

Advancing Sustainability at ESF

October 2011

A Selected Topics Self-Study for MSCHE Reaccreditation

Executive Summary



Cornelius B. Murphy, Jr., Ph.D.
President



State University of New York
College of Environmental Science and Forestry



ESF's Mission

The mission of the College of Environmental Science and Forestry is to advance knowledge and skills and to promote the leadership necessary for the stewardship of both the natural and designed environments.

ESF's Principles of Sustainability

We begin with a commitment to meet present needs without compromising the ability of future generations to meet their own needs. To do this we must:

- Understand basic functions of natural and social systems;
- Acknowledge and quantify the limitations of nature's capacity; and
- Develop solutions through the integration of social, economic, technological, and environmental systems.

Chapter 1. Executive Summary

It is most appropriate that, in our Centennial year, the State University of New York College of Environmental Science and Forestry (SUNY-ESF) undertake a thorough review of our remarkable institution and of its compliance with the Accreditation Standards of the Middle States Commission on Higher Education (MSCHE). It is also timely to conduct a Self-Study focused on the College's responsibility to adopt sustainable practices, teach the basic principles underlining the concept of sustainability, and conduct research to provide the foundation for sustainable management. The centrality of sustainability to the College's mission and the evolving understanding of its many dimensions have prompted SUNY-ESF to undertake a full-scale evaluation of its commitment to sustainability. The review took place within the process of preparing this Selected Topic Self-Study for reaccreditation and this document contains the results of the analysis and recommendations for how to move forward. The College has provided a demonstration of compliance with all 14 standards of excellence in higher education in the form of a document roadmap following the MSCHE format. The document roadmap includes citations to the necessary documentation of ESF's compliance.

This report is organized into three sections, the first of which provides a broad introduction to the College. The second section presents a general context for understanding SUNY-ESF's sustainability agenda by describing the institutional challenges and current progress in advancing the 2003 strategic plan, *Vision 2020*. The final section provides an analysis of sustainability at SUNY-ESF and offers a set of recommendations to advance the College's efforts going forward.

History of ESF

SUNY-ESF was founded in 1911 for the purpose of providing the education and research needed to stabilize and increase the forestry resources of the State. In the late 1800's, the forest resources of New York State had declined to 6.5 million acres. After 100 years of teaching, demonstrating and conducting supportive research, the forests of New York State have expanded to 18.5 million acres, and they are generating three times the forest biomass being consumed.

The objectives of the College have since evolved to include research and education related to solving a wide range of environmental problems, while taking into consideration human and economic implications as well as scientific understanding. Sustainable practices have been embedded within the College from the beginning. Over the last one hundred years, the mission has expanded to address sustainable practices in other areas including water resources, community planning and design, ecosystem management, and construction.

ESF Today

SUNY-ESF is a doctoral granting campus within the 64 campus system of the State University of New York. Governance of SUNY-ESF is unique in that it is guided by both a Governor-appointed College Board of Trustees and the Chancellor of the System who in turn reports to the Governor-appointed Board of Trustees of the State University of New York. The College is comprised of approximately 2,750 undergraduate and graduate students. Approximately 94 percent of the 135 full-time faculty are actively engaged in funded research. SUNY-ESF is designated a Doctoral/Research University within the Carnegie Classification framework. The College offers 22 undergraduate and 30 graduate degree programs, most of which are in the science, technology, engineering, and math (STEM) fields. *US News & World Report* ranks ESF among the "Top 50 Public National Universities" and is in the top 50 of all national universities in the "Best Values" category. *Forbes* ranks ESF the third best college in the nation for women in science and engineering. The campus culture is influenced by a strong commitment to protecting the environment and a long-standing partnership with adjoining Syracuse University which provides ESF students with expanded academic and extracurricular opportunities.

Strategic Planning

As part of the Self-Study process, the College fully reviewed its progress in complying with *Vision 2020*, our strategic planning document. This guiding document declares SUNY-ESF's commitment to stand as a model of environmental sustainability. Approximately 80% of the activities outlined in the far-reaching plan have

been initiated or completed. Since *Vision 2020*'s 2003 inception, the College has successfully followed its seven strategic planning goals and enhanced its undergraduate and graduate academic excellence, student experience, visible reputation, financial stability, partnerships, responds to the needs of society and the human resource and physical infrastructure of the College.

The review of our strategic plan finds that SUNY-ESF offers two top five undergraduate programs, a top ten undergraduate program, and one top five graduate program. In addition, the College has introduced two new associate and two bachelor programs. Financial aid for students has increased by more than 47% since FY 2003-04, due in part to an increase of approximately 30% in undergraduate student costs, a 29% increase in ESF's number of full-time undergraduate students enrolled (1,209 to 1,558), and a 100% increase in undergraduates enrolling from outside New York State (128 to 256) with higher tuition costs.

We have enhanced campus safety through security measures, policies and communication systems. To broaden experiences in the global ecosystem we have worked to develop student international opportunities. Here at home, community service has been substantially enhanced with approximately 65,000 hours provided on an annual basis. ESF was recognized by The Presidents Higher Education Community Service 2010 Honor Roll.

Through the strategic plan, the campus embarked on initiatives including successfully enhancing the College's visibility and developing partnerships to support financial stability and increasing community services. SUNY-ESF has worked to improve its public profile through cable television and direct mail campaigns, a social network presence, the establishment of an intercollegiate athletics program and our first official campus mascot (Oakie the Acorn), and the creation of a "Going Green" series of weekly television spots reaching 1.72 million people.

Over the past ten years, SUNY-ESF established private funding sources and diversified its endowment. Furthermore, academic, international, regional, topical and federal partnerships have been nurtured or developed with other SUNY and private institutions and organizations. Specific examples include a partnership with the U.S. Small Business Administration to stimulate the growth of urban businesses and a project with the Kauffman Foundation and Syracuse University, to infuse entrepreneurship into existing courses.

The College will be updating the strategic plan to conform with the newly developed State University of New York Strategic Plan ("The Power of SUNY") beginning the first quarter of 2012.

Sustainability at ESF

The *Vision 2020* strategic planning process developed a framework to provide a context for integrating sustainability into its academic, research and service programs. This process was later supported by the 2007 Periodic Review Report (PRR) for MSCHE which identifies specific opportunities for progress towards sustainability. Within this framework, the College has set three sustainability goals:

1. Enhance the student experience to produce graduates who use their knowledge to foster actions that lead to increasingly sustainable societies;
2. Grow the College research enterprise to foster sustainable societies; and
3. Champion sustainability through on-campus demonstration.

Since these goals were formally set, ESF has made commendable progress in the areas of education, research and demonstration.

Review of the sustainability initiatives on campus reveal an array of opportunities for students to learn about this topic. Faculty are heavily involved in sustainability research and have extensive academic backgrounds in sustainability. They have embraced the College's sustainability principles and have embedded them into existing coursework. For example, every undergraduate and graduate degree program contains at least one (and, in most cases, many) required courses that address ESF's Principles of Sustainability. The College also reorganized its undergraduate and graduate Environmental Science programs to encourage interdisciplinary learning. Furthermore, ESF now offers a new minor in Renewable Energy and a graduate program in Sustainable Energy Management. Student exposure to sustainable practices also takes place outside of the classroom

on admissions tours, new student orientation, student clubs, a campus garden, internships and campus activities. The campus culture of sustainability is augmented with news, publications and online resources specifically relating to sustainability. SUNY-ESF's outreach programs now focus on sustainability that engage community members ranging from the middle school students to practitioners, covering topics in sustainability in institutional planning, green entrepreneurship, and renewable energy.

The second goal seeks to expand the College's research efforts to include those that foster sustainable societies. An assessment of this goal revealed 74 of the 135 research-active faculty members specifically engaged in research related to sustainability. A review of 2009-10 departmental annual reports indicated all academic departments had at least one faculty member involved in sustainability research leading to 74 journal articles, 11 books and 17 other reports as well as 120 conference presentations. Additionally, in 2010-11, 30 sustainability-related projects (funded at \$4,035,029) were in progress and an additional 47 project proposals (requesting a total of \$23,704,101) were submitted. Commitment to faculty members and facilities has also grown. The College has invested in sustainability research facilities such as an aquatic research laboratory and a biofuels pilot plant, and eight new faculty members have been hired since 2005 to augment sustainability research.

The final sustainability goal seeks to advance the campus's visible sustainability initiatives through demonstration. SUNY-ESF aims to practice what it teaches. Initiated through *Vision 2020's* goal, "Investing in ESF's human resources and physical infrastructure," and expanded within the College's Climate Action Plan, *ESF Carbon Neutral by 2015*, we see a campus whose infrastructure has been transformed. Progress in this area includes new renewable energy technology installations, participation in national commitments to sustainability and top-down and ground-up initiatives. This Fall SUNY-ESF students moved into our new residence building, Centennial Hall, for which we will seek LEED Gold Certification in the coming months. Designed with a number of key energy efficiencies and technologies, the Gateway Building will create more energy than it consumes. The College will seek LEED Platinum Certification for this building scheduled to open in 2012. In 2007, SUNY signed the American College & University Presidents' Climate Commitment.

As part of the commitment the College completed two greenhouse gas inventories, a plan to reach net zero carbon emissions by 2015, and created the Campus Climate Change Committee. The Commitment has also inspired several new visible campus installations that seek to reduce energy. They include one of the country's first 250 kW molten carbonate fuel cells; a wind turbine; a biomass boiler; a green roof on Walters Hall; solar arrays on Baker Laboratory, Waters Hall, Moon Library and the Adirondack Ecological Center; alternative fuel fueling stations for campus and community vehicles; and a self-serve bicycle maintenance station. Other sustainability-related initiatives include the installation of below-ground storage to collect storm water from parking areas; a rain garden; porous pavement in three different areas of campus; and water-saving faucets.

The administration at SUNY-ESF established an Office of Renewable Energy Systems, with two full-time staff members to help focus our sustainability efforts. This office helped to develop a sustainability website; introduce car-sharing and ride-sharing programs; implement sustainability action plans within administrative offices; and adopt several sustainability policies that aim to reduce waste, reduce energy use, purchase more environmentally friendly products and enhance carpooling on campus. Students have also fueled a number of changes on campus. They established the biodiesel production system used to fuel maintenance equipment on campus; the de-lamping of two campus buildings; and an organic campus garden. SUNY-ESF has also received a grant from the Kauffman Foundation to study the feasibility of developing a green energy cooperative based on biodiesel production and established an integrated pest management plan, limiting the amount of pesticide use on campus and increasing the number and diversity of native plants.

In April of 2011, the College completed the Charter version of the Association for the Advancement of Sustainability in Higher Education's (AASHE) Sustainability, Tracking Assessment & Rating System (STARS). As a result of all of the work faculty, staff, students and administrators have contributed to making the campus more sustainability, SUNY-ESF received a STARS Silver rating and plans to reach a Gold rating by 2014.

Challenges

The Self-Study also identified a number of institutional challenges requiring attention to maximize the College's potential to achieve the goals outlined in its strategic plan, including those related to sustainability. With input from the campus community, including the President's Cabinet, the Provost's Academic Council, the SUNY-ESF Board of Trustees, and the Self-Study Steering Committee, they have been consolidated into eleven broad areas of focus as follows.

- Challenge 1: Obtaining adequate operational resources within a constrained environment
- Challenge 2: Attracting and retaining quality, diverse faculty and staff within a constrained environment
- Challenge 3: Rectifying inefficiencies created by an aging administrative infrastructure
- Challenge 4: Establishing and defining the College's position/brand in a changing global arena
- Challenge 5: Enhancing and institutionalizing assessment practices to help drive institutional objectives
- Challenge 6: Meeting enrollment objectives in the face of new competitive programs within and outside SUNY
- Challenge 7: Sustaining strong and vigorous Ph.D. programs that attract students, financially support their education and research and award degrees in a timely manner
- Challenge 8: Achieving diversity goals within our student population
- Challenge 9: Engaging effectively the campus community in understanding and addressing institutional goals
- Challenge 10: Fitting ESF's strategic plan within the SUNY Strategic Planning Objectives to obtain benefits of System membership
- Challenge 11: Maintaining effective relationships with Syracuse University and other partners

Recommendations

SUNY-ESF has developed several recommendations to address these challenges, including institutional recommendations focusing on financial resources and enhancing the efficiency of operations, developing a plan for recruiting under-represented minorities to the faculty and student populations, thoroughly assessing institutional technology needs, and continuing to work with faculty and staff to improve assessment initiatives. In response to the in-depth review of the campus' integration of sustainability efforts into its curriculum, research and operations, SUNY-ESF recognizes the very significant progress it has made in making the campus more sustainable, however we have identified several opportunities for further improvement in meeting our sustainability goals.

Institutional Recommendations

Advancing many of the institution's goals is dependent on acquiring additional financial resources. The associated recommendations are as follows:

- Continue to increase enrollment of out-of-state undergraduates through maintenance of strong national visibility and marketing initiatives.
- Increase enrollment of tuition-paying graduate students through the development of focused Master's Degree programs feeding strong employment markets.
- Build upon the success of the ESF Foundation's Centennial Campaign to enhance private giving by reinvesting Foundation proceeds to increase the size of the development staff.
- Increase sponsored research funding by focusing faculty hiring in fields having significant opportunities for extramural support (e.g. ESF's new initiatives in environmental health and renewable energy management), and through hands-on assistance from the Research Office in helping faculty identify appropriate funding opportunities.
- Increase indirect cost recovery from sponsored programs by focusing on grant opportunities that permit reasonable indirect charges, including federal agencies and some private organizations.

- Continue to develop the newly introduced summer program (2010), concentrating on distance-learning and short-term field experiences.
- Maintain strong visibility and value to SUNY to ensure System understanding of ESF's mission and the special challenges that derive from that mission.

Obtaining adequate financial resources to meet institutional goals also requires achieving greater operational efficiencies. Recommendations for achieving financial efficiency are as follows:

- Reduce energy costs by reducing energy dependence on high cost Syracuse University steam by installing high efficiency power plants in new ESF buildings, by adding solar panels and wind turbines where possible to ESF facilities, by acting on the recommendations of the recent New York Power Authority audit, by making energy efficiency a primary criterion in new building construction and in renovation projects, and by enacting new recommendations that will come from the recently formed ESF energy management team.
- Renegotiate the Accessory Instruction and Related Services Agreement with Syracuse University to include terms that meet the needs of both institutions.
- Work with Upstate Medical Center and other Central New York SUNY institutions to identify services that may be shared to reduce costs to all institutions.

Aside from recommendations specifically related to achieving financial flexibility, the following are recommended:

- Develop a new five-year academic plan to identify and address high priority areas for advancing the mission of the College.
- Continue to invest a portion of the salary savings from faculty retirements in merit raises to recognize and retain high performing faculty members.
- Develop an enhanced plan for adding under-represented populations to the faculty.
- Consider new ways to facilitate spousal hires, e.g. through active programs with nearby SUNY and private colleges and universities. The ESF-wide approach to the search and selection process seemed highly desirable and effective.
- Continue to provide formal grant proposal writing training on an annual or more frequent basis, and provide attractive travel opportunities for promising young scholars (or scholars entering new research areas) to attend targeted grant-development workshops.
- Thoroughly assess institutional information technology needs now and in the future, and develop and implement a plan that meets those needs.
- Improve the utilization of information systems through enhancement of ESF's database system and through training of ESF employees on data systems managed by supporting agencies including the SUNY Research Foundation, SUNY, and other state agencies.
- Include documentation and dissemination of policies, procedures and protocols as part of employee performance programs where appropriate.
- Continue to seek and secure strategic alliances with external partners, public and private, academic and non-academic to advance institutional goals and service to society.
- Maintain strong relations with Syracuse University. Seek additional opportunities for coordination and cooperation.
- Continue to incorporate assessment and improvement as routine operational practices.
- Maintain effective visibility efforts. They advance almost every aspect of the College's agenda.
- Take advantage of the new energy in Faculty Governance to facilitate campus-wide communication and to engage the faculty and staff in meaningful dialog to promote understanding and consensus on major College issues.

Sustainability Recommendations

Education

SUNY-ESF was established based on the principles of sustainability and protection of the environment, independent of the terms used to describe this concept over the past 100 years. An assessment of faculty, educational offerings and General Education requirements reveals that sustainability issues are well integrated into teaching, research, and service at ESF. However, changes in how the College collects and reports data are needed in order to simplify the collection of sustainability-related, campus-wide information for future assessments.

- ESF's principles of sustainability provide an important first step in assisting faculty members with defining the types of sustainability-related teaching, research, and service they do. Identifying sub-principles that clearly identify how each principle relates to each department would further clarify the meaning of the principles for faculty at ESF.
- As course descriptions are reviewed, sustainability-related concepts should be added as appropriate to improve assessment of sustainability courses. Designate courses with a "Sustainability Emphasis."
- Programs such as the GA Colloquium on Teaching and Learning are not intended to teach sustainability, per se, but a discussion of sustainable practices (e.g. the reduction of paper usage by converting to web-based distribution of materials) is included. In the future the College could include a 'special topics' session – as has been done with other selected topics - that is devoted to sustainability and sustainable practices on-campus.
- The new Centennial Residence Hall provides opportunities for increased integration of sustainability between the academic and extracurricular aspects of college life. The incorporation of sustainability into the activities and culture of the new residence hall will greatly enhance the educational opportunities of the students.
- Consider how study abroad experiences related to sustainability could be integrated into all academic programs.

Research

The following steps taken over the next 5-10 years will help the research enterprise at SUNY-ESF evolve toward a more competitive and globally recognized position, particularly in fields that comprise the multi-disciplinary portfolio of sustainability research. These initiatives will be vital to enhancing the SUNY-ESF footprint, both in recognition and in financial support.

- As was done with the Empire Innovation and High Needs programs, search for and hire sets of faculty to include biological and physical scientists, engineers, landscape architects and social scientists who will integrate our sustainability research and academic programs.
- Determine the potential research productivity and financial flexibility provided by a net gain of one or more new faculty per year over the next ten years.
- Increase emphasis and support of large, multi-institutional collaborative proposals. Although proposal numbers (260/year) and success rates (30% on proposals < \$2.5 M are quite high, relatively few large and long-term proposals have been funded.
- Create incentive programs for Centers, Consortia and Institutes to develop collaborative, competitive research proposals, and continue to strive for formal partnerships with existing, private entities such as Upstate Freshwater Institute and the Onondaga Environmental Institute.
- Sponsor a college-wide retreat/event that highlights the Centers/Institutes/Consortia and brings state and national legislators to the College. Recognize a Center or Institute annually with a desirable and visible award.
- Work with private corporations, such as Honeywell, to further promote support of research and graduate programs, and with the ESF Development Office to create new modes of support for research, startup, and seed grants.

- Develop programs similar to the new Environmental Medicine/Hill collaboration, in which modest annual contributions by ESF, SU, UMU and the VA Hospital are used to stimulate teams to pitch collaborative proposals to major funding agencies such as National Institutes of Health.
- Develop additional venues for ESF faculty and staff to brainstorm together in looking to future research areas that are vital to global health and sustainability, and within the reach of College resources, vision and goals.
- Actively pursue ESF research connectivity with the SUNY system, which represents the fourth largest university system in the United States in research expenditures. New programs with Binghamton University in technology transfer and with Upstate Medical University in Environmental Medicine are current examples; additional opportunities exist to include SUNY Buffalo, Stony Brook and Albany. Research proposals that highlight the “Power of SUNY” are likely to receive enhanced attention from granting agencies.
- In the next version of the ESF Promotion and Tenure guidelines, add a “sustainability” parameter to the teaching, research or outreach responsibilities of each faculty member.
- Add a sustainability criterion to the annual Exemplary Researcher Award, or create a new award to include a seminar and recognition ceremony.
- Establish linkages between ESF’s research programs and the AASHE STARS program to increase student and staff involvement with campus-wide sustainability issues (Sustainability Tracking, Assessment & Rating System is a program that measures and encourages sustainability in all aspects of higher education, see Chapter 4).
- To foster cross-campus awareness and collaboration in sustainability research, establish a Faculty seminar series and add a sustainability section to the student “Spotlight on Research” annual poster symposium.
- Use the existing Seed Grant programs to catalyze new research programs in sustainability.
- Through indirect funding and perhaps private development support, strengthen linkages with those groups in the US Forest Products Industry with responsibility for strategic visioning and sustainability initiatives. Maintain representation on USDOE, USDA, and Forest Service panels that establish and “roadmap” research priorities. Provide travel support and recognition for this activity.
- Work with the ESF Foundation to identify opportunities for funding specific research initiatives through the ongoing Centennial Campaign.

Demonstration

ESF is well-positioned to align its campus master plan and sustainability plans with the new SUNY Strategic Plan regarding energy issues and demonstration projects. We can also explore ways to bring greater focus to the sustainability efforts on campus to improve ESF’s current practices of engaging internal and external constituencies with the following recommendations.

- Establish sustainability performance metrics based on the STARS rating system for members of the President’s Cabinet.
- Clearly identify the Office of Sustainability
- Engage the campus in a discussion of environmental stewardship and sustainability to determine the need to change the College mission and vision.
- Continue to utilize State University Capital Funding, supplemented by grants from federal, state and local partners, to implement the bulk of the College’s sustainability demonstration projects.
- Examine additional private/public partnerships as a way to finance sustainability projects and access potential tax benefits associated with renewable energy projects.
- Examine the development of a dedicated sustainability fund, based on a share of the economic savings realized from certain projects, to help develop a source of funds for environmentally beneficial demonstration projects.

- Engage in additional discussions with faculty and staff to determine how to find more opportunities to link existing and future research interests and sustainability projects.
- Review the sustainability communications efforts to internal and external audiences to determine where students and faculty can enhance the effort.
- Develop and publish a sustainability report.
- Review existing planning documents and develop future sustainability plans consistent with the new SUNY strategic plan.

SUNY-ESF has much to be proud of over its one hundred years and especially in the ten year window of the Middle States Review. Through the campus-wide process of conducting the Self-Study and reviewing the College's compliance with the 14 MSCHE standards of excellence in higher education, we have identified challenges to overcome while moving forward, and also a significant number of opportunities. Many initiatives have already been undertaken to adjust College operations and goals as a result of this Self-Study process.