

Keene State College Climate Action Plan - Draft

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- IV. Educational Opportunities
 - a. Co-curricular
 - b. Multi disciplinary
 - c. Inter-disciplinary
 - d. Living/Learning and beyond
 - e. “Service” learning

Why should students learn about Sustainability? Changing facility operations can significantly reduce the carbon footprint of the campus. Changing behaviors can also effect carbon reductions. It is harder to envision how the curriculum fits into a climate action plan.

Our mission and values statements are the foundation for our campus life and for our Academic Plan. “As the Academic Plan delineates the details of the pursuit of academic excellence at this public liberal arts college, it defines our mission in the promotion of academic excellence as demonstrated by a commitment to diversity and multiculturalism and to opportunities that help students become responsible global citizens. We are convinced that the integrity of both process and principles will help us to achieve our goals.”¹

The Plan also encourages us to “Promote learning that leads to engaged citizenship by supporting student learning using curricular and co-curricular activities that engage students in their own learning, increasing opportunities and support for national and international experiences, service learning and other experiential learning.”²

These two statements include language that is also common to definitions of Sustainability: diversity, global citizens, engaged citizenship, experiential learning. Our mission, values and Academic Plan all provide the groundwork to consciously include Sustainability as a guiding principle in our curriculum. If we are successful, we will graduate students who are truly prepared to “go forth and serve”.

Keene State College has been undergoing a series of changes in the Academic Affairs division over the past 4 years. We have moved to a four-credit system, turned the general educational requirements into an Integrative Studies Program (ISP), developed and expanded a College Honors Program, developed living/learning communities and developed CELT (the Center for Excellence in Learning and Teaching) which includes a Coordinator for Social Entrepreneurship and Civic Engagement. Many of those changes are beginning to offer opportunities to engage students, faculty and staff in deeper and more enriching collaborations within campus and in the community.

Two of the most recent changes are also some of the most exciting in relation to Sustainability. In 2009, Keene State College was granted approval to offer a new major that had been several years in the making; thus, SPEDI (Sustainable Product Design and Innovation) was born. This is a logical expansion of the Architecture and Safety Studies programs that have long featured sustainable building design courses, Management courses grounded in sustainability principles, and Safety Studies courses that look for ways to reduce worker hazards. In May 2009, our Environmental Studies program was given status

as a stand-alone program, and we have four full-time faculty teaching in the science and policy concentrations. Previously the Environmental Studies program had shared faculty from other departments.

The Environmental Studies program has long been a multi-disciplinary degree. Courses in Economics, Management and English helped round out science courses, especially in the Policy program. This approach has helped students understand that Environmental Studies, while grounded in Science, has a much wider and more inclusive fabric and should be viewed with a broader perspective.

Living learning communities have had a presence at KSC for many years. For much of that time they were located in various residence halls and were not widely known about by other students or the general campus. The completion of Pondsides III, a LEED Silver building, and a new Residential Life staff experienced in Living/learning communities, brought forth the concept of an entire hall dedicated to living learning communities. Housing these programs in a highly sought after residence hall has kept them in the campus eye. Each year seems to bring new and interesting themes, in addition to ones that have maintained continuous interest. The 2009/10 academic year communities include:

- Buddhist Minds
- Collaboration of the Arts
- Community Service
- Education in Art
- GLBT Educators and Advocates
- Going Green
- Honors
- Leadership Community
- Literature Appreciation
- Music Community
- Resources for Educators Community
- Seeing Things Whole Community
- Social Justice
- Strictly Ballroom
- The Science Community
- Through the Lens - KSC Film Studies Community
- Wellness Living Community

There are five general types of credited service-learning activities: cooperatives, practicums, internships, student teaching, and instructional methods. During the 2004-05 academic year, 342 course sections offered 4,170 students credited service-learning experiences. Based on faculty estimates, these students contributed 535,981 hours of service to local and regional communities. 1200 students contributed an additional 13,000 volunteer hours and there are many students who choose to volunteer in the local community and do not register their experience with any campus department.

Much of this dedication to the Community is reflective of our beginnings as a Normal School whose graduates became teachers in local schools. KSC is very proud of the volunteer and service learning work done by our students and we view it as an important piece of the learning experience.

KSC has approximately 70 student groups including Campus Ecology. Campus Ecology was formed in 1996, originally part of the National Wildlife Foundation programs, but now fully realized on their own initiatives. There are other groups with analogous missions, such as the Outdoors Club and Habitat for Humanity. Campus Ecology's annual programming brings speakers to campus to talk about issues ranging from population to mountain top mining, they do bulletin board displays on pollution and ocean dumping, hold organic food tasting and solar powered music events. This engaged learning that is informed by their studies has been a powerful educational tool for these students.

Eco-Reps is a peer to peer education program managed through the Sustainability Office. Students in the program are paid to learn about KSC sustainability efforts and then teach their peers what they have learned. This can be in the form of bulletin boards, floor meetings, social marketing and even informal discussions. This program is still on a learning curve, but to date over 75 students have participated.

Goals:

All graduating students should have a fundamental understanding of Sustainability. In all areas more specifically related to Sustainability, such as Environmental Studies and SPEDI, deepen and strengthen an understanding of the connection between economics, environment and social justice through learning and active engagement.

Actions:

Have all sustainability related courses designated in the catalog with an earth symbol.

Include sustainability related integrative studies course in some form for all students. This course might combine an understanding of how the environment, economics and social justice combine under a Sustainability umbrella that also includes systems thinking.

Encourage and support research into sustainability related curriculum.

Encourage and support sustainability related campus practices by faculty and staff.

Support classroom learning on sustainability with student engagement opportunities in the campus and Keene community.

Encourage a Sustainability pledge for all graduating students

Include appropriate academic programs in planning and building design, renovation and construction.

Increase the use of the campus as a learning tool.

Use the greenhouse gas inventory as a learning tool and classroom project

Engage students in exploring new opportunities on campus, such as wind power for the athletic stadium.

Encourage student group and classroom collaboration on national projects, such as Step It Up.

Encourage and support student activism.

Explore areas where Community Service and CELT programs and personnel could take sustainable ideas into the community.

Continue to encourage participation in community committees and events such as Community Master Planning, Clean Cities Committee, Monadnock Farm and Family connections, Working Families Win and Heading for Home.

Start a Keene State College Undergrad chapter of Net Impact, for creating positive change through business.

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- V. Operations: Heating and Cooling
 - f. Electricity
 - g. Steam plant (including co-gen)
 - h. Residential fuels (mini-houses)
 - i. Room air conditioning
 - j. Audits
 - k. Central chillers

Life in the northeastern climate of the United States requires heating of some form in most buildings we live and work in. In more recent times, artificial cooling has also come to the forefront as a desirable comfort worth paying for. As a society, we have moved away from using architectural designs that routinely integrate natural heating and cooling capabilities to building designs that function poorly without the use of mechanical systems. As a result, our use of equipment to heat, cool and bring fresh air to our working spaces has intensified. In addition, our climate is changing; although not appearing to follow a straight trajectory of increasingly warm winters or cold summers, we are seeing longer warm seasons, on average, with increased humidity. By designing buildings that have non-operable windows, glass walls that face south and west, entrances without vestibules, insulation that meets code but no better and mechanical systems that are designed for the worst possible conditions (rather than typical conditions) we are increasing our reliance on mechanical systems and the expenses associated with them.

Keene State is using the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver standards for all new buildings and retrofits. Better insulation, more efficient windows and more thorough attention to building techniques are all improving the quality of our built environment. However, LEED does not address the overall wisdom of complete reliance on mechanical systems for occupancy comfort.

In FY09, Keene State College had an annual energy budget of roughly \$4.5 million. Approximately \$2.7 million was spent on electricity; the rest was used for the central heat plant and various independent oil or gas fired heating systems - used in some residence apartments and in many of our smaller buildings. Steady gains have been made over the past eight years to identify and implement projects to reduce our overall electrical use.

Members of the Sustain Council are currently working on an Energy Master Plan (EMP) to have as a guiding document to systematically identify and implement ways to decrease wasted energy and improve our use of energy where it cannot be reduced. Appendix # has a list of completed projects and projects proposed for completion under the Energy Recovery Act. The EMP will more specifically outline future actions.

The KSC steam plant provides central heating and hot water to 45 buildings on campus. Buildings built or having undergone major renovation after ~1989 convert the steam to hot water. The oldest central boilers have been replaced in 2009 with high pressure boilers designed to work in tandem with a turbine

to also produce electricity. This co-generation capacity will primarily be used in the heaviest load months to produce roughly 10% of the campus electrical load and reducing our CO₂ by 538 tons. There is anticipation that central chiller capacity is possible and will help make the co-generation capacity more efficient. A feasibility study of central chilled water would allow the campus to make a decision on that direction before replacement of building level chillers becomes necessary.

The ability to meter each building allows for greater understanding of each building's needs and will allow for competitions between residential buildings as part of ongoing educational programming around resources. Individual campus building electrical metering is not yet complete but discussions are underway.

In addition to the operational efficiencies we have pursued and/or identified we have also worked towards modifying behaviors. The Eco-Reps peer to peer educational program includes a chapter on Energy. Our experience is that students do not correlate the costs of room and board with wasteful activities nor do they understand how electricity is generated in NH or how their actions might influence or impact utility decisions. With much of the electricity in NH generated from coal, nuclear and biomass there are a variety of environmental consequences that are not apparent to the students.

Without a central chiller, much of the cooling on campus in older buildings occurs with room air conditioners. The EMP will also include a discussion on central air conditioning and chillers. As we continue to improve our facilities we will need to have a discussion about whether air conditioning all upgraded buildings is desirable and necessary. Temperature control standards have been developed but they need to be upgraded to include best practices in systems where it is possible to heat a building in order to increase the temperature when the building has been overcooled. These reheat systems can be inefficient. We will need to continue to explore alternatives such as building positioning, night flushing, better window glazings, light shelves and other best practices.

All buildings that are not slated for upgrades will need to have energy audits. The scope and schedule will be part of the EMP.

Goals:

Eliminate wasted energy on campus by employing best practices in energy management, educate our users (students, faculty and staff) to limit wasted energy, improve our metering capability and search for alternatives such as increasing our co-gen output and using bio-fuels. Determine campus standards for mechanical cooling and indoor air quality management.

Pursue zero-carbon buildings

Action Items:

Short term:

Complete and get Cabinet approval for the Energy Master Plan

Develop addendum to Building Standards Manual to include recent lessons learned

Continue lessons learned in recent buildings (insulation, improved windows, first instance testing, commissioning and re-commissioning of buildings)

Develop mechanisms to track building improvements, energy efficiencies

Meter each building individually

Develop annual Energy competitions for residence halls.

Re-commission all newer buildings

Energy Audits for all older buildings

Continue to pursue super energy efficient buildings and retrofits

Investigate the feasibility of central chilling.

Mid-term:

Act on recommendations from energy audits.

Plan for central chilling, if feasibility study warrants institution.

Investigate options for Carle Hall, Owls Nest, and Tisdale heat: add to steam, microturbine, ground source heat pump, #2 oil, other?

Long-term:

Institute central chilling.

Convert Carle Hall, Owls Nests, and Tisdale to energy source other than electrical grid.

Convert from #6 fuel in heat plant to biodiesel

Anaerobic Digester for methane production as part of composting program.

- VI. Operations: Electricity
 - l. Campus overview
 - m. Lighting controls
 - n. LED and Fluorescent Technologies
 - o. Outdoor Lighting

Energy use to light our way and to heat and cool us is so ubiquitous that our students, and many of our faculty and staff, do not often consider what it takes to have this powerful force available at the flip of a switch or turn of a dial.

Keene State College currently uses power that is supplied through the grid, managed regionally in the East by ISO-NE and distributed to us by Public Service Company of New Hampshire (PSNH). Power comes primary from plants burning varying combinations of coal, oil and natural gas but the entire power supply also includes nuclear, biomass and hydroelectric power. There are significant greenhouse gas emissions associated with coal, nuclear, oil and, to a lesser degree, with gas. As we consider our carbon footprint and ways to reduce it, electricity use ranks high as an area where we need to consider our options.

Those options can include reducing our energy needs, developing our own energy sources, exploring the use of community based renewable energy projects and purchasing “green” energy and changing personal behaviors. We live in an era of aging infrastructure, increasing demand and higher prices. Beyond the specter of climate change, it makes fiscal sense to manage the resources we use in the most efficient ways possible.

Every person on campus has the ability to impact our energy use and expenses. We can schedule heating and cooling in many of our buildings for when they are in use, keeping them warmer or cooler when it is unoccupied. We can work with our utility company and we can hire energy analysts to help us figure out when to lock-in the cheapest prices in advance and when to wait for better unit pricing. We can upgrade our buildings with lighting controls, better windows and insulation. We can also save significantly through behavior changes to eliminate wasted electricity.

Our campus uses electricity for both lighting and heating. Carle Hall, the Owl’s Nests and Tisdale all use electric heat. We do not yet have mechanisms in place to meter lighting and heating separately. Adding that capability is a high priority in order to be able to best manage energy use in those buildings.

Lighting controls have been installed in all new buildings and retrofitted in some cases. Most incandescent lights on campus have been replaced with compact fluorescents and the last of the inefficient T12 fluorescent lights will soon be replaced with the renovation of two of our least modern classroom buildings. We have been experimenting with new LED technologies in classrooms, corridors and in our site lighting.

Simple occupancy sensor technology has greatly improved, but a steep failure rate originally did not endear them to the campus community. The newest ones are being installed at a slow but steady rate. All

exit lights on campus are now LED lights, saving significantly on energy and maintenance. Even our Holiday lights are LED, saving hundreds of watts per year. We have not taken full advantage of all of the programmable lighting controls available on campus. Lack of experience with complicated systems and minimal training are further fragmented by user needs that may not be met by the parameters of the systems.

Much of Keene State's HVAC (heating, ventilation and air conditioning) equipment is controlled by computer software, allowing the equipment to be scheduled and temperature set points to be controlled. The campus plumbing shop recently hired a former Honeywell technician who should be able to make better use of the systems and train other campus technicians in better system management. In 2007, the campus committed to using only Energy Star appliances and began using "Portfolio Manager", a computer based method for assessing energy trends in our buildings.

There are 300+ street lights on campus. These 175 watt metal halide lights (each of which draws a total of 205 watts) are on photo timers to reduce waste but are still a significant electric draw. Outdoor lighting technologies have been seeing some rapid changes over the past several years. LED replacements for current fixtures are appearing. Not only do they seriously reduce the energy used, but they also meet the dark sky protocols. Our most recent new building moved to a full cut off style fixture that has met with stylistic approval on campus and also meets the Dark Sky protocols. We will continue to use the full cut off fixture in new building areas. In addition to facilitating star gazing, they are also safer for pedestrians by reducing glare and focusing the light better. Other exterior lighting, such as wall washes, are slowly being converted to LED's.

In addition to the operational efficiencies we have pursued, behavior change and education are probably the next most efficient reduction strategies we can pursue. Our experience in talking with students through the Eco-reps program and anecdotally, is that students do not correlate the costs of room and board with their wasteful activities nor do they understand how electricity is generated in NH or how their actions might influence or impact utility decisions. With much of the electricity in NH generated from coal, nuclear and biomass there are a variety of environmental consequences that are not apparent to the students or other members of campus. In addition, we are not always modeling the best behaviors or identifying operational changes that do model good behavior. The Eco-Reps program is one avenue to educate students about the impacts of their choices. All campus constituents need to get and stay involved for the campus to be as efficient as possible. We can engineer many solutions but not all, and there is much room for user accountability.

Goals:

Eliminate wasted energy on campus by employing best practices in energy management and equipment maintenance, educate our users (students, faculty, staff and guests) to eliminate wasted energy, improve our metering capability and search for alternatives (such as ground source heat pumps) to replace electric heat.

Action Items:

Short Term:

Complete and get Cabinet approval for the Energy Master Plan (EMP).

Develop electricity procurement plan with a designated portion of the savings/avoided costs going to financial support of energy conservation projects.

Set electricity use reduction targets

Get Cabinet approval for Building Guidelines

Develop detailed energy protocol for various types of buildings (residential, academic) for contracted engineers.

Redefine Energy Coordinator job description and continue position.

Replace all street lights with LED's using full cut off fixtures.

Develop mechanisms to track building improvements, energy efficiencies

Meter each building individually

Finalize Office Energy audit project and implement on campus, with timeline for continuous improvement.

Engage Residential Life RD and RA program to collaborate with and expand Eco-Reps type education program in residence halls

Physical Plant and Residential Life assessment of residential buildings to identify spaces where motion sensors could replace switches and develop a timeline for replacement that also includes savings matrix.

Offset our Holiday Tree energy use through community based renewable energy projects.

Mid-term:

Meter each building function individually (e.g Carle Hall and Owl Nest heat vs. light)

Increase co-gen as feasible.

Reduce or eliminate individual air conditioning systems and replace with more efficient central chiller.

Employ best management practices (BMP) for server rooms to reduce wasted cooling.

Invest in onsite and renewable electricity sources

Long-term:

(to be determined)

VII. Waste, Recycling and Purchasing

- a. Composting
 - i. Pre-plate
 - ii. Post plate
- b. Reduced packaging
- c. Increased recycling
 - iii. Surplus
 - iv. IT computer recycling
- d. Reduced wasting
 - v. Vend print
- e. Avoided waste

R.O.C.K.S. is the Recycling on Campus at Keene State College program. Waste handling is managed by Grounds in conjunction with ROCKS. Surplus materials are managed by Purchasing, R.O.C.K.S., Grounds and IT.

Keene State College has a long history of recycling, beginning with a faculty led initiative in the 1970's. The program was largely student managed until the mid 1980's. In 1986 the students were successful in demonstrating that the program was cost- and environmentally effective and they received official recognition, dedicated funding for supplies and space to work. During the 1996 campus wide Open Space meetings (Speak Out), many campus members joined together to form a Green Team that ultimately lead to the establishment of the President's Council for a Sustainable Future and official status and funding for the Recycling Coordinator position.

The program has evolved as the campus has grown and the waste stream has changed. There are opportunities that did not exist 10 years ago, such as furniture and office supply reuse beyond the local community. We have adapted to the increasing use of computers and information technology by moving to online resources. This has helped reduce paper copies and paper waste and highlights the hardest area to quantify in the waste and recycling arena – avoided waste.

There are numerous examples of departments and divisions on campus reducing their waste through technology or through contract language. The VendPrint system in the Library has significantly reduced their paper waste and the attendant ink waste and personnel time. The Blackboard program had a huge potential to reduce waste by allowing faculty to post syllabi, course work and other course related materials on line instead of through paper copies. The on-line catalog, on-line billing and policy manuals are just a few of the many examples of using technologies to reduce paper waste by the College. It is worth noting that some of these techniques may simply shift the waste. By not giving students printed materials, are the students printing the materials using small desk side printers, with their inefficient ink jets and lack of double sided capability thereby simply moving the costs and the wastes to a new arena and not reducing the wastes at all.

One of the interesting conundrums of reducing paper waste by increasing electronic access and usability is that computer waste is more difficult to manage in an environmentally sound manner. In addition, more computers and computing power mean more servers and server rooms. Both are energy intensive and might actually be increasing our carbon footprint. We need to consider these potential impacts and continue to monitor our cost/benefit ratio.

Computer disposal is handled through a contracted Electronics vendor for still good components. Other components are handled through disposal at a local vendor and at the Keene Recycling Center.

This chart shows the changes in the waste and recycling since 2001

Fiscal Year	Waste Totals in tons					
	Truck/managed on campus	Dining commons	Construction Waste	Overall	Recycling	Compost on Campus
2001	611.95		33.79	645.74	251.12	6.9
2002	586.67	compactor sited in Nov 39	6.54	632.21	267.77	7.8
2003	514.17	70.6	59.82	647.89	239.22	8.4
2004	492.66	83.04	101.51	683.45	242.23	8.4
2005	460.38	54.49	154.64	656.01	231.37	10.8
2006	480.12	101.34	249.05	835.43	219.37	59.49
2007	471.55	176.65	118.8	769.44	216.96	30.06
2008	433.2	232.42	92.9	761.45	232.92	30
2009	381.05	246.15	133.65	781.48	253.275	30
Totals	4431.75	964.69	950.7	6413.1	2154.235	191.85

The above chart shows a significant reduction in the amount of waste disposal. Several factors may be in play here including: better education of residents, dumpsters more difficult to access by outside constituents (illegal dumping) and changes to packaging. Tracking will continue to allow us to identify areas of concern that will need to be addressed.

As the Physical Plant has taken on more small projects, our construction and demolition numbers increased dramatically. By working with our vendors Trades was able to reduce carpet disposal, a significant portion of that waste stream, by partnering with a vendor who collects carpet for recycling. All capital projects require recycling of C&D wastes. We have explored whole house deconstruction although removing selected building components and subsequent demolition is most common. The recycled materials are used as fill, processed as mulch and burned for energy recovery.

Residential life furniture contracts include provisions for the goods to arrive with reusable packaging or packaging they must take back. There are many more examples that highlight our efforts to continue to avoid waste.

Pre-plate composting has been practiced on campus since the mid-1980's. The materials are managed on campus and used as soil amendments in campus garden beds. All campus wood is chipped and used on campus as is all gardening and other non-invasive, non-diseased green waste.

While the campus has the legal authority to compost post plate waste on campus, we are severely limited by space constraints and somewhat limited by personnel and equipment resources to effectively compost quantities of plate waste. Unfortunately, there are rare places to compost plate waste in this area of New Hampshire. There is a facility in Massachusetts that is permitted for post-plate waste and our materials went there for a year.

Over the past three years ROCKS has eliminated classroom waste containers and centralized them in main hallways instead. The Science Center, Morrison, VMAC and Huntress classrooms are all managed in this manner. All recycling amounts increased and waste decreased in those areas.

Universal Wastes have increased due to the increased use of CFL's and increased battery use in automatic flush and water valves and electronic equipment. Properly managed they are recycled instead of disposed, but represent, in their life cycle analysis, a complicated and rare earth polyglot of materials.

Surplus goods are handled in a variety of ways. Most miscellaneous office supplies are put into the ROSE (reusable office supply exchange) in Elliot Hall. Larger items that still have value are sold through a monthly surplus sale. Larger amounts of materials, particularly those from the residential life program are managed through IRN the Institutional Recycling Network, who take the materials and donate them to places, largely overseas, where they are used in orphanages, schools and other institutions. Residential life has moved towards items like adjustable beds which give the students the ability to customize their space better and significantly reduced the use of cement blocks in residence halls.

All of these practices represent a steady improvement over the older practice of discarding the materials, regardless of their value.

The decentralized nature of purchases under ##### limit allows individuals to choose products that might not meet the more stringent requirements of the purchasing office. Examples include paper without recycled content and materials with excessive packaging. On the other hand, it does allow for just in time purchases, which decreases storage needs and potentially outdated materials. A decision was recently made to decrease the number of on campus deliveries from our main office supply vendor to three times per week. The decision was economic but the results will also improve the environment.

Goals:

To achieve Zero Waste

Short Term Goals

Reduction in truck traffic related to deliveries and removals

Standardize contracts so that waste shipping materials like cardboard and pallets are returned to the shipper.

Reduce post plate waste through the Healthy Food project, including ongoing education and development of best practices in the Dining Commons.

Reduce the amount of food waste through education and through the promotion of food handling changes in the dining room.

Reestablish post-plate composting.

Continue to quantify wastes.

Seek better ways to capture and manage technology wastes.

Continue to work with IT and contracted engineers to search for and implement energy reducing mechanisms for IT server rooms.

Increase the recycling rate and continue to decrease general waste

Continue to work with Trades to decrease the amount of construction waste with a goal of eliminating waste through activities such as changing practices to design for zero waste.

Reduce IT, furniture and other surplus waste.

Continue to reuse IT and surplus materials where possible.

Continue to centralize all recycling and waste containers in all academic buildings.

Continue to look for partnerships within the local community for ways to reduce waste, recycle more materials and reduce transportation and packaging.

Ongoing educational activities such as the use of Blue Bags, Eco-reps.

Mid Term Goals

Develop life cycle analysis of all materials used on campus.

Implement standardized contract language to discourage waste.

Continued reduction of dumpster locations and other actions to discourage illegal dumping.

Implement Sustainability guidelines for all purchases using a KSC credit card

Reduce the amount of still good materials being discarded.

Develop a better tracking mechanism for numbers and perhaps weights of all materials sent to surplus materials and all IT materials.

- VII. Transportation
 - p. Bus System
 - q. Green bikes Program
 - r. ERideshare
 - s. Campus vehicles
 - i. Biodiesel
 - ii. Electric vehicles
 - iii. Mileage tracking
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 - t. Commuters
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 - u. Business Travel
 - i. Car travel
 - ii. Airline travel
 - iii. Web/telecommuting
 - v. Vendor traffic

Although the campus itself sits in an urban environment, it is still a very rural area. There is minimal access to public transportation outside of a limited public bus schedule. Amtrak has a presence in Brattleboro, VT, 20 miles from Keene with passenger trains running only twice a day, one north and one south. The campus has worked closely with a local organization – Home Health Care and Community Services (HCS) – to fund a campus bus that coordinates with the HCS system. The campus bus operates Monday through Friday during the academic year but connects students to local shopping centers, and through the connecting city buses, to most areas within the city limits. The HCS shuttle is supplemented by a campus shuttle operated by Campus Safety which operates after the HCS shuttle ends and also on weekends. Both services collectively operate for 95 hours per week. Since its initial year of operation in 2001-2002, ridership numbers have increased significantly from just under 5000 riders per academic year to a high of about 28,000 riders in 2007-2008.

In 2001, Campus Ecology students partnered with some local high school students in a free bike program. This program, called Green Bikes, initially fixed and painted donated bikes and left them on bike racks around campus for general use. Unfortunately, the borrowed bikes were often found in trees and in the river. A library staff member on the Sustain Council noted that the library could check out the bikes like any book, geode or computer. As a result the Green Bikes program has survived and flourished. In the 2008 academic year the bikes were rented over 800 times. The program also donates bikes to anyone who requests one and to people the library identifies as constant renters. To date, we have given away dozens of bikes. This popular program could eventually expand to the Keene Public Library if the logistics can be addressed. KSC has seen a steady increase in students bringing their own bikes to campus over the past 5 years. The existing bike racks are no longer meeting the demand.

Temporary bike racks have been added and permanent locations are being established as part of the Landscape Master Plan, currently in the design phase. Covered bike rack areas are also being explored.

During the 2007/08 academic year the Sustainability Office worked with Management faculty and students to develop and implement a survey of the transportation habits of students, faculty and staff. This survey verified that many of our employees and students drive single occupancy vehicles (SOV) to and from campus each day. In addition to giving us a profile of our emissions we also gained valuable information about travel habits. Subsequent discussions have looked at how campus members view their transportation options which should help inform actions designed to change behaviors. See Appendix ## for details.

Several members of campus have been actively involved in a City of Keene projects called Transportation Demand Management (TDM). *TDM for Keene and Cheshire County* has been assessing the transportation options in Cheshire County, surveying work force related traffic to and from Keene and talking with transportation officials and others from the State and other NH counties. They have been looking holistically at alternatives to SOV traffic, ways to decrease congestion without building additional roads or increasing the size of current roadways. They are also looking at road alternatives such as roundabouts, alternating start times for major companies and increasing rideshare use.

The campus has begun to address ways to decrease SOV traffic related to campus life. A subcommittee representing the PAT and Operating Staff Councils, Human Resources, the Parking Office, Management faculty and the Sustainability Office have been looking at alternatives. The first step has been membership in ERideshare, a free ride matching services for students and for faculty and staff. Access to the ERideshare program is housed on the Human Resources website. Various incentives are offered through human resources for alternative travel, such as reflective vests and bike lights. A common concern is for commuters who are interesting in car pooling is how to address emergencies that would make car pooling difficult – child care and other caretaker concerns. Alternatives such as Zip cars and other shared vehicle services may help to alleviate those concerns and increase shared ridership.

Our ongoing goal will be to radically reduce SOV traffic. In addition to the reduction in Co2 levels there could be a corresponding reduction in parking lots, parking lot maintenance and associated expenses and the attendant non-point source pollution (dirty storm water from parking lots).

The campus fleet has been steadily modified since 2001. All diesel vehicles use bio-diesel and we have gradually replaced gasoline powered vehicles with diesel where feasible. Electric vehicles are increasing common and are currently used for residential life, mailroom, Grounds and Campus Safety, which also uses one hybrid vehicle. The President's campus vehicle is also a hybrid. Bikes and trailers are used by Grounds and some trades. With such a compact campus, walking and biking are usually the fastest and most efficient means of traversing the space. The campus has ample opportunity to decrease travel from campus owned vehicles and significantly reduce emissions from those vehicles. The campus culture of transportation and travel is very much mired in an older paradigm of using motorized vehicles for all commuter and work related tasks. Behavior change to move people out of vehicles, share vehicles and

use non-motorized forms of transportation will require encouragement from supervisors and rewards for adapting to a new standard.

Business travel related to campus is a major factor in our emissions profile. Areas where we can improve are in better carpooling habits to regularly traveled locations (e.g. UNH), use of fuel efficient rental vehicles instead of personal vehicles and video conferencing. Some areas of campus, such as human resources, have done an excellent job of consolidating regular off campus meetings into a single day and the use of web/teleconferencing. They could be a model for other areas of campus.

Vendor emissions on campus is an area that is harder to quantify. Costs have already modified some behaviors that benefit the overall campus – having OfficeMax deliver on a schedule instead of the random deliveries cut back significantly on delivery vehicle traffic. Reviews of other campus vendors – such as bottled water deliveries – are in process and they might also influence campus traffic by reducing or eliminating those purchases for the campus.

Goals:

Reduce SOV traffic by 50%

Increase car pooling and ride sharing so that 50% of full time staff and faculty are regularly using these services.

Decrease College vehicle miles driven by 50%

Create no new parking lots

Reduce student driving from within city limits to 0%

Offer students alternatives to keeping a car in Keene

Increase access to Green Bikes by increasing the number of bikes

Increase the number of bike racks

Covered bike racks as part of renovations and new buildings. Covering existing bike racks where possible.

Reduce campus meeting related travel by 25% through meeting consolidation and web/telecommuting.

Action items:

Short Term Actions

Offer guaranteed rides home to anyone who carpools, walks or bikes, in the case of an emergency

Publicize various options for accessing shopping and other daytime needs of faculty and staff, such as green bikes and the bus system.

Designate parking spaces for hybrid and alternative fuel vehicles to encourage their use and promote alternative fuel vehicles on campus.

Continue to work with HHCCS to align bus routes with student housing, throughout the Keene community.

GPS student housing clusters off campus as a student project every 5 years with the goal of modifying bus routes to increase ridership from off campus students.

Work with Zipcar or similar programs to establish a program here at KSC, perhaps in partnership with the City of Keene

Improve ad hoc reporting structure by establishing regular tracking mechanisms for campus related travel, student travel and commuter travel.

Partner with Antioch and the City of Keene to expand the Green Bikes program

Expand e-Rideshare for mobile devices and immediate response

Mid term Actions

Continue partnership with Pathways of Keene to complete bike trail at Emerald Street intersection, bike bridges at 101 and West Street and to light the trail where it goes through campus.

Eliminate any new parking lots in Master Plan

Facilitate access to mass transportation for students headed home for holidays (e.g., mini-bus to airports or train terminals).

Analyze KSC maintenance vehicle traffic with respect to most efficient routes and work order “clustering”.

Long term

(to be determined)

- IX. Purchasing
 - a. Contracts
 - b. RFP's
 - c. Contract services:
 - d. Cleaning
 - i. Green cleaners
 - e. Dining Services
 - f. Living wage and benefits

Purchasing and Contract Services:

Keene State is blessed to have a forward thinking and proactive purchasing department. Incremental steps have been taken over the years to incorporate sustainable practices into contracts and services provided to the campus. Collaboration with other local purchasing agents, a willingness to incorporate alternative vendors, such as deconstruction specialists, and management of the surplus program are just a few of the many paths towards Sustainable purchasing already undertaken by our Purchasing department.

All services provided to the campus have a contract from water coolers to construction services to light bulbs to books. They are an effective tool to assure that our suppliers understand our commitments, including our commitment to climate neutrality. Examples include language to garner significant environmental and economic benefits through our new laundry contract, by contract the paper used in campus printers is 100% recycled content and all of our RFP's encourage companies to disclose their Environmental Statements and practices (see Appendix XX).

Contract Services:

We have two primary contract service opportunities on the KSC campus, cleaning and dining services.

Our cleaning contract includes excellent requirements for recycling and waste management. There are limited Green Cleaning requirements on campus, mostly related to our Pondsides III LEED building. Unfortunately, there are no approved Green Cleaners for use on viruses.

Our dining services contract also contains recycling and composting provisions. Currently our dining services use some local and organic food in their dining services. They have been willing to be actively engaged in discussions on campus around food. Sodexo Food Services has steadily adapted their KSC campus practices to incorporate sustainability. See the Food chapter for more information. .

We don't currently have a provision in our contracts that require a living wage or benefits. As a result, starting wages at our largest contract services are not a living wage as defined by the Josiah Bartlett Center for Public Policy. *

Income below living wages has many social ramifications. The cheapest housing stock in Keene is often also the least efficient energy, with older windows that lack storm windows, poor insulation and are often the most expensive to heat. For those who can't afford even the cheapest housing in Keene, affordable housing means

living in outlying towns, to which there is little or no public transportation. Income below living wages and lack of health benefits often means that workers choose between staying home when sick or coming to work. We ask our students not to come to class if they have a cold or fever, yet the person cleaning the classrooms and hallways or the person serving you lunch might come to work sick due to lack of health insurance.

The effects of poverty are profound and widespread and while it is prudent for the campus to keep costs to a minimum, we need to consider, as a campus, whether we are contributing by proxy to larger green house gas emissions in the surrounding area by not paying wages that improve the quality of living for our employees and contract employees.

By incorporating Sustainability into our contracts, we can reduce the Campus' impact on our natural world and our finances by reducing our water and energy use and our waste. We can make decisions based on life cycle costing, not just on lowest price and we can improve the quality of life for any person who works on our campus.

Goals:

Use local products and local businesses for all possible services on campus.

Provide a living wage and benefits for all who work for KSC or contract to work with KSC.

Use of Green Cleaners everywhere on campus.

Use bid process to more closely align our suppliers with our Sustainability goals.

Increase the use of life cycle costing for purchasing decisions.

Work with USNH to encourage the use of these goals across the University System.

Actions:

Short Term:

Work towards assisting Green Seal with developing guidelines for virus approved cleaners.

Require that all paper goods (bath tissue, hand towels) contain a minimum of 25% recycled content paper with the remaining content from FSC certified wood. (*Canadian equivalent here too*)

Assess our contract service agreements for social justice components, such as fair wages and access to benefits, including a financial analysis of the impacts on our budgets.

Assess opportunities to develop life cycle costing guidelines

Mid term:

Move to all Green Cleaners across campus

Require that all paper goods (bath tissue, hand towels) contain a minimum of 50% recycled content paper with the remaining content from FSC certified wood. (*Canadian equivalent here too*)

Phase in living wage requirements for all contract services

Implement life cycle costing guidelines

Long Term:

Require that all paper goods (bath tissue, hand towels) contain 100% recycled content paper

Require all contract services pay a living wage as determined by the Josiah Bartlett Center for Public Policy.

DRAFT

X. Grounds and Land Management

1. Land management
 - a. Arboretum
 - b. Nelson property
 - c. Owls Stadium
2. Grounds
 - a. Tree Id project
 - b. Best management practices
 - c. Biodiesel
 - d. Winter snow and ice management
 - e. Athletic Fields
3. Bike Racks

Grounds and Land Management

Keene State College has a progressive, forward thinking Grounds department. Over the past 15 years Keene State College has worked hard to move away from chemical management of Grounds towards Best Management Practices (BMP). There is currently a manual in development to codify these practices.

Land management.

Keene State College has three properties outside of the central campus area. One property is the College Camp at Wilson Pond. This property fronts Wilson Pond and land management is guided by the New Hampshire shoreline protection rules. This property is 3 +/- acres and has a relatively small environmental footprint. This building is heated and cooled year round but is not wasted due to a caretaker who lives in a second floor apartment. The caretaker also assures that the systems operate as they should.

The College was given a large tract of land in Nelson NH in the 1970's. The 400 acre Lois Cabot Preserve has remained undeveloped and has limitations imposed by the gift. This land has not been included in our GHG inventory due to questions of accuracy still raised by carbon sequestration of trees and the limited methodologies currently available.

Our third piece is the Owl's Athletic Stadium. This 100 acre site is a wetlands area with limited development potential. Approximately 20 acres are used for playing fields and attendant infrastructure. We practice delayed mowing techniques, in partnership with the USDA, to foster wildlife habitats and maintain the property with a minimum amount of chemical inputs.

Grounds:

Main campus. The main campus is an arboretum featuring ornamental and unusual trees, in addition to usual varieties of New England trees. A tree survey and identification process was completed in 2002.

Our campus is widely known throughout the community for the gardens and beautiful grounds. We are a campus well suited to students with special needs and we work hard to make the campus a safe and easy place to navigate.

Most of the garden annuals are grown at a local greenhouse, using BMP. This is typically a lower impact process, reducing the use of chemical inputs which usually contain carbon based materials. By contracting this service to a local grower, we are able to lower our transportation needs and keep dollars within the local community.

Where possible, the campus uses diesel equipment, including lawn mowers and weed whips. We use biodiesel in all of our diesel equipment. Most recently, we have been purchasing B100 from a supplier who is only 50 miles from campus. Hand cultivation of weeds, mulching of all beds, trees and shrubs with mulch produced on campus (leaf mold, pre-plate dining commons food waste and chipped trees/limbs) combined with mulch from local tree companies and the City of Keene has improved the health of our plantings and maintains them in a process closer to what nature would provide while still offering the look and feel of a manicured estate. Compost tea, made here on campus is used to feed the plantings. High mowing heights help keep lawns beautiful without the need for pesticide applications. Aeration and applications of fertilizer that is not made with petroleum products are all standard practice here. All of these practices have decreased the amount of materials used that are based on fossil fuels.

Winter snow and ice management have undergone a radical change over the past eight years. The primary change has come from the use of a material called Ice-Ban. This brewery waste product is mixed with potassium chloride in a liquid form. Much experimentation has led to pre-treatment of walk and road ways before storms. This process keeps the snow and ice from bonding to the pavement, making snow clean up and removal simpler, easier and more thorough. In addition, we mix the product with salt, when it is used, making the salt considerably more effective, in our experience. The largest source of Environmental Health and Safety reports are from slips and falls. Keeping the sidewalks and roads clear has environmental impacts and social impacts (wheelchair and cane accessibility). Use of sand had been completely eliminated from the campus. Eliminating sand reducing trucking to and on campus, severely limits the need for sweeping parking lots, eliminating more vehicle traffic, reduces the impacts of blowing sand on vehicles and buildings, storm drain cleanings and sand washing into local waterways. Salt is largely pretreated with the Ice-Ban and use has been reduced. Salt used in this area of the country is shipped from Canada. Reducing the amount of salt means less trucking of the product and fewer opportunities for environmental damage from salt storage and use sites. We were able to determine that during the winter of 2008/09 the local business with similar sized parking lots and sidewalks used 70 tons in the same month that we used 30 tons, due to our different management practices and use of Ice-Ban. Other benefits include easier and more thorough clean up of the site with less physical and mechanical effort.

Bike racks:

Bike racks are common on campus and we have seen a steady increase in bicycle use by students. As the campus has grown there has been a continued effort to place bike racks near residence halls and in the public areas. Covered bike racks are rarer, but there is a desire to have more covered spaces.

Athletic Fields:

Coaches and players have high expectations for field quality. Managing the heavily used fields in an environmentally friendly ways requires new and innovative techniques. The fields closest to campus are surrounded by the Ashuelot River and the Stadium fields are bordered by both the Ashuelot River and associated wetlands. Delayed mowing practices in areas not used for fields or running paths have reduced our fuel use in mowers and reduced the opportunities for contaminating the site. Aeration, attention to mowing heights and careful monitoring of the root systems have all led to fields that are attractive and functional while using limited chemical inputs.

Goals:

Continue to maintain the campus using environmentally friendly techniques while reducing our use of chemicals or petroleum based products. Increase the use of the campus properties for educational and aesthetic interests.

Short Term Actions

Complete Best Practices Manual (BMP), codify and develop sustainable practice methodology for future users.

Encourage the use of the campus grounds as a tool for curriculum. There are few organizations large or small in this region who have so thoroughly and successfully moved towards these lower impact management techniques.

Mid term actions

Develop a long range plan for the athletic fields and the attendant infrastructure.

The Cabot Preserve was intended to be used for research. Development of a program to use the land for research and to maintain the trails and access for research and pleasure would fulfill the hopes of the gift and introduce members of campus to a beautiful, historically interesting site.

XI. Architecture and Planning

1. Master Planning
 - i. Building guidelines
2. USNH Construction Offices
 - i. Building updates and enhancements
 - ii. LEED buildings
 - iii. New RFP provisions
3. Councils
 - i. FPAC
 - ii. Planning Council
 - iii. Budget & Resource Council

Keene State College has steadily worked to inculcate long term planning into the culture. Two Master Plans have guided development for the past 15 years. We are currently halfway through the second Master Plan. The College has done remarkably well at following the basic outline and has consistently used the Plan to guide the decision making process. The most recent plan has sustainable principles woven throughout.

A new Provost and President, multiple changes to the curriculum and the development of new programs have reshaped some of the planning focus but the tools have remained flexible.

Generally speaking, KSC has maintained the look and feel of a “New England” school. Red brick and granite are common throughout campus. There has been a determined effort to keep a cohesive look and feel to new buildings and major renovations while addressing energy efficiency and future needs and uses.

Building guidelines were developed 3 years ago by the President’s Council for a Sustainable Future in conjunction with the USNH construction office. Although not yet approved by the Cabinet, they are posted on the Purchasing website and are used to inform potential contracted services of our desires to build energy efficient buildings and landscaping appropriate to our region and to our arboretum.

In 2009, three new conditions for hiring construction managers were added to the USNH construction documents. The three new components included a request (and expectation of follow through) for C&D recycling on the site and indoor air quality maintenance, including assurance that moisture and dirt would not infiltrate the ventilation system during construction and an expectation that all of the materials would be kept clean and dry. Last was a request for examples of LEED buildings built by the Construction managers and their level of familiarity with the requirements of high performance buildings.

Our newest buildings, including the LEED silver Pondsides 3, are super insulated and have many green features. We have completely or nearly completely renovated our two oldest residence halls, located on the central Quad, in the past 3 years. Insulation, new insulated windows, updated heating systems, new appliances and new fixtures (both lighting and plumbing) will make those buildings considerably more energy efficient than before. There was a striking visual display of the advantages of renovations for energy efficiency during the 2008/09 winter. On the coldest days the first building to be renovated did not have a single open window. The adjacent building had 75% open windows due to overheating from the old steam radiators.

Keene State College has thoughtfully refurbished and repurposed many of the buildings it now owns and operates. Our academic scheduling coordinator has continued to look for ways to make best use of our classroom spaces and works closely with other scheduling coordinators on campus. The acquisition of Schedule 25 or similar program will facilitate the scheduling process and bring it all under one umbrella, making space utilization as efficient as possible. This is important to energy efficiency for a variety of reasons. Programmable heating and cooling systems are adjusted based on class schedules. If there are no classes in a building, the temperatures are set back to a cooler or warmer temperature, based on the time of year. When feasible, the academic scheduler can cluster classes in buildings to avoid single classes in multiple buildings and the subsequent inefficiency of heating or cooling multiple locations. With the ability to schedule all of the classrooms at their highest use rate possible, it is easier for campus planners to determine whether new classroom space is needed. The greenest buildings are the ones we don't have to build, so having an accurate picture of our schedulable space is critical to determining our building needs.

The Facilities Planning Advisory Committee meets regularly to discuss new planning initiatives and review the Campus Master Plan. They help determine the priorities for renovation and repair dollars. Projects range from placement of sculpture to funding major renovations to campus buildings, such as the renovation of the former dining commons to the current Media Arts Center. This Council also has the opportunity weigh in on design criteria for subsequent buildings and renovations. They can help inform decisions about such questions as the widespread use of air conditioning, planning studies for buildings and timelines for deferred maintenance.

Two new Councils, the Budget and Resource and Planning Councils have been added. The Councils are a mechanism to allow campus initiatives to be presented and reviewed in a timely and thorough manner on campus. This process has allowed the campus community to compare all initiatives on campus and determine how resources can best be used. The Budget and Resource Council is also reviewing ways in which the campus can be more efficient with resources. They solicited the campus members for efficiency suggestions, they are reviewing cost/benefits from such things as summer classes and summer camps and they have an overview of the multiple campus projects and can look for synergies that might not be apparent to individual project proposers.

All of the activities of these Councils will eventually inform the next round of Master Planning. We have seen the benefits of good planning over the past decade in a cohesive, attractive, functional and

comfortable campus. Thoughtful management of our resource and a thorough understanding of our funding and how it is used naturally lend a frugal and efficient underpinning for our planning processes. A birds-eye view of our programs through good scheduling and our annual planning processes and discussions will all help inform our decisions for the next decade and beyond. There is a fundamental understanding that we build buildings for the long term and we need to make decisions that enable us to continue to offer an affordable and desirable educational environment to our students.

Goals:

All planning will integrate Sustainability as a core principle.

Move towards zero-carbon buildings.

Actions:

Short Term:

Get cabinet approval of the Building Standards

Assure that the newest RFP language around Sustainable Building Practices (IAQ plans, recycling plans and experience in high performance building) in the USNH documents becomes standard language

Develop a mechanism to review all new projects through systems thinking and a sustainable or efficiency lens.

Continued PCSF presence on planning and budget related councils.

Acquire Schedule 25 or similar program to put all scheduling under one umbrella to improve both day to day operations and to help determine space needs for academic, support and core operations.

Medium term:

Update Campus Master Plan with lessons learned through various planning processes.

Move towards determination of whether buildings can be better utilized or repurposed where possible.

Renovations that are not intended to be permanent will be designed to be reused.

Long term:

Partner with a not-for-profit, or develop a not-for-profit that purchases local residential buildings and improves their energy and water efficiency. Quantify the energy savings and use them to offset the campus's energy use, for a limited period of time. This could have various benefits including improving the housing stock in the immediate campus surroundings, provide affordable housing for faculty, staff and students and improving community relationships.

XII. Food

- a. Local foods
- b. Organic Foods
- c. Composting
- d. Trayless dining
- e. Education

Food is an important part of the campus experience. Residential students are required to purchase meal plans and many members of campus purchase food in the Student Center or Dining Commons. The new Dining Commons offers a good selection of choices, including an extensive salad bar and Vegan Valley, a food station serving the vegan and vegetarian population.

Sodexo Services is our current food services management company. They have been supportive of efforts to embrace sustainable principles in their processes and in the food they serve. Research and behavior observations lead to tray less dining, helping to reduce food, water and energy waste and are now the norm. The last two semesters have included a Harvest Fest featuring local foods – bringing in farmers and local food producers to talk with students and to put a face to the food they eat. Sodexo works with the students in the dietetics program and with athletics to bring educational speakers to campus. The use of local foods has increased and there is an effort to include local foods where available and cost comparable. Good signage helps diners identify the local foods that are used.

There are rich opportunities to include more local and more organic foods in our dining services. Working with other local organizations, like the Hannah Grimes Center and the Monadnock Food and Family Connection project, provides opportunities to expand our reach and depth into local food markets. This will help lower transportation, packaging and storage related emissions. Recent studies also show that there is an economic advantage to eating locally called ‘the multiplier effect’. Eating locally puts \$3 back into the community for every \$1 spent on food, because local farmers are likely to re-spend that money locally on supplies and labor. *

The Sustainability Office is engaged in a systemic look at food, health, diet and waste in a project called “Lifelong Choices: A healthy balance between mind and body”. The project outline is listed in appendix ##. Goals include reducing waste and educating students about food and nutrition. Representatives from Student Affairs, including Athletics, Dining Services, Counseling Center, Health and Wellness office and from the Nutrition and Dietetic internship programs in Academic Affairs are part of the discussion. There are multiple student organizations focused on nutrition, health and physical activity who are also participating in this initiative. Bringing together all of the many people who educate, produce or manage food and wellness program on campus is a first step towards educating all of our students about their health and nutrition and provide them with a good foundation for maintaining their health once they graduate.

Goals:

Educate all campus members about healthy eating by providing healthy choices and education. Interface with the larger Keene community to purchase local and organic foods where possible and reduce food waste on campus.

Short Term actions

Purchase 25% of our food from local and organic sources by 2015.

Compost 100% of our food waste.

Increase access to local community supported agriculture programs for faculty and staff by establishing a location on campus where CSA's could drop off shares

Facilitate student requests for a community garden, and encouraging a partnership with City of Keene community gardens and facilitate access for students through bikes or bus route modifications.

Reduce meat consumption by 10%

Reduce dining commons food waste by 25%

Develop strategic plan to redesign of dining commons loading zone to accommodate composting containers.

Continue working towards goals outlined in the Healthy Choices project.

Mid term actions:

Purchase 50% of our food from local and organic sources by 2020

Reduce meat consumption by 30%

Long Term actions:

Maximum possible local and/or organic food purchased for dining commons/student center

Educate all students in healthier lifelong eating habits.

XIII. Water

Water resources are not included in all Climate Action Plans since there is a low association of water with climate mitigation strategies. However, access to clean water is paramount to sustaining life. Maintaining clean water for human and agricultural needs should be part of the campus discussion of our use of natural resources. Many climate mitigation strategies, such as reducing emissions from coal-fired electrical generating plants will also help decrease mercury in aquatic animals; eliminating food waste ultimately impacts how much food farms grow and how much water they use in their activities. Limiting development in flood plain and wetland areas will help manage watersheds and the natural cleansing and storage of water supplies and limit severe weather related disasters.

Keene State College is partially located in a flood plain area, has athletic fields bordering on wetlands, has storm water run off from parking lots and the Ashuelot River running through campus and past the athletic fields. Considered impacts on these areas should be part of our planning processes. Our actions will also have impacts on Cheshire County watershed management.

We use thousands of gallons of fresh water each year in our residence halls, Dining Commons and heat plant. Efficient use of these resources lowers or slows our costs and those of the City of Keene who manages the water supply and wastewater management facilities. We also purchase drinking water which is largely taken from outside of our region and has environmental impacts in those areas.

We are fortunate to live in an area where water is plentiful. Thoughtful and careful use of this precious resource should be part of our planning. Appropriate development in water sensitive areas, efficient use of water for human activities, eliminating wasted water and reconsidering our use of bottled water should all be given thoughtful consideration.

Goal:

Develop a water related master plan for fresh water use on campus and watershed management.

Short Term Actions:

Complete bottled water survey and develop action plan for reducing purchases of bottled water.

Analyze infrastructure leaks from district heating system

Standardize low water use plumbing fixtures for all campus buildings

Research effectiveness of grey water reuse.

Continue searching for ways to decrease storm water runoff through mitigation techniques such as permeable pavement, rain gardens and green roofs.

Mid Term Actions:

Repair and replace infrastructure components that are inefficient, leaking or failing.

Codify storm water mitigation strategies

Eliminate bottled water on campus.