Sustainability at Rowan University

Introduction

The purpose of this report of the Senate Ad Hoc Committee on Integrating Sustainability into the Rowan Curriculum is to recommend ways to incorporate sustainability into the culture and curriculum of Rowan University (RU). This endeavor is part of the President's Climate Commitment (http://www.presidentsclimatecommitment.org). President Farish was the first to sign the Climate Commitment in New Jersey. The ultimate result of the commitment will be to make RU climate neutral (i.e., zero net carbon emissions) in the not too distant future. The commitment involves:

1. Establishing an institutional structure to oversee the development and implementation of a climate action program;
2. Completing an emissions inventory within one year;
3. Establishing a climate action plan that includes a target date and interim milestones for becoming climate neutral within two years;
4. Taking immediate steps to reduce greenhouse gas emissions by implementing at least two of a list of seven tangible actions while the climate action plan is being developed;
5. Establishing a plan for integrating sustainability into the curriculum and making it a part of the educational experience; and
6. Making the inventory, climate action plan, and progress reports publicly available.

Items 1, 2, and 4 above have been completed. Items 3 and 5 are due on September 15, 2009. The purpose of this document is to provide preliminary recommendations regarding item 5, sustainability in the curriculum. Faculty, staff, and student comments and suggestions will be gathered for the rest of this semester and to the end of May in order to inform the plan that will be submitted in September. The plan to be submitted September 15 will represent a serious commitment of the University; however, it will be modified over time in response to faculty, staff, and student input and changing conditions (e.g., in climate science and energy/ control technologies). Of course, normal University procedures will be followed, e.g., the curriculum committee would act on any associated curriculum changes.

The remainder of this document includes:

- An Introduction to Sustainability;
- The Current Situation Regarding Sustainability at RU;
- Desired Outcomes;
- Sustainability in the RU Culture;
- Sustainability in the RU Curriculum;
- Sustainability Majors/Minors/Certificates; and
- Recommendations Regarding the September 15, 2009 Plan.

Sustainability

Sustainability has been defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987). In an ecological context, sustainability can be defined as the ability of an

ecosystem to maintain ecological processes, functions, biodiversity and productivity into the future (US Regional Ecosystem Office 2009). For Rowan's purposes, this Ad Hoc committee recommends a combination of these two definitions, focusing both on the sustainability of human life on earth and on the sustainability of earth's ecosystems under human impact. As such, sustainability requires taking account of the triple bottom-line, i.e., economic, ecological, and social performance. Sustainable activities work within acceptable economic and social systems and do not degrade the environment to a level unable to support future generations or ecosystems.

In particular, as a society, we are currently acting in ways that only consider the short term, are wasteful of human and natural resources, cause physical and chemical changes that disrupt the natural cycle of life and climate, create economic systems with gross and widening inequities between rich and poor, create media systems that diminish cultural diversity and quality, and create more humans than the Earth can support.

Current Situation

The current situation at RU regarding sustainability varies across departments and offices. On the facilities side, some programs consider sustainability issues. For example, RU purchases one-third of its consumed electricity from renewable sources. In accordance with the President's Climate Commitment, Rowan has created an institutional structure to guide the development and implementation of a climate neutrality plan, and has adopted an energy-efficient appliance purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist. The RU Green website promotes sustainability to a certain extent. Extracurricular activities related to sustainability occur from time to time, such as the Focus the Nation event in Spring 2008. Student groups, e.g., GEO and the National Wellness Institute, sponsor related events. The Engineers Without Borders student group incorporates sustainability into its projects in the developing world. A number of courses incorporate sustainability concepts (Table 1). Faculty are encouraged to report additional courses to make this list more complete. The College of Engineering is creating an emphasis area in sustainability at the master level.

Table 1: Partial list of Rowan University Courses Related to Sustainability

CRN #	COURSE TITLE	CREDITS
INTR 01138:	**Issues in Sustainable Development**	**3 S.H.**
INTR 99300:	**Environmental Internship**	**6 S.H.**
INTR 01148:	**Environmental Ethics: Through the Lens of Diversity**	**3 S.H.**
INTR 01140:	**Diverse Approaches to Environmental Literature**	**3 S.H.**
GEOG O6328:	**Environmental/Sustainable Planning**	**3 S.H.**
GEOG 06327:	**New Jersey Applied Planning Practice**	**3 S.H.**
GEOG 06310:	**Land Use and Resource Development**	**3 S.H.**
GEOG 06355:	**Metropolitan/Regional Planning**	**3 S.H.**
GEOG 06302:	**Urban Geography**	**3 S.H.**
GEOG 063??:	**Water Resources Planning**	**3 S.H.**
GEOG 06313:	**Geography of Transportation**	**3 S.H.**
GEOG 06306:	**Cartography**	**3 S.H.**
GEOG 06360:	**Geographic Information Systems I**	**3 S.H.**
GEOG 06415:	**Geographic Information Systems II**	**3 S.H.**
PSY 05205:	**Environmental Psychology**	**3 S.H.**
SOC 08400:	**Environment, Policy and Society**	**3 S.H.**
BIOL 20100:	**Introduction to Natural Resources**	**3 S.H.**
BIOL 20330:	**Environmental Science**	**4 S.H.**
ECE 09403:	**Sustainable Design in Engineering**	**3 S.H.**
CEE 08 311	**Environmental Engineering I**	**3 S.H.**
CEE 08312	**Environmental Engineering II**	**3 S.H.**
CEE 08 431	**Integrated Solid Waste Management**	**3 S.H.**

Desired Outcomes

Sustainability should be a high priority shared value for students, faculty, administration and staff. This implies that all community members:

- Have a good general understanding of the current situation regarding sustainability, i.e., global climate change, biodiversity loss, pollution, etc.
- Have a good general understanding of the human causes of global unsustainability, including their contribution to it as individuals and as members of RU.
- Have a good general understanding of the best proposed solutions for unsustainability crises.
- Know what RU has committed to do in response to the crisis, and what progress has been made.
- Know how our actions and choices contribute to reaching RU sustainability goals.
- Have clear and rewarding ways available to them to help reach RU sustainability goals.
- Identify with the community effort, and communicate with others about it.
- Act to support the effort.

- Help to spread sustainability values and actions into the surrounding community.
- Carry these values and actions with them when they leave RU.

A centerpiece in promoting sustainability is the role of academic institutions. RU can play a major role in sustainability and development of resources not only through its campus but also through outreach programs that touch its surrounding community. The following are desired outcomes (both short term and long term) relative to RU's role towards sustainability in the present and future time.

Short term Outcomes:

- Establish a leadership role in the region towards sustainability awareness. This outcome can be implemented in the form of monthly televised special forums and or seminars.
- Initiate sustainability and awareness through project-based applications on the main campus and satellite campus grounds. This outcome can take the form of Rowan student associations, clubs, colleges, departments and offices designing, developing and implementing projects that target sustainability at RU.
- Implement courses within the Rowan curriculum. Possible applications of this outcome can be the designation of curricular committees within colleges and departments to work on integrating academic content on sustainability within current programs.
- Establish outreach community programs on sustainability targeting the local area. These programs could be developed in collaboration with local community institutions outside of Rowan (e.g. schools, community centers etc.).

Long term outcomes:

- Develop national and international connections with global sustainability and development programs. This outcome can be achieved through initiation of project-based programs that emphasize the involvement of the Rowan community within both the national and international spotlight. For example, participation of Rowan faculty and students in global conferences, hosting global conferences on sustainability and development, extending collaborative outreach programs with other academic institutions both in the US and abroad.
- Develop an effective political voice in the arguments pertaining to sustainability and development.
- Implement community educational professional development result- based programs targeting sustainability issues.
- Develop curricular programs and tracks within the Rowan curriculum.

Culture

Sustainability can be incorporated into the culture of RU by making information available, using eco and carbon footprints to provide sustainability metrics, and finding ways to reward outstanding contributions to sustainability.

Information

Information on sustainability can be disseminated in a number of ways.

- High-profile lectures or panels by nationally or internationally recognized sustainability experts can be offered, at least one each year. These could be presidential lectures, funded by a grant, and/or co-sponsored by various departments and organizations.
- Faculty and students could hold frequent on-campus lectures, panels, discussion groups related to sustainability.
- More activities similar to Clean & Green could be offered on campus, e.g., building & maintaining bike paths, planning and managing a campus bike rental system (if established).
- Service-learning opportunities related to sustainability could be offered.
- The RU Green web-page could contain sustainability related information, including:
    - A Quick Glance statement of goals and progress, including link to the Presidents' Climate Commitment;
    - recent sustainability news;
    - a link to the sustainability plan for the university;
    - a detailed statement of goals with regular reports on progress toward meeting goals, i.e., a score card that keeps us honest, motivates us, and informs the public (for models see Interface Corporation, Herman Miller Corporation);
    - opportunities for sustainability volunteerism on and off campus; and
    - a blog or discussion page where community members and alumni can comment.

Metrics (Footprints)

Eco (e.g.,www.rprogress.org) and Carbon (e.g., www.epa.gov/climatechange/emissions/ind_calculator.html) footprints provide a simple method for determining ones effect on global sustainability. An eco footprint estimates the area of the surface of the earth required to support one's lifestyle. This is often converted to the number of earths needed if the entire world population had at a particular lifestyle. For example, if everyone lived like US citizens, over 5 earths would be needed. A carbon footprint estimates the amount of carbon dioxide produced by a lifestyle. Sustainability can be incorporated into the culture of Rowan University by using footprints, and footprint reduction, to encourage sustainable programs and behavior. Rowan faculty, staff, and students should be encouraged to estimate their own footprints. Rowan should provide information on its own footprints, and plans for reduction.

Rewards

Rewards can be individual and institutional. Individual awards consist of recognition and prizes for individuals who distinguish themselves. Institutional awards should include sharing any

economic benefits obtained from sustainable activities. For example, if the people working in a building on campus reduce their energy consumption, some percentage of the savings should be returned to the budgets of the appropriate departments.

Curriculum

Any curricular efforts regarding sustainability should provide a minimum level of competence regarding sustainability. This should include a good understanding of:

- The current situation regarding sustainability, i.e., global climate change, biodiversity loss, pollution, etc.;
- The human causes of global unsustainability, including individual and Rowan contributions;
- The best proposed solutions to return to sustainability; and
- The relationship between sustainability and the triple bottom-line.

A number of possible mechanisms are given below.

Sustainability Seminar - An integrative semester-long seminar course that emphasizes sustainability and the triple bottom-line could be required for all students. This could be a one or zero credit course, either offered on-line or live in Pfleeger auditorium. Multiple lectures would be developed/delivered by faculty with appropriate expertise.

Sustainability Module in Rowan Seminar – One lecture in Rowan Seminar could be focused on Sustainability. Materials would be developed to help faculty deliver and assess the lecture. Guidelines would be provided to help faculty lead an appropriate discussion.

Sustainability Gen Ed requirement - A sustainability Gen Ed requirement could be added to the current system. Faculty would design courses that would meet this requirement.

Curriculum-wide Inclusion of Sustainability - All courses at Rowan University could incorporate sustainability issues, as appropriate. All courses could include discussion of how sustainability is or is not related to the course content.

Sustainability in Majors - Each major could require an entire course or modules in multiple courses on sustainability. A single course in a major's core curriculum could focus on sustainability, covering topics appropriate to the major. Alternatively, sustainability could be covered with modules in courses spread throughout the major. Modules would consist of single or multiple class periods with lectures, discussions, and assignments pertaining to sustainability issues. Each major would determine the appropriate mix of economic, ecological, and social issues that should be included. For example, business and economics majors might focus more on economic aspects, sciences such as biology or chemistry more on environmental aspects,

and sociology and anthropology more on social aspect.

Sustainability Majors/Minors/Certificates

A concentration or minor in Environmental Sustainability could be created to augment the existing Environmental Studies Bachelor of Arts degree. Furthermore, an Environmental Sustainability Master's (Science/Arts) degree could be created. The programs would have a rigorous core curricula taught within the program emphasizing basic and applied ecology; a diverse set of electives (from education, engineering, economics, natural science, sociology, and philosophy); and a strong experiential learning component (i.e. internships, student research, service learning, and participation in the ongoing transformation of the university into a more sustainable campus).

More specialized minors or certificates could be created for students who wish to focus on specific aspects of sustainability. Possible focus-areas include sustainable systems, non-carbon energy systems, sustainable building practices, sustainable land planning and management, sustainable product design and manufacturing, sustainable cultural studies, ecological protection and restoration, sustainable business practices, sustainability metrics, and sustainability planning.

Recommendations

The recommendations of the Senate Ad Hoc Committee on Integrating Sustainability into the Rowan Curriculum are:

1. Sustainability awareness at RU shall be encouraged though information, metrics, and rewards, as described in this document.
2. All majors at RU should incorporate sustainability through (1) the inclusion of a single required course focused on sustainability or (2) sustainability modules included in select required courses in the major. Modules would consist of single or multiple class periods with lectures, discussions, and assignments pertaining to sustainability issues. Each major would identify the appropriate course(s) and determine the appropriate mix of economic, ecological, and social issues that should be covered. The appropriate curricular innovation should be implemented by Fall 2011.
3. RU should assess the incorporation of sustainability through a Sustainability Seminar, Sustainability Module in Rowan Seminar, Sustainability Gen Ed Requirement, and/or Curriculum-wide Inclusion of Sustainability. The appropriate curricular innovation, if any, should be implemented by Fall 2012.
4. RU should assess the creation of sustainability majors, minors, and certificates. The appropriate curricular innovation, if any, should be implemented by Fall 2013.