Employee Education and Sustainability

Prepared for Unum Group

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Forward

It is with great pleasure that our team presents Unum Group with this sustainability plan for employee education. We hope that these proposed initiatives serve as a guide to improve the lives of its employees at the workplace and at home.

Thank you to Paul Larkins, Director of Corporate Planning and Construction, and fellow colleagues Jill Henderson and Crystal Birch for their time and effort to provide our team with vital company information. Finally, we would like to thank Prof. William O'Brien of the Clark University Graduate School of Management for his guidance and support.

Introduction

The classic definition of sustainability was developed by the Brundtland Commission of the United Nations World Commission on Environment & Development. "Sustainable development seeks to meet the needs and aspirations of the present without compromising the ability to meet those of the future." (Introduction, 1) Unum Group has a history of incorporating sustainability into its daily operations. This includes the 2008 initiative to measure its carbon footprint worldwide, emphasizing recycling and switching to electronic paper transfer and its latest endeavor and affiliation with the U.S. Green Building Council.

Picture from http://www.worcestermass.org/city-initiatives/citysquare

In conjunction with the City Square revitalization project, Unum Group's new corporate headquarters will be a LEED Certified Silver exterior and Gold interior building. The construction of this type of building will have a dramatic impact on Worcester's downtown area as well as on the environment. This project has the support of many Massachusetts political and business leaders.

Worcester was also recognized as a "Green Community" in June 2010 (Introduction, 2). It is clear that local government and business leaders understand the importance of sustainability. In a way, these initiatives represent a top-down approach to advancing sustainability goals.

At the same time, however, companies are beginning to understand that employees are an essential component of incorporating sustainability into daily operations. According to the National Environmental Education Foundation, employees' environmental and sustainability knowledge has a major impact on their internal operations (Introduction, 3). Of 1,300 respondents,

➢ 78 % believe this knowledge will be an increasingly important factor in hiring decisions
➢ 75% educate their employees on the environment and sustainability
➢ 49% who have no formal education plans plan on creating one soon

The main goal of our sustainability plan is to identify the reasons an education plan is important, some of the best practices from other corporate engagement/educational programs, possible initiatives suitable for Unum's Worcester office, and provide a road map for future programs at other Unum locations.

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Why Is Sustainability Education Important?

Creating formal education plans is an important new component to sustainability initiatives. According to a Strandberg Consulting Report, which outlined the "Business Case" for sustainability, employers can receive benefits from formalizing a program (Why is Sustainability Education Important?, 1). These benefits include recruitment and retention of potential employees, increased company loyalty and overall productivity.

Recruitment: In 2009, the Harvard Business Review stated that three-fourths of new graduates entering the workforce believe sustainability performance as a key factor in selecting potential employers.

Retention: A GlobeScan Survey of 2006 found that 83% of employees from G7 countries cite Corporate Social Responsibility reputations as a factor in company loyalty.

Productivity: Author Bob Willard stated in his book, "The Sustainability Advantage" that employers could potentially see a 4% increase in productivity due to better work conditions and the overall organizational environment.

In addition, MBA programs throughout the nation have been increasing the number of classes related to sustainability and corporate responsibility. Clark University's Graduate School of Management has added six new courses to its curriculum related to sustainability. Finally, The Aspen Institute publishes an annual survey of the Global 100 (Why Is Sustainability Education Important?, 2). This is a list of the top management schools that incorporate sustainability into their curriculum. In the 2010 Global 100 list, the United States universities have seven out of the top ten rankings.

Unum's increased presence in downtown Worcester places Unum in the unique position to become a leader in sustainability in Central Massachusetts. According to the Worcester Survey we conducted, 67% of the respondents have worked at Unum for 10 years of more. As workers retire and replacements are sought, a sustainability education plan could provide a unique advantage to persuade new employees to work at Unum and live in the greater Worcester area.
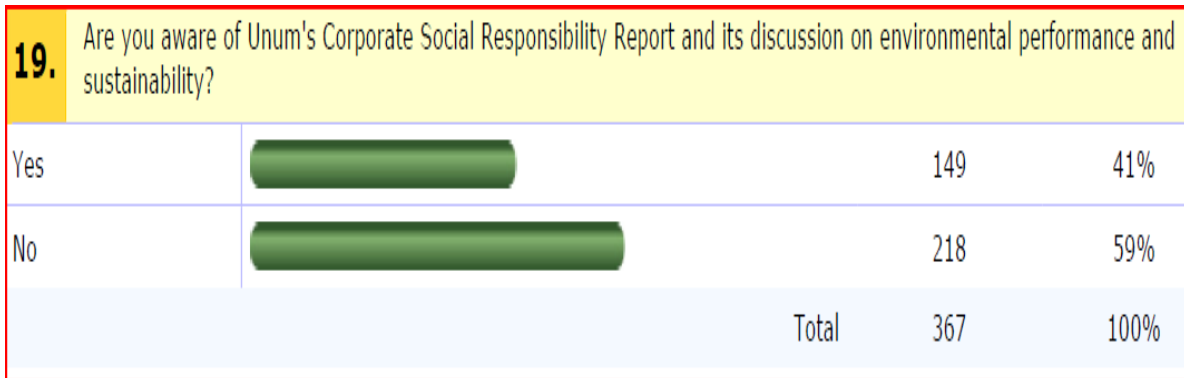
Worcester Unum Survey

As a first step in this process, an online survey was distributed to Worcester employees. This survey sought to identify employees' current knowledge of and interest in sustainability issues as well as Unum's programs. Approximately 370 employees responded to a survey which provided valuable information. The findings included the following:
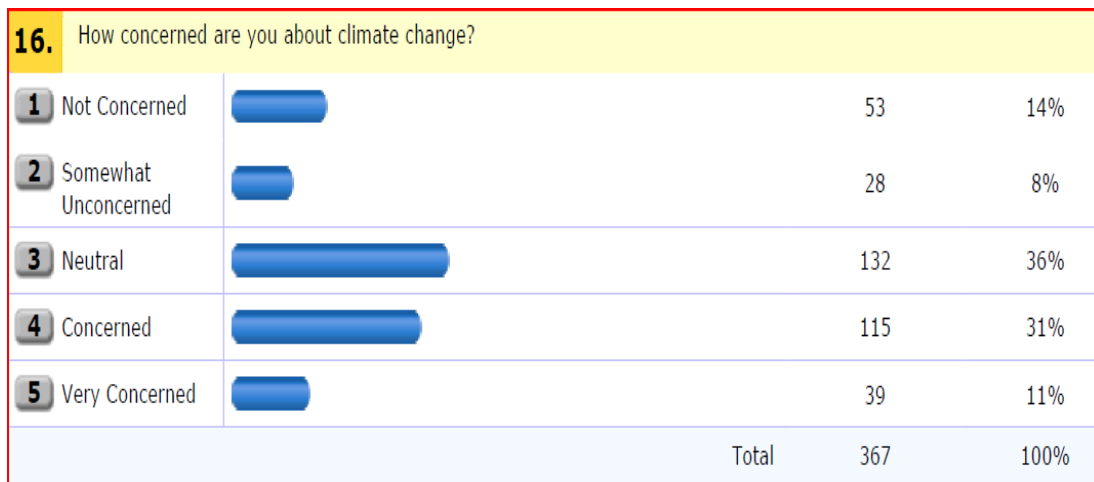
Volunteers: Seventy people were interested in participating in future sustainability projects at Unum.

Communication: Employees were interested in a variety of communication channels to obtain the knowledge.

Unum CSR Awareness: 59 % of respondents have limited knowledge of Unum's sustainability initiatives. Most were not aware of Unum's Corporate Social Responsibility reports.

19.	Are you aware of Unum's Corporate Social Responsibility Report and its discussion on environmental performance and sustainability?		
Yes		149	41%
No		218	59%
	Total	367	100%

Climate Change: 36% of respondents were neutral about the issue of climate change. 22% were either Somewhat Concerned or not at all.

16.	How concerned are you about climate change?		
1 Not Concerned		53	14%
2 Somewhat Unconcerned		28	8%
3 Neutral		132	36%
4 Concerned		115	31%
5 Very Concerned		39	11%
	Total	367	100%

There were many other questions on this survey including some specific demographics about Worcester employees and there opinions and interests on a variety of environmental and social issues. See Appendix 2 for more details.

In general, these conclusions are fairly typical of organizations in the beginning stages of employee education programs. Due to the dramatic increase of interest over the past decade, case studies have been created specifically related to employee education plans on sustainability. Brighter Planet, an organization that provides technological solutions to companies' sustainability challenges, conducted a study of such programs in February of 2010. They surveyed employees from a variety of industries and companies and the study came to the following conclusions

- ➢ Communication is extremely important in successful programs but is lacking in most.
- ➢ Most organizations view sustainability initiatives as an opportunity for competitive advantage.
- ➢ Employees' view of success varies by industry.
- ➢ Programs can include both "Top-Down" and "Bottom-Up" approaches.
- ➢ Social media and the Internet are important tools for successful education programs.

Most companies are confronting challenges on how to create an environment where employees want to participate in sustainability projects as well as how to communicate with them. The next section outlines Best Practices from "successful" education programs.

Employee Education Plans: Best Practices

As referenced in the Introduction, the National Environmental Education Foundation (NEEF) has conducted extensive reviews of corporate employee education programs. In their March 2009 report, NEEF surveyed managers for many companies ranging from small to large. The large companies included Cisco, Hewlett-Packard, Interface, Johnson & Johnson and Wal-Mart. Although these companies all have varying programs, the report found the following trends applicable to all (Employee Education Plans, 1).

- ➢ Successful programs often tie initiatives to the company's vision or mission. This helps create a corporate culture of sustainability.
- ➢ Companies used a variety of methods to reach employees including

  - ▪ Multi-departmental leadership
  - ▪ Employee-led "green" teams
  - ▪ Awards
  - ▪ Online Training
  - ▪ Mixed-Media Communications
  - ▪ Performance Incentives
  - ▪ Partnering with Third Party Organizations on Sustainability Issues

- ➢ Programs were initiated and managed by one department.
- ➢ Executives of the companies were seen as champions of sustainability programs.
- ➢ Programs had specific initiatives with specific metrics.

These are seen to be the most important best practices of employee education plans on sustainability from a top-down perspective. Best Practices and Lessons learned for each company can be found in Appendix 3 and 4.

Change Management: 8 Critical Steps

From conducting the survey and studying the best practices of other companies, we believe that increasing employee participation in sustainability programs is critical. According to John P. Kotter, businesses change the way they conduct business in order to deal with new challenges (Kotter 1995, 2). Following these eight steps should create more participative employee attitudes and behaviors toward sustainability.

8 Steps to Create Change

1) Establishing a Sense of Urgency

This involves an examination of market and competitive realities as well as identifying current or potential emergencies or opportunities. Worcester employees do not seem aware or especially interested in Unum Group's sustainability initiatives or other environmental issues and why they are important. Employees must see any sustainability initiatives as part of an overall strategy.

Action: Executives and department heads should increase communication related to sustainability. Recognize the fact that employees seem unaware of sustainability initiatives and discuss current or future initiatives in relation to the company's overall strategy.

2) Forming a Powerful Guiding Coalition

This step requires a group of people capable of leading a change initiative and working together as a team to accomplish this goal. As stated before, there are a few dedicated people working on the construction of LEED certified building, however, it appears to be contained in one department or at higher levels of the organization.

Action: Post a call for volunteers to join a "Green Team". This can ensure participation from various levels of the company and might produce truly unique ideas on how Unum can use sustainability to become more efficient or save money.

3) Creating a Vision

Identify the vision of the change initiative and develop tactics to accomplish it. As stated previously, many successful programs link their programs directly to the mission or vision of the company. Unum's mission is to be the leading provider of employee benefits products and services that help employers manage their businesses and employees protect their families and livelihoods.

Action: "Green Teams" can develop the vision for Unum Worcester's education program and distribute widely requesting feedback.

4) Communicating the Vision

Aggressively communicate the strategy to all important stakeholders and having the change leaders "lead" by example.

Action: Unum's leadership should not only communicate via email but also participate in Green Team and company wide activities related to sustainability.

5) Empowering Others to Act on the Vision

Identify obstacles or roadblocks and eliminate them. This step also involves fostering an environment for new and innovative ideas to accomplish the vision.

Action: Encourage employees to submit ideas on sustainability education. This will foster an environment of creativity. In addition, this should also ensure that the overall educational program will be sustained as more people become involved.

6) Planning for Short-Term Wins

Recognizing the short terms wins is important to continue the change initiative.

Action: Green Teams should publish education program objectives. This will show other employees that their colleagues are actively pursuing educational programs.

7) Consolidating Improvements and Producing Still More Change

This step includes hiring, promoting or developing employee skills and creating new projects or initiatives to support the vision.

Action: Green Team should announce new projects for employees to work on at Unum Worcester and at home. Possible initiatives include Unum going paperless and encouraging employees to reduce home costs by pursuing energy efficiency improvements. Green Teams should be encouraged to focus on their own projects of interest.

8) Institutionalizing New Approaches

>   Finally, outlining how the change impacted overall corporate success and continuing developing leadership.

Action: Make a standardized and tangible education plan that can be implemented in all Unum offices. Creating a handbook for education to be distributed to all departments would solidify its presence.

Educational Tools: LEED Headquarters

Initial Steps to Employee Education

The first step to educating Unum employees should include topics that have a direct influence on their lives. In this case, the new LEED Certified office building is the perfect starting point. The following sections include information, tools, and tactics to induce participation.

Source- LEED Core Concepts and Strategies Online Course

Information

The LEED Certification checklist contains six major sections. They are Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, and Innovation and Design Process. Every employee should understand how the new Worcester building will meet these criteria, why it is important these features be included in the building design and how these design features could be can impact their lives. The following sections will outline each section of the LEED Certification checklist providing basic educational points that should be included in the plan, the specific features of the Worcester building, and the environmental, economic or social impacts these changes will have on the employee.

Sustainable Sites

Key educational points
   1) Alternative transportation
   2) Carpooling
   3) Site Selection
   4) Development Density and Community Connectivity

The selection of a site is very important for building a LEED certified building. The Worcester office will receive three points for building in an urban setting. The criteria for this section are that the building cannot be constructed on land that has value as farmland and it cannot disrupt any type of body of water. Building in an urban landscape adds to the sustainability of the building because there is a preexisting infrastructure. Unum will not have to build any additional roads, or any other services. Worcester has many restaurants, bars, and other entertainment such as theater, museums and sports. People will not have to spend time and money driving home from work and then out to another city for dinner. Also, since it is already a developed area the construction will not negatively impact any natural landscapes or natural resources.

The final aspect of the Sustainable Sites section is the proximity to alternative transportation. This building will be located within half a mile of the Commuter rail line as well as two different bus routes. Taking public transportation and not driving cars to work every day can have a huge impact by reducing the amount of $CO2$ that is released into the air. Unum also has the Ride Share program to make it easier for employees to carpool. By carpooling, less pollution is emitted and less money is spent on gas. With gas prices so high it could make a big difference economically if employees shared a ride a couple of times a week. If employees want to be very ambitious the Worcester office will have bicycle storage and shower facilities for anyone wishing to ride a bike to work. Not only is this good for the environment, it will give the employee great exercise and keep the workforce healthy.

Why this is important

Selecting a site that interferes with the natural environment can have big impacts to the environment as well people. Certain wild areas can be important homes for endangered species. By constructing a building in an area that can be a habitat for another species can limit their ability to survive. The impacts to people could be if the site is too close to a body of water. If the water is polluted from the construction or operation of the building it could have a negative impact on the health of the people living in the area. Another problem for people is if the building is put on prime farmland. By reducing the amount of land used for food production the supply is limited and could actually affect the prices we pay in the grocery store. For the people that enjoy the outdoors, parks and recreation areas can be important place to relax and unwind. That is why ensuring the new building is placed in an area that does not disturb natural landscapes is very important to people.

Water Efficiency

Key educational points

1) Growth and development is contributing to unsustainable water usage
2) Water runoff from parking lots and other developments are preventing water tables from replenishing
3) Run off from farms and roadways can contaminate water
4) Cost of transporting water to cities and cost of treating waste water

Worcester Office

The office at City Square will have a target of 30% reduction in water usage over the 1992 Energy Policy Act baseline. In order to achieve this goal they will be using water saving devices

that can include water aerators, low flow toilets, low flow faucets, and dual flush toilets. Low flow toilets use only 1.6 gallons per flush compared to a standard toilet which uses 3.5 to 7 gallons per flush. With a dual flush toilet a separate button allows you to flush liquid waste using only .8 gallons of water. (Water Efficiency, 3) A low flow sink faucet will use less than 1.5 gallons per minute while regular faucets use of 2.5 gallons per minute. (Water Efficiency, 4) A water aerator in the bathroom faucets mixes air into the stream of water so it can reduce the flow of water by 1 gallon per minute. (Water Efficiency, 5)

Why this is important

It may seem that there is plenty of water in New England but it is still important to conserve water. According to the EPA website many communities are having more trouble supplying water and managing wastewater treatment facilities due to population sprawl and growth. The water tables and rivers are not keeping up with demand. Some communities have to implement water use restriction bylaws in order to reduce the consumption of water during the summer months. (Water Efficiency, 11)

Another issue that impacts people is the energy required to transport and treat water. Unless you have a private well your water must be pumped into your home. In California this water must be pumped hundreds of miles over some rough terrain. Big cities require building reservoirs to hold the water which disrupts natural ecosystems. Worcester's water supply comes from 10 different reservoirs that cover 40 square miles. (Water Efficiency, 6) In addition to limited supply and cost of transporting the water, the safety of the water must be monitored. The open reservoirs are at risk from farm runoff, landfill leachate, and highways. If any of these sources were contaminated then the impacts on Worcester would be devastating. It makes sense to conserve the water in order to prevent and protect the quality and safety of huge reservoirs.

In addition to the features outlined in the Worcester building, Grey Water Systems can be utilized to reduce water usage. Grey water is wash water, such as showers, sinks, and washing machines. When managed properly grey water can be used as a resource to irrigate gardens and landscapes. It can also be used to flush toilets. By using a grey water system there is a reduction in the use of fresh water, since grey water can be use for plants and gardens and there is less need to treat water in a sewer system. Please refer to the Resources Appendix for more detail on the types of systems and implementation information.

As a business and resident, reducing the amount of water is important for several different reasons. It not only reduces the impact on the environment that we live and work in but it also saves money a couple different ways. Most obvious is if we use less water our water bills will be reduced, however, money is also saved by the city if they have to treat less water or distribute less water to buildings. If the city is paying less money for the water services, the taxes can be reduced or at least free up money for other public projects.

Energy and Atmosphere

Key educational points

1) Lighting and energy reduction
2) Equipment and energy reduction
3) Energy use measurement

<u>Worcester Office</u>

The office will be built with automatic lighting systems that will automatically turn on and off the lights. The lights will have motion activated sensors that will be able to tell when the lights need to be on and when there is no motion detected the lights will automatically be turned off again. It will also be possible to adjust the amount of intensity based on the amount of daylight that is present. On a bright sunny day when a lot of light is coming through the windows the lighting system will reduce the amount of artificial light being produced.

"ENERGY STAR is a joint program of the U.S. Environmental Protection Agency and the U.S. Department of Energy helping us all save money and protect the environment through energy efficient products and practices." (Energy, 1) The Worcester office will use between 70% and 90% Energy Star products. Products must follow strict energy efficient guidelines in order to be certified, so you know you will be getting the highest quality product.

The IT department will be using energy efficient equipment and programs to help save money on energy bills. Unum will be using the "Night Watchman" software. This is a program that will be used to shut down computers at night and over the weekend when they are not in use. It will also automatically save any files that were open upon the shutdown and reopen them again when you start the computer. Night Watchman has several different settings to shut down the computers. It can be done at a specific time at night, or when a computer has become inactive for a period of time. There are also options to keep the computer from shutting down when it is still in use. (Energy, 2) The office will also use Blade servers which reduce the amount of space necessary, energy used to run them, and air condition used to cool them.

The new office will have software that will measure energy usage and track the results. This data will enable the exact source of energy usage to be pinpointed. Once the sources are known action can be taken in order to find ways to reduce the amount of energy usage and save money.

<u>Why this is important</u>

These innovations are very important because they can be implemented in homes as well as in office buildings. Households that switch to Energy Star certified appliances can save up to a third of the cost on their monthly electric bills. (Energy, 1) Motion detecting lights can be used in the home to turn the lights on when you get back from work. That way you don't have to walk into a dark room, but they will turn themselves off once you leave so you don't have to worry about wasting energy. The final point is the energy tracking systems.

National Grid will be implementing a Smart Grid Pilot program in the city of Worcester. A smart grid is similar to the measuring and tracking system that will be used in the Worcester office building. Every house in Worcester will be equipped with a two way communication device that will relay information about the performance of the houses electricity usage back to National Grid. National Grid will also be able to send information about pricing and your usage to a computer in your household. This information can help you understand exactly where you are using the most energy and ways to reduce that energy. Appliances can be purchased that have computer chips in them so that in conjunction with the smart grid system people can control their home appliances from any network computer. This will allow people to turn the heat on in their house 20 minutes before they get there or program the dishwasher to run when the prices are at the absolute lowest. It will also help National Grid identify power outages and therefore reduce inconvenience to their customers. This will enable people to understand their energy use and find ways to reduce the cost. (Energy, 3)

Materials and Resources – this section includes recycling, and building/furnishing materials

Recycling

Key educational points

1) Importance of recycling
2) Description of the designated area
3) Complete listing of all items that can be recycled

Worcester Office

"Provide an easily accessible area that serves the entire building and is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, corrugated cardboard, glass, plastics and metals." (Recycling, 1) The new Worcester building will have an area located on every floor with a series of containers labeled with the appropriate types of materials. There will be a separate bin each of the materials required by the LEED certification as well as a bin for batteries, light bulbs/ballasts, and miscellaneous office supplies and equipment. In addition to these items all outdated computer equipment will be recycled, used toner cartridges, and the cafeteria will use as many recyclable products as possible.

Each collection bin should have a sign that clearly states what items are acceptable, a list of common office items that can be recycled, and clear pictures of appropriate items. The picture above is a good example of clear pictures describing what items should be placed in each bin.

Why this is important

A major reason why recycling is important includes the amount of valuable resources lost if materials are put into a landfill. By using recycled materials, "virgin" materials do not need to be mined, which is much more energy intensive than using recycled materials. For example using recycled aluminum to make new products takes one twelfth the energy than using raw materials. (Recycling, 3)

Without recycling, waste ends up in landfills or incinerators. Landfills can smell bad and could make living nearby a very unpleasant experience. They also emit noxious gases and chemicals that could make their way into water sources which would compromise the health of the residents of that neighborhood. Incinerators can also release toxic gases into the air which can also cause health problems.

To go a step further, waste can be reduced by composting organic materials that cannot be recycled. Items such as fruit and vegetable scraps and food contaminated paper, like plates and pizza boxes can all be composted instead of thrown into the landfill. The benefit to composting is that it provides a nutrient rich soil amendment that can help grow fresh vegetables in home gardens. It is possible to reduce all of our waste to items that can be recycled or composted. Whole Foods designs some of their packaging to be waste neutral, meaning it can either be recycled or composted. Some of the stores also collect their food waste for recycling in order to reduce as much waste as possible.

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Building and Furnishing Materials

Key educational points

1) Source of raw materials
2) Recycled Content
3) Regional Materials
4) Certified Wood

Worcester Office

The Worcester office will be constructed using building materials that are made from 10% to 20% recycled content. Encouraging large construction operations like this will increase the demand of building products made from recycled content. All of the wood used in the building will be FSC (Forest Stewardship Council) certified. The FSC is an independent non-profit organization that promotes the responsible management of the world's forests. This organization was established to combat the global deforestation by communicating globally to define environmentally, socially and economically viable management practices. The FSC also develops the tools and resources to carry out these practices. (Building and Furnishing Materials, 4)

Why this is important

Ensuring that wood is harvested according to the FSC regulations is very important because of the alternate methods. Clear cutting is a common method of harvesting wood. In this method all of the trees in a certain area will be cut down and cleared out regardless of whether they are the appropriate size. On a mountain where a forest once existed will be completely bare. This ruins the landscape for hikers and other people that enjoy the scenery but it also causes some other problems. By ruining a natural habitat the animals that were living there will have to find someplace else to go. This could cause certain animals to come into towns and scavenge for food there. Hunters would see a decrease in the amount of animals available to hunt. In some places in the world they rely on the forest for survival and by clear cutting the forest their lively hood is taken away. (Building and Furnishing Materials, 5)

Another option for sustainable building materials is to purchase within the region of the construction site. This can include either materials that were extracted locally or were manufactured locally. The standard for LEED certification is the material has to be from within 500 miles of the site. This supports the local economy and may even provide business to a company where a family member works. It also reduces the impact from transportation. It takes a lot of fuel to truck lumber in from the west coast.

Increasingly, renewable materials are another sustainable building material that can be used to lower the overall impact of the building. These are plant based materials that can be grown and harvested in less than ten years. Some examples of this include bamboo, straw, and natural linoleum such as Marmoleum. The downside to this is that rapid renewable materials cannot be grown everywhere so the impacts from shipping must be taken into consideration. For example most of the bamboo that is used is grown in China. (Building and Furnishing Materials, 6)

Indoor Environmental Quality

Key Educational Points

1) Types of contaminants
   - Radon
   - Mold and other Allergens
   - Carbon Monoxide
   - Volatile Organic Compounds
   - Legionella
   - Asbestos
   - Carbon Dioxide
   - Ozone
   - Lead
   - Tobacco Smoke
   - Particulates

2) Sources of contaminants
   - Combustible sources: oil, gas, wood
   - Building Materials, carpets, and furniture
   - Insulation
   - Perpetually damp areas
   - Cleaning materials
   - Heating and cooling systems
   - Pesticides

3) Methods to Prevent
   - Plants
   - HVAC
   - Purchasing no VOC products

Worcester Office

The main feature of the Worcester office building used to control the indoor environmental quality will be the Heating, Ventilating, and Air-Conditioning system. The most state of the art HVAC system will be used in the new Worcester building. These systems keep the buildup of indoor contaminants to a minimum by continuously ventilating the air. It will bring in fresh air from the outside and push contaminated air out. The system will also use filtration devices that will clean out any contaminants. The Worcester system will not contain any ozone depleting chemicals. Some refrigerants emit ozone during operation which is counterproductive since ozone is a lung irritant.

Another method that will be used to control the indoor environmental quality is to refrain from using the products that produce the contaminants. In order to reduce VOCs in the building the carpets and carpet padding will meet the Carpet and Rug Institute's Green Label Plus standard. Adhesives, sealants, paints and other chemicals will all be below VOC limits designated by the LEED certification. The wood and furniture will not include materials that cause contaminants to be released into the air.

Why this is important

Sick Building Syndrome is a term used to describe a situation when occupants of a building become uncomfortable or develop acute health problems due to spending too much time indoors. Building Related Illness is similar except that the occupants develop diagnosable illnesses due to the quality of the indoor environment. These illnesses are caused by many everyday items in homes that release particles and gases into the air. A major cause of problems is having improper ventilation. This prevents fresh outdoor air from replacing the contaminated indoor air. (Indoor Environmental Quality, 2)

Heating, Ventilating, and Air-Conditioning or HVAC systems can be used to manage the quality of the air within a building. When these systems are used properly the indoor air quality can be improved. The air that is brought in from the outside is usually cleaner than the indoor air.

Anything that is in the outside air is filtered before entering. This fresh air replaces the polluted indoor air. (Indoor Environmental Quality, 4)

Another way to reduce the amount of indoor pollutants is with use of house or office plants. They are able to reduce the concentrations of VOCs and carbon dioxide. (Indoor Environmental Quality, 3) Rather than trying to remove some of the contaminants it is better to not introduce them in the first place. There are alternatives to buying goods that are the sources of indoor pollutants. For example cleaning products, furniture, carpets and paint all have no VOC options which will eliminate many troubles from the beginning. Please see the references section to find more information on these goods. Some of these items will be used in the new LEED certified building. (Indoor Environmental Quality, 1)

Innovation and Design Process

This section of the LEED certification was set up to enable design teams to go beyond the designated requirements. It allows the team to find new innovative ways to solve problems that are not constrained by the five previous sections. The following are a few of the projects that the Worcester office will be incorporating into the design and function of the building.

Green Housekeeping

Unum has already implemented a Green Cleaning Program that makes the office environment a healthier safer place and reduces the impact on the environment. Green cleaning products do not include any chemicals that will be harmful to people or animals, are made from plants and are biodegradable. These products reduce VOCs and are better for health. Since they are biodegradable they make the water treatment an easier and cheaper process.

Dirtt Walls

The interior office walls will be made using products from the Dirtt Company. The office will be made from non-permanent materials. In most buildings permanent walls are constructed which uses a lot of resources. Then if a new occupant comes and wants to change the layout of the office the walls must be knocked down and the debris thrown away. With Dirtt products the walls can be rearranged into any layout that is wanted. The materials are made with materials that either emit no VOCs or are low VOC. Everything is recyclable and built to minimize waste and energy use.

Green Energy

Many innovative design features will be used to reduce the energy required to operate the office building in Worcester, however, the building will still require a certain amount of energy to operate. Instead of using coal to create the electricity necessary, Unum will be purchasing 100% of the electricity to run the new building from sustainable sources such as wind. Green power is part of the LEED certification in the Energy and Atmosphere section, but it only requires 50% of the energy to be from renewable sources. Unum is going above and beyond by purchasing 100%.

Tools

Signage

In other LEED certified buildings, such as the Mass Audubon Society's Wellfleet Bay Wildlife Sanctuary, plaques are used throughout in order to highlight some of the major sustainable designs that were used. Here are some examples of the plaques that were used in the Wellfleet Bay Wildlife Sanctuary. We recommend that Unum create plaques for the following items that will be used in the Worcester office. These plaques should contain a brief description of the technology, an interesting statistics that will make an impact, and a link to find more information on how this technology can be used in personal homes.

> ➤ Sustainably harvested Wood
> ➤ Low/no VOC carpets, paint, etc…
> ➤ Water saving faucets or any other water saving system ex: grey water
> ➤ Recycling stations
> ➤ Efficient lighting bulbs and/ or turning off light switches
> ➤ Active/passive lighting

Interactive Educational Displays

According to the survey of Unum employees, people are interested in a variety of forms of communication. We believe that a series of interactive education displays throughout the mock office will make an interesting addition to more standard forms of communication. The employees will be able to manipulate the display and see how the technology is more sustainable. Please see the Interactive Displays section in Appendix 1 for tips on constructing displays. The following are displays that we suggest:

Workstation Energy Usage - Create two workstations side by side that are hooked up to a working electric meter. One station would have inefficient office equipment like standard light bulb lamp, and a desktop computer. The second station would be set up with a laptop computer and a lamp with a compact fluorescent light bulb or LED light bulb. You would be able to see how much energy they use by comparing the meters. A watt hour meter can be purchased for around $20 – $30.

Interactive Light Display - A simplified version has three light bulbs hooked up to one meter. The three would be a standard light bulb, then a compact fluorescent light bulb and a LED light bulb. There would be a switch that would allow you to turn each bulb on individually and then you would be able to see the meter turn at a different rate. A pre-made version of this can be purchased from http://www.windstreampower.com or http://scienceshareware.com.

Smart Grid - National Grid has submitted a proposal to the Massachusetts Department of Public Utilities to build and operate a Smart Grid Pilot system in Worcester. According to the website the pilot system will allow the electric system to transmit information in two directions. The system allows customers to see exactly how much energy they are using and where it is being consumed. This allows the consumer to control how they consume electricity. (Energy, 3) William Pratt the Program Director from National Grid has offered to work with Unum to develop a working display and a presentation to the employees on the Smart Grid system. His email address is William.Pratt@us.ngrid.com.

Compost Bin - A real or fake worm compost bin can be set up near the cafeteria. With a fake bin a clear plastic bin can be used so that you can see the different layers. On the bottom layer you would be a few inches of soil that will imitate the finished compost that the worms created. Mixed into that layer you would add plastic worms to show where they usually reside. On top of the soil and worms is where the food scraps would go. These are spread out evenly across the entire container but not mixed into the soil. The worms come from the bottom and eat the food so it does not need to be mixed. The rest of the container would be filled with shredded newspaper. Around the bin you would display literature on how to build your own worm bin for home use or other types of systems. Please see the Appendix 1 for brochures and handouts that can be used.

Active/Passive Lighting - There are several different methods for using the sunlight as the main source of lighting for a building. The most obvious is windows; however they will only allow light to penetrate approximately 15 feet into the building. A solution is light shelves. These are horizontal surfaces that are placed above the window to reflect the sunlight into the center of the room. In the summer the sun is higher in the sky so not as much sunlight will enter the building directly. With the light shelf the sun will reflect off of the horizontal surface and then reflect off of the ceiling which will in turn light the entire room. The ceiling can be sloped slightly to guide the light all the way into the back of the room. There are methods other than windows to utilize sunlight to light interior rooms. Skylights are the most simple since they work just like a window only on the ceiling. There are some variations on this in case the building has multiple floors. One method is the Solar pipe. It works like a skylight but instead of opening directly to the top floor a pipe made of reflective material directs the light down to lower floors. There are several websites in the Lighting section of the Appendix 1 that show examples of different kinds of active and passive solar lighting.

These methods can be demonstrated by constructing a model building and a lamp that acts as the sun. The lamp will be fixed to an arm that rotates to simulate the time of day and year. The model home would be open to one side so you can see inside and observe where the shadows fall. With a couple different designs you can demonstrate how the light is affected by adding a light shelf or different kinds of sky lights.

Events

Family Day at Ecotarium – Ecotarium is a science museum located at 222 Harrington Way, Worcester, Massachusetts 01604 and has indoor and outdoor activities and exhibits. This is a great place for families to come and learn about science, nature and space. Many of the exhibits are interactive so everyone can enjoy a hands-on learning experience.

Ecotarium offers group rates for parties greater than 10. They also offer the option of renting out space where lunch can be served. This is a good location for Unum to have a Family Day where employees could bring their children and learn about the science used to design the new LEED certified building.

Intranet Site

As another tool for learning a special section should be added to the intranet site that focuses on the employees and how the new building will affect them. Below are some suggestions on items that should be included in the intranet site in order to get more employees to log into the website and look through the materials.

Tactics

Personal Carbon Footprint

According to the Global Footprint Network if everyone lived the same lifestyle as that of the average American, then we would require 4.5 planets to support everyone. (Carbon Footprint, 1) Developing countries are getting closer to this lifestyle so it is important to make sure we make some changes. The carbon foot print calculator is a good way to understand exactly what impact our actions have on the world around us. If you think you are living a sustainable lifestyle then the calculator is a good check to see where you fall. It can also provide some suggestions on how to improve your rating and have less of an impact on the planet.

Once the test has been taken it would be interesting to see how you compare next to coworkers. It would be fun to post the results so that everyone can see. In order to get more people involved upper level management should be the first to take the test and post their results. Then a comparison can be done between departments or even between different regional offices.

In Appendix 2 there are two different online calculators. The Footprint Network (http://www.footprintnetwork.org) has a fun interactive application for testing your foot print. There is also an extensive website that has more information. My Footprint (http://www.myfootprint.org/) does not have an extensive website but they are able to customize the quiz to fit your website. There is a fee associated with this application but they will add questions, links, and other features that will relate to your company.

Challenges

Have a day where the entire company is challenged to make a change that was included in the educational materials. A "Ride your bike to work day" could be scheduled where any employee that lived within five or ten miles from the office would be encouraged to ride to work. This would not be feasible for everyone, but someone might find that once they tried it they really liked it and will keep doing it in the future. This could also include challenging employees to come up with a new idea for an educational tool. This would get people involved not only in using the materials but also doing the research and creating their own.

Quizzes

In addition to the carbon footprint test there could be a monthly quiz on the materials that are on the Intranet site. Each month a new quiz could be posted dealing with each of the six LEED categories. Please see Appendix 5 for a sample quiz on water efficiency. The results can be posted the same way the personal footprint but the winner would get some recognition. A small reward could be given like a gift card to a local restaurant for lunch. The prizes could potentially relate to the subject matter of the quiz.

Content Updates

Another way to encourage employees to visit the Intranet site would be to continue to add new content and offer helpful tips on how to use the information outside of the office. The updates could be announced by the CEO each month in a short email. The email could contain information about the Intranet site as well as updates on the progress of the new construction.

Future Initiatives

Greening Employees Homes

Unum is planning a Energy Awareness Program to promote conservation awareness of employees for both home and office. Employees can target "low hanging fruit" in their own homes by making their homes more energy efficient. This will enable them to reduce their own carbon footprint but also save on energy bills.

> ➢ National Grid's new Smart Grid could be a substantial change for many central Massachusetts residents. A representative from this organization is open to giving a presentation to Worcester Unum employees on how they could save money when this new program is rolled out.

> ➢ Mass Save is an initiative sponsored by

Massachusetts' gas/electric utilities and energy efficiency service providers. This initiative works closely with the Department of Energy Resources to provide a variety of services, incentives, trainings and information promoting energy efficiency. Services include Home Energy Assessments and coupons and rebates for Energy Star appliances among many others.

Carpooling

Carpooling can have several benefits for the employee and the employer. For the employees the incentives include; cost-sharing, less wear and tear on vehicles, time savings in regions with HOV lanes, and the ability to talk, eat, sleep, or read while commuting. For the employer the incentives include; fewer parking spaces required, lower carbon footprint for the company, less employee stress and improved productivity. (Carpooling, 1) According to the Unum employee survey most people are unable or unwilling to carpool for various reasons. As a future initiative Unum could survey other regions to see if carpooling would be more feasible. Some of the following incentives could be attempted to determine if they would increase employees willingness or ability to participate in the rideshare program.

Some of the common incentives for rideshare programs are as follows. (Carpooling, 1)

- ➢ Preferred parking
- ➢ Reduced cost for parking
- ➢ Parking cost taken as a pre-tax expense
- ➢ Monthly prize drawings for carpoolers
  - ▪ Ex: for each day a person carpools they are entered into a drawing, the more they carpool their chance of winning increases.

Unum employees cite carpooling as inconvenient and finding someone to share a ride with can be challenging. Appendix 1 lists several rideshare matching websites that have commuters in the Worcester area. Unum could link their matching software to the external websites, which would increase the likelihood of finding people on the same schedule.

Another solution to the issues faced by Unum employees is to have a "Guaranteed Ride Home Program". In cases where an employee must work late, or rush home because a family issue, this program would provide alternate means for the people left behind. This could be as easy as paying for a taxi. (Carpooling, 1)

The following are companies that have successful carpooling programs and what strategies they use to entice employees to participate. This information was taken from items one and two in the Carpooling section of Appendix 2.

Nike: Reserves parking spaces for carpool participants. In addition, they have monthly and quarterly drawings. Nike spends $23,000 each year on prizes for carpoolers. Security guards distribute tags to carpoolers to prove the car had more than one occupant. A matching program for the city of Portland reduces the need to rely on in-house program and provides employees with more access to other carpoolers. Finally, they provide employees with written guidelines.

Bell: A third party organization, The Carpooling Network, manages Bell's carpooling initiative. It has over 40 partners which allow for a larger pool of people looking to share rides. Additional software eliminates hassle of searching for a match and employees simply

enter the availability and destinations they require. Matches are then automatically suggested.

Working Wirelessly

Unum has invested in virtual meeting technology including Video Conference, Web Cams, Data Exchange, WebEx, and Teleconference. These tools offer many benefits to both the employee taking advantage of these tools and Unum itself. Unum can take advantage of these benefits by educating the employees about the tools available and the benefits of working wirelessly. The benefits to the employees and to the company were taken from sections one and two in the Working Wirelessly section of Appendix 1.

The benefits to Employees are as follows:

➢ Better work-life balance for employees
➢ Saves employees money on commuting cost
➢ Increased flexibility
➢ Increased job satisfaction
➢ Shows Unum trusts employees which increases work satisfaction

The benefits to the Company are as follows:

➢ Reductions in operating expenses
➢ Increased employee productivity
➢ Increased quality contact with customers
➢ A reduction in total carbon footprint of the company
➢ Retention and recruitment tool: working remotely allows company to higher highly qualified individuals that have geographical constraints or time constraints. Giving the flexibility to employees to work from home can reduce employee turnover by as much as 18%.
➢ Decreased absenteeism
➢ Increase moral

Working from home can also increase participation in the rideshare program. Employees would be able to leave at the specified time for their carpool, but complete any unfinished work once they get home.   The following are companies that have successfully implemented telecommuting programs and the strategies they use.

Noblis: Employees work from home up to three days a week. They sign voluntary agreements to ensure no loss of communication between employees, clients and managers. The application process to participate in this program ensures that only reliable and qualified employees will work from home. These employees have monthly reviews in order to track performance and evaluate the success of the program. (Working Wirelessly, 3)

Aetna: Allows employees the option of part time telecommuting and the program enjoys active support from senior level managers. Special teams devoted to developing strategies to best use telecommunication devices continually improve the experience for the employee and enable the employee to be as efficient as in the office. Teams made up of some telecommuters and some not and the program helps to build corporate culture of connectedness of telecommuters (Working Wirelessly, 4)

<u>Paperless</u>

Unum is committed to a few paper reduction initiatives, mostly to promote overall online application use instead of printing. This can be seen in its customer service, employee payment and office operation operations.

In order for Unum to be completely paperless, there is still a need to determine what activities in office consume paper and in what amount. Then try to eliminate some use of paper whenever there is an alternative, e.g. online. For the unavoidable use of paper, it is still important to remind employees to proof read and preview their documents before printing. The benefits include saving money on paper purchase, reducing indirect carbon footprint and improving efficiency and accuracy of work with electronic tools. The following are a few software options to consider which could be used companywide or by employees at home:

GreenPrint: This software highlights and removes unwanted pages from printing (such as pages that print due to an unnecessary URL). It also tracks the pages you print and the money that is saved by doing so. It can create PDFs with one click and different versions are available at www.printgreener.com (Paperless 1). Other versions include a business, home and free version of the software. The website also includes free tutorials on how to use the software.

Basecamp: This is a sharing and collaboration software that can facilitate communication between team members and clients. Basecamp provides to do lists, messages, milestones, collaborative documents, chat, time tracking, and a shared file service.   There is a 30 day free trial service and can be found at http://basecamphq.com/tour/ (Paperless 2). A free alternative to this program is Google Docs.

For the unavoidable paper usage, a sustainable paper tutorial can be found at http://www.celerydesign.com/ecological-guide-to-paper/ (Paperless 3). Here is a list of alternatives is paper use is necessary paper:

- ➢ 100% Post-Consumer Waste (PCW)
- ➢ Processed Chlorine Free (PCF)
- ➢ Uncoated
- ➢ Forest Stewardship Council (FSC) Certified
- ➢ Made by renewable energy sources (wind, geothermal, solar, etc.)
- ➢ Treeless paper like bamboo, hemp and kenaf (if readily available locally)

These are possible initiatives and employee led Green Team should be encouraged to create other programs that are of interest to their colleagues.

Performance Metrics and Reporting
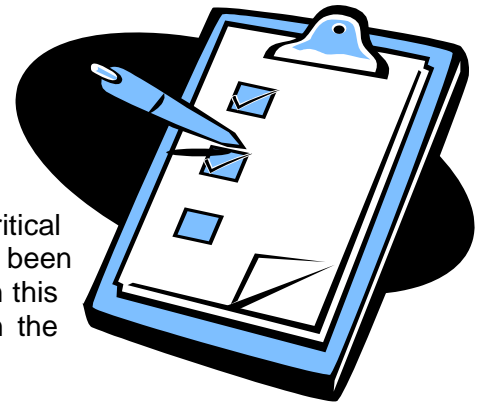
As noted earlier, companies cite performance metrics as a critical success factor in employee education programs. This has also been cited as the most difficult item to measure. Fortunately, research in this area is growing and perhaps more strategies will be identified in the future.

Recommendation: We recommend using the LEED Educational Tool as the Performance Measure. As mentioned in the Quizzes section, we have drafted a sample quiz for employees to take to measure effectiveness of all communication and education activities. This quiz is located in Appendix 5.

Roadmap

In conclusion, we feel that this educational program can be implemented at other Unum locations. Similar communication methods and educational tools can be used, but the content should be tailored to the interests of the employees in each region. The LEED outline may not be of interest to employees that do not work in a LEED certified building. The following are the steps that should be taken:

1) Survey employees to gather information related to knowledge level and interest.
2) Engage regional management in the process.
3) Create Green Teams.
4) Develop the vision and distribute widely for feedback and finalize.
5) Choose initiatives that match regions' mission and education goals.
6) Create communication strategy to engage employees.
7) Continue developing new ideas for future projects.

Appendix 1: Resources

Introduction
1. United Nations World Commission on Environment & Development, 1987
2. http://www.worcesterma.gov/announcements/city-of-worcester-designated-a-green-community
3. National Environmental Education Foundation: Business & Environment Program (2009). "The Engaged Organization: Corporate Employee Survey Findings and Case Study."

Why is Sustainability Education Important?
1. Strandberg Consulting (2009). "The Business Case for Sustainability." 1-10.
2. http://www.beyondgreypinstripes.org/rankings/index.cfm

Worcester Unum Survey
1. Brighter Planet (2010). "Employee Engagement Survey 2009: An analysis of the Extent and Nature of Employee Sustainability Programs."

Change Management
1. Kotter, John P. (1995). "Leading Change: Why Transportation Efforts Fail" Harvard Business Review. 1-10.

Employee Education Plans
1. National Environmental Education Foundation: Business & Environment Program (2009). "The Engaged Organization: Corporate Employee Survey Findings and Case Study."

LEED General
1. http://www.usgbc.org/ShowFile.aspx?DocumentID=5546 – LEED Requirements explained

Sustainable Sites
1. http://www.uitp.org/publications/brochures/better/pics/solutions-en.pdf - Slides on site selection

Water Efficiency
1. http://www.epa.gov/NE/eco/drinkwater/water_conservation.html - Water conservation in New England
2. http://www.greenbuildingadvisor.com/blogs/dept/energy-solutions/saving-energy-conserving-water - Importance of water conservation
3. http://greenliving.lovetoknow.com/Water_Saving_Devices - Water saving devices
4. http://www.epa.gov/WaterSense/products/bathroom_sink_faucets.html - Water saving devices
5. http://eartheasy.com/blog/2009/01/saving-water-in-the-bathroom/ - Tips on saving water
6. http://www.epa.gov/WaterSense/calculate_your_water_savings.html - Tool to calculate water savings
7. http://www.greywater.com/ - Description of grey water system
8. http://www.bracsystems.com/facts.html - Grey water system company
9. http://www.worcesterma.gov/uploads/84/c0/84c0e2d82fdbdae8843b5b7d9d77f2af/water-quality-report-2009.pdf - Report on the quality of Worcester's water
10. http://ga.water.usgs.gov/edu/earthgwaquifer.html - Ground water science

11. http://www.mma.org/index.php?option=com_content&task=view&id=2793&Itemid=83 – Summer water conservation
12. Stein, Melanie. "Making a splash in New England water management: CLF works to shift the traditional water paradigm.(Conservation Law Foundation)." *Conservation Matters* Autumn 2006: 1+. *Academic OneFile*. Web. 1 Nov. 2010. – Article on water conservation in New England

Lighting
1. http://www.lrc.rpi.edu/programs/futures/lf-daylighting/index.asp - Daylighting Technologies
2. http://www.wbdg.org/resources/daylighting.php – Daylighting Technologies
3. http://lighting.sustainablesources.com/ - Daylighting and energy efficient lighting
4. http://www1.eere.energy.gov/femp/pdfs/tf_hybridsolar.pdf - Hybrid solar lighting
5. http://www.bestofbuildingscience.com/pdf/NEWDES1.PDF – Active Daylighting
6. http://www.solatube.com/residential/what-is-daylighting/index.php – Daylight product for home use

Energy
1. http://www.energystar.gov/index.cfm?c=about.ab_index – Energy efficiency rating
2. http://www.1e.com/softwareproducts/nightwatchman/index.aspx - Power management software
3. http://www.nationalgridus.com/masselectric/a3-1_news2.asp?document=4003 – Smart Grid pilot program

Recycling
1. http://www.p2pays.org/ref/11/10461.htm - Basic information on recycling
2. http://www.epa.gov/osw/conserve/rrr/recycle.htm – Basic information on Recycling
3. http://www.recyclezone.org.uk/iz_whybother.aspx – Basic information on Recycling
4. http://www.worcesterma.gov/dpw/trash-recycling - City recycling website
5. http://greenliving.lovetoknow.com/Why_is_Recycling_Important - Importance of recycling
6. http://www.green-buildings.com/content/78782-post-consumer-vs-pre-industrial-recycled-content-whats-difference – Post Consumer/Pre Consumer recycled content explained
7. http://www.worcesterma.gov/dpw/seasonal-information/yard-waste-drop-off/composting-information - City compost website
8. http://www.cityofboston.gov/publicworks/RecyclingandSanitation/composting.asp

Building and Furnishing Materials
1. http://www.goodguide.com/ - Excellent product rating on Health, Environment, and society
2. http://www.greenopia.com/USA/ - Product, company and state ratings
3. http://www.ecohomemagazine.com/news/2010/08/product-review-recycled-content-tile.aspx - Tiles made from recycled content
4. http://www.fsc.org/about-fsc.html - Sustainably harvested wood
5. http://www.nrdc.org/land/forests/fcut.asp – Information on Clear-cutting
6. http://www.green-buildings.com/content/78325-rapidly-renewable-materials-leed-mr-credit-6-what-are-they - Renewable building materials

Indoor Environmental Quality
1. http://www.epa.gov/iaq/voc.html - Indoor air quality
2. http://www.epi.state.nc.us/epi/air.html - Sick building syndrome
3. http://en.wikipedia.org/wiki/Indoor_air_quality - Indoor air quality (Maybe delete)
4. http://www.cdc.gov/niosh/topics/indoorenv/BuildingVentilation.html - HVAC information

5. http://www.slideshare.net/ccseerc/passive-solar-design-presentation – Slide show on passive heating

Interactive Display
1. http://www.energystar.gov/ia/products/event_toolkit/Interactive_Displays.pdf - Tips on building interactive displays
2. http://www.nyc.gov/html/nycwasteless/html/resources/promo.shtml#composting – Compost handouts

Carbon Footprint
1. http://www.footprintnetwork.org/en/index.php/GFN/ - free Footprint calculator
2. http://www.myfootprint.org/ - customized Footprint calculator for a fee

Quizzes
1. http://www.mnn.com/eco-biz/building-products-supplies/sponsor/test-your-leed-knowledge
2. http://www.energystar.gov/index.cfm?fuseaction=bygtw.showSplash – Energy IQ quiz

Carpooling
1. http://www.commutesolutions.com/letsride/Resources/commuterchoice/carpool.pdf - EPA analysis on incentive programs, Description of Nike's program
2. http://www.bell.covoiturage.ca/A_Propos-fr.html - Description of Bell's program
3. http://www.blrgreenteam.com/2010/09/key-components-of-an-employee-carpooling-program.html - Carpool information
4. http://www.ridebuzz.org/ - Independent ride share program

Working Wirelessly
1. http://www.megapath.com/pdfs/wp_implement_telecommuting_program.pdf - White Paper on telecommuting
2. http://www.jobs.sc.gov/OHR/telecommuting/Suggestions-Telecommuting.pdf - Suggestions for implementing successful program
3. http://www.noblis.org/NewsPublications/Publications/TechnicalPublications/SigmaJournal/Documents/Sigma_GFE_Modern_Telecommuting.pdf - Analysis of Noblis' telecommuting program
4. http://www.telecommutect.com/employers/employers_cases_aetna.php – Aetna's program

Paperless
1. www.printgreener.com
2. http://basecamphq.com/tour/
3. http://www.celerydesign.com/ecological-guide-to-paper/

Videos
1. http://www.massaudubon.org/renewableenergy/featured_sanctuaries.php#wellfleet – Video on the Mass Audubon Society's Wellfleet Bay Wildlife Sanctuary building
2. http://cltc.ucdavis.edu/content/view/782/404/ - Video on lighting

Global Climate Change
1. http://gregcraven.org/ - Video about Climate Change looked as a risk management issue
2. http://www.worldwatch.org/files/pdf/CCRG.pdf – Comprehensive climate change document

Appendix 2

Unum Worcester City Square
Sustainability Survey November 2010

zoomerang

Results Overview

Date: 11/10/2010 6:13 AM PST
Responses: Completes
Filter: No filter applied

2.	How long have you worked for the company?		
I am a new employee		5	1%
Less than two years		7	2%
Less than five years		36	10%
Less than ten years		72	20%
10 or more years		249	67%
	Total	369	100%

3.	Please tell us to which group you belong (if more than one group applies please select the one which you consider your primary affiliation).		
Executive/Owner		5	1%
Management		50	14%
Customer Service		38	10%
Operations		152	42%
Sales & Marketing		1	0%
Information Technology		22	6%
Human Resources		1	0%
Other, please specify		95	26%
	Total	364	100%

4.	Are you:		
Full Time		348	95%
Part Time		18	5%
	Total	366	100%

5.	How long is your typical one-way commute?		
Less than 5 miles		60	16%

5 to 9 miles		70	19%
10 to 14 miles		62	17%
15 to 19 miles		53	15%
20 to 24 miles		43	12%
25 or more miles		77	21%
	Total	365	100%

6. How much time do you typically spend commuting (one-way)?

Less than 15 minutes		72	19%
15 to 19 minutes		62	17%
20 to 24 minutes		47	13%
25 to 29 minutes		50	14%
30 to 44 minutes		80	22%
45 to 60 minutes		49	13%
More than an hour		10	3%
	Total	370	100%

7. What is your primary mode or method of transportation?

Driver of car		313	85%
Passenger in car		5	1%
Dropped off and picked up from Unum by car		2	1%
Driver of truck, van or SUV		41	11%
Passenger in truck, van or SUV		1	0%
Dropped off and picked up from campus by truck, van or SUV		1	0%
Motorcycle, moped		0	0%
Public Transportation		2	1%
Bike, rollerblade, jog, walk		0	0%
Other, please specify		5	1%
	Total	370	100%

8. If you commute by private vehicle, what would you estimate to be the vehicles average fuel efficiency?

Less than 15 miles per gallon		24	7%
15 to 19 miles per gallon		82	23%
20 to 24 miles per gallon		127	35%
25 to 29 miles per gallon		91	25%
30 to 39 miles per gallon		32	9%
40 or more miles per gallon		3	1%
	Total	359	100%

9. If you use public transportation, how frequently?

Never		324	90%
Rarely		33	9%
Several times per week		1	0%
Several times per month		0	0%
Nearly all the time		2	1%
	Total	360	100%

10. Do you carpool?

No, never		295	80%
Rarely		47	13%
Several times per week		9	2%
Several times per month		5	1%
Nearly all the time		13	4%
	Total	369	100%

11. Which best describes your situation or opinion regarding car-pooling to Unum?

Impractical given commitments, schedule, lifestyle, etc.		261	72%
Would like to carpool			

from time to time, but on the whole is too inconvenient		41	11%
Would carpool, but it is too difficult to find carpooling partners & manage schedules		37	10%
I do carpool occasionally		8	2%
I carpool frequently		18	5%
	Total	365	100%

12. Would you be more interested in carpooling if:

Carpoolers received priority parking spaces		18	5%
Carpools received free parking		11	3%
There was a system to help identify others with whom you might carpool		41	11%
No, I'm not interested in carpooling		258	72%
Other, please specify		30	8%
	Total	358	100%

13. For those who drive to Unum, how much time, on average, would you say you spend searching for a parking space?
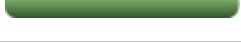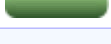
I usually find a space right away		350	97%
A Couple of minutes		10	3%
At least 5 minutes		0	0%
At least 10 minutes		0	0%
At least 15 minutes		0	0%
More than 15 minutes		0	0%
	Total	360	100%

14. How frequently do you work from home or work remotely?

Never		252	68%
Experimented once or twice but that's all		14	4%
Occasionally, but mostly on an ad hoc		76	21%

basis			
Routinely (two or three times a month)		9	2%
Frequently, it is integral to my work		17	5%
	Total	368	100%

15. Do you find any of the following to be barriers to working from home or working remotely?

Equipment or network constraints		38	11%
The need for frequent face-to-face collaboration with colleagues		24	7%
Not fully supported by my work group administrator		69	20%
The nature of my work requires that I be at the office		80	23%
No, none of these are barriers		102	29%
Other, please specify		40	11%
	Total	353	100%

16. How concerned are you about climate change?

1 Not Concerned		53	14%
2 Somewhat Unconcerned		28	8%
3 Neutral		132	36%
4 Concerned		115	31%
5 Very Concerned		39	11%
	Total	367	100%

17. What item would be of interest on a company sustainability website? (Select as many as are applicable to you.)

Current projects and challenges		204	62%
Education on sustainability		160	49%
Community development		148	45%

Best practices on sustainability		160	49%
Links to, and contact information for, organizations interested in sustainability		100	30%
Recycling Issues		180	55%
Renewable energy		154	47%
Local businesses		133	40%
Other, please specify		12	4%

18. What additional intranet design features would like to see? (Select as many as you would be interested in seeing.)

E-mail alerts on new topics relevant to features that I have indicated interest in		123	41%
A link to the site through the main Unum website		197	65%
Suggestion boxes throughout the website		111	37%
On-line discussion forums		39	13%
Contact information for various Unum personnel on sustainability		86	28%
Online courses and training		133	44%
Real-time sustainability data		89	29%
Other, please specify		5	2%

19. Are you aware of Unum's Corporate Social Responsibility Report and its discussion on environmental performance and sustainability?

Yes		149	41%
No		218	59%
	Total	367	100%
	2 Responses		

20. How would you like to be consulted?

		31	9%

Through public forums			
Through web-based forums		163	47%
Both		139	40%
Other, please specify		11	3%
	Total	344	100%

21. Rank the issues that you would most like to be consulted on in order of importance (1 being highest priority- 10, & NA)

Top number is the count of respondents selecting the option. Bottom % is percent of the total respondents selecting the option.	1	2	3	4	5	6	7	8	9	10	NA
Health and well-being	112 46%	17 7%	12 5%	5 2%	7 3%	13 5%	5 2%	9 4%	9 4%	35 15%	17 7%
Community	9 4%	41 18%	24 10%	18 8%	20 9%	18 8%	22 10%	25 11%	25 11%	14 6%	15 6%
Knowledge	11 5%	29 12%	35 15%	25 11%	22 9%	15 6%	21 9%	31 13%	17 7%	14 6%	17 7%
Governance	10 4%	9 4%	10 4%	25 10%	34 14%	33 14%	17 7%	19 8%	23 10%	23 10%	39 16%
Economy and wealth	11 5%	25 10%	21 9%	23 10%	37 15%	23 10%	24 10%	18 7%	15 6%	18 7%	26 11%
Water	10 5%	22 10%	32 15%	21 10%	30 14%	32 15%	14 7%	10 5%	9 4%	8 4%	24 11%
Materials (paper)	6 2%	9 4%	19 8%	28 12%	25 10%	30 12%	36 15%	35 14%	14 6%	12 5%	28 12%
Air	13 6%	22 9%	33 14%	24 10%	25 11%	23 10%	19 8%	20 9%	21 9%	10 4%	22 9%
Energy	18 7%	28 11%	22 9%	30 12%	22 9%	18 7%	26 10%	23 9%	20 8%	19 8%	22 9%
Land	26 9%	25 9%	27 9%	27 9%	20 7%	25 9%	22 7%	33 11%	27 9%	21 7%	41 14%

22. Which of the following would be most useful to help facilitate this?

Web-based training		113	33%
Classroom training		26	8%
Pamphlets		37	11%
Books		2	1%
Surveys		13	4%
		128	38%

Intranet bulletin			
Combination or other, please specify		22	6%
	Total	341	100%

23.	Would you be interested in being part of a volunteer committee on Unum Worcester's sustainability?		
Yes		70	20%
No		286	80%
	Total	356	100%
	16 Responses		

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Appendix 3: Best Practices

Vision	Communication	Metrics
Cisco links education program to this statement. "If it can be connected to the Internet, it can be green."	IKEA offers online and classroom training. They classify information as "must know" or "good to know".	IKEA's Environmental Coordinators responsible for an action plan for recycling, energy saving, and education. They receive key performance indicators to set and measure goals.
Interface's vision is, "There is nobody at Interface with a sustainability title; it's part of everyone's job. Interface then uses sustainability as part of their hiring process.	Cisco has an EcoBoard and a Green Task Forces to coordinate, develop and implement programs. Each year programs and content annually. They also have a discussion forum for employees called "Let's Talk Cisco Green".	Cisco conducts surveys of employees and tracks new stories and forum usage.
Johnson & Johnson links its efforts to one of the company values. "Being good to the environment is good for business."	Hewlett-Packard has brown bag lunch seminars and provides incentives for employees to purchase solar panels. It also supports employee efforts and networking which is called the Sustainability Network.	Hewlett-Packard's "Live Green" program allows employees to sign up and pledge to reduce their environmental impact. They also measure webcast and event attendees.
	Interface created a new program for new hires related to its sustainability program to introduce them to the organization's culture. They also have many monthly in-person meetings to discuss sustainability in relation to their jobs.	Interface neutralized its employees personal travel emissions. The company also acknowledges employees in a ceremony with their sustainability work. They also measure material usage and employee surveys.
	Johnson & Johnson encourage locally tailored thematic campaigns. The company also gets helps with materials from a third party organization.	Employees can participate in Personal Sustainability Projects at Wal-Mart.
	Wal-Mart has development Sustainability Value Networks of employees throughout its organization.	

Compiled from NEEF Study (Introduction, 3)

Appendix 4: Lessons Learned

	Lessons Learned
Cisco	Start with senior management vision. Nuture a Green culture through customizable events and communications. Inspire employee conversation with one another. Use Web 2.0 technology as an asset to provide employees with resources.
Hewlett-Packard	Support grassroots efforts with a variety of resources. Use a combination of media for communications, events and programs. Incentivize employee's actions at home. Measure results. Reach out to the less motivate.
Interface	Make E&S part of a shared vision and the company culture, not a "flavor of the month" Measures are critical, and the best teacher Storytelling is a power tool. Include all employees. Consider E&S motivation and knowledge in hiring process.
Johnson & Johnson	Build on existing corporate culture. Tailor messages for the audiences. Provide resources, not a prescriptive approach. Use repeated, frequent messaging and multiple appeal. Appeal to employees' hearts, and involve kids. Work with partners outside of the company.
Wal-Mart	Make E&S outreach personal and voluntary. Grassroots and personal involvement is essential. Engage employees in setting goals.

Compiled from NEEF Study (Introduction, 3)

Appendix 5: LEED Education Quiz

1) How much will Unum reduce their water consumption over the 1992 Energy Policy Act baseline?
   a. 10%
   b. 20%
   c. 30%
   d. 40%
2) Grey Water is used water from which of the following sources?
   a. Shower
   b. Sink
   c. Washing Machine
   d. All of the Above
3) How many gallons of water per flush does a low flow toilet use?
   a. .5
   b. 1.6
   c. 2.1
   d. 3
4) What does LEED stand for? (Quizzes, 1)
   a. Leadership in Energy and Environmental Design
   b. Local Enterprise Executive Division
   c. Leading Edge Ecological Directory
   d. League of Environmental Economic Development
5) All buildings must reduce their water consumption with the same designs?
   a. True
   b. False
6) How many reservoirs supply the water to Worcester?
   a. 5
   b. 10
   c. 20
   d. 40
7) Water Sense is a…
   a. Tool to calculate efficiency of water fixtures
   b. Advocacy group with a mission to teach business owners how to manage their water usage
   c. Device that is used to detect water leaks
   d. EPA sponsored program to protect our nation's water supply
8) A low flow sink faucet has a flow rate of
   a. .5 gallons per minute
   b. 1 gallon per minute
   c. 1.5 gallons per minute
   d. 2.5 gallons per minute
9) Pesticides and chemical fertilizers can wind up in our drinking water.
   a. True
   b. False
10) An aerator can be installed on a regular faucet to improve the water efficiency?
   a. True
   b. False

Answers: 1) c 2) d 3) b 4) a 5) b 6) d 7) d 8) c 9) a 10) a