFest | \$ 2,435.20 | \$ 16,747.57 | \$ 5,390.00 | | \$ 44,000 |
| Safety & Environment | \$ 0.00 | \$ 0.00 | \$ | | \$ 30,000 |
| Education Sessions | \$ 0.00 | \$ 0.00 | \$ 700.00 | | \$ 3,000 |
| | | | | | |
| Education | | | | | \$ 110,000 |
| ND Energy Education | \$ 0.00 | \$ 0.00 | \$ 0.00 | | \$ 60,000 |
| Teacher Seminar | \$ 1,324.37 | \$ 15,636.73 | \$ 2,170.00 | | \$ 55,000 |
| ShowYourEnergy | \$ 0.00 | \$ 0.00 | \$ 0.00 | | |
| | | | | | |
| Promotion & Marketing | | | | | \$ 755,000 |
| Advertising | \$ 152,409.24 | \$ 195,346.38 | \$ 1,050.00 | | \$ 732,500 |
| Publications & Documents | \$ 909.37 | \$ 909.38 | \$ 0.00 | | \$ 22,500 |
| | | | | | |
| Emerging Issues | | | | | \$ 14,000 |
| | | | | | |
| TOTAL | \$ 157,078.18 | \$ 228,640.06 | \$ 9,310.00 | | \$ 957,000 |

⁷ See Appendix I for expenditures.

⁸ See Appendix J for record of in-kind labor.

Budget Year-to-Date and Cost Share

| | <u>NDIC Share</u> | <u>NDPC Share (including in-kind)</u> | |
|--------------|----------------------|---------------------------------------|------|
| Contract | \$ 478,500.00 | \$ 0.00 | |
| Phase I | \$ 191,400.00 | \$ 203,234.16 | Paid |
| Phase II | \$ 147,148.34 | \$ 136,337.33 | Paid |
| Phase III | \$ 139,951.66 | \$ 237,950.06 | |
| TOTAL | \$ 478,500.00 | \$ 577,521.55 | |




Appendices

Appendix A: #ShowYourEnergy Website and Video



www.ShowYourEnergy.com

Appendix B: #ShowYourEnergy Flyer and Rules



#SHOW YOUR ENERGY WITH S.T.E.A.M.

What is petroleum? How was it formed? How do you use petroleum? What's your favorite way to use petroleum? Where has petroleum and the energy from it made your life easier?

Oil and natural gas are a big part of North Dakota's economy, but did you know they're an even bigger part of your lives? Energy and the products produced from it are around you every day, from your cell phone to your bike tires. Responsible development of this resource requires knowing a lot about it and we want to see North Dakota students to show us your appreciation of energy by using your skills and knowledge in Science, Technology, Engineering, Art and Math to create a fun, informative video about our vast energy resources.

SHOW YOUR ENERGY - WHAT IT IS:

The Energy of North Dakota together with the North Dakota Governor's Office, the North Dakota Department of Mineral Resources Oil and Gas Division, and the Interstate Oil and Gas Compact Commission is sponsoring a friendly video competition for North Dakota students to show us their energy knowledge and know-how by producing a video that is three minutes or less. The campaign will include three grading rounds. The deadlines by which to submit videos are:

- Round 1: 5 p.m. Central on December 1, 2017
- Round 2: 5 p.m. Central on February 1, 2017
- Round 3: 5 p.m. Central on April 1, 2017

WHO CAN PARTICIPATE:

Any North Dakota school, classroom, and/or academic club is invited to participate. Video submissions will be divided into two categories:

- Grades 1-6
- Grades 7-12

Classrooms and/or schools are not limited in submissions, so if you have several great ideas, produce them all!


WHY YOU SHOULD SHOW US YOUR ENERGY:

This campaign is designed to fulfill several of North Dakota's educational standards (see examples here), making this campaign a great way for teachers to work fun, creative, hands-on activities into their regular lesson plans. And also because there are prizes.

One submission in each category (Grades 1-6 and Grades 7-12) will be chosen based on a grading rubric each round and will receive \$150. Each of these videos will continue on to the finals. One video from each category will be chosen for the Grand Prize of \$1,500 for the class, plus the chance to attend the Williston Basin Petroleum Conference in May 2018 to showcase their video.

HOW TO PARTICIPATE:

1. Divide students into groups (you may produce a video as a full classroom or club or divide the classroom or club into smaller groups).
2. Have students develop a video concept that demonstrates energy use and/or development and incorporates their knowledge, skills and/or usage of Science, Technology, Engineering, Art and Math.
3. Videos should be three minutes or less in length.
4. Grading of videos will be based on creativity, understanding of the topic, application of STEAM principles, and more.
5. Submit your video by the applicable dates listed above to: info@ShowYourEnergy.com.





#SHOW YOUR ENERGY WITH S.T.E.A.M.

APPLICABLE EDUCATIONAL STANDARDS

This initiative is designed to include (though is not limited to) the following North Dakota Education Standards:

- 1.1.1 Identify models that represent real objects (e.g., globe represents the Earth);
- 1.1.2 Identify objects (e.g., toy vehicles, dolls) that are made of parts;
- 1.1.3 Describe different ways that things can change (e.g., size, mass, color, movement);
- 2.1.1 Explain ways models are like (e.g., globe and Earth are both round) and unlike (e.g., different sizes, missing details and functions) real things;
- 2.1.2 Identify some things that may not work if some of their parts are missing, broken, or assembled incorrectly (e.g., batteries are necessary for some toys to operate, wheels and energy are necessary for a car to function);
- 3.3.2 Explain how supply and demand affect personal economic choices (e.g., how scarcity forces people to decide which goods and services to obtain);
- 3.3.3 Explain the differences among natural and human resources, and how they are used locally;
- 3.6.1 Identify ways technology (e.g., zippers, Velcro, measuring instruments, computers) can be used to solve problems at home and school;
- 4.1.1 Explain changes in the real world using a model (e.g., rock formations of the Bakken)
- 4.3.2 Identify ways that natural resources (e.g., oil and natural gas) contribute to the economy and the local community and North Dakota;
- 4.3.4 Identify principal exports of North Dakota;
- 4.6.1 Evaluate the effects of technology on people and the environment (e.g., new construction, oil drilling, electric cars);
- 4.6.2 Explain how an invention may lead to other inventions;
- 5.1.1 Use an appropriate model (e.g., drawing, equation, computer program, diagram, or 3-D device) to convey scientific information
- 5.6.1 Use technology to design a solution to a problem;
- 6.3.1 Organize materials according to similar properties (e.g., physical, chemical);
- 6.3.2 Use simple machines to change forces;
- 6.3.3 Identify different forms of energy (e.g., chemical, mechanical, heat, sound);
- 6.3.4 Identify sources of energy;
- 6.3.5 Explain how vibrations create wavelike disturbances that spread out from the source (e.g., seismographs are used to measure vibrations and detect oil resources);
- 6.5.2 Explain how rocks are formed (e.g., melting, cooling, metamorphism, combinations of minerals)
- 6.5.3 Describe the characteristics of the layers of Earth;
- 7.5.3 Identify the Earth's renewable and nonrenewable resources;
- 7.5.7 Explain changes (e.g., the value placed on land, water, wind energy, and fossil fuels) that occur in the meaning, use, distribution, and importance of resources;
- 9-10.1.4 Describe the relationship between form and function (e.g., solids, liquids, gases, cell specialization, simple machines, and plate tectonics);
- 11-12.1.4 Explain the relationship between form and function (e.g., atoms and ions, enzymes, aerodynamics);

This is just a small example of the educational standards that can be applied to lessons on energy and oil and natural gas. The industry is complex, requiring skills and education in nearly every subject. If you have a question as to how these standards apply or if you have another idea and just need more information on how to incorporate energy, please let us know at info@ShowYourEnergy.com.





#SHOW YOUR ENERGY WITH S.T.E.A.M.

VIDEO IDEAS:

Video concepts can be as simple or as complex as you like. Here are some examples your students may draw from to get you started:

- **Creating Energy:** How was petroleum formed? How is energy made? *Example:* Our oil resources were formed millions of years ago. Tell us the story explaining how pressure and heat helped form the Bakken.
- **Pulling Dragons from the Ground:** It's an industry slang term for recovering oil. Demonstrate how it is done and how STEM is used to do it. *Example:* Pumping units use a combination of gears to bring oil from two miles down. Just how do they do that?
- **Magic? Or Chemical Transfiguration?** How does a black liquid or invisible gas become the energy or many tangible products we use? How might life be different without it? *Example:* We all know Carson Wentz can channel a lot of his energy and strength to throw the ball a long way, but how does oil make it possible? Hint: it's in the football.
- **Mythbusters:** Take a common claim about our petroleum resources and see if you can prove – or disprove – it. *Example:* In the 1970s, everyone was convinced we were running out of oil, but now we have more than ever. How did technology change that belief. How has this been good for North Dakota?

Look on the back for links to other sites that help outline projects, experiments or activities to help students develop their video concept.

RESOURCES

Below are some ideas for activities and experiments that may help with concepts for your video:

U.S. Department of Energy Toolkit for Teachers and Parents:
<https://energy.gov/fe/about-us/students-and-teachers/study-guides-and-activities>

"Exploring Oil and Natural Gas," National Energy Education Development Project
<http://www.need.org/files/curriculum/guides/ExploringOilandGas.pdf>

"Wonders of Oil and Gas," National Energy Education Development Project
<http://www.need.org/files/curriculum/guides/WondersofOilandGas.pdf>

API Online Education Resources
<http://www.api.org/oil-and-natural-gas/consumer-information/in-the-classroom/online-education-resources>

"Force, Motion, Friction and Energy," Baylor College in cooperation with HESS
<http://www.bioedonline.org/lessons-and-more/focus-on-stem/force-motion-friction-and-energy/>

The Switch Energy Project
<http://www.switchenergyproject.com/>
<http://www.switchenergyproject.com/education/energy-lab>

Visit www.ShowYourEnergy.com or follow us on Facebook at [Facebook.com/EnergyofND](https://www.facebook.com/EnergyofND) or find @EnergyofND on Twitter for continued updates on ideas for projects.



Fair-goers learn about N.D. oil



JILL SCHRAMM, MINOT DAILY NEWS

Kari Cutting, vice president of the North Dakota Petroleum Council, holds a cleaning product made with a petroleum product as Rob Lindberg, director of Bakken Backers, looks on at right during an energy presentation Thursday at the North Dakota State Fair in Minot.

Presentation helps people grasp impact petroleum has on state

JILL SCHRAMM
Minot Daily News

MINOT — Helping people grasp the impact petroleum products have on their lives was the goal of a stage show that took place at the North Dakota State Fair Thursday.

Petroleum is in everything from smart phones and iPads to shoes and sunglasses. It is used in wood treatments, paints, cleaners, plastics, lipstick and numerous other products.

Scott Hennen, host of the "What's On Your Mind" radio pro-

gram, emceed the presentation of "North Dakota Energy - What's In It For You?"

State Tax Commissioner Ryan Rauschenberger told the crowd they would pay about three to four times as much in sales tax or income tax if they had to make up revenue now being collected in North Dakota oil taxes.

The average family pays about \$700 in income taxes, Rauschenberger said. That amount would be \$2,500 to \$3,000 if North Dakota tried to fund government at the current level without oil, he said. If tax income from coal and wind energy were included, those income taxes would go even higher, he said.

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Appendix D: current “We Want” ads

To see the television ads, visit www.youtube.com/NDPetroleumCouncil

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Outdoor Ads

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- We Want Better, Stronger, Brighter Futures.** EnergyofND.com/wewant
- We Want Economic Strength.** EnergyofND.com/wewant

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