SOUTH DAKOTA BOARD OF REGENTS

Full Board

AGENDA ITEM: 13 – A

DATE: December 12-13, 2012

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SUBJECT: New Programs: BHSU M.S. in Sustainability

Executive Summary: Black Hills State University requests authorization to offer an M.S. in Sustainability. An M.S. in Sustainability is within the statutory (SDCL 13-59-1) and Board policy missions of the University (Board Policy 1:10:4 Black Hills State University). The program would contribute to the South Dakota workforce by preparing people for sustainability positions in business, government agencies, educational institutions, and non-profit organizations. The proposal addresses South Dakota employer interest in sustainability and student demand.

The University requests authorization to deliver the program online with implementation in 2013. BHSU requests authorization to deliver the program at the University Center Rapid City and at the University Center Sioux Falls with implementation to be determined based on student demand.

The University does not request new State resources or new student fees to implement the program. The program would be funded with self-support tuition.

Attachment I – Program Proposal
  Appendix A – Individual Student Outcomes
  Appendix B – Budget
  Appendix C – Response to External Reviewer’s Report

Attachment II – Report of the External Reviewer: Dr. Paul Rowland, Executive Director, Association for the Advancement of Sustainability in Higher Education

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RECOMMENDED ACTION OF THE EXECUTIVE DIRECTOR

1. Approve the Black Hills State University proposal for an M.S. in Sustainability described in Attachment I.
2. Authorize Black Hills State University to deliver the M.S. in Sustainability online with implementation in 2013.
3. Authorize Black Hills State University to deliver the M.S. in Sustainability at the University Center Rapid City and at the University Center Sioux Falls with implementation contingent on demand sufficient to support delivery.
1. Introduction

Black Hills State University requests approval for an M.S. in Sustainability. The proposal is provided as Attachment I. The Board approved the intent to plan at the 2011 December meeting with (Minutes, pp. 3682 & 4325-4340).

2. University Mission and Priorities

The statutory mission of Black Hills State University is provided in SDCL 13-59-1:

*The primary purpose of Northern State University, at Aberdeen in Brown county, and Black Hills State University, at Spearfish in Lawrence county, is the preparation of elementary and secondary teachers, and a secondary purpose is to offer preprofessional, one-year and two-year terminal and junior college programs. Four-year degrees other than in education and graduate work may be authorized by the board of regents.*

Board of Regents Policy 1:10:4 Black Hills State University Mission Statement:

*The legislature established Black Hills State University as a liberal arts university to meet the needs of the State and region by providing undergraduate and graduate programs.*

*The Board implemented SDCL 13-59-1 by authorizing undergraduate and graduate programs in the liberal arts and sciences and in professional education, to promote excellence in teaching and learning, to support research, scholarly and creative activities, and to provide service to the State of South Dakota and the region. Black Hills State University is the only multipurpose university in Western South Dakota.*

The University offers five master’s degrees:
- M.S. in Curriculum and Instruction (approved in 2001)
- M.S. in Integrative Genomics (approved in 2006)
- M.S. in Strategic Leadership (approved in 2008)
- MBA in Applied Management (approved in 2009)
- M.Ed. in Reading (approved in 2010)

BHSU has undergraduate programs in disciplines related to sustainability (natural sciences, social sciences, and business).

The program supports BHSU’s strategic plan and its sustainability priority. University sustainability initiatives are noted in the proposal (Attachment I, section #1).
3. **System Strategic Goals, Workforce Need and Student Demand**

The proposed program supports the system strategic goals (Policy 1:21):
- Expand graduate education.
- Contribute to workforce development by expanding academic programs to meet workforce needs and offering programs off-campus and online.

The University consulted with South Dakota businesses and government agencies during the development of the program. Similar programs at other universities are attracting students (Attachment I, section #1).

4. **Estimated Enrollment and Projected Graduates**

BHSU expects that the number of new students will grow from 15 students in FY14 to 38 students in FY17. The University does not expect to redirect students from its other master’s programs.

The University expects 13 graduates in FY15 and 18 graduates in FY16 and FY17.

5. **Development and External Review**

The Board’s external reviewer (*Board Policy 2:1 External Review of Proposed Graduate Programs*) was Dr. Paul Rowland, Executive Director, The Association for the Advancement of Sustainability in Higher Education and former dean of Education at the University of Montana and the University of Idaho. Dr. Rowland interviewed faculty and administrators during his visit to University on November 5 and 6. His report is provided as Attachment II.

Dr. Rowland supported the program and offered recommendations concerning the curriculum. The University’s responses to Dr. Rowland’s recommendations are summarized in Attachment I, Appendix C.

6. **Board Policy**

The University does not request any exceptions to Board Policy.

7. **Off-Campus and Distance Delivery**

Black Hills State University requests authorization to deliver this program online. Delivery would begin in 2013.
The University requests authorization to deliver the program at the University Center Rapid City and at the University Center Sioux Falls. Off campus delivery would be implemented only if there were sufficient employer and student demand to support face-to-face delivery.

8. **Budget and Resources**

Black Hills State University does not request new State resources or student fees to implement the program.

The University expects that the expenses related to teaching, course development, marketing, advising, and program management will be covered by the self-support tuition revenue. The startup cost of program development and marketing will be met through relocation of some self-support revenues from existing online programs.
South Dakota Board of Regents
New Graduate Degree Program

<table>
<thead>
<tr>
<th>University:</th>
<th>Black Hills State University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposed Graduate Program:</td>
<td>Sustainability</td>
</tr>
<tr>
<td>Degree:</td>
<td>Master of Science</td>
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<tr>
<td>Existing or New Degree(s):</td>
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<tr>
<td>Intended Date of Implementation (term):</td>
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<td>Proposed CIP code:</td>
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<tr>
<td>University Department:</td>
<td>Educational Outreach</td>
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</table>

University Approval

To the Board and the Executive Director: I certify that I have read this proposal, that I believe it to be accurate, and that it has been evaluated and approved as provided by university policy.

[Signature]
President of the University

Date

After approval by the President, a signed copy of the proposal should be transmitted to the Executive Director. Only after Executive Director review should the proposal be posted on the university web site and the Board staff and the other universities notified of the URL.

1. What are the purposes of the proposed program?

Black Hills State University requests authorization to offer a Master of Science in Sustainability (MSS). The program would contribute to the South Dakota workforce for industries related to energy/communications, construction, and manufacturing. The proposed program would benefit students seeking a variety of careers, including chief sustainability officer, sustainability analyst, sustainable design professional, social responsibility officer, sustainability coordinator, energy efficiency analyst, operations manager, and project manager.

The University intends to request authorization to deliver the program using the Internet to accommodate working adults. The University does not intend to request new State resources or ask for new student fees to implement the program. The program would be supported with internal redirections and self-support tuition revenue.

The program supports the System Strategic Goals (Policy 1:21):
- Expand graduate education.
- Contribute to workforce development by expanding academic programs to meet workforce needs and offering programs off-campus and online.

According to the Environmental Protection Agency (EPA), “sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit
fulfilling the social, economic and other requirements of present and future generations. Sustainability is important to making sure that we have and will continue to have, the water, materials, and resources to protect human health and our environment.\textsuperscript{1} Sustainability includes policies and strategies that meet society's present needs without compromising the ability of future generations to meet their own needs. The study of Sustainability from a public policy perspective focuses on the "economic, social, and security needs now and in the future without undermining the natural resource base and environmental quality on which life depends."\textsuperscript{2} The goal of sustainability in businesses is "to increase long-term shareholder and social value, while decreasing industry's use of materials and reducing negative impacts on the environment."\textsuperscript{3} Sustainability is an interdisciplinary approach that uses ideas and concepts from various fields such as environmental science, philosophy, economics, environmental history, biology, industrial technology, law, public policy, political science, sociology, and business.

**Careers and Workforce Demand for Graduates**

The Obama Administration announced that environmental protection and energy independence is a top priority. The Administration’s plan proposes to help create five million new jobs by strategically investing $150 billion over the next ten years to catalyze private efforts to build a clean energy future.\textsuperscript{4} Many major corporations have made sustainability a priority, which is expected to create new employment avenues in this field. For example, Wal-Mart recently launched the "Green Jobs Council" to help create new green jobs.\textsuperscript{5} A 2008 report by the U.S. Congress of Mayors, "U.S. Metro Economics: Current and Potential Green Jobs in the U.S. Economy" estimates that there were about 750,000 green jobs in the United States as of 2006. The number of American green jobs is projected to increase to more than 2.5 million by 2018, nearly 3.5 million in 2028, and 4.2 million in 2038.\textsuperscript{6} An analysis of job openings available on various "green jobs" and "sustainability jobs" websites shows a demand for jobs with a primary focus on sustainability, as well as positions where knowledge of sustainability is noted as a preferred qualification. There are wide ranges of openings with job titles including project director, sustainability coordinator, sustainability analysts, energy efficiency specialists, environmental policy specialists, etc. These openings require a cross-section of academic backgrounds, and most mid-level positions require or prefer a master's degree in sustainability or related field. The Peterson Graduate Directory notes "sustainability coincides with such industries as computer networking and system technology, communications, energy, environmental management, architecture, engineering, planning, design, construction, media, marketing, parks and recreation, horticulture, agriculture, hospitality, travel and tourism, transportation, and more."\textsuperscript{7} In addition to industry, sustainability jobs exist in higher education, governmental agencies, and non-profit organizations.

\begin{enumerate}
\item \url{http://www.epa.gov/sustainability/basicinfo.htm#sustainability}
\item City of Syracuse Sustainability Guide, \url{http://www.syracuse.ny.us/Sustainability_Guide.aspx}
\item City of Syracuse Sustainability Guide, \url{http://www.syracuse.ny.us/Sustainability_Guide.aspx}
\item \url{http://change.gov/agenda/energy_and_environment_agenda/}
\item In Focus newsletter, University Continuing Education Association, November/December 2008.
\item \url{http://www.petersons.com/graduate-schools/green-jobs-sustainable-development.aspx}
\end{enumerate}
Sustainability is an emerging field, so South Dakota occupational projections are not available from the South Dakota Department of Labor and Regulation website. However, many sustainability related jobs would fall into “Professional, Scientific and Technical Services,” “Construction of Buildings,” “Utilities,” and “Waste Management and Remediation Services” categories created by the South Dakota Department of Labor and Regulation. The “Professional, Scientific and Technical Services” category is projected to grow 19.9% from 2008 to 2018, while “Construction of Buildings,” “Utilities,” and “Waste Management and Remediation Services” are projected to grow 21.2%, 5.7%, and 20.6% respectively. The South Dakota Department of Labor and Regulation’s statistics show continuing diversification of the State’s economy toward professional, technical, and service-oriented occupations. BHSU is responding to the expansion and diversification of South Dakota’s economy by providing a state-of-the-art program in an emerging and professional field.

The Greening of the South Dakota Economy, a report published by the South Dakota Department of Labor and Regulation, states “there is growing interest in jobs that preserve and restore environment.” The report notes that one of the ideas to create new jobs is to capitalize on the “greening economy” as new jobs will be needed as green technologies are implemented.

Mr. Hunter Roberts, Energy Policy Director, State of South Dakota sees the connection between sustainability and economic development in South Dakota. Mr. Roberts states, “Any time you have a proven workforce it’s attractive to new businesses – having that trained workforce in sustainability areas makes economic development easier. South Dakota has the opportunity to create major changes in the fields of energy, recycling, and reuse...we need people who understand a wide range of sustainability issues to lead those changes.”

Ms. Aimee Ladonski, Sustainability Coordinator, City of Sioux Falls recognizes the growing need for sustainability education in Sioux Falls as she states, “Many new and existing businesses in the area are beginning to recognize the importance of sustainable practices because it’s the right thing to do, but they are also recognizing the economic benefit. Increasingly, I am fielding phone calls from local and regional business asking for resources, ‘how-to’s,’ and help with becoming more sustainable in their practices. Many want to draw new business to Sioux Falls and we need to be progressive in our sustainable practices to do that.”

Ms. Ladonski further states “I believe Sioux Falls and Rapid City, in particular, are primed and ready for this kind of [degree]. These concepts make sense for the environment, but they also make great economic sense and it’s the direction the country is heading. Sustainable practices promote local purchasing, local economic development, and a strong consideration for all demographics in our communities...By making sustainability a part of the curriculum in our colleges, we are building tremendous social capital as we seek to advance our regional leadership on this front.”

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Mr. Trent Lubbers, Sioux Falls Wastewater Superintendent, Sioux Falls, South Dakota stated, “I think a program like this is on the cutting edge – the economy is down now, but when things turn around and energy and resources are more expensive and scarce, your [students] will have what organizations want and need.”

Ms. Karri Stroh, Executive Director of Northern Plains Sustainable Agriculture Society, expresses a need for sustainability advocates and states that “Our membership (primarily in North and South Dakota and Minnesota) are in need of advocates who can help them expand and move their operations to the next level in sustainable ways. These advocates can help with communication, transportation, policy, and aligning the needs of local producers with the field of sustainability.”

The state media have also recognized the need for green industries. The Rapid City Journal in an article titled “Green jobs development should be state priority,” notes the need for attracting green jobs in South Dakota. The article further notes that there are hurdles in creating green industries; however the “long range payback is worth the sustained investment of time and energy.” Mr. Roberts in this article mentions “more than 50 energy companies either are looking to build or expand in South Dakota.”

The University of Chicago recently launched a sustainability management program. Cary Nathenson, associate dean, notes in an article “We have engineers. We have architects. We have economists. What we don’t have is what is being referred to nowadays as the sustainability director. This is an emerging position.”

The proposed program will prepare students from a variety of backgrounds for career advancement or career change. Graduates of the program will be prepared to assume policy and leadership positions related to sustainability in higher education, industry, consultancy, utilities, regulatory agencies, non-profits, non-governmental organizations, or local, state or federal government. Such positions include chief sustainability officer, sustainability director, sustainability analyst, sustainable design professional, social responsibility officer, sustainability consultant, energy efficiency analyst, operations manager, development specialist, resource manager, environmental science/sustainability teachers, climate preparation analyst, etc. There are many professions where a degree in sustainability will improve career prospects. Such professions include city planners, architects, physical plant managers, policy analysts, construction managers, lawyers, communications professionals, scientists, and industrial technologists.

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**Student Demand for the Program**

The *USA Today* article titled, “College students are flocking to sustainability degrees, careers,” states that Arizona State University’s sustainability program enrolled 300 undergraduates in the first year it was offered.\(^{18}\) ASU School of Sustainability offers undergraduate and graduate degrees focused on an interdisciplinary approach.

BHSU examined sustainability programs offered by other universities to assess student demand for a master’s degree in sustainability.

- Columbia University offers an MS in Sustainability Management. Dr. Steve Cohen, Dean of the Earth Institute at Columbia University, noted an upward trend in enrollment in their sustainability program. He mentioned “Student response has been overwhelming. We anticipated starting with 30-40 students and we’re up to 150, with another 120 ready to start this Fall.”\(^ {19}\)

- Ramapo College offers a master’s degree program in sustainability. Dr. Ashwani Vasishth, Program Director states, “Here at Ramapo College our degree program in sustainability has grown over the past two years from 12 students in the first cohort to 15 in the second. We see a lot of growth potential as various organizations begin to change their traditional practices to integrate and adopt more sustainable practices.”\(^ {20}\)

- Northern Arizona University offers an M.A. in Sustainable Communities. The Program Director, Dr. Luis A. Fernandez, mentioned, “Our program here at Northern Arizona University currently has about 60-70 students in cohorts of 20 plus students – we have seen consistent growth in our program enrollment.”\(^ {21}\)

BHSU offers an undergraduate major in environmental physical sciences. Students in this program and in the environmental sociology course have shown a strong interest in a graduate sustainability program that addresses public policy and sociological issues – a critical component in the proposed program.

The University currently offers an online Master of Science degree in Strategic Leadership. The study of strategic leadership has a strong relationship with sustainability, as it is a key to the competitive advantage sought by organizations in a global economy. Blekinge Institute of Technology in Sweden offers a master’s program (MS in Strategic Leadership towards Sustainability or MSLS) that combines strategic leadership and sustainability.\(^ {22}\) Some degree of curricular crossover would strengthen both programs. It is believed that many students in the Strategic Leadership program would be interested in taking some sustainability courses as electives or vice versa.

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\(^{20}\) Used with permission

\(^{21}\) Used with permission

\(^{22}\) [http://www.bth.se/msls](http://www.bth.se/msls)
University Mission

The statutory mission of Black Hills State University is provided in SDCL 13-59-1:

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University Strategic Plan and Priorities

A master’s degree program in sustainability will strongly support the University’s *Strategic Plan*, which emphasizes innovative undergraduate and graduate programs. The *Plan* states:

*Black Hills State University is a master’s level university that strives to meet the needs of the State and region by providing innovative, high-quality undergraduate and graduate programs.*

The *Strategic Plan* also supports the development of new degree programs to meet the changing needs of society and to engage in sustainability initiatives. The following points from the strategic plan reflect the congruence of this program:

- Black Hills State University will provide a learning environment characterized by innovative, high-quality academic experiences
- Develop new degree programs to meet the changing needs of society

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23 [http://www.bhsu.edu/Portals/0/facultystaff/policy/StrategicPlan.pdf](http://www.bhsu.edu/Portals/0/facultystaff/policy/StrategicPlan.pdf)
Black Hills State University
New Program: M.S. in Sustainability

- Advance ecological and energy saving initiatives
  - Reduce dependence on non-renewable resources and consumables
  - Increase use of recycling and use of sustainable products when economically feasible
  - Expand the campus garden and use of local products

Sustainability is a priority for Black Hills State University. BHSU was the first university in South Dakota to sign the Presidential Climate Commitment.

The University’s sustainability initiatives include:
- LEED certification for various buildings (Student Union, University Center-Rapid City, and the new Science building)
- waste management initiatives in dining services
- responsible use of electricity in buildings
- installation of solar panels
- limiting any printing or copying to double-sided materials when possible
- Green Day activities in the Fall and Earth Day activities in the Spring to promote overall awareness about sustainability
- An environmentally beneficial swale in the new parking lot, which recaptures storm water and uses it for irrigation in the parking lot.
- Sustainability is the key direction for its Madelaine Young Speakers program.24

2. Rationale

   A. If a new degree is proposed, what is the rationale?

The Master of Science degree is not new for Black Hills State University. See Section #1 above.

   B. What is the rationale for the curriculum?

Sustainability is an interdisciplinary field. Black Hills State University consulted with many industry experts, faculty, and businesses to understand the competencies and skills graduates need to find employment in the field of sustainability.

Dr. Ashwani Vasishth, Director & Associate Professor, Environmental Studies, Ramapo College stresses an interdisciplinary approach in teaching graduate level sustainability program. He said, “Graduate programs in sustainability need to create interdisciplinary thinkers – people who can repurpose and reframe their work across a wide spectrum of jobs and organizations to begin to think in terms of working and acting in sustainable ways.”25

Dr. Luis A. Fernandez, Director of the M.A. in Sustainable Communities at Northern Arizona University also supports an interdisciplinary curriculum for graduate level sustainability programs and states, “If our problems related to sustainability were merely technical, we would

24 http://www.bhsu.edu/Portals/0/facultystaff/policy/StrategicPlan.pdf
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have solved those problems long ago. In addition to programs in the technical and scientific fields, we saw a need for a program that would allow students to develop ways of thinking and acting in a highly social and political environment – people who are sensitive to the implications of any changes we make as we seek to solve our problems related to sustainability... We see a need to develop change agents – people who can [bring] new ways of thinking about the problems that face our nation and our world.”

Trent Lubbers, Sioux Falls Wastewater Superintendent, Sioux Falls, South Dakota echoed the need for well-rounded sustainability professionals as he stated, “One of the greatest needs [in South Dakota] in terms of sustainability is people who know how to pull together all the different aspects of sustainability and make the case, both socially and economically, for solutions that address our problems.”

Students in the program will gain a complex understanding of environmental (natural) systems, economic and social systems, legal frameworks, and policy making to help organizations meet sustainability related challenges. The program would provide a cohesive understanding of topics such as sustainable communities, environmental laws and policy, state and federal regulations, funding and advocacy, environmental history, ecology, alternative energy resources, environmental economics, climate change, pollution control/prevention, social entrepreneurship, and decision tools for sustainability professionals. Students in the program will be able to investigate concepts and methods of different disciplines in a holistic way, work collaboratively in a multi-disciplinary team of professionals, and develop creative and ethical solutions to sustainability related problems facing their organizations.

C. Demonstrate that the curriculum is consistent with current national standards.
Complete the tables below and explain any unusual aspects of the proposed curriculum.

There are a few graduate programs available in sustainability and related fields. BHSU has examined programs at Arizona State University School of Sustainability and Ramapo College in New Jersey in developing its curriculum. The degree programs offered at these institutions are interdisciplinary and are similar to the one being proposed at BHSU.

| Comparative of BHSU's Proposed Sustainability Curriculum and those of Arizona State University and Ramapo College |
|---------------------------------------------------------------|-----------------------------------|-----------------------------------|
| BHSU (33 credits)                                             | ASU (33 credits)                  | Ramapo College (36 credits)       |
| Required Courses (21 Credits)                                 | **Core Courses (15 Credits)**    | Required Courses (36 Credits)     |
| o Fundamentals of Sustainability                              | o Perspectives on Sustainability  | Fall I                            |
| o Quantitative Methods in Sustainability                      | o Quantitative Methods in         | o Foundations:                   |
| o Environmental Economics                                     | Sustainability                    | Sustainability Theory             |
| o Science for Sustainability                                  | o Sustainable Resource            | o Foundations: Natural           |
| o Human Dimensions of Sustainability                           | o Allocation                      | Resources, Processes             |

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D. Summary of the Degree (modify table as needed)

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<th>Proposed M.S. in Sustainability</th>
<th>Credit Hours</th>
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<td>Required courses, all students</td>
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<td>Electives</td>
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Required Courses

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<td>SUST XXX</td>
<td>Human Dimensions of Sustainability</td>
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<tr>
<td>SLDR 752</td>
<td>Strategic Decision Making</td>
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<tr>
<td>SUST XXX</td>
<td>Environmental Law &amp; Policy</td>
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<tr>
<td>SUST XXX</td>
<td>Capstone Project</td>
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</table>
Elective Courses in the Program: List courses that may be taken as electives in the program. Indicate any new courses to be added specifically for the major. *(If the list of existing courses is long, it may be provided as an appendix.)*

<table>
<thead>
<tr>
<th>Prefix &amp; Num</th>
<th>Course Title</th>
<th>Credit Hours</th>
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<tr>
<td>SLDR 740</td>
<td>Leading Change: Ethics and Social Responsibility (BHSU)</td>
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<td>XXXX</td>
<td>Global Climate Change (BHSU)</td>
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<td>Alternative Energy (BHSU)</td>
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<td>SUST XXX</td>
<td>Topics in Sustainability</td>
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3. Student Outcomes & Demonstration of Individual Achievement

A. What specific knowledge and competencies, including technology competencies, will all students demonstrate be able to demonstrate before graduation? *The knowledge and competencies should be specific to the program and not routinely expected of all university graduates. Complete Appendix A – Outcomes using the system form.*

Program goals include:
1. Graduate will recognize and analyze interconnections within and between social, environmental/ecological, and economic systems pertaining to sustainability.
2. Graduates will demonstrate an understanding of how social, environmental, and economic systems work cohesively and interdependently to foster or impede sustainability.
3. Graduates will implement and evaluate performance matrices and methodologies to demonstrate economic value and environmental impact of sustainability initiatives.
4. Graduates will analyze the role of human attitudes and values in fostering and impeding sustainability.
5. Graduates will recognize environmental conflicts in the context of human values, economic inequities, power, globalization, and political interests.
6. Graduates will analyze statutory approaches such as federal disclosures, corporate disclosures, Clear Air Act, Clean Water Act, “Cradle to Grave” regulation, remedial liability for toxic cleanup.
7. Graduates will demonstrate an understanding of power balance between federal and state governments in environmental regulation and regulatory issues.
8. Graduates will demonstrate an understanding of interconnections between nature, matter, and energy.
9. Graduates will evaluate various sources of energy and their limitation and implications.
10. Graduates will analyze and explain economics-environment interaction, supply & demand in context of sustainability, and economic models of sustainable development.
11. Graduates will develop creative, adaptive solutions to sustainability challenges; evaluate challenges and real-world solutions using a broad range of methods of enquiry and analyses.

Appendix A shows the courses that will provide each outcome.
B. What national instruments (examinations) are available to measure individual student achievement in this field?

There are no national exams available in this field. However, students will be required to complete a comprehensive project in their capstone course as part of their summative experience.

C. How will mastery by individual students be demonstrated? Describe the specific examinations or processes to be used. This is to include external measures. What will be the consequences for students who do not demonstrate mastery?

Students will be required to demonstrate their mastery of the course materials through the following assessment measures:

- Course examinations
- Written assignments
- Class discussions
- Class projects
- Class presentations

In addition, a comprehensive project will be assigned in the capstone course. A team of faculty will assess the completed project.

4. What instructional approaches and technologies will be used to teach courses in the program? This refers to the instructional technologies used to teach courses and NOT the technology applications students are expected to learn.

In order to provide working students with the opportunity to complete this degree, the courses will be taught in an online format. Desire2Learn (course management system used in the SDBOR system) will be utilized to deliver online courses. Other technologies such as Elluminate and Second Life will be used to enhance class discussions and online office hours.

5. Did the University engage any developmental consultants to assist with the development of the curriculum? Were any professional or accrediting associations consulted during the development of the curriculum? What were the contributions of the consultants and associations to the development of curriculum? See also section 11 below.

BHSU consulted and sought advice from faculty, industry experts, regulators, business leaders and other academicians to assess the demand for the program and to develop the curriculum.

---

28 What national examination, externally evaluated portfolio or student activity, etc will be used to verify that individuals have attained a high level of competence and identify those who need additional work?
29 Developmental consultants are experts in the discipline are hired by the university to assist with the development of a new program (content, courses, experiences, etc). Universities are encouraged to discuss the selection of developmental consultants with Board staff. See section 11 below.
6. Are students in the program expected to be new to the university, redirected from other programs or both? Complete the table and explain how the estimates were developed.

All students are expected to be new graduate students at the University. BHSU does not expect students enrolled in its other master’s programs to change to the M.S. in Sustainability.

<table>
<thead>
<tr>
<th>Estimates</th>
<th>Fiscal Years*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st</td>
</tr>
<tr>
<td>Students new to the university</td>
<td>FY14</td>
</tr>
<tr>
<td>Students from other university programs</td>
<td>15</td>
</tr>
<tr>
<td>Continuing Students (attrition=2 students per cohort)</td>
<td>15</td>
</tr>
<tr>
<td>Total students in the program (fall)</td>
<td>15</td>
</tr>
<tr>
<td>Program credit hours (major courses)**</td>
<td>270</td>
</tr>
<tr>
<td>Graduates</td>
<td>13</td>
</tr>
</tbody>
</table>

* Do not include current fiscal year.

** This is the total number of credit hours generated by students in the program in the required or elective program courses. The same numbers are used in Appendix B – Budget.

Development of Estimates
BHSU expects to enroll 15 students in the initial cohort and 20 in succeeding cohorts. Attrition is expected to be 2 students per cohort. Students are expected to take 18 credit hours in their first fiscal year and 15 hours in their second fiscal year. Students will graduate at the end of two years.

7. If program accreditation is available, identify the organization and explain whether accreditation is required or optional, the resources required, and the University’s plans concerning the accreditation of this program.

No program accreditation is available for sustainability programs at this time.

8. Does the University request any exceptions to any Board policy for this program? Explain any requests for exceptions to Board Policy. If no exceptions are requested, enter “None.”

None.

9. Program Delivery

A. Does the University request authorization to deliver this entire program at any off-campus locations? If yes, list location(s) and intended start date(s).

Yes, BHSU requests authorization to deliver the entire program at the University Center in Rapid City and Sioux Falls. Delivery at either location would be implemented if the student and employer demand were sufficient to provide the resources needed to support face-to-face delivery.
B. Does the University request authorization to deliver this entire program by distance technology? If yes, identify delivery method(s) and intended start date(s).

Yes, BHSU requests the authorization to deliver this entire program by distance technology (Internet). The capstone course may be offered as a hybrid course. The intended start date is Fall 2013.

C. Include off-campus tuition and site or delivery costs in the next section and in Appendix B. If off-campus or distance delivery authorization is not requested, enter "None."

Tuition and delivery costs are addressed in Section 10 and in Appendix B.

Black Hills State University does not intend to ask the Board of Regents to request new State resources or student fees to develop and implement the M.S. in Sustainability program. This program would be funded by self-support tuition revenue.

10. Costs, Budget and Resources

Explain the amount and source(s) of any one-time and continuing investments in personnel, professional development, release time, time redirected from other assignments, instructional technology & software, other O&M, facilities, etc needed to implement the proposed program. Address off-campus or distance delivery separately.

The program budget is provided in Appendix B. Black Hills State University does not request new State resources or student fees to develop and implement the M.S. in Sustainability program. This program would be funded by self-support tuition revenue. BHSU will redirect resources to cover any shortfalls in the early years of the program.

The University expects that the expenses related to teaching, course development, marketing, advising and program management will be covered by the self-support tuition revenue. The startup cost of program development and marketing will be met through relocation of some self-support revenues from existing online programs.

Faculty members in biological science, physical science, economics, industrial technology, sociology, and public policy with expertise in sustainability will be assigned to teach in the new program. In such cases, existing courses will be assigned to other faculty or adjuncts. For some courses, it would be necessary to hire adjuncts that have practical knowledge in sustainability related areas and required academic qualifications.

The design and delivery of courses in the sustainability program will not reduce the availability of courses for existing programs.
11. Board Policy 2:1: “Proposals for new graduate programs shall be evaluated by independent consultants retained by the Board.” Provide the names, telephone numbers, and URLs of professional organizations, accrediting bodies, and journals (editors) who may be able to assist the Board staff with the identification of consultants.

Organizations and Associations
- Association for the Advancement of Sustainability in Higher Education
  http://www.aashe.org/
- American College and University Presidents Climate Commitment
  http://www.presidentsclimatecommitment.org/
- Higher Education Associations Sustainability Consortium
  http://heasc.aashe.org/

Programs at Other Universities
- M.S. in Sustainability, Arizona State University:
  http://schoolofsustainability.asu.edu/graduate/master-of-science.php
- M.A. in Sustainability Studies, Ramapo College
  http://www.ramapo.edu/masters-sustainability
- Northern Arizona State University
- Texas State University
- M.S. in Sustainability Science, University of Massachusetts Amherst
  http://eco.umass.edu/degree-programs/sustainability-science

12. Additional Information.

Admissions Requirement

In congruence with the other MS programs offered by BHSU, the admission to this program will require the evidence of the following:
- Official BS/BA transcript from an accredited college/university with evidence of cumulative grade point average of 3.0 or above on a 4.0 scale
- Three letters of recommendation that can demonstrate the applicant’s potential for academic success in graduate studies
- A personal essay
- Minimum paper-based TOEFL score of 550 (for international students only)

Recruitment Plan

Existing resources will be used to cover the cost of recruitment. Recruitment activities include:
- BHSU website
- Professional and career websites
- Brochures
- Directed mailings
Management Plan

The Director of Graduate Studies will be responsible for program oversight. Oversight and administration of BHSU procedures and policy will be the responsibility of the BHSU Graduate Council. The Director of Graduate Studies will be responsible for processing admissions requests. The Director of Graduate Studies, with input from the Graduate Council, will be responsible for recruitment and marketing. The department chairs will coordinate scheduling of courses. Students will be assigned a faculty advisor. Faculty will notify the Director of Graduate Studies of students with academic deficiencies. The Director of Graduate Studies will process probations, suspensions and readmissions.
### Appendix A
Student Outcomes and Program Courses

<table>
<thead>
<tr>
<th>Individual Student Outcomes</th>
<th>Required Courses</th>
<th>Program Electives</th>
</tr>
</thead>
</table>
| 1. Demonstrate the ability to recognize and analyze interconnections within and between social, environmental/ecological, and economic systems pertaining to sustainability. | • Fundamentals of Sustainability  
• Human Dimensions of Sustainability  
• Science for Sustainability |                                                                                   |
| 2. Show an understanding of how social, environmental, and economic systems work cohesively and interdependently to foster or impede sustainability. | • Fundamentals of Sustainability  
• Science for Sustainability | • Global Climate Change |
| 3. Understand how to evaluate performance matrices and methodologies to demonstrate economic value and environmental impact of sustainability initiatives. | • Quantitative Methods in Sustainability  
• Strategic Decision Making |                                                                                   |
| 4. Demonstrate the ability to analyze the role of human attitudes and values in fostering and impeding sustainability. | • Fundamentals of Sustainability  
• Human Dimensions of Sustainability | • Leading Change: Ethics and Social Responsibility |
| 5. Recognize environmental conflicts in the context of human values, economic inequities, power, globalization, and political interests. | • Human Dimensions of Sustainability |                                                                                   |
| 6. Exhibit the ability to analyze statutory approaches such as federal disclosures, corporate disclosures, Clean Air Act, Clean Water Act, “Cradle to Grave” regulation, remedial liability for toxic cleanup. | • Environmental Law and Policy |                                                                                   |
| 7. Demonstrate an understanding of power balance between federal and state governments in environmental regulation and regulatory issues. | • Environmental Law and Policy |                                                                                   |
8. Demonstrate an understanding of interconnections between nature, matter, and energy.  
   - Science for Sustainability

9. Have the ability to evaluate various sources of energy and their limitation and implications.  
   - Science for Sustainability
   - Alternative Energy

10. Have the ability to analyze and explain economics-environment interaction, supply & demand in context of sustainability, and economic models of sustainable development.  
    - Environmental Economics

11. Demonstrate the ability to develop creative, adaptive solutions to sustainability challenges; evaluate challenges and real-world solutions using a broad range of methods of enquiry and analyses.  
    - Strategic Decision Making
    - Quantitative Methods in Sustainability
    - Environmental Law and Policy
Appendix B

Budget & Resources

Black Hills State University, M.S. in Sustainability

1. Assumptions

<table>
<thead>
<tr>
<th></th>
<th>1st FY14</th>
<th>2nd FY15</th>
<th>3rd FY16</th>
<th>4th FY17</th>
</tr>
</thead>
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<tr>
<td><strong>Headcount &amp; hours from proposal</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Fall headcount (see table in proposal)</td>
<td>15</td>
<td>33</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>Program FY cr hrs, State-Support</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Program FY cr hrs, Self-Support</td>
<td>270</td>
<td>555</td>
<td>630</td>
<td>630</td>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>1.00</th>
<th>1.75</th>
<th>1.75</th>
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<tbody>
<tr>
<td><strong>Faculty, Regular FTE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Faculty Salary &amp; Benefits, average</strong></td>
<td>$80,259</td>
<td>$80,259</td>
<td>$80,259</td>
<td>$80,259</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Faculty, Adjunct - number of courses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Faculty, Adjunct - per course</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Other FTE (see next page)</strong></td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Other Salary &amp; Benefits, average</strong></td>
<td>$6,335</td>
<td>$6,335</td>
<td>$6,335</td>
<td>$6,335</td>
</tr>
</tbody>
</table>

2. Budget

**Salary & Benefits**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty, Regular</td>
<td>$80,259</td>
<td>$140,453</td>
<td>$140,453</td>
<td>$140,453</td>
</tr>
<tr>
<td>Faculty, Adjunct (rate x number of courses)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other FTE</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
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</tbody>
</table>

**S&B Subtotal**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Contractual Services</td>
<td>$18,000</td>
<td>$15,000</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Supplies &amp; materials</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
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<tr>
<td>Capital equipment</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

**OE Subtotal**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>$108,259</td>
<td>$165,453</td>
<td>$150,453</td>
<td>$150,453</td>
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</table>

3. Program Resources

<table>
<thead>
<tr>
<th></th>
<th>GR</th>
<th>GR</th>
<th>GR</th>
<th>GR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SELF-support tuition/hr, net of HEF</strong></td>
<td>$345.35</td>
<td>$345.35</td>
<td>$345.35</td>
<td>$345.35</td>
</tr>
<tr>
<td><strong>Self-support tuition revenue</strong></td>
<td>$93,245</td>
<td>$191,669</td>
<td>$217,571</td>
<td>$217,571</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>GR</th>
<th>GR</th>
<th>GR</th>
<th>GR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STATE-support tuition/hr, net of HEFF</strong></td>
<td>$150.65</td>
<td>$150.65</td>
<td>$150.65</td>
<td>$150.65</td>
</tr>
<tr>
<td><strong>State-support tuition revenue</strong></td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Program fee, per cr hr (if any)</td>
<td>$0.00</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Delivery fee, per cr hr (if any)</td>
<td>$0.00</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>University redirections</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Community/Employers</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>Grants/Donations/Other</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

**Total Resources**

|                                | $93,245  | $191,669 | $217,571 | $217,571 |

BHSU MS Sustainability AppB Oct01.xls

1 - 3

12/4/2012, 12:20 PM
Appendix B
Budget & Resources
Black Hills State University, M.S. in Sustainability

Resources Over (Under) Budget  
($15,015)  $26,216  $67,118  $67,118

Provide a summary of the program costs and resources in the new program proposal.

<table>
<thead>
<tr>
<th>Estimated Salary &amp; Benefits per FTE</th>
<th>Faculty</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated salary (average) - explain below</td>
<td>$64,743</td>
<td>$0</td>
</tr>
<tr>
<td>University's variable benefits rate (see below)</td>
<td>0.1418</td>
<td>0.1418</td>
</tr>
<tr>
<td>Variable benefits</td>
<td>$9,181</td>
<td>$0</td>
</tr>
<tr>
<td>Health insurance/FTE, FY13</td>
<td>$6,335</td>
<td>$6,335</td>
</tr>
<tr>
<td><strong>Average S&amp;B</strong></td>
<td>$80,259</td>
<td>$6,335</td>
</tr>
</tbody>
</table>

Explain faculty used to develop the average salary & fiscal year salaries used. Enter amount above.

The FY13 salaries of 5 people in the following departments were averaged (natural science, sociology, business, institutional research).

Explain adjunct faculty costs used in table:

Explain other [for example, CSA or exempt] salary & benefits. Enter amount above.

Summarize the operating expenses shown in the table:

Course development during the first two years. Advertising to recruit new cohorts each year.

Summarize resources available to support the new program (redirection, donations, grants, etc).
### State-support:

<table>
<thead>
<tr>
<th>Self-Support Tuition, HEFF &amp; Net</th>
<th>FY13 Rate</th>
<th>HEFF</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>$289.00</td>
<td>$24.85</td>
<td>$264.15</td>
</tr>
<tr>
<td>Undergraduate-UC Foundations</td>
<td>$189.00</td>
<td>$24.85</td>
<td>$164.15</td>
</tr>
<tr>
<td>Graduate</td>
<td>$383.00</td>
<td>$37.65</td>
<td>$345.35</td>
</tr>
<tr>
<td>Externally Supported</td>
<td>$40.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### State-support:

<table>
<thead>
<tr>
<th>Self-Support Tuition, HEFF &amp; Net</th>
<th>FY13 Rate</th>
<th>HEFF</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate - BHSU, DSU, NSU</td>
<td>$124.20</td>
<td>$24.85</td>
<td>$99.35</td>
</tr>
<tr>
<td>Undergraduate - SDSMT, SDSU, USD</td>
<td>$129.90</td>
<td>$26.00</td>
<td>$103.90</td>
</tr>
<tr>
<td>Graduate - BHSU, DSU, NSU</td>
<td>$188.30</td>
<td>$37.65</td>
<td>$150.65</td>
</tr>
<tr>
<td>Graduate - SDSMT, SDSU, USD</td>
<td>$196.80</td>
<td>$39.35</td>
<td>$157.45</td>
</tr>
</tbody>
</table>

### Variable Benefits Rates

<table>
<thead>
<tr>
<th>University</th>
<th>FY13</th>
</tr>
</thead>
<tbody>
<tr>
<td>BHSU</td>
<td>14.18%</td>
</tr>
<tr>
<td>DSU</td>
<td>13.92%</td>
</tr>
<tr>
<td>NSU</td>
<td>14.40%</td>
</tr>
<tr>
<td>SDSM&amp;T</td>
<td>14.00%</td>
</tr>
<tr>
<td>SDSU</td>
<td>13.96%</td>
</tr>
<tr>
<td>USD</td>
<td>13.84%</td>
</tr>
</tbody>
</table>
APPENDIX C

Summary of BHSU’s Response to External Reviewer’s Comments

Dr. Paul Rowland, Executive Director for the Association of Sustainability in Higher Education reviewed BHSU’s proposal for a Master of Science in Sustainability on November 5 and 6, 2012. In his summary, Dr. Rowland stated, “sustainability programs are still quite rare, particularly programs like that proposed are not connected to a particular discipline or profession. Although that creates a level of uncertainty about what the program should include (or exclude) it does indicate that there is an opportunity to move into an open niche. Based on what has happened at other institutions in the U.S. that appears to be the case. New sustainability degrees have been very popular. In that respect this program has a high possibility of success.” Dr. Rowland concluded his summary by stating “based on my review and previous comments, I support the continued development and implementation of the M.S. in Sustainability at Black Hills State University.”

Summary of BHSU’s Response to Reviewer’s Comments

A. Under *Program Curriculum* for the proposed Master of Science in Sustainability the reviewer noted that “the capstone is not clearly defined and how and on what basis it will be assessed is unclear.” In addition the reviewer noted, “program electives are limited to 6 credits, which is not unusual for a graduate program however there are only three courses listed at this time.”

   a. RESPONSE: BHSU agrees with both assessments and has assigned a faculty member to develop a more detailed set of learning objectives as well as a more detailed plan of how the capstone will be assessed. To expand the elective offerings, a Special Topics in Sustainability has been added to electives. It is anticipated that new courses could be added in the future.

To ensure the coursework is focused and complimentary, BHSU has established an Academic Advisory Group for the new MS in Sustainability, which will oversee the development of all proposed courses in the curriculum.

B. Under *Faculty* the reviewer noted, “Among the faculty none of them have held the type of job that the program is preparing its graduates to hold.”

   a. RESPONSE: BHSU acknowledges this limitation among the existing faculty and is developing a faculty development program in sustainability for its faculty. This will be initiated by a retreat facilitated by a sustainability professional. BHSU will also provide travel funding for faculty to attended professional meetings and conferences in sustainability and fund a sustainability speaker series.

C. Under *Other Issues* the reviewer noted, “The issue of greatest concern to this reviewer is the lack of a designated position as advocate/champion/liaison for the program.” The
reviewer also noted “there is widespread support for some form of face-to-face convocation of the students at least once during their program of study.”

a. RESPONSE: BHSU agrees with these assessments. To address this in the short term, BHSU has established a Leadership Team made up faculty from two academic units providing curricular support for the program and one administrator. The Leadership Team will serve as the liaison/advocate for the program.

The Academic Advisory Group will review the idea of some form of face-to-face convocation as part of the program of study at the retreat currently scheduled for early-March of 2013. One possible opportunity for a face-to-face convocation for the students could be the Annual Association of Sustainability in Higher Education Conference.

D. Under Summary Recommendations the reviewer stated “there is a critical need to get the faculty on the same page. Developing a common understanding of the degree program and its purpose is prerequisite to the development of the details of courses.” Dr. Rowland also noted “the success of the program will hinge on its ability to recruit students that will find value in the program.” “Students will expect the institution to be holding itself to high standards of sustainability. It will be important to brand and market both the degree and the institution simultaneously as the go to place for sustainability.”

a. RESPONSE: BHSU is in agreement that the faculty for this program need to work collaboratively in the development of the degree program. BHSU seeks to assure a common sense of purpose for the program by offering professional development opportunities for faculty, convening and externally facilitated retreat and establishing an Academic Advisory Group.

BHSU has an ongoing commitment to sustainability and recognizes its responsibility to provide leadership in sustainability through on-campus initiatives, education, outreach and stewardship. To ensure alignment of on-campus initiatives with the new MS in Sustainability, BHSU will reorganize its existing Sustainability Committee and consider the establishment of a Chief Sustainability Officer to coordinate all sustainability efforts at BHSU.
Review and Evaluation of Proposed
Master of Science in Sustainability
at Black Hills State University

Paul Rowland, Ph.D.
Executive Director
Association for the Advancement of Sustainability in Higher Education

Background Information

This review of the proposed M.S. in Sustainability at Black Hills State University is based on a reading of the program proposal and other ancillary materials and a site visit to BHSU on November 5 and 6, 2012 including meetings and interviews with faculty, staff, and administrators. In addition, my review is based on my knowledge of a number of similar programs throughout the United States and my national and international knowledge of the employment of sustainability professionals in business, government, and the non-profit and education arenas.

Program Curriculum:

It is clear from both the curricular materials submitted and the understanding of the curriculum by the faculty and administrators, a great deal of thought has gone into creating the curriculum.

Sustainability is a newly emerging field both academically and in employment. As such there are no national standards, no national accrediting body, and indeed no leading professional organization. As sustainability degree programs have emerged, they have created a new area of academic engagement that draws on many existing fields but is unique in its holistic approach to problem identification and solution. Based on an understanding of complex systems, sustainability programs aim to prepare individuals to think broadly about opportunities to change practices to create a sustainable society and the consequences, both intended and unintended, of actions. Of course, there are multiple ways to achieve this outcome and the choice made by BHSU has been to take students who have developed some expertise through a bachelor’s degree, as well as through their employment, and to add a broad layer of understanding about sustainability on top of it. Such an approach will provide graduates with the ability to take their professional interest developed in their undergraduate program and to develop an understanding of how to view their professional work through the lens of sustainability and to assist their employers in becoming more sustainable in their practices. This type of program will appeal to potential students who want to take a more active role in developing sustainability in their workplace.

It is my opinion that this approach is appropriate and timely. At this time, the development of the sustainability professional requires some broad knowledge of sustainability, opportunities to practice thinking sustainability and solving problems, and an opportunity to apply their knowledge to real world settings. This program will provide this opportunity.
Having made a general statement of support for the program curriculum, there are some areas in which it needs greater definition.

1. The most important element of the program is the Capstone Project, a six credit course that is (presumably) taken at the end of the course of study. It is in this course that the student must demonstrate their ability to synthesize the complex breadth of sustainability and to demonstrate that they can be sustainability professionals. Unfortunately, the capstone course is not clearly defined and how and on what basis it will be assessed is unclear. It may make sense for the program to think through how they might engage outside sustainability professionals in the mentoring and the assessment of student success in this course.

2. Related to the issue of the assessment of the Capstone Project is clarity about what the program outcomes are. Sustainability is a broad interdisciplinary area of study and work and there are few agreed upon definitions or boundaries. Programs tend to operationalize the boundaries and definitions by their practices however it would be important to have clarity about those definitions and boundaries (or at least core principles) prior to finalizing the curricular offerings. Without such focused definition the program may suffer from being “all things to all people” and lose value in the process. The program should encourage multiple viewpoints and approaches but it must be about “something” and that “something” needs to be defined for students, faculty, and employers.

3. Program Electives are currently limited to 6 credits which is not unusual for a graduate program however there are only three courses listed at this time. Attention should be paid to providing additional electives that might be of value to other students outside this program or to existing courses that might strengthen the employment capacity of the graduates.

4. It will be essential that the required courses in the program be focused on applied sustainability either through the didactic materials or through assignments for students.

Faculty

The faculty members bring both high levels of expertise in their specialties as well as a passion and enthusiasm for this degree program. Sustainability is so new that there are only a handful of individuals with advanced degrees in sustainability so currently programs rely on a professoriate that has been trained in the disciplines (or in few cases – interdisciplinary programs) but have self trained in their understanding of sustainability and its relevance to and within their expertise. The faculty at BHSU includes a number of these types of faculty who have interest and inclination to seeing how their expertise intersects with that of others.

A key issue to examine in creating a general sustainability degree program is that it includes representation from a wide variety of disciplines that can address the social, economic and scientific elements of sustainability and can do so in ways that maintain the integrity of the discipline but also recognize the superior value of a multi- or interdisciplinary approach to understanding and solving problems. Based on my interviews with nearly a dozen faculty members this criterion is met with the faculty team.

One limitation among the faculty is that none of them have held the type of job that the program is preparing its graduates to hold. Several were not sure whether they had ever met a
sustainability professional and certainly did not have clarity as to their requisite job skills and knowledge. That is not unusual in an emerging field, particularly one so vaguely defined. It would strengthen the program and the reputation of the program for it to engage the sustainability professional community in various ways to assist the faculty in understanding what a sustainability professional does and what they need to know and do. Since the degree is not a research based degree the research of the faculty is less important than their understanding of the profession.

**Facilities, Equipment and Services.**

The library has sufficient resources for the degree program. As an online program, these resources are available online and through interlibrary loan. The online program support for both faculty and student appear to be adequate for a successful program. Current online programs indicate that the university has the ability to deliver coursework in that format.

**Other Issues**

The issue of greatest concern to this reviewer is the lack of a designated position as advocate/champion/liaison for the program. Although the program currently has a high level of support from administrators it appears not to have a permanent position allocated to administer, coordinate, assess, and advocate for the program. The deans have worked collaboratively with upper administration to move the program forward but it is not institutionalized. It is understandable that there is reluctance to place the program in a department or a college but it does not bode well for a program to have no one whose position is to coordinate the program. In short, it is unclear whether or not such a program would be sustainable.

Another issue that needs to be addressed is who are the students that are expected to enroll in the program. The documents provided prior to the visit indicated that they would be professionals around the state but in some conversations the likelihood of new BHSU graduates becoming students was raised. Since some courses seem to build around students who have full time employment it is unclear how this would work with new graduates. This lack of clarity on student audience will create recruitment and marketing issues and should be addressed prior to marketing the program.

An important issue was raised with respect to the strength of the program being the diversity (in terms of employment and undergraduate major) of the students. Can the faculty take advantage of this strength in the way they structure online classes? There was widespread support for some kind of face-to-face convocation of the students at least once during their program of study. There are a number of ways this can be done and this reviewer encourages there to be conversations about how to accomplish it. The place-based nature of sustainability would indicate a need for students to spend at least some time in a common place.

**Summary Recommendation**

Sustainability degree programs are still quite rare, particularly programs like that proposed that are not connected to a particular discipline or profession. Although that creates a level of
uncertainty about what the program should include (or exclude) it does indicate that there is an opportunity to move into an open niche. Based on what has happened at other institutions in the U.S. that appears to be the case. New sustainability degrees have been very popular. In that respect this program has a high possibility of success.

BHSU has adequate resources for the program and has a highly motivated and talented faculty to create and continue the program. The choice to offer the program as an online program gives it the opportunity to serve students throughout the state and beyond.

There are a few caveats and recommendations that qualify this support of the program.

First, there is a critical need to “get the faculty on the same page.” Developing a common understanding of the degree program and its purpose is prerequisite to the development of the details of courses. I would recommend that some kind of faculty professional development be conducted with all faculty who will be participating in the program so that the common understanding of the program can be consistently communicated to the students.

Second, the success of this program will hinge on its ability to recruit students that will find value in the program. This will require clarity about the program and defining the distinctive characteristics of the program – particularly the program outcomes that will define a graduate. Linked to the issue of recruiting and in general the program’s credibility will be the general reputation of the institution with respect to sustainability. Students will expect the institution to be holding itself to high standards of sustainability. It will be important to brand and market both the degree and the institution simultaneously as the “go to place” for sustainability. Without such branding and marketing it is likely it will be difficult to attract students to the program however there are several indicators that such efforts are not beyond the reach of BHSU.

Based on my review and previous comments, I support the continued development and implementation of the M.S. in Sustainability at Black Hills State University.