

March 1, 2004

North Dakota Industrial Commission
ATTN: Oil & Gas Research Program
State Capitol – Fourteenth Floor
600 East Boulevard
Bismarck, ND 58505

Oil & Gas Research Council:

Thank you for the opportunity to apply for funding through the newly established Oil and Gas Research Council. The application enclosed is for a project to develop a statewide program for grade 4 teachers that incorporates hands-on activities and information about the energy industry into the North Dakota Studies curriculum.

Gateway to Science will work with Kent Ellis, Special Projects Coordinator for the Bismarck Public Schools School-to-Work program to develop a comprehensive program of educational resources regarding the energy industry for 4th grade teachers and the general public. The project includes a workshop to be held in the fall of 2004, at which Gateway to Science will bring together 4th grade teachers from around the state and energy industry professionals. The workshop will include presentations by geologists, engineers, and other science professionals working in various energy industry fields. Workshop participants will also visit a local petroleum refinery and an oil-drilling rig in western North Dakota. The culmination of the workshop is to develop hands-on activities that can be used in the classroom.

An outcome of the workshop will also be the development of two traveling science trunks on the geological principles of oil and gas exploration. Gateway to Science traveling science trunks serve as a resource for teachers and informal educators in our state. They include background information, demonstration activities for teachers, as well as hands-on activities for students and assessment tools to determine the students' level of understanding. The proposed project also includes the design and prototype of a new multi-station exhibition on oil and gas production for display in our public exhibit gallery. Following a period of testing and improvements, the prototype will be developed into a full-scale exhibition for display in the Gateway to Science public exhibit gallery. Funding for the full-scale exhibition is not included in this request. Cost estimates for constructing the full-scale exhibition are dependent on the design and will, therefore, be determined at a later date. Development of an exhibition will allow dissemination of information about the oil and gas industry to the 8,000+ visitors we serve each year.

The application enclosed includes all required and relevant information about our grant request. I acknowledge, on behalf of Gateway to Science, that we will complete the project as described in the application if the Commission makes the grant requested.

Sincerely,

Elisabeth Demke
Executive Director

Enclosure

Gateway to Science Center, Inc.

**North Dakota Oil & Gas Research Council
Grant Application**

Project Title:

“ND Studies & the Energy Industry”

Applicant:

Gateway to Science Center, Inc.
2700 State Street, Suite 17
Bismarck, ND 58503-0669
701-258-1975

Principal Investigator:

Elisabeth Demke, Executive Director

Application Date:

March 1, 2004

Amount of Request:

\$10,000

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Grant Application Abstract

Objective 1: To develop a statewide program for grade 4 teachers that incorporates hands-on activities and information about the energy industry into the North Dakota Studies curriculum. Enhanced “North Dakota Studies” curriculum will include hands-on activities, resources and information about the energy industry in the state.

Objective 2: To develop traveling science trunks on oil and gas exploration to serve as resource materials for use by teachers in the classroom and other educators in the field.

Objective 3: To design and prototype a hands-on exhibition to demonstrate basic concepts of oil and gas production.

Expected Results:

The proposed project has three components: 1) A workshop will be held for teachers from around the state to increase understanding of the energy industry and its impact on the state of North Dakota. 2) Two traveling science trunks on the geological concepts of oil and gas exploration will be developed for teachers to use in the classroom. 3) A hands-on exhibition will be designed and prototyped for display in the Gateway to Science exhibit gallery to demonstrate basic concepts of oil and gas production.

Duration:

The project period will be July 1, 2004, through June 30, 2005.

Total Project Cost:

The project will cost a total of \$20,000.00, which includes this grant request of \$10,000.00 and \$10,000.00 in matching funds.

Participants:

4th grade teachers and their students from around the state will benefit from this project.

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Project Summary

The proposed project consists of three components:

- 1) A workshop for 4th grade teachers entitled, “North Dakota Studies and the Energy Industry,” which will enhance social studies curriculum with hands-on activities and information about the energy industry. The workshop will provide teachers with an innovative approach to presenting North Dakota Studies curriculum. Curriculum enhancements will provide students with a foundation of understanding of the state’s resources and how the location of those resources influenced development of population centers.
- 2) Development of traveling science trunks on the geological concepts of oil and gas exploration for use by teachers in the classroom. Two identical trunks will be developed, one for teachers and the second to be used by Kent Ellis, Bismarck Public Schools Special Projects Coordinator, in his demonstrations around the state.
- 3) Design and prototype of a hands-on exhibition to demonstrate basic concepts of oil and gas production. Following a period of testing and improvements, the prototype will be developed into a full-scale exhibition for display in the Gateway to Science public exhibit gallery. Funding for the full-scale exhibition is not included in this request. Cost estimates for constructing the full-scale exhibition are dependent on the design and will, therefore, be determined at a later date.

The three components described above will establish a comprehensive program of educational resources for 4th grade teachers, as well as the general public.

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Project Description

Gateway to Science will work with Kent Ellis, Special Projects Coordinator for the Bismarck Public Schools School-to-Work program to develop a comprehensive program of educational resources regarding the energy industry for 4th grade teachers and the general public. The presentation of a “North Dakota Studies” unit is required of every 4th grade teacher in the state. Their challenge is to present the history of the people and events in North Dakota in an innovative manner that expands this unit to include the state’s current inhabitants, geography and industry. Curriculum enhancements will provide students with a foundation of understanding of the state’s resources and how the location of those resources influenced development of population centers. Incorporating information about the energy industry and its importance to the state will offer a broader description of the issues relevant to North Dakota’s present and future.

Several objectives have been established for the development of this project:

Objective 1: To develop a statewide program for grade 4 teachers that incorporates hands-on activities and information about the energy industry into the North Dakota Studies curriculum. Enhanced “North Dakota Studies” curriculum will include hands-on activities, traveling trunk materials, resources and information about the energy industry and its impact on the state.

Gateway to Science will bring together 4th grade teachers from around the state and energy industry professionals to participate in a 3-day fall workshop in Bismarck, the purpose of which is to enhance the “North Dakota Studies” curriculum. The workshop will include presentations by geologists, engineers, and other science professionals working in various energy industry fields. Workshop participants will also visit a local

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petroleum refinery and an oil-drilling rig in western North Dakota. The culmination of the workshop is to develop hands-on activities that can be used in the classroom.

The workshop will accommodate 20 teachers, two each from the areas served by the state's ten teacher centers (Bismarck-Mandan, Devils Lake, Dickinson, Fargo, Grand Forks, Mayville, Minot, Valley City, Wahpeton and Williston). The school districts represented will provide transportation and substitute teacher payments as matching funds for the project. Participating teachers will return with a program to share with other teachers served by their teacher centers.

We will work with the North Dakota Department of Public Instruction's Social Studies Standards committee as new state standards are developed in the summer of 2004. We will also work with the Bismarck Public School District Social Studies Curriculum Committee to determine ways to enhance grade 4 "North Dakota Studies" curriculum with information about the energy industry, to comply with new state standards. The workshop will bring together teachers and energy industry professionals, who can serve as resources for future classroom instruction, to explore innovative approaches to incorporating energy industry activities and information into teaching methods.

The workshop will be held in September 2004 at the Jack Science Center building of Bismarck State College, utilizing both a lecture room and a chemistry lab. Due to the lack of classroom space at Gateway to Science, we have used the facilities at Bismarck State College for many of our educational programs. Housing will be provided for teachers attending the workshop.

Objective 2: To develop traveling science trunks on oil and gas exploration to serve as resource materials for use by teachers in the classroom and other educators in the field.

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Gateway to Science will add two traveling science trunks to its collection of twelve such trunks, which are available for teachers to utilize in the classroom. Each traveling science trunk provides background information and demonstration activities for teachers, hands-on activities for students, and assessment tools to determine the students' level of understanding.

As we develop new traveling science trunks, we research available hands-on activities and curriculum for the targeted grade level. The traveling science trunks for this project will target grade 4 and will include age appropriate activities that best demonstrate the geologic principles of oil and gas exploration. We have recently worked with the North Dakota Geological Society to develop our first geology trunk, "Rocks and Land Formations," which will be available for teachers in the near future.

Objective 3: To design and prototype a hands-on exhibition to demonstrate basic concepts of oil and gas production.

Gateway to Science designs and constructs quality exhibits that demonstrate scientific principles in a hands-on manner. The majority of our exhibits are related to physical science, but the broad category of earth science is an area for which we have not developed hands-on exhibits. This is also an area that teachers have requested be developed into exhibits in our gallery.

When developing new exhibitions of any kind, our staff works with a volunteer exhibit committee comprised of college professors and others knowledgeable in the particular scientific field. The committee researches current exhibits in other science centers as well as hands-on activities that can be developed into interactive exhibits to demonstrate the principles desired.

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Following a period of testing and improvements, the prototype will be developed into a full-scale exhibition for display in the Gateway to Science public exhibit gallery. Funding for the full-scale exhibition is not included in this request. Cost estimates for constructing the full-scale exhibition are dependent on the design and will, therefore, be determined at a later date.

Environmental, Economic & Technological Impacts

There are no anticipated environmental, economic or technological impacts of this project.

Standards of Success

Gateway to Science has a great deal of experience providing educational programming for teachers and students. We maintain high standards for every aspect of our organization and rely on the evaluation by participants to tell us what we do right and how we can improve. The expectations of each component of the proposed project are that they will fulfill a need for teachers, students and the general public to gain an understanding of the energy industry in North Dakota.

Background

Gateway to Science is a non-profit organization under IRS Section 501(c)(3), serving as a regional resource for informal hands-on science education. We offer exciting educational opportunities to promote an increased understanding of scientific principles by the general public. Since opening the first hands-on science center in North Dakota at Gateway Mall in November 1994, over 66,000 visitors have participated in science center activities. Although Gateway to Science serves the immediate communities of Bismarck and Mandan, and the surrounding areas, our statewide audience increases

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each year as more teachers, students and the general public learn about our unique way of presenting informal science. We have continued to maintain very low admission prices of \$5.00 for adults and \$2.00 for children ages 4-18; children under 4 are admitted free with an adult. Memberships are also available. We believe it is important to make informal science experiences accessible to everyone, regardless of economic circumstances.

We have established a collaborative relationship with the Bismarck and Mandan Public School Districts, Bismarck State College, and the University of Mary to offer quality educational programs that enhance the science curriculum being taught in the school system.

Qualifications

The project will be coordinated by Gateway to Science Outreach Coordinator, Karen daSilva, who has several years of experience managing a variety of events for numerous nonprofit organizations. Karen is just completing the arrangements for our annual Environmental Festival, which will be attended by over 1,000 fifth grade students in March. The principal investigator for the proposed project is Elisabeth Demke, Executive Director, who has been in her position with Gateway to Science for eight years, and served as a volunteer prior to that time. Elisabeth is responsible for managing all grant funds received by Gateway to Science, including budget activities and reporting to granting agencies.

Workshop presenters will be recruited from professionals working in the energy industry. Additional volunteers working on the project will include our teacher advisory committee and our exhibits committee.

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Value to North Dakota

Every 4th grade teacher in the state is required to include a unit on “North Dakota Studies” in their curriculum. Quite often, this unit becomes not much more than a history lesson about people and events in North Dakota’s past, with little information shared about the state’s current inhabitants, geography or industry. Incorporating information about the energy industry and its importance in the state will provide students with a broader understanding of the issues relevant to North Dakota’s present and future.

Recruiting workshop participants from all over the state will ensure the dissemination of information to teachers represented by all ten teacher centers. Those teachers will, in turn, share the information with their peers. The additional components of traveling science trunks and the design and prototype of an exhibition on oil and gas exploration and production will increase the public’s understanding of the oil and gas industry.

Management

Although Gateway to Science operates with a very small staff, we have earned a reputation of providing quality educational programming. As the proposed project consists of three components, each will be managed separately, with consideration for how the individual component is connected to the project as a whole. Gateway to Science’s Outreach Coordinator will be responsible for overseeing the project activities, and the Executive Director will administer the timetable and monitor the budget. Evaluation points occur at critical times throughout the timeframe, and at the completion, of each component and are noted in the timetable included with this proposal.

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Timetable

July 1, 2004	Project Begins
July – August 2004	<ul style="list-style-type: none"> • Meet with DPI Social Studies Committee • Plan syllabus for workshop and obtain approval from university system • Recruit presenters • Schedule facilities and field trip opportunities • Workshop registration
September 2004	<ul style="list-style-type: none"> • Finalize facility needs & field trip • Confirmation to presenters and teachers • Lodging arrangements for teachers • Purchase materials • Host workshop
October 2004	<ul style="list-style-type: none"> • Evaluation and report of workshop • Disseminate information to teachers • Follow up with presenters • Put together traveling science trunks and supporting materials
November – December 2004	<ul style="list-style-type: none"> • Test traveling science trunks in classroom
January 2005	<ul style="list-style-type: none"> • Evaluate trunks and modify as necessary • Prepare usage agreements • Traveling science trunks available for teachers
February – March 2005	<ul style="list-style-type: none"> • Research existing exhibits on oil and gas production • Exhibits committee to determine number and content of each station, up to six • Preliminary design and test phase • Order materials for prototype
April – May 2005	<ul style="list-style-type: none"> • Develop prototype of exhibit stations • Evaluate and modify designs as needed • Finalize designs • Recommendations for exhibit signage and explanations
June 2005	<ul style="list-style-type: none"> • Display of prototype stations in exhibit gallery • Collect comments from teachers, students and the general public for evaluation of prototype • Final evaluation of project components • Report to funders

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Project Budget

Description	Budgeted	Grant Request	Match	Match Anticipated by:
Teacher Workshop:				
Facility	500.00		500.00	Bismarck State College
Personnel	3,000.00	2,000.00	1,000.00	Volunteer Presenters
Materials & Supplies	1,500.00	1,000.00	500.00	Sponsorship
Meals & Lodging	3,300.00	2,100.00	1,200.00	Sponsorship
Transportation	1,000.00	800.00	200.00	Sponsorship
Traveling Science Trunks:				
Maintenance	1,000.00	500.00	500.00	Gateway to Science Commitment
Materials & Supplies	800.00	600.00	200.00	Sponsorship
Personnel	2,000.00	1,000.00	1,000.00	Volunteer Teacher Advisory Committee
Trunk Usage & Shipping	900.00	500.00	400.00	Sponsorship
Exhibition Design & Prototype:				
Materials & Supplies	1,000.00	500.00	500.00	Sponsorship
Personnel	4,000.00	1,000.00	3,000.00	Volunteer Exhibit Committee
Project Administration	1,000.00		1,000.00	Gateway to Science Commitment
Total	\$20,000.00	\$10,000.00	\$10,000.00	
Sponsorship will be sought from private industry for materials, transportation and trunk usage.				

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Matching Funds

Please refer to the budget above for an estimate of matching funds and sources.

Tax Liability

Gateway to Science is a nonprofit organization and not subject to income tax. The organization, as an employer, is liable for employment taxes, which are paid on a monthly basis and on time. Gateway to Science does not have an outstanding tax liability owed to the State of North Dakota or any of its political subdivisions.

Confidential Information

There is no confidential information included in this grant proposal.

Patents & Rights to Technical Data

No patents or rights are associated with this grant proposal.