# Envisioning helps promote sustainability in academia

## A case study at the University of Vermont

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## Abstract

**Purpose** – Universities are increasingly aspiring to be both models and catalysts of change, leading the world to a more sustainable and desirable future. Yet complex and ineffective governance, traditional disciplinary boundaries, and the lack of a shared vision at academic institutions often hinder progress toward this goal. The purpose of this paper is to describe an approach to envisioning and engagement used by the University of Vermont (UVM) to overcome these barriers, and in the process, continue the university's progress toward leadership in systems thinking, ecological design, and sustainability.

**Design/methodology/approach** – The envisioning and engagement process involved 1,500 participants from the UVM campus and Burlington community. Participants' visions of a sustainable and desirable university are gathered through two community events and three online surveys. Their responses are analyzed using a modified Q methodology, a survey method in which participants direct the formation of survey categories. The results of the analysis lead to the formation of a vision narrative, a sustainability charter, and guide the creation of a range of initiatives.

**Findings** – The results of these efforts suggest that when provided with ample and well-structured opportunities, university community members will become active participants in initiatives aimed at fostering institutional change. By focusing on shared values and long-term goals, envisioning exercises can achieve a surprising amount of consensus while avoiding the divisiveness and polarization that often plague open-ended discussions and university governance.

**Originality/value** – While envisioning exercises are sometimes conducted by local governments, institutions of higher education still rely predominantly on more traditional and hierarchical methods of planning. The innovative process outlined in this paper for adapting Q methodology for community envisioning appears to be an effective method of eliciting participants' visions and establishing broad-based support for actions that promote sustainability planning and education.

**Keywords** Sustainable development, Higher education, Universities, United States of America

**Paper type** Research paper

## Introduction

As ecological and social crises deepen, colleges and universities are increasingly committed to fostering learning and service for the purpose of developing solutions for real world problems. Since social and environmental problems cross traditional disciplinary boundaries, there has been growth in inter- and transdisciplinary programs

(i.e. Columbia University's Earth Institute, University of Michigan's Erb Institute) aimed at developing holistic and integrated solutions. Around the world, college campuses are also beginning to model designs for a sustainable and desirable world through their campus operations.

Yet myriad barriers hinder progress toward these ambitions. Disciplinary boundaries remain largely entrenched, and integrated programs often fall short of their goals (Patterson, 2007). Ineffective and cumbersome governance combined with competing university priorities undermines innovative programs (Thomas, 2004). It is increasingly recognized that isolated and piecemeal reforms will not form an adequate response to our current ecological plight. However, efforts aimed at campus sustainability rarely pervade all university practices, remaining largely relegated to individual initiatives such as recycling or green buildings (Orr, 2006; Rowe, 2007).

In part, the disappointing pace of progress is due to a lack of a shared vision of the role of higher education in fostering a sustainable world and the lack of concerted efforts to develop integrative programs and reform campus operations. While university priorities are often established in a "top-down" manner, organizational change requires goals to be shared by members of the community and developed through face-to-face discourse and discussion (Senge, 1990; Meadows, 1996). And while declarations of commitment (i.e. the Tallories Declaration) have their place, appropriate strategies for fostering sustainability must be concurrently developed at the scale of the individual institution (Fien, 2002).

Envisioning is a process in which community members collectively identify shared values, describe the future they seek, and develop a plan to achieve common goals (Meadows, 1996). Envisioning complements more traditional forms of planning, serving as a tool for determining community desires and initiating the process of organizational change. While its roots lie in local government and business planning, it is equally effective at the institutional level (Costanza, 2000). Envisioning generally begins by eliciting a community's goals and desires, established through public forums that provide valuable face-to-face discussion. Surveys are often employed to expand the visioning process to a larger group of participants (Sharp, 2002; Solop, 2001).

In 2007, the University of Vermont (UVM)[1] initiated an envisioning process to develop a plan to transform the university into a leader in whole systems thinking and sustainable design. The effort was facilitated by the leading by Design Task Force, a group of UVM faculty, staff, administrators, student representatives, and Burlington community members. It was informed by broad participation of the UVM community and supported by a planning grant awarded by the Lewis Foundation.

### Envisioning approach

The purpose of this study was to design an effective participatory process for envisioning sustainability and creating institutional change at the university level. The process incorporated public forums, class discussions, online surveys, e-mail submission of ideas, and a modified version of Stephenson's (1953) Q methodology. Q methodology is an approach useful for actively engaging participants in developing and assessing a diverse range of attitudes and values relating to a particular discourse. In Q methodology, structured interviews with participants are used to create a set of "quintessential" statements that capture the range of attitudes presented by participants.

Participants are then asked to rank their agreement with the statements on a Likert scale (Barry and Proops, 1999).

Several approaches were used to engage a broad range of university and community participants in establishing a set of vision statements. An online survey, posted from April 11 through June 6, 2007, contained 11 open-ended questions designed to guide participants in crafting a vision for the "perfect university." Respondents were asked to discuss curriculum and pedagogy, campus operations and management, and material and energy systems. A total of 140 community members provided their vision through this online survey. E-mails were also solicited and 77 community members sent letters to the task force describing their visions. In addition, an introductory level course in natural resources tackled this question through a collaborative project. The 200 students in this course identified and refined a list of priorities for the university to address, and then offered campus-wide initiatives that would move the university towards sustainability.

On April 30, 2007, the task force hosted an "Open Space" event. In Open Space events, participants create and self-organize into discussion groups (Owen, 1997). Over 350 attendees worked in 11 break-out groups to craft vision statements relating to biodiversity planning, carbon neutrality, curriculum and pedagogy, diversity and social justice, energy, community integration, food systems, applied research, transportation, housing, and waste management.

Task force members jointly reviewed and synthesized the results of the online survey, e-mails, natural resources course initiatives, and the Open Space event to establish a set of 60 distinct and comprehensive vision statements grouped under four categories: human, social, built, and natural capital. Human capital includes physical labor, skills, knowledge, and health. Social capital consists of the web of interpersonal connections and institutional arrangements that facilitate human interactions. Built capital encompasses infrastructure: buildings, roads, and factories. Natural capital refers to the land and its resources, including ecological systems and services (Costanza *et al.*, 1997).

These 60 distinct vision statements were released as a second survey to the UVM community in late June and kept online through the end of October 2007. Participants were asked to rank the vision statements on a five-point Likert scale (Table I). They also identified and ranked five statements in each category as the university's highest priorities. About 988 students, faculty, staff, and community members participated in this survey.

To encourage broad participation, the survey was available to the entire community. Therefore, while respondents represented the university's eight colleges and schools, they were self-selecting, raising concerns about potential nonresponse biases. To address this issue, an electronic survey was distributed to a stratified, random sample of 1,200 students, faculty, and staff to assess the validity of the survey results. Following a modified version of Dilman's (2000) methodology, two personalized reminder letters were sent to nonresponders. A total of 397 individuals participated in this survey. After accounting for individuals who could not be reached, the effective response rate was 33.5 percent. Univariate and bivariate analysis of survey results was conducted using the statistical analysis package SPSS, and a series of $\chi^2$-tests identified significant differences between the self-selected and randomly selected respondents, as well as between different types of respondents. Self-selection bias was assessed for both the Likert scale and prioiritization rankings.

| Capital category | Vision statement | Percentage of respondents for whom the statement was extremely or somewhat important |
|---|---|---|
| Human capital | Courses have a strong emphasis on critical systems thinking and applied, problem-based learning | 92.4 |
| | UVM is actively engaged in global research and education initiatives | 89.7 |
| | Service learning, internships, and work-based learning have become fundamental components of the educational process | 88.6 |
| | UVM rewards collaboration and partnerships in both research and education | 83.7 |
| Social capital | UVM has adopted policies and practices that foster quality of life for students, faculty, staff, and the broader community | 94.8 |
| | Employees are compensated equitably and competitively | 91.8 |
| | The university celebrates diversity and has rid itself of racism, sexism and other prejudices | 90.9 |
| | Tuition at UVM is accessible to a diverse student population | 90.1 |
| Built capital | Campus buildings are ecologically designed for efficiency and create healthy environments with access for all with differing abilities | 95.5 |
| | Bike and pedestrian paths link campus and community | 91.8 |
| | Campus vehicles are fueled by clean technologies | 90.3 |
| | Efficient use of building space minimizes the need for new construction | 90.1 |
| Natural capital | UVM has ample, well-maintained green spaces for recreation, social interaction, and aesthetic enjoyment | 95.3 |
| | Functional landscaping captures all campus storm water runoff, protecting Lake Champlain | 93.4 |
| | Campus vehicles are fueled by clean technologies | 90.3 |
| | Campus dining facilities utilize compostable containers and re-use dishes and utensils | 91.3 |

**Table I.**
Highest ranked vision statements

## Results

### Importance rankings

The results demonstrate strong levels of support for all vision statements, with the median value for all responses deemed either "important" or "very important." The strongest levels of support were shown for vision statements referring to the importance of ecologically designed, efficient buildings, policies and practices that foster quality of life, courses with strong emphasis on systems thinking and problem-based learning, maintaining abundant green spaces, developing functional landscaping to capture campus storm water runoff, and providing equitable employee compensation (Table I).

*Statement priorities*
Respondents were then asked to indicate which visionary ideas were most important for the future of the university by ranking their top-five priorities within each capital category. The top-ranked vision statements, presented below, were determined by totaling the number of times each statement was ranked as a priority (1-5):

(1) *Human capital priorities (Figure 1):*
- courses have a strong emphasis on critical systems thinking and applied, problem-based learning;
- to graduate, all UVM students demonstrate eco-literacy and take required courses that integrate issues of sustainability;
- degrees are flexible, allowing integration across disciplines;
- UVM is actively engaged in global research and education initiatives;
- service learning, internships, and work-based learning have become fundamental components of the educational process; and
- UVM is universally recognized as one of the nation's premier small public research universities.

(2) *Social capital priorities (Figure 2):*
- UVM has adopted policies and practices that foster quality of life for students, faculty, staff, and the broader community;
- employees are compensated competitively and equitably;
- the university celebrates diversity and has rid itself of racism, sexism and other prejudices; and
- the cost of higher education is kept attainable for students of diverse backgrounds.

(3) *Built capital priorities (Figure 3):*
- campus buildings are ecologically designed for efficiency and create healthy environments with access for all with differing abilities;
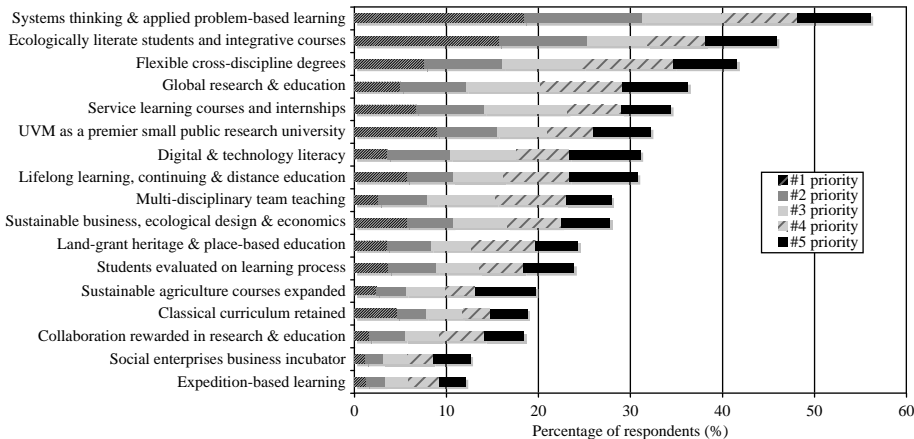


Figure 1.
Human capital priorities

Policies & practices promoting quality of life
Diversity celebrated
Employees compensated competitively and equitably
Tuition at UVM accessible to diverse student population
Earth charter endorsed by university
Mindful approach & culture
Ethical food system
Study & work linked to community systems
Faculty rewarded for impact
Flexible, creative, less demanding schedules
Reasonable priced food
Full-cost accounting implemented
Strong student voice in governance
Intergenerational & family friendly environment
Ongoing envisioning influencing governance

#1 priority
#2 priority
#3 priority
#4 priority
#5 priority

Percentage of respondents (%)

**Figure 2.**
Social capital priorities

Ecologically-designed, efficient & healthy facilities
Maximize use of building space
Bike & pedestrain paths that link campus
Retrofitting existing buildings as a priority
LEED designed & renovated campus buildings
Campus vehicles use ever-greener technologies
Human mobility on campus without personal autos
Appropriately scaled construction projects
Number of parking spaces maintained
UVM housing promoting living & learning
Subsidities for commuters using no fossil fuels
University partnerships with area ecovillages
Telecommuting & online courses expanded
Facilities co-located to minimize daily trips
Less & more efficient travel to conferences & meetings

#1 priority
#2 priority
#3 priority
#4 priority
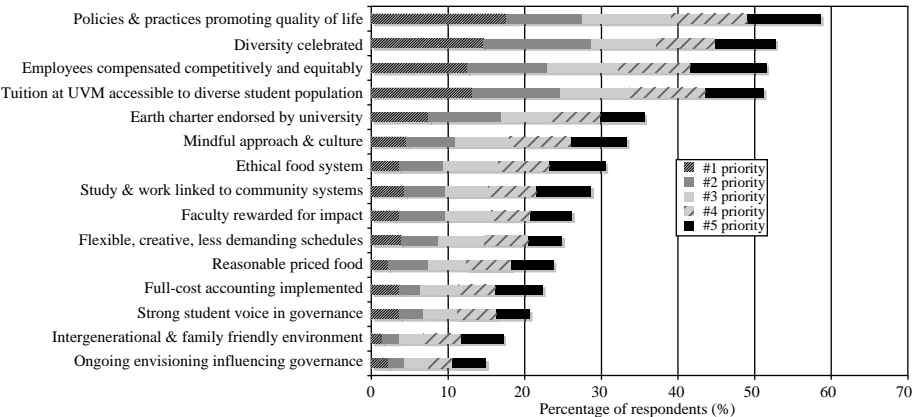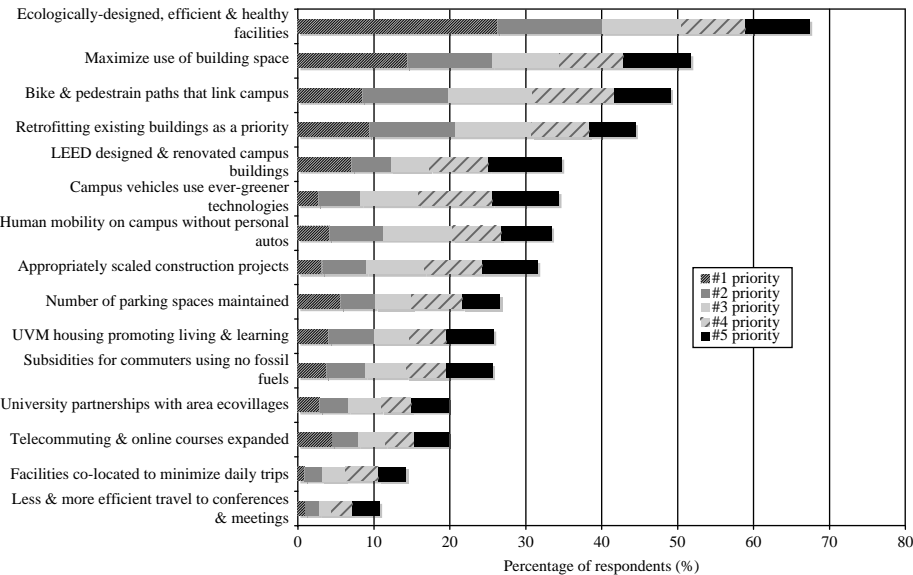#5 priority

Percentage of respondents (%)

**Figure 3.**
Built capital priorities

- efficient use of building space minimizes the need for new construction;
- bike and pedestrian paths link campus and community; and
- retrofitting and redevelopment of buildings takes priority over new construction.

(4) *Natural capital priorities (Figure 4)*:
  - UVM purchases a majority of its food from local and organic farmers and businesses;
  - UVM has ample, well-maintained green spaces for recreation, social interaction, and aesthetic enjoyment;
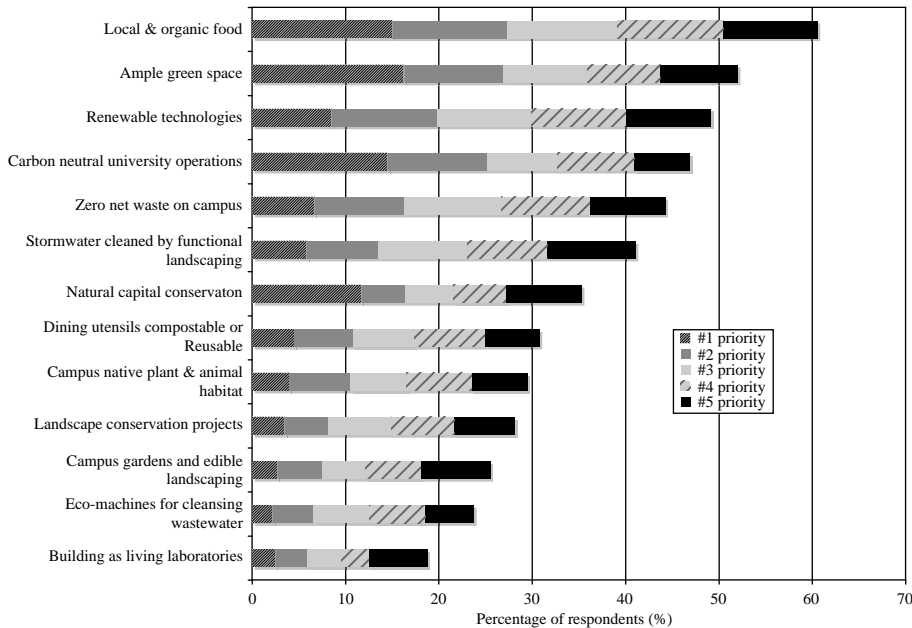
Figure 4.
Natural capital priorities

- 100 per cent of UVM's energy needs are met with renewable technologies located either on campus or as close as possible to campus;
- the UVM has become a carbon neutral campus by drastically reducing its emissions of carbon dioxide and offsetting any emissions through purchasing carbon credits; and
- as a campus, UVM produces zero net material waste.

*Variations in rankings among students, faculty, and staff*
Students, faculty, staff, and community members ranked priorities differently. Undergraduates prioritized statements regarding ecologically designed buildings, local and organic food systems, and ample green space. While ecologically designed buildings and food systems were also important to graduate students, they were more likely to value courses with an emphasis on systems thinking and problem-based learning. Faculty and staff both felt strongly about the need for policies and practices that foster quality of life and ecologically designed buildings. While faculty favored integrated systems thinking, staff were more concerned with fair and equitable employee compensation. Lastly, community members cared most about keeping higher education affordable.

Students, faculty, staff, and community members ranked several statements similarly, including the need for appropriately scaled construction projects ($\chi = 0.26$), engagement in global research and education ($\chi = 0.27$), and native plant landscaping ($\chi = 0.26$). There appears to be greater consensus among the different university affiliations for the built and natural capital statements, where responses were not significantly different for seven out of the 15 built capital and ten of the 13 natural capital statements.

In general, the weakest consensus occurred with statements in the human and social capital categories. Only three of the 34 statements had no significant variation among different respondent types:

(1) to graduate, all UVM students demonstrate eco-literacy and take required courses that integrate issues of sustainability;

(2) the UVM has endorsed the goals of the Earth Charter, a global initiative outlining fundamental principles for creating a just, sustainable and peaceful global society in the twenty-first century; and

(3) the university celebrates diversity and has rid itself of racism, sexism, and other prejudices.

*Self-selection bias*
Significant differences ($p < 0.05$) in Likert scale rankings between the self-selected group of 988 respondents and the stratified, random sample of 397 respondents were found for only 13 of the 60 statements. However, most of these biases were weak (Kendall's b-tau values ranged from 0.05-0.09), and differences were not apparent for any of the top statements. While biases were apparent in 66 percent of the prioritization rankings, they did not affect the statement ranking order.

Although the presence of these biases implies that the self-selected group is not perfectly representative of the university population as a whole, their responses did not differ dramatically from the randomly sampled set. As biases did not contradict any of the top-ranked statements nor the statement ranking order, it appears that the general trends and values established through the envisioning process are reasonably accurate. Therefore, the responses of the self-selected 988 participants and the 397 participants who completed the random sample were combined to form one data set for further analysis.

## Discussion
*Consensus building*
The combination of internet-based surveys with community forums appears to be an effective approach for engaging both broad participation and collaboration. Community surveys are useful as a tool to ensure a cross section of voices are heard in the envisioning process (Solop, 2001). However, community meetings are necessary to build the trust, understanding, and social networks critical for collaborative initiatives (Helling, 1998).

A surprising amount of consensus emerged from the envisioning exercise, with a generally high level of support for the 60 vision statements generated by the community. By focusing on shared values and long-term goals, envisioning avoids the polarization that often plagues academic planning and politics. Other researchers have reported similar levels of consensus as a result of envisioning exercises (Solop, 2001; Helling, 1998), due in part to the commitment to collaboration inherent in community envisioning.

However, the results suggest that despite the generally high levels of support for the created vision, faculty, staff, students, and community members have different sets of prioirities. These differences could create future implementation challenges. The use of

ranking exercises may help administrators identify initiatives that have consistent levels of support for action.

As more consensus emerged among students, faculty, staff, and community members on natural and built capital priorities compared to the human and social capital statements, there appears to be more of a shared understanding on the ecological and built environment components of sustainability compared to its socio-cultural aspects. Staff, for example, prioritized equitable compensation more than others, while students were more likely to prioritize a strong student voice in campus governance. Indeed, many measures of sustainability focus primarily on environmental considerations, and efforts to form unified measures are fraught with discrepancies, in part due to measurement and valuation challenges (Bohringer and Jochem, 2007).

*Towards implementation*

Envisioning is only the first step in organizational change. Implementation requires additional information and labor, time, and capital (Meadows, 1996). Visioning can fail if the focus remains mainly on processes rather than on identifying specific outcomes (Helling, 1998). Furthermore, effective implementation of new sustainability intitiatives must also reach beyond "low hanging fruit" to broad and comprehensive institutional changes (Thomas, 2004; Rowe, 2007).

The consensus that emerged through the UVM visioning process was summarized in two documents to guide implementation of new initiatives: a vision narrative and a sustainability charter. The vision narrative presents a glimpse of the UVM of the future as a university with a holistic approach to teaching, research, and campus operations, serving as a model for other organizations and developing solutions for local and global problems. The sustainability charter contains a set of principles and indicators to guide actions and investments.

To implement institutional changes, a new pan-university agency was proposed to facilitate initiatives generated by students, faculty, staff, and community members. This collaborative effort will involve multiple partnerships operating to develop integrative solutions. New certificate programs will bridge different fields of study and allow students to pursue competencies in areas that may be outside their home discipline. Additional solutions-focused and tools-based courses will be offered to students in all colleges, and a cadre of faculty, fellows, and graduate students will aid in these initiatives.

*Limitations*

While creating a shared view of a sustainable and desirable future is an important step in catalyzing institutional change, the process outlined can be challenging and has its limitations. Visioning is time and personnel intensive, and requires sufficient resources for an effective process. Primarily relying on a voluntary gatherings (such as the Open Space Forum outlined in this paper) to elicit the vision statements central to Q methodology may limit the breadth of the generated vision to concerns not representative of the entire community. Finally, reaching consensus on priorities may be more difficult at institutions with broad missions, less integrated instruction and disparate teaching and research objectives.

To move beyond visioning toward implementation also requires a culture where priority is given to research and education relating to sustainability along with

the commitment of organizational resources and staff training (Thomas, 2004). Failure to maintain momentum can negate progress, creating cynism, distrust and a reluctance to participate in future efforts (Helling, 1998; Moore, 2006). Envisioning is often done concurrently with more traditional and hierarchical planning process, and is generally seen only as a guiding tool. This can limit its ability to effect change in the highly political arena of university goverance and decision making.

## Conclusions

Universities are increasingly committing to fostering learning and service for the purpose of developing solutions for interconnected environmental and social problems. Yet university priorities are often established in a "top-down" manner and disciplinary and organizational boundaries remain largely intact, hindering the effectiveness of these endeavors. As a result, the theme of sustainability is largely relegated to individual, isolated initiatives that fail to fully engage a broad range of students, faculty, staff, and community members.

The process of community engagement outlined in this paper combines face-to-face dialog in Open Space events, broadly accessible online surveys, and the systematic approach of Q methodology. By focusing on shared values and long-term goals, the envisioning exercises achieved consensus on many key issues while avoiding much of the divisiveness that characterizes university governance. While not without its limitations, the described approach has value as an effective method of establishing a shared vision and developing broad-based support for actions that promote sustainability planning, education, and research.

## Note

1. The University of Vermont, located in Burlington, Vermont, was founded in 1791. As a public university, it is home to over 11,000 students and 1,300 faculty housed in seven academic colleges and schools.

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