Sustainability Audit Of

The United Church of

Christ

Bus/Rel 250: Green Business

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Table of Contents

Acknowledgements

Introduction
Alex Jeffers

Mission, Vision, Values
Group Names

Aesthetics/ Human Health
Antoinette Rivera, Sarah Kane, Sarah Kambara, Rebecca Kennedy

Energy
Energy Group Names

Waste Management
Alanna Crumley, Devin Rafferty, Samantha Husted, Russell Retallick

Materials
Materials Group Names

Surrounding Community
Community Group Names

Conclusion
Rebecca Kennedy

Editor
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I. Introduction

The United Church of Christ's 2005 Resolution on Environmental Education quotes the Book of Genesis, "And God saw that it was good." The goodness of God's creation includes humanity, but embraces all that is-- the sun, stars, plants, animals, oceans and earth. This resolution suggests the role of humans on this planet as stewards and caretakers of all the earth, not just what brings us benefit. For this reason, we hope this sustainability audit of UCC national headquarters might offer some modest assistance in helping you to live that mandate. As a denominational headquarters, it is important to lead by example and show tangible initiatives toward becoming stewards of creation. Actions by your Headquarters can show congregations, members, and the larger world, the importance of immediate change for the sake of your mission and the planet. These changes include simple and "mundane" adjustments such as changing lighting and cleaning products, but also should include a shift in attitudes and a realization that the UCC's mission and values coincide directly with the pursuit of more "eco-efficient" operations. These actions at the headquarters are expressions to the larger church and the world that "God is still speaking" through our efforts to live responsibly on our planet and among our neighbors.

This audit evaluates various components of the UCC National Headquarters and offers recommendations on how to move closer to the ultimate goal of becoming a "zero-waste" organization that causes no negative harm to the world[1]. Our evaluation focuses on six areas of importance: mission, vision and values; social sustainability; aesthetics;

[1] William McDonough and Michael Braungart, *Cradle-to-Cradle* (New York: North Point Press, 2002)

energy; materials and purchasing, and water and waste. Together, we mean for them to embody a full, yet always incomplete, sense of organizational sustainability.

II. Mission, Vision, and Values

A. Introduction

The concept of sustainability is widely used in society and business. It generally has 3 categories. These categories have been coined "The Three E's": Ecology, Economy, and Equity.[2] These three concepts are essential in understanding sustainability, for the UCC, its employees and congregations.

Our primary goal is to align the UCC's mission with a strong commitment to sustainability. Creating a unique sustainability mission statement can be coupled with the commitment of UCC employees and congregations to practical application and change. The UCC takes a strong leadership position on equity for people worldwide and has carried this leadership into communities in which you are a part. At the same time, UCC employees do not appear to feel connected with environmental action. Mobilizing concrete action around sustainability could create more cohesion so that the UCC becomes recognized as a denominational leader in sustainability.

B. Environmental Mission Statement

The United Church of Christ's mission statement declares, "As people of the United Church of Christ, affirming our Statement of Faith, we seek within the Church Universal to participate in God's mission and to follow the way of the crucified and risen Christ."[3] Many "calls to action" are listed following this mission statement. We propose

[2] For an introduction to sustainability see Edwards, 2005.
[3] http://www.ucc.org/beliefs/statement-of-mission.html: 10-12-09

that your core mission statement begs for the creation of an environmental mission statement.

A church's mission statement should reveal its core self-understanding, its beliefs and values, and serve as the basis of identity. In addition, your rich legacy of resolutions and social statements should be the "flesh on the bones" of your sense of mission. One resolution statement declares, "…the Church needs to prepare a hopeful stewardship based pathway for congregations to follow with faith on this journey to create a more sustainable and just 21st century."[4] Just as the UCC's mission statement serves as a covenant between the organization and the members, an environmental mission statement could serve as a covenant between the environment and the church.

Your mission statement and the documents of your church stress concepts of equity, stewardship, and justice, which combine to form an environmental mission statement. Your mission statement suggests how humans can participate in God's mission. "To praise", "To proclaim", "To embody", "To join", "To work", "To embrace" are all ways people in the church, and others, can work towards a more sustainable world and lifestyle. Thus, sustainability seems to be consistent with your understanding of God's mission. We think you have the opportunities to advocate and practice this message in ways that can more effectively empower employees and congregations.

Another resolution "Encourages local churches…to address their own lifestyles (institutional and personal) to assure the minimum production of wastes that threaten the

[4] Provided by The United Church of Christ and D. Krueger through the Blackboard Academic Suite: 10-1-09 (Publication Pending)

environment."[5] To us, this resolution suggests that the UCC should take necessary steps to be more sustainable in its consumption and waste production. It also suggests the UCC, the congregation, and the individual are equally responsible for addressing these issues. Also, "…the Church will be challenged as never before to advance the teachings of Christ to alleviate fear, to provide hope, and to bring people together in harmonious actions aimed at finding new, sustainable living conditions for all with justice and peace…"[6] For your organization, the task of being more sustainable may not be easy. By following the way of the crucified Christ, and "advancing" his teachings, attitudes can be altered, hearts can be changed, and the possibility arises of practicing sustainability more intently in your operations and practices.

Your environmental mission statement might read similar to the following:

"As people of the United Church of Christ, we seek to fully understand what it means to be God's stewards of the earth, to protect and care for all living things on the planet, and truly love and respect what He has given us."

C.The Website

The Twenty-Seventh General Synod urges "the entire Church, clergy and laity, officers and members, to listen carefully and prayerfully to the scientific consensus now available, to make education on these matters a priority throughout the United Church of Christ, and to take immediate steps, both individually and collectively, to address the changes required at all levels by this unprecedented global crisis."[7] The website is the

[5] http://www.uccecoaction.org/Warming99.html: 10-05-09
[6] Provided by The United Church of Christ and D. Krueger through the Blackboard Academic Suite: 10-1-09 (Publication Pending)
[7] Provided by The United Church of Christ and D. Krueger through the Blackboard Academic Suite (11-12-09)(Urgency for Action)

perfect place to show how you are responding through visible actions and practice in your organization. UCC could focus on an environmental mission statement, with environment, economics, and equity as primary divisions of sustainability. This would be followed by promoting concrete steps you are taking within your headquarters to try to embody this conviction. You can then lead by example.

The website must be easy to use for first time visitors, returning visitors, and employees. Accessibility is vitally important if you want people to understand what your organization is about. For employees and congregations to understand the components of sustainability, the website is a good way to show what UCC is doing.

We recommend that an environmental mission be available on the first page of the website and include what sustainability means to a believer in your church! By dividing the web site into the "three E's"[8], the UCC can show your impact on the environment, on communities, and the financial implications of sustainability. For instance, the Twenty-Sixth General Synod, "urges a recommitment to the Christian vocation of responsible stewardship of God's creation, and expresses profound concern for the pending environmental, economic, and social tragedies threatened by global warming, to creation, human communities and traditional sacred spaces."[9] This resolution's commitment is part of the "three E's" concept. From a sustainable business perspective, the UCC would demonstrate higher credibility because the "three E's" help to organize and categorize efforts into divisions of sustainability that are internationally recognized.

[8] Cf., Edwards (2005).
[9] Provided by The United Church of Christ and D. Krueger through the Blackboard Academic Suite: 10-1-09 (Publication Pending)

D.Teamwork

Collaboration and teamwork at UCC is essential for pursuing sustainability within your building and community. The Twenty-Fifth General Synod proclaims, "It is recognized that each of us has the responsibility of caring for God's Earth, individually and collectively."[10] It is important to note that UCC recognizes team effort in achieving sustainability and should therefore attempt to create ways in which employees work together towards sustainability goals. Examples to enhance teamwork include, exchanging incandescent light bulbs for more energy efficient ones, creating innovative ideas for saving money, or planning a day for volunteer work. The UCC could create contests and competitions to make sustainability awarding and appealing to the employees. Activities could then be shared on the website or on bulletin boards as a way to show members of the UCC how you have made it fun to become involved in sustainability. Increased participation in sustainable activities will show that the UCC can generate innovative methods for conducing sustainable action that may not otherwise be achieved through persuasion and suggestion. It could also create an enhanced sense of individual responsibility to sustainability. The UCC could create team-building activities during the workweek. One sure example of a well-received work activity conducted by UCC employee, Lisa Thomas, was "March Madness."[11]

[10] Provided by The United Church of Christ and D. Krueger through the Blackboard Academic Suite: 10-1-09 (Publication Pending)
[11] Information obtained from meeting with EcoJustice Ministry at UCC

E. Bulletin Boards

To boost employee attention and focus on this issue, bulletin boards could be strategically placed in the UCC's break areas, lobby, elevators, and/or kitchens. Bulletin boards could foster employee education on sustainability, and provide easy access for employees to track the progress of UCC efforts. To align UCC's mission with environmental action, it is crucial that the environmental mission is easily accessible and visually appealing to employees and staff in order to support and effectively communicate sustainability.

Besides the environmental mission statement, the board could include quotes from employees on why sustainability is important to them, newspaper articles dealing with environmental issues, a list of easy steps employees can take in the work place and at home to be more sustainable. The board could also display signups for those interested in participating in floor activities and contests for sustainability, while posting a sustainable employee of the month. Bulletin Boards could also be used to post tangible information about the recycling and energy saving efforts the UCC and its employees have adopted.

Benefits of a Bulletin Board include: a fast and accurate communication medium, allowance for employees to absorb information at their own pace without feeling pressured, and reminding employees that UCC is concerned with their interests and ideas. Initiatives from other elements of sustainability can be displayed on these boards. Such ideas could include better recycling ideas, more environmentally friendly toner cartilage, community efforts, and volunteer opportunities for employees to participate in. Bulletin boards could also be used in rewarding group efforts in sustainability causes. The board

could be used to announce congratulation on improved environment efforts of UCC. By having this outlet of mass communication visual, team and personal motivation could increase. Bulletin board ideas and themes are endless. They inspire the mind and pull one's attention outside of one's narrower work tasks.

F. Measurements

Many of your theological statements support a strong UCC leadership role in sustainability. The Twenty-Fifth General Synod finds "It is important that the UCC denomination projects an equally well coordinated and articulated approach to our common concerns about the environmental and environmental justice."[12] The UCC must create ways to measure your progress in this area and make it public. Your website provides a perfect, low cost venue. For instance, Starbucks has comparison charts that measure employee volunteer hours,[13] the implementation of recycling bins in their stores,[14] and yearly percentages of coffee purchased through the Coffee and Farmer Equity (C.A.F.E.) Practices.[15] People and congregations will benefit from online access to UCC's goals and progress and you can serve as a model for others in you denomination and beyond. You provide congregations, organizations, and other denominations a framework from which they can form sustainability action plans. Leading by example may be the simplest way that the UCC can become a leader in sustainability. Your website provides a communication platform from which UCC

[12] Provided by The United Church of Christ and D. Krueger through the Blackboard Academic Suite: 10-1-09 (Publication Pending)
[13] http://www.starbucks.com/SHAREDPLANET/ourGOALS-community.aspx: 09-13-09
[14] http://www.starbucks.com/SHAREDPLANET/ourGOALS-environmental.aspx: 09-13-09
[15] http://www.starbucks.com/SHAREDPLANET/ethicalSOURCING.aspx: 09-13-09

congregation can share ideas with others. UCC's efforts towards sustainability have to be transparent.

The UCC should make your intentions towards sustainability public to foster accountability for your progress. This accountability could be fostered with analytic benchmarks for evaluating progress. Some examples of analytical benchmarks are energy reduction goals, goals for volunteer hours, and percentages of distribution materials purchased through the Fair Trade Program created by the Environmental Task Force at UCC. However, the UCC should not limit their scope of evaluation to these areas only. The UCC should create goals for each aspect of sustainability. These evaluations should be annual or quarterly and could build credibility through third party evaluation. If UCC's efforts become stagnate, you can detect problems quickly and create new solutions.

G. Conclusion

In sum, the UCC has an opportunity to lead by example as environmental, social, and financial stewards. To align the UCC mission with a strong commitment to environmental action, the UCC can consider creating an environmental mission statement. Your website can communicate progress in sustainability and build a shared identity of environmental and social responsibility. Heightened shared identity suggests more ways for employees to become more involved in volunteerism in the community.

III. The UCC and its Neighborhood: Social Sustainability

A. Introduction

Our vision is that the UCC can relate effectively with its surrounding neighbors to promote the long-term sustainability of your organization and your neighborhood. This audit affirms the value of a connection between the concept of sustainability and the UCC's relationship with its surrounding neighborhood. Sustainability is not only concerned with ecological practices but with social equity and justice as well, concepts that are deeply ingrained in the UCC's religious purpose. The UCC's self-image and its mission statement are implicitly relevant to the local community and its sustainability. This local community includes not only the people employed at UCC but the surrounding businesses and visitors of downtown Cleveland area, especially the Historic Gateway Neighborhood. The UCC has a rich opportunity within the Historic Gateway Neighborhood to showcase its deep commitment to human and environmental wellbeing.

For the UCC to help transform its local neighborhood into a cleaner, more sustainable community, we offer several recommendations. We advocate actions to reach out to the surrounding community and increase collaboration with local businesses. Also, we suggest promoting more sustainable methods of transportation for employees. The UCC could encourage employees to consider alternative modes of transportation,

such as carpooling, public transportation and involvement with the Cleveland Downtown Alliance[16] and the Ohio City Bike Co-op[17].

Through face-to-face interviews with seven surrounding businesses in the Historic Gateway Neighborhood we conclude that the UCC is generally perceived as a good neighbor but one that tends to not be very involved with the immediate community (See Appendix I). To change this view, the UCC could become more involved in the Historic Gateway Neighborhood and become more visible with efforts to help the community. The involvement of employees and congregational youth groups on specific projects could be fruitful here. The UCC could encourage youth groups to find ways to help with the highly concentrated population of homeless people in the area, as well as suggest involvement with planting urban gardens to help beautify and aid the community.

B. Community Involvement and Education

UCC headquarters has many impacts and interactions in the Cleveland area. According to its 2008 Annual Report, the UCC is committed to the single mission of changing and transforming lives through "celebration of worship, courageous acts for justice, selfless giving and prayerful living." We think your organization has more opportunities to embody this mission within your own neighborhood.

Engaging in community service stimulates the development of citizenship by encouraging volunteers to be contributors to the betterment of society. Community service could help the United Church of Christ stand as a role model in the Historic

[16] Downtown Cleveland Alliance is the not-for-profit organization dedicated to building a dynamic downtown. It is committed to making downtown Cleveland the most compelling place to live, work, play and visit in the region. http://www.downtownclevelandalliance.com/page/whatwedo.aspx?parent=1

[17] The OCBC is a non-profit, volunteer-driven, cooperative bicycle education center located in Cleveland. http://www.ohiocitycycles.org/index.php?option=com_content&view=article&id=25&Itemid=30

Gateway Neighborhood. Through community service, the UCC could also show direct support for the organization's stated goal of providing a national setting for changing lives by supporting its churches and members in doing the same[18].

The UCC embraces communal stewardship through participatory action in service of the community through the organization's "All-Staff Community Day". This day forms a foundation for the organization's role as a community member by sending employees to places in the community to reach out to others and help them through direct service. Positive effects of service could be magnified for UCC employees if more service opportunities were available to them. For example, the UCC could pair with *Supporting Hands on Northeast Ohio*, an organization that offers numerous local volunteer opportunities in the Cleveland area[19].

The UCC could have a list of recommended community service sites available for individuals coordinating service opportunities. When groups, such as congregational youth groups, take part in these activities, they could tour the United Church of Christ Headquarters and be educated on the importance of global stewardship as well as local contribution. This would educate individuals about the social aspects of sustainability on a wider plane. Visitors could take what they learn from the UCC to their hometowns, leading to the vital integration of sustainability to these areas.

The *Green City Blue Lake Institute* is a local sustainability organization fostering ideas for helping Cleveland "find its environmental voice". The Institute promotes "giving circles". Which are groups of like-minded friends, neighbors, or colleagues who

[18] UCC 2008 Annual Report http://www.ucc.org/about-us/flash/2008_annual_report.swf

[19] http://www.handsonneo.org/projects/viewProject.php?_mode=project_intro&_clearFlag=course,specialevent

join together for the purpose of collective giving[20]. One example of a local "giving circle" is the *Cleveland Colectivo*[21]. This specific "giving circle" has a vision of "strengthen[ing] [the local] community through collective investments that identify and nurture innovative projects". By investigating and interpreting the ideas of *Green City Blue Lake* and the *Cleveland Colectivo*, the United Church of Christ could become a stronger citizen and leader in bettering the Historic Gateway Neighborhood.

The UCC could commit to engage in more community involvement to better enhance its mission, as well as its local leadership role. The UCC could become a more visible community member and influence neighboring businesses through efforts promoting community sustainability. We propose that the UCC consider membership to the *Cleveland Colectivo*. The *Colectivo* requires members to pool funds that are invested into projects seen as worthwhile in the local area. Members contribute to the *Colectivo* quarterly and together choose what projects to support. One previously supported project was granting finances to the *Earth Day Coalition*[22]. Working with an organization like the *Colectivo* would help the UCC become involved with innovative projects for the betterment of the local community.

The UCC is committed to serving people, not only those within UCC congregations and organizations but many outside the denomination, such as those living in the Historic Gateway Neighborhood. This can involve volunteering time and resources and also documenting and vocalizing its role in the local community. This can strengthen your reputation among peers and neighbors as a sustainability leader. Press

[20] Green City Blue Lake on "giving circles", http://www.gcbl.org/spirit/giving-circles
[21]The Cleveland Colectivo Mission and Vision, http://www.clevelandcolectivo.org/about.htm
[22] The Earth Day Coalition is Cleveland's not for profit environmental organization, http://www.earthdaycoalition.org/

releases in local newspapers such as the Cleveland Plain Dealer, the Free Times and the Cleveland Scene could help in this effort. Recent service activities could be publicized to the local area as well as upcoming events the UCC is to be involved with. These press releases will not only help UCC's image but also allow the public to become involved with UCC service projects. Social interaction is a key component of sustainability.

C. Internal and External Communication

Another useful tool in publicizing the UCC's role in the community would be the use of internal and external community bulletin boards. External outlets for these bulletin boards could be found at community centers such as the YMCA, YWCA, and the Cleveland Public Library. The addition of an internal "Community Happenings" board in the UCC lobby would inform visitors and employees of UCC's strong ties to the Historic Gateway Neighborhood. These bulletin boards could not only contain information about UCC's mission and values but also activities UCC employees have been involved with around the Cleveland area and upcoming events that volunteers could be needed for. For example, a flyer advertising for help at a local *United Way* soup kitchen to help feed the local hungry and homeless, a growing concern for The United Church of Christ, could be showcased on these boards.

D. All Staff Service Day

In addition to being heavily involved with the *United Way*, the UCC boasts an "All Staff Service Day". This event is a great opportunity to bring awareness to UCC's neighbors about sustainable practices. One possible event could be a neighborhood "Recycling Round-up". This occasion could call for local businesses of the Historic

Gateway Neighborhood to push one another to collect as many recyclable items as possible to be weighed and then recycled properly. This UCC sponsored event could allow the organization to partner with the well-established Cleveland Downtown Alliance, a group with a strong positive image within the local community and with neighboring businesses. Also this event could help the UCC emerge as a strong community leader, bringing together businesses of the district under the goal of sustainable development. Sponsoring this event would encourage staff participation. Staff would talk to surrounding businesses and create contacts for the event helping expand UCC's community connections. The "Recycling Round-up" could create a "fun feel" about the neighborhood and be a great way to publicize the area's growing green efforts.

E. Aiding the Homeless

One major concern expressed by members of the Historic Gateway Neighborhood during our interviews was the overwhelming presence of homeless individuals. The 2008 Annual Report for the United Church of Christ expresses the organization's concern for people that society "casts off." To exemplify this compassion; the UCC could continue to work closely with St. Paul's Community Church[23], your UCC congregation only two miles from the UCC headquarters. As you know, this congregation works to serve people "living on the edge" and disregarded by society, including the homeless. The UCC has previously made some effort to help the homeless, including working with the *United Way* in guiding the homeless to shelters to providing them with food or medical

[23] St. Paul's Community Church is a congregation under the United Church of Christ and is committed to service in the Cleveland area, http://www.stpaulscleveland.org/

assistance. Through the utilization of the "Cleveland Street Card"[24], homeless individuals are permitted to use the UCC lobby phone to call the *United Way*[25] if they come to their offices. However, as mentioned above, becoming further involved with trying to address the needs of the local homeless population could be a top priority of the organization.

The goal of stronger involvement with the needs of the homeless could be advanced by founding an urban garden on the roof of the United Church of Christ headquarters, or by partnering with an already established local urban garden. The yields of this garden could be donated to area homeless shelters. There are approximately 200 community urban food gardens in the Cleveland area. A 2004 report by *EcoCity Cleveland* states that with an annual investment of $100,000 of City Block Grant Funding, gardens bring a 1000% return by producing $1 million worth of produce every year, as well as qualitative social and environmental value[26]. In a 2008 report by SustainLane[27], Cleveland ranked 16th in a list of the 50 sustainable heavily populated cities. SustainLane boasts the nation's most complete report card on urban sustainability and made mention of the 225 community gardens and 25 for-profit farms within Cleveland's city limits[28].

One established urban garden in Cleveland is the Esperanza Garden on West 25th

[24] The Cleveland Street Card is provided by the Northeast Ohio Coalition for the Homeless and contains information to assist the homeless in accessing services in Cuyahoga County http://www.neoch.org/street_card.htm
[25] http://www.liveunited.org/
[26] Smart Growth: Protecting Urban Gardens, http://www.ecocitycleveland.org/smartgrowth/openspace/gardens.html
[27] The largest online resource for going green, http://www.sustainlane.com/
[28] http://www.urbangardensweb.com/2009/07/06/the-full-green-cleveland/

Street. This garden belongs to the *Cleveland Botanical Garden*[29]; however, they do not maintain it. They have allocated this responsibility to local teenagers involved with a local organization called *Green Corps*[30]. Much like the Esperanza garden, the United Church of Christ could outsource the upkeep of its garden to teenagers who are members of the church's various local youth groups. The creation of an urban garden could expand the UCC's ties to its own youth groups but to the community in general through the aid of the homeless and others with produce donations. Another example of an already established urban garden in the surrounding area is the *CityFresh*[31] garden, located just a few blocks from Esperanza. The Ohio State University Extension Office and the New Agrarian Center, in hopes of bringing fresh produce and nutritional facts to the more urban areas of Cleveland run this garden[32]. This garden, instead of donating its produce, sells it in "Market Share"[33] bags. These bags contain freshly picked locally grown, in-season produce. Bags are ordered before harvest for an affordable twenty-dollar rate but the *CityFresh* group also offers discounts to low-income patrons, including accepting the Ohio Direction card[34]. Both of these gardens could be a viable way to get congregational youth groups involved in the community and attempt to further help the homeless population in the surrounding area.

F. Transportation

[29] The Cleveland Botanical Garden was the first urban botanical garden established in the United States, http://www.cbgarden.org/
[30] http://www.greencorps.org/field-school-for-environmental-organizing/program-overview
[31] http://cityfresh.org/about-city-fresh
[32]The Ohio State University on its involvement with CityFresh, http://urbanprograms.osu.edu/success-stories/gardening/city-fresh/
[33] Urban Gardens in Cleveland, http://www.thisgardenisillegal.com/2006/06/urban-gardens-in-cleveland-esperanza.html
[34] About the Ohio Direction Card, https://www.ebt.acs-inc.com/pdf/OH_Client_Brochure122105.pdf

With approximately 161 employees driving and 16 using alternate forms of transportation[35], the UCC has opportunities for improvement regarding employee transportation. Ecological benefits to alternative transportation include minimizing public health threats due to air pollution, and helping to curb climate change. Although these issues may seem obvious, there are less obvious economic benefits to alternative transportation as well. According to a savings calculator sponsored by *CommuterCheck*[36], for every $50.00 a month spent on alternative transportation, employees can save an average of $165.00 on tax breaks and employers can save up to $44.00 by taking advantage of government commuter benefit programs. The average annual savings for this $50.00 a month spent not driving is $727.26 and 1056 pounds of reduced carbon emissions. In addition to these benefits are numerous health benefits, such as more exercise and less polluted air, which could improve employee performance and reduce absence rates.

One alternative way to commute to work is biking. Biking to work has become a very accessible means of transportation in many parts of the city. For employees that live out of range for bicycling, all RTA busses have bike racks and all Rapid Train cars are required to allow up to two bikes on each car as of October 16, 2007[37]. This allows for biking to bus stops, then using public transportation to commute to UCC. Bikes can be stored in storage areas off of the main lobby at the UCC headquarters or at the Gateway East Parking Facility[38] where biking parking is provided free of charge.

[35] According to Kimberly Whitney, UCC's Minister for Community Life
[36] http://www.commutercheck.com/Home.aspx
[37] Riding Options: Bikes, http://www.riderta.com/ro_bike.asp
[38] The Gateway East Parking Facility is located at 650 Huron Rd Cleveland, Ohio.

Some employers now offer bicycling employees $20.00 a month for financial support through company tax breaks provided by the federal government[39]. It works the same as commuters receiving bus pass or parking reimbursements, but the money would go to paying for repairs, a new helmet, bike rental (possibly from the Cleveland Downtown Alliance's *CityBikes* program[40]), or any other cost the employee might incur due to their biking commute. The program requires commuters to sign and submit a reimbursement card[41] at the end of every month, pledging that they rode their bike to work at least three days a week. Also, employees are to submit any receipts of reimbursable purchases to the employer once year. An employer can contract with a commuter benefit provider, such as Accor Services USA[42], to assist in providing this benefit to employees.

Employees could participate in Cleveland "Bike-to-Work Week", an event that takes place in May, which is National Cyclist Month. This is not only a great way to save money on transportation, but also to become more involved in the community. During our interviews of UCC neighbors we found that many employees of A.J. Rocco's Café bike to work and take part in this local cycling event. In the past, A.J. Rocco's has even been the meet up point for "Bike-to-Work Week" events[43]. UCC staff could partner with the café to gain more local involvement with "Bike-to-Work Week".

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[39] http://commutebybike.com/2008/05/30/commuter-tax-benefit/

[40] *CityBikes* offers bike rentals by the hour for workers and visitors of the Cleveland area, http://www.downtownclevelandalliance.com/page/City-Bikes.aspx?parent=4

[41] Employees can print of reimbursement cards at http://www.bikeleague.org/resources/commuters/reimbursement_cards.php

[42] http://www.accorservicesusa.com

[43] Bike-to-Work Week Events Calendar 2007, http://www.gcbl.org/transportation/bikes/bike-to-work-with-clevelandbikes-friday-september-29

Public transportation is another viable substitute for daily auto travel. The UCC offers the RTA's "Commuter Advantage Program"[44] to employees; however, only approximately 11 UCC employees are currently utilizing it (See Appendix II). This program provides tax deductions to participating employees and employers. The benefits of involvement are not only ecological but economic as well. Employees are estimated to obtain substantial annual savings, which can be estimated using the RTA's "Commuter Savings Guide"[45]. A concern voiced in the responses we gained from our survey of UCC employees (See Appendix) in regards to using public transportation was needing a vehicle in case of family emergency or staying at work later than usual. This program provides for this concern by offering employees a guaranteed ride home, should they ever have an emergency or need to stay late at work. The RTA will provide them with a ride home either by bus, cab, or special dispatch vehicle with no charge to the employee[46]. To promote the use of public transportation, the UCC should consider providing employees with a full list benefits from the "Commuter Advantage Program". Currently low rates of involvement in the program may be attributed to employees being uninformed.

G. Conclusion

In summary, the UCC has many opportunities to strengthen its social role in the Historic Gateway Neighborhood and aid in transformation of its surrounding area into a more sustainable one. We have recommended the expansion of the UCC's involvement with local "giving circles" such as the *Cleveland Colectivo*, as well as service-based

[44] About the Commuter Advantage Program, http://www.riderta.com/pro_commuter.asp#Employee
[45] http://www.riderta.com/pro_commuter-estimator.asp
[46] More about the "Guaranteed Ride Home" benefit, http://www.riderta.com/pro_commuter.asp#Guaranteed

organizations like the *United Way*. Also, we have proposed the creation of or involvement in an urban garden in the local community to connect the UCC with area youth groups and help to address the homeless population in Cleveland, a growing concern for the UCC and its neighbors. Lastly, we have offered solutions to reduce the number of UCC employees driving to work, including the involvement of the organization with commuter programs for both bikers and public transportation users. As a religious organization, the UCC should feel obligated to be a leader in the movement towards a more sustainable society; their efforts in these areas should be visible by all surrounding businesses. Through greater involvement and visibility, the UCC can and will become a sustainable example for the Historic Gateway Neighborhood.

IV. Materials, Purchasing, Supplies, Chemicals

A. Introduction

We discuss four main areas to help move the UCC to higher levels of sustainability: (1) creating an organization-wide sustainable purchasing policy, (2) reducing chemicals in the workplace and in cleaning products, (3) purchasing less paper and recycling ink cartridges for computers, and (4) lowering the cost of paper products such as paper towels. We offer analysis and recommendations in each area.

B. Sustainable Purchasing Policy

A sustainable purchasing policy provides guidelines for purchasing products that promotes a commitment to finding cost-effective and more environmentally sustainable alternatives. Below is a draft policy that might be appropriate for the UCC based on resources provided by the Natural Resources Defense Council:

This environmental purchasing policy for The United Church of Christ provides guidance in purchasing products and services that help to promote our environmental stewardship mandate in cost-effective ways. Purchasing preference (whenever feasible) will be given to products that:

1. *Reduce greenhouse gas emissions or use renewable energy (e.g. ENERGY STAR computers, green cleaning products).*
2. *Decrease the use of toxins detrimental to human health and to the environment.*

3. *Contain the highest possible percentage of post-consumer recycled content (a finished material that would normally be thrown away as solid waste at the end of its life cycle, and does not include manufacturing or converting wastes).*
4. *Reduce on air, land, and/or water pollution.*
5. *Reduce the amount of waste produced.*
6. *Are reusable or contain reusable parts (e.g. rechargeable batteries, refillable pens, etc.).*
7. *Are multifunctional (e.g., scanner/copier/printers, multipurpose cleaners) and serve to decrease the total number of products purchased.*

When making purchases, priority will also be given to suppliers who offer environmentally preferable products, who work to exceed their environmental performance expectations, and who can show documentation of their supply-chain impacts.

Environmentally preferable products and services of similar quality and price to conventional counterparts should gain a purchasing preference. When the greenest option is not available, too costly, or impractical, The United Church of Christ should look at how the products are produced, as well as the environmentally and socially responsible management practices of suppliers and producers.

The United Church of Christ's policy of purchasing environmentally preferable products is one element in our continuing, long-range commitment to the environment. By adopting this policy, we hope to likewise engage producers and suppliers of office products and services we use to utilize business practices that also reduce their impact on the environment. We also aim to set an example of responsible stewardship for organizations and congregations of the UCC

One can find other models and recommendations for sustainable purchasing policies at the Evangelical Lutheran Church of America[47], the Presbyterian USA[48], and the United Methodist Church[49].

With a sustainable purchasing policy, the UCC can develop a plan for future purchases of items such as furniture, carpeting, drywalls, and fabrics, for instance. Environmentally friendly carpeting is an example of green flooring that uses recycled carpet and reduces dependency on oil, meets government regulations for recycling, can

[47] http://www.elca.org/Our-Faith-In-Action/Justice/Advocacy/Corporate-Social-Responsibility/Resources-5-Selective-Purchasing-Policy-Guide.aspx
[48] http://www.pcusa.org/justliving/everyday/greenliving.pdf
[49] http://archives.umc.org/interior.asp?ptid=4&mid=958

last longer than other typical carpet, creates pride in ownership and contributes to a better world, is safe for you and the environment, is recyclable to prevent needlessly filling up landfills, can save time and money, and ensures a healthy environment for future generations. When the time comes to replace carpet, Green Floors Co. or another conventional green carpeting company offer products with reduced levels of harmful chemicals that are generally found in conventional carpeting and help lower the amount of waste in landfills[50].

C. Office Supplies

Office supplies are another large aspect of organizational purchases. A website that can help in choosing alternatives for office supplies and equipment is www.thegreenoffice.com. Some types of supplies found here include ink and toner, office furniture, and janitorial supplies. The site even ranks each product's sustainability attributes. These are examples of kinds of products to be used when replacing carpeting or office supplies and furniture. For instance, ErgonomicHome Sustainable Furniture[51] offers office furniture that is also eco-friendly, including chairs, filing cabinets, desks, tables, and modular office furniture. Switching to these alternatives can save the UCC money, reduce harmful chemicals, and increase the overall quality of the workplace.

D. Reducing Chemicals in the Workplace

Many actions that appear to be harmless involve the use of harmful chemicals. Household cleaners, garden pesticides, paints, batteries, detergents, even furniture and

[50] http://www.greenfloors.com/hp-cc-index1.htm
[51] http://www.ergonomichome.com/

carpet can be hazardous to our health and the environment. Detergents, degreasers, stain removers and pesticides have made our homes and businesses miniature chemical factories. Hazardous chemicals endanger the environment by contaminating our groundwater, lakes and oceans. If these hazardous products in homes and offices are ingested, absorbed through the skin or inhaled, they can cause illness that may only appear years later. The most common ingredients in office cleaning products include alkalis, phosphates, acids, detergents, and other toxic chemicals. Alkalis are soluble salts that are effective in removing dirt without excessive rubbing. Alkalis vary in strength; the stronger ones cause burns, and if swallowed can cause internal injuries and even death. Acids are beneficial in removing hard-water deposits, discoloration and rust stains. Acids can irritate and injure the skin and eyes. Oxalic acid, used in some toilet bowl cleaners, is extremely poisonous[52].

Many cleaning products that the UCC uses, including their current Windex glass cleaner, all purpose sprays, bathroom cleaners, and hand soaps from Clorox Company contain many of these potentially harmful chemicals. Windex, for example, contains a chemical called ethylene glycol butyl, or EGBE, which has been known to cause reproductive problems in animals such as testicular damage, reduced fertility, death of embryos and birth defects. These chemicals can be eliminated from use altogether, and replaced with cleaning products that are much more environmentally friendly and much less expensive. Star Spray cleaner from Buckeye International, used by the UCC cleaning crew is not recommended, for mixing glass and surface cleaner can lower the cleaning quality of the product[53].

[52] http://www.shareguide.com/hazard.html
[53] Wolf, Alan

Buying cleaning products in water diluted, ready to use, individual containers is extremely inefficient, wastes money, and means the inevitable purchase and waste of countless plastic packages. This can be avoided by purchasing cleaning products that come in bulk concentrated solutions, and then are diluted on site at the UCC. Spartan Chemicals is a great example of an eco-friendly company that manufactures cleaning products in concentrated solutions[54].

Spartan Chemicals' manufacturing plant is located in Ohio, making these products "local", potentially reducing your carbon footprint from buying their products. Buckeye International is located much further in Missouri. They also guarantee their products are made only with local ingredients found as close to the plant as they can purchase them. There is no need to sign a contract with Spartan. One needs to purchase special pumps from them to attach to janitorial sinks, but Spartan is willing to send their own personnel to train cleaning crews on how to use them, at no charge. Sinks would dilute concentrated cleaning products on the UCC's premises, and one simply refills bottles with the solution, eliminating the need to purchase new plastic bottles each time.

[54] http://www.spartanchemical.com/web/webhome.nsf

Baldwin-Wallace College uses Spartan Chemicals[55]. By going to this plan, our college should save approximately $100,000 annually. Spartan boasts simplicity and efficiency in their products. One purchases only five separate cleaners for an entire building, the General Cleaner and Sanitizer used to sanitize surfaces, the Tri-Base Multipurpose Cleaner for all surfaces, the Glass Cleaner for glass, the disinfectant for killing bacteria and pathogens, and the Spartan Lite and Foamy Hand Soap for use in the bathrooms. These products are "Green Seal Approved", which means that all are approved by the U.S. EPA, and are free of phosphates, acids and alkalies found in normal cleaning products. All products are also 100% biodegradable except for the disinfectant. Not only are the products safe, simple, and biodegradable, they also generate large cost savings. Here are some comparative numbers based on typical retail purchase prices:

Clean by Peroxy (General Cleaner):
$0.47 per gallon when diluted on site
$6.67 per gallon when ready to use at the store

Tri-Base Multipurpose Cleaner:
$0.31 per gallon when diluted on site
$6.67 per gallon when ready to use at the store

Glass Cleaner:
$0.25 per gallon when diluted on site
$11.00 per gallon when ready to use at the store

Disinfectant:
$0.50 per gallon when diluted on site
$12.00 per gallon when ready to use at the store

Spartan Lite and Foamy Hand Soap:
Only $16.50 per gallon, but you get 3780 pumps from each gallon compared to 2500 average from other foaming hand soaps

[55] Greg Paradis, Baldwin-Wallace College Custodial Supervisor

Another quality cleaning company is EZ-Brite Cleaning Company. They claim they have been using the cleanest ingredients for their products since they began business 62 years ago[56].

E. Purchasing Less Paper and Recycling Ink Cartridges for Computers

There are many ways to reduce use of resources and to save energy while using a computer. One obvious way to reduce resource consumption is to use double-sided printing, or to eliminate hard copy printing altogether, if possible. For instance, Baldwin-Wallace College sets their computer lab printers to default with double sided printing. One representative from the UCC indicated that some items are not desirable to be printed double sided, such as bulletins used during church services. Our recommendation is to set printers to double side settings as possible and to formulate a plan to choose which documents don't need to be printed at all, which can be sent and filed electronically Documents that need to be single sided would require a manual selection on the printer options.

The UCC could also begin relationships with office supply companies such as Staples. Last year, Staples recycled over 22 million ink cartridges[57]. This can reduce waste, and save money by using and reusing recycled ink and their cartridges. Batteries should also be purchased in large quantities but should also be rechargeable. Ink and batteries can be highly toxic for the environment and need to be removed safely to reduce on harmful chemicals in the workplace.

[56] http://www.ezbritebrands.com/
[57] http://www.staples.com/sbd/content/about/soul/recycling.html

F. Lowering the Cost of Paper Products Such as Paper Towels

While visiting the United Church of Christ headquarters, we examined restroom facilities to identify opportunities for reduction in environmental harm. Current paper towel dispensers function via a crank-dispensing format. These crank dispensers could be replaced by tear-away paper towel dispensers, which would likely result in a significant reduction in paper towel usage and, ultimately, less waste. Tear away paper towel dispensers limit the length of each paper towel and can make employees use less each time they use the restroom. Hand towels can also be placed in restrooms alongside these new tear away dispensers for employees to use as opposed to using paper towels.

Not only will the quantity of paper towels used be lowered, the UCC can be sure that The Kimberly-Clark Company uses the most sustainable paper products available. Kimberly-Clark, one of the leading tissue paper companies in the world, purchases wood fiber from well-managed forestlands to using post-consumer recycled fibers in their tissue products. According to their website, Kimberly-Clark states that "by 2011, [they] will ensure that 40 percent of [their] North American tissue fiber is either recycled or FSC [Forest Stewardship Council] certified – a 71 percent increase from 2007 levels" (Kimberly-Clark). The Forest Stewardship Council (FSC) is one of the most preferred certification systems in the timber industry. However, the company states that in the absence of FSC-certified fiber, wood fiber will be purchased under the following certification systems: Sustainable Forestry Initiative (SFI), Canadian Standards Association's National Sustainable Forest Management Standards (CSA), Sistema

Brasileiro de Certificacao Florestal (CERFLOR) in Brazil, and the Program for the Endorsement of Forest Certification Schemes (PEFC)[58].

The company's interest in sustainable forestry is made more prominent by the fact they were the "first major tissue company to set the goal of purchasing 100 percent of [their] wood fiber from suppliers that gain independent certification of their woodlands or their fiber procurement activities," and that by the end of 2008, "98 percent of the virgin fiber and wood pulp [that they] purchased was sourced from certified suppliers, marking the fifth consecutive year that [they] have increased on a global basis the use of wood fiber from certified suppliers"[59]. Such accomplishments are not only sustainable, but also affordable. Kimberly-Clark sells commercial paper towels at 1000 feet per roll ($5.25 per roll) and also commercial toilet paper at 2000 feet per roll ($4.25 per roll)[60]. These numbers can be compared to other leading companies listed on Kimberly-Clark's website, where paper towel rolls sell for $7.75 on average and toilet paper sells for $6.25 on average.[61] Dispensers are provided for free with the purchase of their respective rolls.

G. Conclusion

Many recommendations we offer to the UCC require little effort. Creating a Sustainable Purchasing Policy can be the start to changing the organization's view on how it manages product purchasing. This policy can be the framework for making future purchases of furniture, carpeting, paper, and safer cleaning products. These safer cleaning products will lower amounts of harmful chemicals at the UCC, while at the same time often substantially lowering costs. Finally, lowering the amount of paper use

[58] "Kimberly-Clark: Committed to Sustainable Forestry."
[59] "Kimberly-Clark: Committed to Sustainable Forestry."
[60] Greg Paradis, Baldwin-Wallace College Custodial Supervisor
[61] "Kimberly-Clark: Committed to Sustainable Forestry."

by purchasing more efficient paper towel dispensers and printing double sided can lower the UCC's carbon footprint while lowering their cost to purchase these products. Using these alternative cleaning products, installing new paper towel dispensers, and changing the settings on the computers, result in easy improvements in purchasing and cleanliness.

V. Energy

A. Introduction

Dating back to 1979, the UCC has stated its commitment to new energy policies, including "emphasis on conservation, including tax incentives…development of alternative renewable energy sources; calls for reduction of energy usage throughout the church." In later social policy statements, the idea of stewardship of the world's natural resources is reinforced repeatedly, even in 1999 when UCC details the threat of global warming and the "biblical mandate as stewards of God's creation, responsibility to us to reduce greenhouse gas emissions." In the most recent Resolution on Climate Change, the church's role in this mandate is clarified as "supporting mandatory measures that reduce the absolute amount of greenhouse gas emission, and in particular emissions of carbon dioxide (lines 31-33)."

Today, some of the largest emitters of GHGs are energy producers. Examining the UCC's energy consumption, we have identified many potential ways to reduce energy consumption in lighting, windows, the HVAC system, the roof, and office equipment within the UCC's 700 Prospect Building. These ideas include lighting retrofit systems, lighting upgrades, a variable-speed drive HVAC system, a vegetative roof, and new

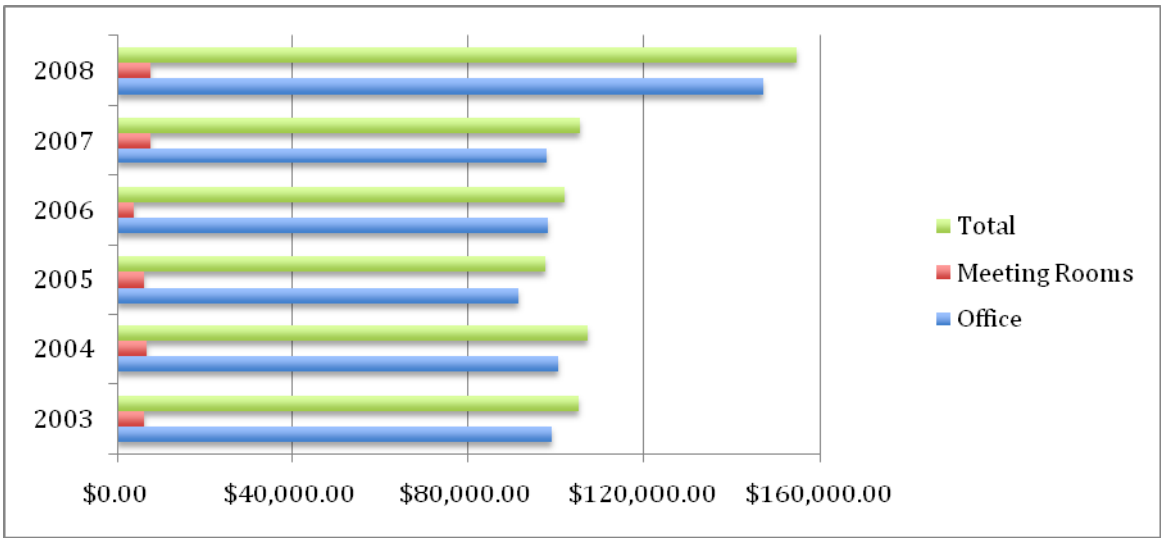
energy-efficient office equipment. We have included with these alternatives, as possible, estimates of the potential energy savings, cost savings, and overall benefits that the UCC may receive after implementation, in addition to staying true to their resolution statements.

B. Lighting

Lighting is one of the highest energy expenses for any building. According to reports, 60% of some company's electric bills are solely dedicated to costs for lighting. This 60% figure is the industry average in commercial buildings. By examining your organization's records, our group was able to provide a rough estimate of annual lighting expenses for the UCC building and the adjoining hotel meeting rooms, for years 2003 to 2008. To see the results year by year, see the following chart:

Lighting Costs						
	2003	2004	2005	2006	2007	2008
Office	$98,966.75	$100,639.37	$91,577.17	$98,213.33	$97,852.22	$147,040.32
Meeting Rooms	$6,239.69	$6,587.49	$5,968.64	$3,660.08	$7,587.66	$7,556.76
Total	$105,206.44	$107,226.86	$97,545.81	$101,873.41	$105,439.88	$154,597.08

Total Spent on Lighting from 2003-2008: $671,889.48



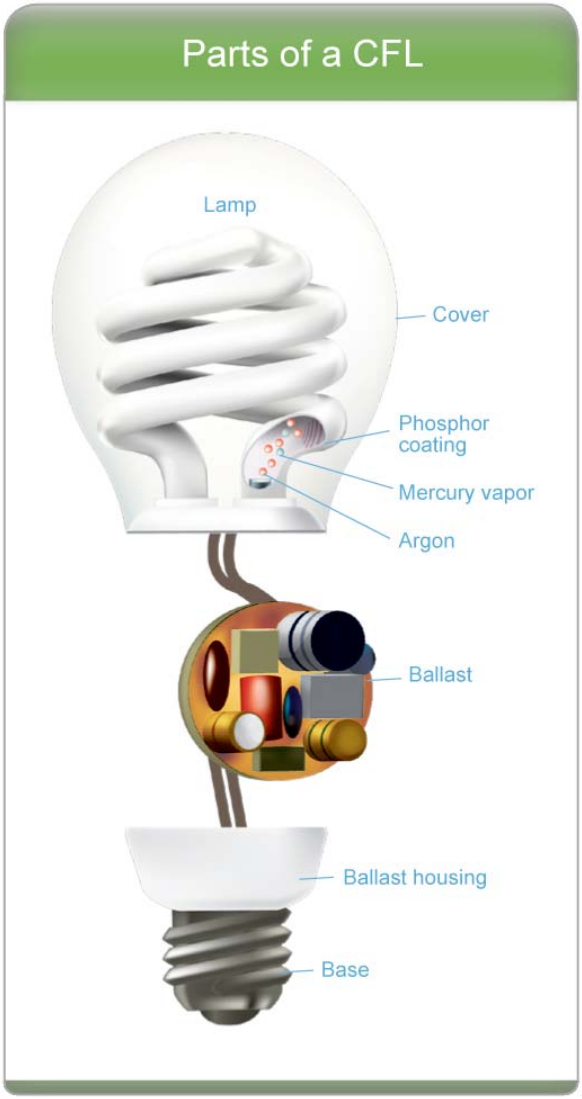
(The large spike in 2008 is indicative of the UCC's contractual agreement with Celeren that resulted in excess costs of approximately $64,000 due to lack of payments to the Illuminating Company by Celeren.)

The UCC spent nearly $672,000 on lighting in this time span. One of the biggest issues with this high use of electrical use is the rate of carbon emissions dispersed by electricity usage. Using a carbon calculator, we estimate that the UCC has produced approximately 4312 tons of carbon emissions from electricity alone during a five-year span from 2003-2007. This annually breaks down to roughly 862.4 tons a year (Bloch). This five year span does not include the year 2008 due to contractual obligations that forced a higher electric bill than would be indicative to the UCC's energy use. Another point of interest is that the tonnage of carbon emissions could vary based on the energy mix of your electric provider, The Illuminating Company (a subsidiary of First Energy). According to First Energy's website, they use 56% coal (which emits the highest amount of CO_2), 28% nuclear energy, 11% natural gas or oil, and 5% from pumped-storage/hydroelectric or wind facilities to generate their electricity ("Corporate Profile: Generation Systems").

Incorporating some of these recommendations below not only will help cut costs of your electrical and lighting bills, but also you will experience the satisfaction of working in a higher efficiency building with lower environmental impacts.

C.Chapel and Meeting Rooms

Based on the above chart and information we suggest you examine the lighting in the chapel and the hotel meeting rooms. By doing research and consulting a lighting professional from the home improvement store Lowe's, the best and most cost-effective way for you to do this is likely to change the types of lighting to either compact fluorescent light bulbs (CFLs) or light-emitting diodes (LEDs).



In the Chapel, the lighting fixture is comprised of an inner and perimeter fixture. The inner fixture uses a 50-Watt bulb with a cost of $10.46 each; the perimeter uses a 75-Watt Par30 bulb with a cost of $8.32 each. In the short run, the option that will benefit you the most would be switching the bulbs from incandescent to CFLs. The CFL bulbs will fit the already existing lighting fixtures. CFL bulbs still produce the same comparable amount of light as incandescent bulbs, and they produce

better quality light in terms of brightness and sharpness, while using up to 75% less electricity than conventional light bulbs ("Learn About CFLs:" How do CFLs Work?). These CFL bulbs are longer lasting bulbs than incandescent, meaning they do not need to be replaced as often as the regular bulbs. "Generally speaking, for every 10 regular light bulbs the UCC replaces, only one CFL bulb would need to be replaced ("CFL and LED Bulbs: A Comparison:" Compact Fluorescent Bulbs)." This alone saves money, about $30 over a CFL bulb's lifetime and pays for itself in about six months. Not only will CFL bulbs save the UCC money but it will also decrease their amount of waste.

In the Chapel now, the UCC can replace exiting incandescent bulbs to the CFLs. Current 50-Watt bulbs in the inner portion of the fixture can be replaced a 13-Watt CFL equivalent. On a retail level, bulbs require 120 volts and are sold in packs of six with a cost of $29.99 per pack, or $4.99 a bulb (Quote from Lowe's). This is a savings of $5.47 per bulb. The 75-Watt bulbs used in the perimeter of lighting fixture can also be replaced with an 18-Watt CFL bulb equivalent that also is a 120-volt bulb. At the retail level, these 18-Watt CFLs are also sold in packs of six at the same $29.99 price tag, or at $4.99 a bulb (Quote from Lowe's). This amounts to a savings of $3.33 per bulb compared to what is being used in the perimeter fixture now.

The second option the UCC can address in lighting is to switch from incandescent bulbs to light-emitting diodes, or LEDs. These bulbs use moving electrons to light a bulb instead of the traditional gases or filaments, which means that LEDs produce far less heat than standard bulbs. These bulbs are incredibly energy efficient and require only a fraction (about $1/50^{th}$) of the energy needed to light a regular incandescent or CFL bulb-type ("CFL and LED Bulbs: A Comparison:" Light Emitting Diodes). Although LED

bulbs are more expensive, the benefits far outweigh the costs. These bulbs last ten times longer than CFLs even and have a lifespan of fifteen years. Given the way technology has changed since LEDs first debuted, new LED bulbs are compatible with current lighting fixtures and do not require the installation of new fixtures. Another positive of LED lighting is that they produce more light per watt than incandescent bulbs, while emitting far less heat, which keeps rooms cooler and thus driving down energy bills. The website www.ledlight.com lists a few more advantages of LED lighting: "The LED Light Bulb saves 90% energy, LED lights last longer up to 60,000 hours, LEDs are cool to touch, LED Bulbs are unbreakable, and LED Lighting saves time, money and the environment." For example using a 3-Watt LED Light versus a 60 light bulb will save you $405.01 Per LED Bulb at 11¢ per kWh/60000hrs ("LEDLight.com:" Information on LED Lighting Products). If every U.S. household replaced just one standard 60-watt bulb with a LED Light bulb it could save 24,184.4 mega (million) watts per day (http://www.ledlight.com/LED-Information.aspx). The following chart shows a simple comparison between LED lighting and the use of incandescent bulbs ("LEDLight.com:" Information on LED Lighting Products). Although it is not specific to the wattage the UCC uses in their bulbs, it does provide a general comparison that may be very helpful in decision-making:

LED Lighting Life Span and Energy Usage Beneficiaries Vs. Incandescent Lights	**LED Light** (1.3 Watt Light Bulb) 1.3 Watt LED Light	**Incandescent Lights**

Life Span How long will the light bulbs last?	Greater Than 60,000 Hours	1,000 Hours
Number of Bulbs Used over a 60,000 Hour Time Period	1 LED Light Bulb	60 Light Bulbs
Bulb Cost	$14.99	$40.20 (60 Bulbs At 67¢ Each)
Electricity Usage Over a 60,000 Hour Time Period	.17 kWh	.17 kWh
Cost of Electricity	$20.40	$612.00
Total Cost After 60,000 Hours	$35.39	$652.20
Total Savings Residential incandescent light bulb cost vs. LED Light cost	**$616.81**	
Total Savings Commercial incandescent light bulb cost vs. LED Light cost	Labor Costs $65 per hour, Boom lift $350 per day, Operator Pay, etc. **$415,405.01**	

(The last two numbers represent the amount residential building would save from switching out their incandescent lights and also how much a commercial building would save from switching incandescent bulbs).

As mentioned above, the UCC can replace current light bulbs in the Chapel with new LED bulbs that would not require a new fixture or any new equipment, other than the new bulbs. On the perimeter of the fixture a Par30 LED bulb can be installed. These

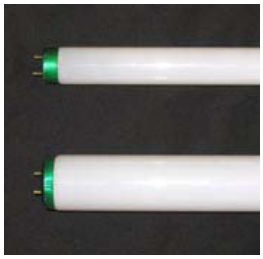
bulbs cost $29.99 each, but have a 60,000-hour lifespan (Quote from Lowe's). The previous 50-Watt bulb used in the interior part of the fixture can be replaced with a Standard Ultra Bright 6-Watt LED bulb. This bulb comes with a price tag of $60 each (Quote from Lowe's). As shown above, the benefits are far greater for LED lighting than incandescent bulbs even though they come with a more expensive price tag.

Lighting improvements also can be made is in hotel meeting rooms. Lighting fixtures in those rooms are T12 fixtures that require a 96"inch single-pin 65-watt bulb. The best way to lower energy usage and lighting costs is to switch to a lower watt bulb. Switching to a $4.65, 60-watt bulb, the results are drastic in changes in cost and energy usage. Another area for improvement is in meeting rooms where bulbs in the spotlights can be changed to a lower-wattage and switched over from fluorescent bulbs to the equivalent of LEDs or CFLs.

Another suggestion for the meeting rooms is exit signs. These can be changed to LED signs, like the ones in the main lobby of the UCC. A Lithonia Polycarbonate LED Exit Sign has a price tag of $59.95, but as light bulbs reduce energy usage and lighting expense that a typical exit sign with standard bulbs uses. A final suggestion for meeting rooms is to install motion sensors in rooms that turn-on only when there is movement and activity within the room. These motion lighting sensors come in various models from several brands and can range in price from $15.95 to $44.95 per sensor. These may well be worth looking into as they will help to drive down the amount of electricity that is used by shutting off the lights when the room is not in use and automatically turning them on when there is movement in said room.

D.Meeting Rooms/Offices

The UCC headquarters has begun to move toward energy-efficient lighting. Some lighting, especially in the lobby, is compact-fluorescent bulbs and halogen bulbs, which



are able to direct light more precisely. However, throughout the walkway and upper-floor meeting rooms, T8 ballasts and T12 ballasts are used. T8 ballasts are used on meeting floors, in the basement, and walkway, while the old magnetic T12 ballasts are located in the mezzanine and the east end of the 9th floor. A 1.5-inch diameter bulb characterizes a T12 bulb, whereas a T8 bulb has a 1-inch diameter. Typically both T12 and T8 bulbs are 4 ft. in length. Both types emit the same amount of lumens (brightness), but a T8 uses less wattage, decreasing your electricity bill (Philips). However, due to the

difference in diameter, T8 bulbs cannot fit into T12 ballasts. The whole system should be updated. The UCC has about 125 ballasts per floor. This many lights can become problematic when several rooms appear to be unoccupied during daylight hours.

A first option to cut energy use and provide cost savings would be to retrofit existing fixtures. Within the past two years, there have been developments of an Easy Fit T5 adapter. This adapter will fit into a T5 bulb, which will then fit into a T8 ballast. Using this adapter does not require professional installation so it eliminates the cost of labor. When comparing several brands, a T5 adapter can give a payback period between one to two years, with a 40-50% energy savings (Chalmor: Solutions for Offices-Easifit T5). Britain's Chalmor Company's adapter (pictured) provides a 24,000-hour lamp life, which is about 3X the life of a T8 light. Chalmor also has an energy saving calculator based on electricity usage rates and changes made. Based on this calculator, the UCC

would reduce their CO2 emissions by close to 15,000 kg with the adapters alone (Chalmor: Solutions for Offices-Easifit T5). This is especially important to the UCC since your 2007 Resolution on Climate Change advocates "supporting mandatory measures that reduce the absolute amount of greenhouse gas emissions, and in particular emissions of carbon dioxide (UCC)."

However, recent updates from the U.S. Department of Energy state that July 1, 2010 will see a phase-out of old magnetic T12 ballasts. After that date, manufacturers are prohibited from producing T12 ballasts for replacements and new fixtures ("Strong T12:" Paragraph 2). For this reason, the UCC should focus first on updating these systems. The best solution would be to use a T5 retrofit conversion kit. These kits, similar to the adaptor, come with all installation tools to cut labor costs. Depending on the type of conversion kit (ones with reflectors and starting plugs, or one-ended conversions, both shown to the left) prices typically range from $20-100 (based on products by Electrical Marketplace). T5 lamps are only .625 inch in diameter, which reduces material costs and toxic content ("T5" Specifications). T5 bulbs also come with a phosphor coasting that prevents mercury absorption and maintains the lumen output over its lifespan. The reflector typically used with the bulb help direct the light more precisely, increasing the energy efficiency in the room. Therefore, a T5 bulb can last for 20,000 hours compared to the 10,000 hours of a T12 ("T5" T5 Savings). In other words, one T5 bulb can do the work of two T12's. Using these conversion kits for every light could save about 40% of the cost of T8 lights ("Smart Lighting Solutions"). Based on a $30 retrofit kit, to replace all ballasts in the UCC (294 kits based on the 294 bulbs accounted for in supply budget) would cost $8820 plus $2911 for 294 T5 28W bulbs. Since the ballasts consume 74% of

the lighting supply cost, we can assume they use 74% of the lighting electricity cost, equaling about $72,372 annually. Based on the possible savings of 40%, the payback period for the retrofit system would be about 6 months. There are also government incentive programs that cover about 50% of the cost of a retrofit system ("Lamp and Ballast").

The only drawback to using a retrofit kit is that many are not designed to work with magnetic ballasts. Instead, the T12 ballast may be upgraded to a T8 ballast. Both T12 and T8 ballasts will fit into the same fixture, so by purchasing and installing a new T8 ballast into the existing fixture and buying new bulbs, a system may be upgraded. 4-bulb T8 ballasts may be purchased through Lowes for only $28.88. For maximum energy efficiency and cost savings, upgrading the T12 system to T5 would be best. However, this would require installing a new fixture. According to Edward Murray, electricity supervisor for B-W's Buildings and Grounds, to replace a T12 fixture with a T5 would take a minimum of one hour per fixture. Multiplying each fixture in the UCC by labor cost per hour will give an approximate figure for this task, plus the price of the new bulbs and ballasts. Specialty Lights has High Performance T5 ballasts plus bulbs for $150-$260 (Specialty Lights).

Another recommendation includes installing occupancy sensors in less-used rooms like meeting rooms, stairwells and basement (chiller room, etc).

Since office hours vary throughout the building, monitoring the sensors could help in establishing an occupancy schedule for the building. For the type of spaces in the UCC, a ceiling mounted dual

technology sensor might be best. A dual technology occupancy sensor uses both infrared technology and ultrasonic technology that can detect heat changes and sound changes in a room ("Motion Sensors" 1). Since larger rooms may obstruct direct heat changes, the ultrasonic technology extends its reach and can detect around corners. These sensors can be found through a company called Lutron that reach up to 2000 square feet and cost around $140 ("Integration"). Therefore, we would suggest beginning with a few larger rooms such as the chiller room and meeting rooms (this may involve a more detail-specific occupancy schedule). The table below will show potential cost-savings in various rooms with use of occupancy sensors according to Madison Gas and Electric Company.

Type of room	Energy Savings (%)
Private office	13 to 50
Open-plan office	20 to 28
Classroom	40 to 46
Conference room	22 to 65
Restroom	30 to 90
Corridors	30 to 80
Storage area/closet	45 to 80

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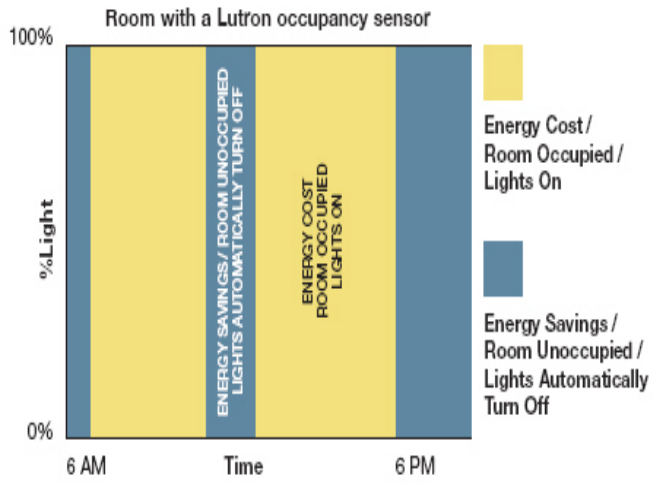


Average Cost Savings around 20% to 30% annually

E. Windows

Although windows will not be extensively covered as part of our energy savings proposals, it is a large piece of the energy savings puzzle and a brief mention of it is noteworthy to suggest how to make your building more energy efficient in the long-term.

Prior to eventual window replacement, hiring an energy auditor can be valuable for an extensive energy audit. Replacing windows is expensive with long payback

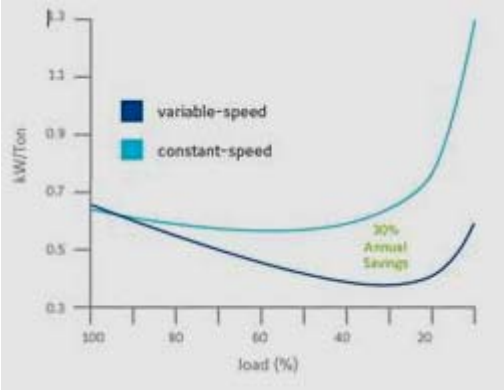
periods, but there are other remedies one can incorporate before replacement time. For instance, window film over the existing windows is a simple, short-term, cost effective plan to help control the air that comes in through windows and help reduce energy costs.

F. HVAC System

An important component of energy efficiency for buildings such as the UCC headquarters is heating, ventilation, and air conditioning systems (HVAC). These integrated systems comprise the circulation of temperature-controlled air throughout the building as well as proper air ventilation. This component of energy efficiency plays a role in reaching the resolution of the UCC's "Call for Environmental Education and Action" (lines 69-72) statement. By becoming more energy efficient in the workplace the UCC can stand out as a leader in sustainable business practices.

Through its social statements and resolutions, the UCC has shown strong concern for our environment and the importance of incorporating more sustainable practices in the workplace. By introducing an upgrade or replacement in your current system, the UCC can take another step towards energy efficiency and responsible care for creation. An HVAC system that is not running at optimum levels will not properly heat or cool a building. Perhaps the biggest improvement that is feasible for the UCC is a conversion to a more efficient HVAC system. One possible upgrade would be to a low voltage, variable-speed drive system as opposed to the current constant-speed drive system at UCC headquarters. Our example would be the York® OptiSpeed™ Variable-Speed

Drive from Johnson Controls Inc. This breakdown shows potential benefits of use over the constant-speed drives.



Over time, constant-speed drives on chillers, which regulate airflow in and out, and within a building, experience frictional losses that affect the chiller's efficiency and restrict its energy-saving potential by running the airflow at higher levels than needed. The OptiSpeed Drive cuts chiller energy and CO_2 emissions by as much as 30% annually (figure 1).[62] This innovative system remembers different operating conditions throughout performance in order to function optimally. This results in an enhanced overall performance leading to energy-savings. By using the OptiSpeed Drive, the system will start more slowly rather than a full-speed start up used in constant speed chillers and never overuses its full load amps because it requires 60% lower startup amps.

By having an HVAC system that runs more efficiently, electrical and mechanical components benefit from running at a lower speed and also experience less wear and tear, which results in more reliability and a longer system life. This equipment's modular design requires only one person for maintenance and the provided software OptiView™ has troubleshooting for quick problem identification. Retrofitting a current constant-

[62] Affinity laws state that reducing fan speed to 50% results in a power consumption drop to 12.5% and with a variable-speed drive system the motor is slowed and the frictional losses are minimized and deliver 30% energy-savings. Acquiring lower energy cost involves reducing the factors that affect the chiller's energy consumption, e.g., the chiller load and the entering condenser water temperature. Cool down periods are needed for system restarts and usually take up to 30 minutes, but with improved system the drive can be restarted in less than 3 minutes providing quick emergency resets. This variable-speed drive provides electrical protection designed to reduce current distortion that can be harmful for other mechanical equipment. The OptiSpeed, when in use also has a noise decrease of about 10 decibels, because roughly 99% of the operational hours are run at slower speeds than the original constant-speed drive systems.

speed centrifugal chiller with an OptiSpeed variable-speed drive reduces energy costs, and has a fast payback period of a little as one to three years plus Johnson Controls can even provide statistical analyses of how much energy bills can be reduced by having a system upgrade (Johnson Controls, 2007).

Incorporating a technology such as the OptiSpeed variable-speed drive into the current HVAC system used at the UCC headquarters can generate significant, long-term cost savings. As stated above, this variable speed drive not only will help to cut back on energy costs it will also have longer equipment life, easier maintenance, and lower noise levels. This system has an estimated payback period of only one to three years (Johnson Controls, 2007).

G. Roofing

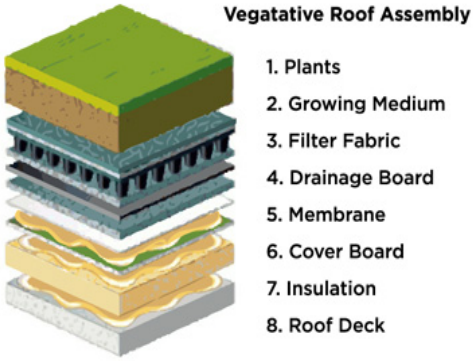
Altering the composition of your roof can also reduce costs. After reviewing blueprints of the building, and making estimations based on these blueprints, as well as measurements taken by maintenance staff, we estimate you have approximately 9,000 square feet of usable space on your roof. With this, a number of innovations are possible. These options include efficient coating, a solar panel array, and/or a vegetative roof.

Vegetative roof

Rooftop solar array

A vegetative roof is a roof that is constructed to support plant life and other forms of vegetation. They are constructed from numerous layers of material, as shown below, all of which are vital to the vegetative roof working properly to serve its various purposes. Primarily, it provides an aesthetic boost to one's rooftop, and provides a comfortable, enjoyable space to converse while looking over the city. However, the benefits of a sustainable roof go far beyond that. Not only would one look nice, but it would also help keep the roof cooler, thus causing less stress on the HVAC system, help provide a small increase in air quality on the roof, and also provide a more effective way of handling excess water runoff. These roofs can be customized to serve specific needs, and can be maintained by an outside agency, which would minimize internal maintenance.

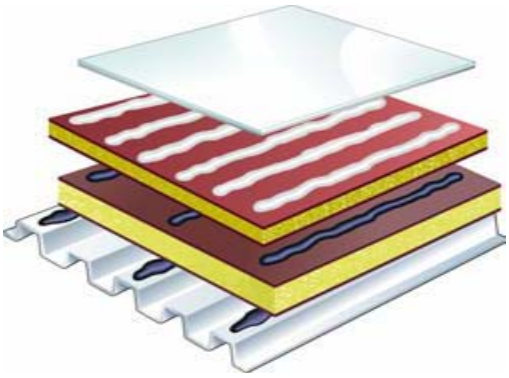
Vegetative roof components (exploded view)



A sustainable roof can also have solar panel arrays. A sustainable roof would help the solar array run more efficiently, as foliage would keep the panels cooler, causing them to run under safer circumstances.

The roof faces direct sunlight from sunrise to sunset with minimal obstruction. A small solar array could provide electrical power to the building, which would help lower energy consumption costs substantially. Plus, you can be paid for installing an array, and if you can provide enough energy, even generate extra revenue by providing energy to nearby locations.

Another option is to install a “single-ply” roof coating, which is composed of three major parts: insulation, to provide “R” value and stable substrate for roof system, a single ply membrane, which must be present for the roof to be effective at all, flashings to provide waterproofing around the roof perimeter, equipment and projections. There is also an optional fourth component, an adhesive, which adds further waterproofing and bonds the ply to the insulation layer.



Single ply roofing (exploded view)

A Cleveland-based company, Tremco, offers multiple types of roof coverings, and also offers a vegetative roof option. They also offer a restoration service to extend the life of the roof, as long as it is a single-ply or metal roof. Currently, the roof is modified asphalt, which would not work properly with the restoration, but the current covering is moderately efficient, as the color reflects sunlight and heat. However, there may be even more efficient coverings available. Garland Company also offers numerous “green” roofing solutions similar to Tremco on their website, www.garlandco.com.

According to Business Wire, an energy-efficient roof “creates an immediate decrease in energy and operating costs because of the lower temperature on the roofs. As the HVAC brings in warm air on the roof, it must work harder to lower the temperature using more energy. When the air on the roof is already at a lower temperature due to the cool roof, the HVAC will use less energy” (Business Wire).

H. Energy In the Office

UCC headquarters is similar to many large office buildings. With six floors of operating space, energy costs can accumulate quickly. Each floor has between 20 and 30 offices, as well as meeting and multi-purpose rooms. Cubicles and offices are typical as far as the electricity, lighting, and computers are concerned. The fact that these offices are typical is a problem. Energy is not being used excessively; however several options can be implemented to change this office environment from typical to more eco-friendly. Areas to focus include the equipment in the offices, power strips, and heating and cooling.

I. Energy Star Rating

Electricity is mainly used for office equipment and lighting. Upgrading office appliances, such as computers, fax machines, printers, and paper shredders to those that are Energy Star qualified, can reduce electricity consumption. Energy Star qualification means that the particular piece of equipment has been designed to run on less electricity and likely has other unique energy saving features (Energy Star). Such features include a power management setting that allows the owner to set a timer for when the piece of equipment will turn off automatically. By doing this, phantom energy load can be eliminated. Energy Star rated equipment often has a tax credit incentive. Energy Star rated equipment has possible energy savings of 50% (http://www.srpnet.com/energy/biztips.aspx).

J. Computers, Printers, and Paper

Another energy saving option is to consider using laptops instead of desktops. Laptops have an estimated 80% to 90% energy savings over desktops (Energy Saving Tips for Businesses). However, if the desktop is necessary, LCD monitors consume from 50% to 70% less energy than a standard CRT monitor. Also, a common misconception is that screen savers reduce energy use by monitors; they do not. Switching to sleep mode automatically or manually turning monitors off is always the better energy saving strategy.

Printers also consume electricity. Paper and ink cartridges printers also incur expenses and cause indirect ecological harm. Paper reducing strategies such as communication through e-mail and double-sided printing paper also conserves other resources such as staff time and precious natural resources. Inkjet printers consume up to 90% less energy than laser printers (New England Gas Company).

K. Power Strips

Power strips, or surge protectors, also save energy. Surge protectors protect electronic devices from power surges and function as an all-in-one power switch for all electronics. Most electronic devices are not unplugged every night, therefore they run what are called “phantom loads”- they waste electricity from only being plugged into the outlet. Employees could plug all of their electronic devices into one power strip, and at the end of every workday switch the power off on the strip. The Belkin “Conserve Surge with Timer” allows the user to set a timer for when the surge protector will shut off each day. In the average home, up to 75% of electricity used to power electronics is consumed while products are turned off.

L. Cooling, Heating, and Natural Lighting

There are also many cost efficient ways to heat and cool an office building. Installing weather strips around doors and windows allow rooms to retain and hold air conditioning or heat better. Closing off unoccupied rooms such as meeting rooms, offices, or bathrooms can also help to hold and retain a temperature longer and more stable. Opening a window can also be an easy way to get fresh air circulation without having to use a fan or air conditioning system. Also, by opening the shades of a few windows, a room can be just as easily light naturally rather than using lights. Trimming trees and shrubbery around windows to maximize natural lighting is also cost effective (Energy Saving Tips).

By implementing a few of these easy and cheap energy saving options, UCC headquarters can reduce its energy usage and save thousands of dollars. Employees must be trained and educated collectively so that the energy saving efforts can be maximized. Yearly, the UCC's electricity bill is between $150,000 and $200,000. A strong collaborative effort from all employees could potentially save tens of thousands of dollars in costs. Not only do these ideas reduce costs but also are consistent with the UCC's values to conserve scarce natural resources and to reduce harmful impacts on global climate change. Money saved could be put to use toward community and church projects/ events, UCC churches, charity organizations, and many other goals or aspirations the UCC may be restricted to pursue due to lack of financial sources. Cost savings could also be devoted to investments in higher cost energy conservation technologies.

M. Conclusions

We have outlined several energy-saving options. Some offer quick payback periods, reductions in carbon emissions, and significant cost savings. In the short run, the

bulbs in the chapel rooms can be switched with CFL bulbs, which will result in a 75% energy reduction, averaging about $30 savings per bulb. By investing in switching the bulbs to LEDs in the long run, UCC can save $120 in purchasing price and up to 90% in energy costs. By retrofitting the T8 and T12 ballasts to T5s using conversion kits, lighting electric bills may be reduced by 40%. The use of occupancy sensors can save an additional 20-30% annually. In other areas, the HVAC system can be updated to a centrifugal variable speed drive, such as the OptiSpeed Drive, which can cut carbon emissions by 30%, reduce noise pollution, and last longer to save money. Our vegetative roof suggestion aids the HVAC system by providing cooler air, as well as increasing air quality and maximizing aesthetic appeal. Outside of these major changes, the UCC can examine their offices for change, from printers that provide less waste, to plug load controllers that reduce electricity, to computer suggestions that save on electrical costs. As evidenced by our research, these solutions are fairly easy to implement and can result in significant cost savings for the organization. More importantly, the UCC can reduce their overall carbon footprint, striving to practice the content of your denominational social statements, and even receive government incentives to do so. Our solutions attempt to optimize opportunities for the UCC in its role to be a steadfast role model as stewards of creation.

VII. Aesthetics

A. Introduction

This section of our audit addresses aesthetics as a component of sustainability. Not only does sustainability aim for health of the environment, but also of the people who live within it. Good workplace aesthetics can provide a happy healthy environment for employees through good use of existing space and incorporating sustainable materials. Good aesthetics can contribute to higher productivity and lower absenteeism. Live plants, lighting, and sustainable floors and paints can promote human health. This supports the UCC's mission on health and well being because your mission is to preach and teach with the power of the living Word, to work for justice, healing, and wholeness of life, and to embrace the unity of Christ's church. Key components of good aesthetics and employee health at your headquarters building include space utilization, natural lighting, flooring, air

quality, visually pleasing design, and availability of employee space such as lounges. These key components are derived from the LEED for Existing Buildings Rating System, created by the US Green Building Council, with the goal of—"…maximizing operational efficiency while minimizing environmental impacts."[63]

B. Space Utilization

Convia reports that, better space utilization has countless benefits, including:

- Employees become more accessible to each other
- Worker productivity improves
- Employee satisfaction rises
- Products and supplies are closer
- Storage capacity increases
- Damage to inventory and equipment is reduced
- The need to expand facilities is delayed indefinitely[64]

Herman- Miller, a sustainable office furniture company, offers office systems that allow the worker to have expressive communication and open space.[65] For

[63]USGBC: LEED for existing buildings
[64] "Space Utilization Reporting Lets Businesses Understand How a Space is Performing." *Convia: Providers of Energy Management Controls*. Web. 11 Nov. 2009. <http://www.convia.com/convia-controls/performance-reporting/space-utilization-reporting/>.
[65] "Systems Furniture - Products - Herman Miller." *Global Landing - Herman Miller*. Web. 30 Oct. 2009. <http://www.hermanmiller.com/Products/Systems-Furniture>.

instance, one suggestion is to consider transitioning to office modules and furniture that provide sustainability features. Two of their office systems: "*Intent* and *Vivo* interiors achieve a unified aesthetic, from private offices to system workstations in the open plan". With a unified office aesthetic design individuals can interact with each other more openly.[66] *Vivo* design components have various heights from 35 to 79 inches high, allowing different levels of privacy. *Intent* furniture design may allow daylight and outside views to reach building occupants through the use of transparent materials and low furniture heights. *Intent* Systems has an option to be easily reconfigured for renovation.

Above left is an example of an Intent and Vivo Interior Workspace. Compared to the UCC office on the right it has a private to open spectrum, and utilizes space for two workers, instead of one.

[66] http://www.hermanmiller.com/Products/Intent-Furniture

Office Specialty, another sustainable office company, has storage centers that offer a variety of flexible filing and storage. "It's designed to allow you to create custom storage walls that are functional and elegant."[67] Herman-Miller's Meridian filing and storage design offers lateral and vertical storage systems.[68] For example, its stackable lateral files are "ideal for centralized, high-volume, readily accessible filing areas. They can divide space, define walkways, and set boundaries. They're modular and even reversible." Herman-Miller's vertical files are "great for efficient, high-density document storage. Modules can be stacked to the desired height in a compact footprint to take advantage of vertical space."

Alternate Filing and storage systems can be utilized to manage clutter in an office. An option to store items more compactly would be by utilizing one area for needed storage. This could organize cluttered files and storage containers that are spread out in different areas of the building.

[67] http://www.officespecialty.com/

Upper left: Office Specialty's storage center series offers the option to combine filing and storage in one system

Bottom left: Herman Miller's Meridian filing styles can easily reduce clutter with various storage and file systems.
Upper Right: An example of the UCC's current, more cluttered, storage.

C.Natural Light

The UCC building currently has center cubicles with limited outside views as well as low natural light quantities. Many cubicles have high dividers, making the centers of each floor seem constrictive and cluttered. Only offices with doors along the outside of each floor have views and natural lighting. Windows on some floors are very small but have good views of downtown Cleveland. Even though each office has its own desk lamp for personal task lighting making use of the natural light they have would be more beneficial to human health. Center cubicles have artificial lighting on through out the workday.

Above left: examples of small windows in the 9th floor conference room.

Above right: An example of a typical cubicle space at the UCC. The space is lit solely by fluorescent lights.

Left: This conference room shows better utilization of natural light, with large windows to let more sunlight in.

Several low-cost changes could be made to invite more natural light into the inner spaces where cubicles are located. Light bulbs, both ceiling and personal ones in offices, could be changed to full spectrum bulbs which create the entire spectrum of natural light and mimics sunlight to the eye and body. More vegetation in offices could also help in bringing nature into the workspace. Spaces could be opened up by removing tall dividers that break entire sections of a floor in half, allowing for a more inviting space instead of confined offices.[69]

Higher cost renovations could be considered in the future. Tubular skylights could bring in sunlight from above to lower floors that cannot have standard

[69] LEED certifications include a section covering amount of daylight and natural views. Certification credits are based on a 2% minimum requirement for daylight in 50% percent of spaces and direct line of sight of outside for 45% of areas.

skylights and also qualify for a 30% federal tax credit[1]. Another option would be to expand windows on any floor not just in offices but in conference rooms as well.

Above: example of a factory roof with tubular skylights.	Above: An example of the indoor view of a factory with tubular skylights.

Scientists have done studies on bringing daylight into office spaces, and the findings indicate that “Day lighting has been associated with improved mood, enhanced morale, lower fatigue, and reduced eyestrain”[2]. Full spectrum light bulbs are the easiest way to “trick” the body into thinking it is seeing natural light and improve overall health and productivity of employees. Opening windows and adding vegetation into spaces brings nature into the general sterile feeling of an office building.

Along with natural light, “Natural views [also] tend to produce positive responses, they may be more effective in reducing stress, decreasing anxiety, holding attention, and improving mood”[3]. Body systems use natural light to function. For example, it is common knowledge that sunlight helps your body produce Vitamin D, an essential vitamin for our body to function well. Over all, health, happiness and productivity of UCC employees can be improved with small changes such as introducing more natural light.

D.Flooring and Air Quality

Another human health factor is air quality. Currently, most flooring at the UCC is carpet. While cheaper than most other flooring options, most carpets contain plastics and chemicals, which can be harmful when inhaled. These chemicals can include VOCs, volatile organic compounds, and can cause hallucinations, nerve damage and respiratory illness in humans (Brooks). Carpeting is also a host for allergens such as pet dander, dust mites, mildew and molds. For those employees who suffer from illnesses such as asthma or have allergies this could be a large problem.

One quick solution would be covering existing flooring with a carpet seal. SafeChoice Carpet Seal prevents out gassing of harmful chemicals used in backing of carpets (AMF). It can be purchased from American Formulating and Manufacturing, and when used correctly, this odorless seal guards people from chemicals such as formaldehyde, toluene, benzene, xylene and styrene for up to one year (Dwell Smart, For Healthy Sustainable Living). [70]

Replacing carpeting with traditional wool carpet or 100% natural, non-dyed wool carpet would also improve air quality (Real Green). The Los Angeles Contempo Flooring Company distributes carpets that are not only soft and comfortable, but also biodegradable. 100% non-dyed wool also offers an ultra-low toxicity, is a rapidly renewable resource and is recyclable. Additionally, to better protect employees who suffer from asthma or other illnesses, wool carpeting can be successful in filtering out many harmful allergens and dust (Contempo Carpet).

[70] "SafeChoice Carpet Seal." Dwell Smart, For Healthy Sustainable Living. 2009. DwellSmart, Web. 7 Nov 2009. <http://www.dwellsmart.com/Products/Carpeting/Carpet-Seal-gallon-size>.

Contempo flooring also lists multiple padding options, such as synthetic Jute and Healthier Choice padding. Synthetic Jute is hypoallergenic carpet padding for high traffic areas. It can improve carpet life, has insulation properties, and is mildew and odor resistant. Healthier Choice padding is all natural and 100% post-consumer recyclable. It is soy-based, and is guaranteed to last a lifetime. It not only offers antimicrobial protection, but also is hypoallergenic and has the lowest VOC emissions of any other carpet padding (Contempo Padding).

Nature's Carpet is a green flooring brand that offers a "green" spectrum in which to clarify the varying degrees of earth-friendly flooring (Nature's Carpet). This spectrum ranges from "dark green to green" and describes in detail what each product offers. This company uses Jute padding with their flooring, and is a 100% chemical-free, non-toxic, and non-dyed product. They have retailers all over North America and offer prices comparable to most wool floor coverings in the market.

Shaw Contract Group is a "Cradle-to-Cradle" certified company, which distributes carpet tiles. This certification is given to those companies who maximize material value and eliminate waste. This certification also means a healthy and safe product that can be collected and remanufactured over and over again. Shaw focuses on sustainability through innovation, and because of this they have developed multiple products that posses this "Cradle-to-Cradle" certification (Shaw). Similarly, InterfaceFLOR has a goal to exceed green product characteristics. In their mission zero statement they state that, "Every creative, manufacturing and building decision we make is intended to help us achieve zero environmental footprint by 2020 and give you the most fashionable, high performing and

environmentally well-rounded products in the industry" (InterfaceFLOR). Their approach is to create products that take nothing from the earth that cannot be easily replaced, and to educate the employees of Interface on their impact on the environment. Interface offers multiple categories of environmental carpet squares. *Cool* Carpet is one, of many, that zeros out all greenhouse gases, which would be released during the entire lifecycle of the floor (InterfaceFLOR). The main benefit in using carpet tiles is that the entire wall-to-wall carpet does not need to be replaced when a portion of flooring has been damaged. Only one square may need to be changed, and this could eliminate rolls of carpet, which are not biodegradable, being left in landfills. LEED indoor chemical and pollutant source control stresses isolating high volume copy and fax machines to minimize exposure of building occupants to potentially hazardous particulates and chemical pollutants (LEED Green Building Solutions). Currently the UCC is not isolating their copy machines. Below is an image of a UCC kitchen in which a copier is in direct contact with employees as well as their food preparation area. This LEED certification standard is an important factor in human health, and to comply with this health standard, the UCC needs to implement entryway systems, properly exhaust chemical use areas, and employ high efficiency filters on mechanical ventilation systems. This will help to minimize exposure to hazardous particulates and chemical pollutants.

Above is an employee kitchen area in which the large printer is in direct contact with employees and their food preparation.

E. Live Plants

The UCC's headquarters currently uses artificial plants more than real plants. Ron Wood, a research associate with the Environmental Quality Group at the University of Technology in Sydney, Australia, advises live plants absorb toxins, increase creativity, productivity, and lower stress. Professor Tove Fjeld of Agricultural University in Oslo, Norway, conducted several conclusive studies regarding health claims relating to "Sick Building Syndrome" among workers (The Benefits of Plants are too Good to Ignore). He found that the following health complaints were decreased after the introduction of live plants to work environments:

Ailment	**Reduction**
Fatigue	20%
Headaches	30%
Sore/Dry Throats	30%
Coughs	40%
Dry Facial Skin	25%

The Environmental Protection Agency rates indoor pollutants as a top environmental health risk, especially since people on average spend around 90% of their time indoors. Fjeld's study also found that absenteeism and indoor air quality liabilities cost over $60 billion per year. Fjeld found that these basic health complaints are reduced by 23% when live plants are present, and in a two year study in 51 offices, negative health symptoms were 23% less in offices with plants and productivity increased by 12%. Introducing more live plants rather than fake or silk plants could improve human health by bringing nature inside. (<http://www.plantscapers.com/the-benefits-of-plants.html>.)

F. Visually Pleasing Design

The UCC's current color scheme consists of grays and whites, which is not as aesthetically pleasing as having brighter colors and paintings on walls. The paints are latex acrylic and water-based acrylic. As the UCC repaints their walls, sustainable choices could be either soy-based or VOC free paints. Volatile organic compounds (VOCs) are chemicals with low water solubility and high vapor pressure. VOC's can trigger short-term and long-term adverse health reactions, and paint without them, especially indoors, is beneficial to human health (Carroll). One example of VOC-free paint is The Freshaire Choice paint, available at Home Depot (www.freshairechoice.com). Freshaire Choice is VOC-free, eco-friendly interior paint with 66 different colors. Another sustainable paint choice is Harmony Interior

Latex, which is available at Sherwin-Williams, and "Greensure" certified. The Harmony paint is low-odor, VOC-free, has the highest indoor air quality ratings, and is also LEED certified (Harmony Interior Acrylic Latex). Regarding paints, brighter colors or at least paints with a tint of color gives offices less of "an institutional feel," as one employee described the color scheme. Brighter colors and artwork could also increase a feeling of energy in employees.

Above is a picture of a typical hallway at the UCC headquarters, which is mostly whites and grays, and could be improved with brighter colors and more artwork.

The UCC already has many examples of artwork around the offices, but by adding more colors and artwork, a brighter environment would be created with more art that expresses UCC mission and values.

G. Conclusion

Our aim is that these aesthetics recommendations will contribute to a higher sense of employee health and well-being. Better space utilization would provide a

more open work environment and heighten daily communication. Management of stored items would reduce visible clutter by using alternative filing and storage systems, systems with banding applications. Filing and storage systems can be centralized for the files to be more accessible in one area. Incorporating natural lighting and outdoor views into the UCC building could result in less fatigue, reduced stress, and more sustained and productive UCC employees. Flooring refurbishing such as carpet sealer, padding for carpet, or more sustainable carpet products—can reduce chemicals such as VOCs and formaldehyde and allergens such as mildew and mold. Isolation of high volume fax and copy machines minimizes exposure to hazardous particles and chemical pollutants from employees. Utilizing live plants could decrease health complaints in the workplace such as headaches, soar/dry throats and dry skin. Initiating more visually pleasing design will make the UCC headquarters more welcoming to employees and visitors.

VIII. Water and Waste

A. Introduction

The UCC national headquarters is an important citizen in its surrounding community in Cleveland as well as for its congregations and related organizations nationwide. It is important for such a leading organization to try to live up to its own vision of stewardship for the environment in order to continue to act as a leader in environmental efforts. Harmful environmental impacts of a commercial building with a large number of people consuming water resources and producing trash are unavoidable. However, there are many ways to reduce that negative environmental impact with considerable cost savings. By making simple changes in product choices, improving technology, and consciously rather than thoughtlessly consuming resources, it is possible for the UCC to move towards being a "zero-waste" organization. We discuss possible improvements in UCC operations that would maximize long-term savings through improvements in water efficiency and reduction of solid waste.

B. Water

Over the last seven years, the UCC Headquarters has spent an average of $3,979 annually on water, and an average of $6,564 on sewer services through NEORSD per year. A large amount of water consumption is attributed to the use of water-consuming fixtures in restrooms and kitchens. With approximately 180 employees working in the building, it is understandable why water consumption is high. The UCC Headquarters is nine stories with restrooms and kitchens on each floor. These rooms have sinks and toilets that are the main sources of water consumption. New technology is available to reduce water consumption of sinks and toilets retrofits existing fixtures instead of replacing them.

Your building has 44 restroom sinks, 33 toilets, 10 urinals, and 8 utility sinks. Most faucets are made by Moen and have aerators, but since no information is printed on the products it is unclear if they are "low-flow" aerators or not. Aerators that are specifically designed to be "low-flow," allow 1.5 gallons per minute (gpm) to pass through the fixture (as opposed to 2.5 gpm). Moen sells aerators that can be attached to Moen faucets by screwing into the threads on the fixture with a retail price range from $7-$11. If the faucet is not threaded, flow control valves can be installed underneath the sink. These are more adjustable than aerators because the flow can be varied to fit the function, such as less than 1.5 gpm in commercial restrooms. Depending on where purchased, these types of flow control valves sell for approximately $20. If the UCC were to replace existing aerators by installing specifically low-flow aerators on each of their 44-restroom faucets, the total cost would be approximately $400.

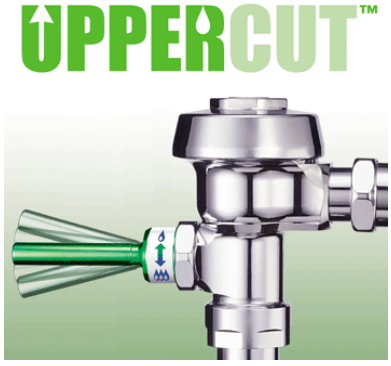
The 33 toilets and 10 urinals are another major source of water consumption. All 33 toilets currently operate at the standard 1.6 gallons per flush (gpf) and all 10 urinals operate at the standard 1.0 gpf. It is possible to reduce this water consumption by replacing the current toilets and urinals with HET's (high-efficiency toilets) and HEU's (high-efficiency urinals) that operate at a respective 1.28 gpf and 0.5 gpf. American Standard HET's are listed on American Standard's online store as selling in the retail price range of $236-$1,119, while American Standard HEU's in the retail price range of $849-$1,215.[1] However, it could be more economical to install retrofitting kits for both toilets and urinals to reduce their "gpf" since they are relatively inexpensive compared to the cost of replacing existing units with HE units.

American Standard's online store also sells a water free urinal, which has a retail price of $469.[2] Instead of having a reservoir of water that flushes out, it has a trap insert filled with a liquid sealant that floats on top of the liquid collected in the urinal to seal out odor.

Since Sloan Valve Company manufactures the toilet valves in your building's restrooms, a practical choice is to install the Uppercut Dual-Flush System, also manufactured by Sloan and designed to function with their valves. This system allows the handle to be moved either up or down, up for liquid and paper waste (1.1

[1] (http://www.americanstandard-us.com/searchResults.aspx?d=1&t=3&a=7)
[2] (http://www.americanstandard-us.com/urinals/flowise-flush-free-waterless-urinal-large/)

gpf) and down for solid and paper waste (the standard 1.6 gpf). Flushing upward uses 30% less water, saving 0.5 gpf. The handle is colored green to signify that it is a water saving device. The proper kit needed to function with the UCC's existing toilets is the Uppercut Handle Retrofit Kit with Handle and Diaphragm; model number WES-213A (www.sloanvalve.com). Lakeside Supply, a Cleveland area distributor of all Sloan Valve Company products, sells these kits locally.[3] They do not currently have the Uppercut in stock, but will order any number of them upon request. Sloan's list price for the product is $83.70. Lakeside Supply would be able to sell them for $62.78 each, but by purchasing them in bulk (33) they would be discounted to $56.50 each.[4] If the UCC were to purchase 33 of these retrofit kits the cost would be $1,864.50, plus the cost of installation by a contracted plumber.



With a few assumptions, we can calculate the current consumption of water in restrooms and also the consumption reduction after the installation of retrofitting kits. Let's assume an employee typically uses the restroom 3 times in an eight-hour workday, and washes their hands each time. However, women and men use restrooms differently. Women always use toilets, while men typically use out of those three times urinals twice and toilets once. Without an approximate ratio of

[3] (www.lakesidesupply.com)
[4] (Representative of Lakeside Supply, personal communication, October 29, 2009)

women to men employees, we assume from our observational visit that the ratio is 60:40. Since we know the UCC has 180 employees, we can estimate with our ratio that approximately 108 are women and 72 are men. Currently, restroom toilets use 1.6 gpf, urinals 1.0 gpf, and faucets 2.5 gpm. After installing retrofitting kits in restrooms, toilets will use 1.1 gpf on the *up* flush and 1.6 gpf on the *down* flush, urinals remain 1.0 gpf, and faucets 1.5 gpm. After toilets are retrofitted, we assume that a female employee will *up* flush twice and *down* flush once a day. From personal observations of hand washing, we assume that time duration is 20 seconds. From these values we can roughly calculate the daily and yearly water usage in restrooms before and after retrofitting restroom fixtures.

Table 1 **DAILY WATER CONSUMPTION**			Gallons /day
Existing Toilets: Women	(# Women)(# Flushes x gpf)	(108)(3 x 1.6)	518.4
Existing Toilets: Men	(# Men)(# Flushes x gpf)	(72)(1 x 1.6)	115.2
Existing Urinals: Men	(# Men)(# Flushes x gpf)	(72)(2 x 1.0)	259.2
Existing Faucets: M+W	(Flow Rate x Time)(# Employees x Hand washings)	(2.5 x 0.3)(180 x 3)	405
Total			**1297.8**
Retrofitted Toilets: Wom	(# Women)[(# Up flushes x gpf) + Down flushes x gpf)]	(108)[(2 x 1.1) +(1 x 1.6)]	410.4
Retrofitted Toilets: Men	(# Men)(# Down flushes x gpf)	(72)(1 x 1.6)	115.2
Existing Urinals: Men	(# Men)(# Flushes x gpf)	(72)(2 x 1.0)	259.2
Retrofitted Faucets: M+W	(Flow Rate x Time)(# Employees x hand washings)	(1.5 x 0.3)(180 x 3)	243
Total			**1027.8**
Percent of Water Reduction	(100%) – [(Gal/day after Retrofit)/(Gal/day Existing) x 100	(100) – [(1027.8 1297.8) x 100]	**21%**

Assuming the UCC is open 255 days a year (365 – weekends – holidays), we can roughly estimate yearly water consumption.

Table 2 **YEARLY WATER CONSUMPTION**	Gallons/year

Existing Fixtures	(Total Gal/Day) x (# Days of Operatio	(1297.8)(255)	330,939
Retrofitted Fixtures	(Total Gal/Day) x (# Days of Operatio	(1027.8)(255)	262,089
Percent of Water Reduction	(100%) – [(Gal/year afte Retrofit)/ (Gal/year Existing) x 10	(100) – [(262,089 / 330,939) x 100]	**21%**

From this analysis it is apparent that retrofitting existing restroom fixtures significantly reduces water consumption. Without knowing the exact cost of water we cannot calculate cost savings, but undoubtedly the savings would be significant.

To reduce water and electricity use we suggest that the UCC replace the Oasis Point of Use water coolers with faucet attached Brita water filters. The current monthly rental charge for one Oasis Point of Use water cooler is approximately $23.00. The UCC currently uses 8 of these coolers, with a monthly rental cost of $184.00 and a yearly rental cost of $2,208.

Oasis POU water coolers require the filters to be changed every 12 to 18 months, at a cost of $55.00 per water cooler, for a total of $440.00 per year. The Oasis POU water coolers also require the use of electricity: 115volts/60 hertz per cooler. These coolers run 24 hours a day.

Switching to Brita faucet attached water filters would have a one time purchase price of $18.99 each, for a total of $151.92. This purchase price for the eight Brita filters is cheaper than current rental cost of the Oasis POU water cooler and would save the UCC $2,056.08 a year. Brita recommends that the filter be changed every 4 months. Each Brita filter would require 3 filter changes a year. Brita sells filters in packages of two for the price of $29.99. The UCC would need 12 packages of these filters for the price of $359.88 yearly. The switch to Brita would

save the UCC an additional $80.12 per year. Also, the Brita water filter does not require the use of electricity.

Table 4
Oasis/Brita Cost Comparison

	Monthly Cost	Electricity Usage	Filter Cost	Annual Cost
Oasis	$184.00	115 volts/60 hertz	$440	$2,648.00
Brita	$151.92*	None	$359.88	$511.80**
Total Saving	$2,146.20			

*This cost is a one-time purchase price.
**This cost does not include the one-time purchase price

C. Waste

Another improvement that could be made in restrooms is to replace paper towel dispensers to reduce the amount of paper waste the building produces. One alternative to paper towels would be Extreme Air hand dryers. The UCC spends approximately $3,809 annually on paper towels. The total cost (this includes the cost of generating requisitions and purchase orders receiving, servicing towel dispenser, collecting and disposing of used towels) per year is $5,714. Switching to hand dryers would eliminate 95% of paper towel cost. The annual cost for Extreme Air hand dryers would be around $340 and saves the UCC $5,375 a year. The hand dryers sell for $355 per unit plus an installation fee. We estimate that installation of

16 bathrooms would cost $7,280.[71] The Extreme Air has a payback period of about 1.4 years. The energy cost of the Extreme Air hand dryer as estimated at $0.40 per 1,000 hand dryings. Producing one ton of virgin paper requires on average 20,000 gallons of water, 17 trees, 384 gallons of oil, and 42 gallons of gasoline. The energy use of paper towels per drying is 460 Kilojoules compared to the 51 Kilojoules the Extreme Air hand dryer uses. There are also sanitary issues with paper towels dispensers because touching the dispensers can transmit germs. This is not a problem with Extreme Air hand dryers because they are motion activated. It takes 10 to 15 seconds to dry hands completely. They are also maintenance-free. The Extreme Air hand dryers are Greenspac listed and have LEED credits.[6]

[71] Installation cost is $100 dollars per unit. No future maintenance is necessary. Electricity cost is about $0.20 per hours used.
[6] (http://www.americandryer.com/?gclid=CLzf8dmkh54CFYdd5Qod3zurog)

Table 3 Calculating Savings	
1. Number of cases of paper towels used annually	106 cases
2. Cost per case	$35.94
3. Total paper towel cost per year	$3,809.64
4. Handling cost (50% of item 3. This includes the cost of generating requisitions and purchase orders receiving, servicing towel dispenser, collecting and disposing of used towels)	$1,904.82
5. Total cost of using paper towels per year	**$ 5,714.46**
6. Number of paper towels used annually (4800 ft of paper towels per roll. 4800x106)	508,800 sheets
7. Number of hand dryings annually (508,800sheets/2.5 towels per hand drying)	203,520 hand dryings
8. Hours of dryer usage (203,520 hand dryings/ 240 hand dries per hour because it takes 15 seconds for the Extreme Air hand dryer to dry hands)	848 hours
9. Cost of electricity per hour (1.5 KW it takes to run the Extreme Air hand dryer times the KWH of $0.10)	$0.20
10. Total annual hand dryer cost (848 hours x $.20)	**$339.20**
11. UCC's annual savings (Percent savings = 94.1%)	**$5,375.26**
12. Cost of each dryer $355 plus installation cost $100 = $455 455x16 = Total Purchase Price of…	$7,280
13. Savings multiple (annual savings/total purchase price)	.738
14. Payback period (12 months divided by the savings multiple)	**16.3 months** or **1.4 years**

Kimberly-Clark, a "green" paper supply company, sells tear-away paper towel products. Each role has 1000 feet of paper in it. Kimberly-Clark paper towels have 25% more feet than the SCOTT 1040 Roll Towel without increasing roll

diameter or sacrificing performance. They are made of 40% post-consumer waste content and elemental chlorine-free bleaching. They sell their paper towels for $31.50 per case ($5.25 per roll/6 rolls per case). The UCC would now be spending $3,339 instead of $3,809.64 annually. They would save $470.64 each year. Dispensers are provided for free with the purchase of rolls of paper towels. This will limit the amount of paper towels use of each person and will lessen the paper waste because the employees will have a set amount of paper that they can use instead of taking more paper towels then they need. [7]

To combat waste generated by the use of paper and Styrofoam cups, we suggest the UCC provide each employee with a stainless steel or plastic water bottle. This would be a one-time purchase that would eliminate the need for disposable paper cups.[8] Styrofoam and plastic cups currently used to drink warm liquids could be replaced with ceramic mugs that are either purchased by the UCC or brought in by each employee. In addition to discontinuing the use of disposable cups, the use of plastic flatware and paper plates should also be avoided. Employees could be encouraged to bring in their own plates or disposable items could be replaced with a set of metal flatware and reusable plates to be used in each kitchen.

Though large paper recycling bins are available on each floor, we suggest providing desk-side paper recycling bins to employees to remove recyclable paper from the solid waste stream. The cost is $5.99 per bin if purchased from the Home Depot. In addition to recycling paper, waste can be further avoided by sending faxes electronically, scanning documents, and printing double sided.

[7] (http://www.reliablepaper.com/SearchResults.asp?Cat=3232&Click=19099)
[8] The cost would be $9.99 per 26oz bottle if purchased from EcoCanteen.

To analyze the contents of your waste stream, we took a look in your dumpster. The contents roughly break down into 4 categories:

- Mixed Trash – 40%
- Food Waste – 25%
- Packaging – 20%
- Recyclable Material – 15%

Since waste removal services are shared with the adjacent hotel, it is likely that most of the food waste is from the hotel kitchen. In order to reduce packaging from entering the waste stream, purchase products in bulk or with recyclable packaging as much as possible. Though UCC is diligent about recycling, some recyclable material still ends up in the dumpster. It is important to educate employees on exactly what is and is not recyclable. This can be achieved by posting recycling information on bulletin boards around the offices. Reduction of waste is an important aspect of sustainability and requires attention as to what is entering the waste stream.

Currently, Allied Waste removes solid waste produced by the UCC. The monthly fee is $1,058 on average. If the UCC significantly reduces the amount of recyclable material that ends up in their dumpsters, Allied Waste could potentially remove the waste less often, consequently saving the UCC money for waste removal services. Currently, one two-yard open top dumpster of trash is emptied 6 times a

week, and one, two-yard compactor box of trash emptied 6 times a week. Two two-yard open top dumpsters of recyclables are emptied 3 times a week (Mon, Wed, Fri), as well as 10-12 totes of recycled paper every other Wednesday. One 35-gallon bag of plastic is recycled about once a week. Aluminum is taken to a metal recycler as needed. Roughly 80 pounds is recycled three times a year. The UCC is paid about $75 for the metal each visit.

A different option for waste removal could be the City of Cleveland's Division of Waste Collection and Disposal. According to their website, a two-yard front-end load dumpster costs $16.00 per pick up. If the city would remove the trash the UCC would pay approximately $750 per month. However, this does not include recycling. Recycling can be taken to the drop off location at the corner of E. 14th St. and Euclid Ave where paper and plastic is accepted. This location is only 0.5 mile from UCC headquarters. If a trip was made every day as opposed to only three trips per week the recycling could be managed with a cart and walking. Total savings would be over $3500 per year. Reducing the overall amount of trash produced by the UCC could eliminate the need for multiple containers and pickups 6 times a week, which would result in cost reductions as well.

D.Conclusion

In summary, we have identified areas of consumption that generate high costs of waste that can be reduced. These recommendations will reduce financial cost and waste to the environment.

- Retrofitting toilets and faucets to be low-flow,
- Installing hand dryers or tear-off paper-towel dispensers,

- Discontinuing use of Oasis POU water-coolers,
- Stocking kitchen cupboards with reusable cups/plates/flatware,
- Providing employees with reusable water bottles

The UCC will save money in both the short and long run and also significantly reduce negative environmental impacts it produces from "business as usual" operations. These reductions can also be promoted to your UCC constituency and help position you in your attempts to lead in sustainability.

IX. Conclusion

The purpose of this audit was to generate ideas for ways the UCC can more effectively embody “sustainability”, not only by reducing the organization’s “environmental footprint” through such things as use of energy and materials, but also in the way it positions itself within its local community. As Mahatma Gandhi said, “It's not too late at all. You just don't yet know what you are capable of.” It is never too late to make changes that make a difference. . By drawing upon the spirit of your mission, organizational vision, and values, the UCC could easily add an “environmental mission statement” that makes more explicit your inherent environmental concern and that builds a pact between the church and the planet. By moving outside of the church building and recruiting surrounding neighbors to the “green” movement, the UCC can more fully leverage its influence on neighbors around you. In spite of the current economy, we trust that the UCC can incorporate recommendations regarding both sustainable materials without toxic chemicals and “green” improvements concerning design and lighting meant to increase employee health and happiness. By reducing fossil fuel energy use and also your production of waste, the UCC will save money and live more responsibly. As more companies, municipalities, nonprofits, and nations stretch themselves toward the goal of a more

sustainable future, we believe that the UCC can be among those in this movement who will help preserve the planet for future generations.

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Appendix I

UCC Neighbor Interviews

On September 8 and 11, 2009 our group of five Baldwin-Wallace students went to the Historic Gateway Neighborhood and conducted face-to-face interviews with businesses surrounding the UCC headquarters. We spoke to managers of seven businesses as well as employees and posing these questions:

1) In your opinion, what are the most important issues relating to the health and wellbeing of your neighborhood?
2) What do you perceive the role of the United Church of Christ to be in the neighborhood?
3) What are your views of the Cleveland Downtown Alliance and the roles that it plays in the neighborhood?
4) What are the Alliance's strengths and weaknesses?
5) Are there any unmet needs that need to be addressed here?
6) Are there any additional ways that the institutional residents of your neighborhood could cooperate together for mutual benefit?
7) Any additional comments you would like to make?

In our face-to-face interviews we received the following responses from the seven businesses we visited:

The Hotel Radisson

1) Keeping streets clean and trash picked up because there are overflowing trash bins.
2) The UCC participates in some sort of "All-Staff Community Service" Day.

3) They are very involved.

4) They seem to have a lot of events to get the community involved.

5) No unmet needs.

6) Taking the extra effort to get involved with the neighborhood

7) Over the last 5 years there have been a lot of restaurant openings making things more accessible for downtown residents.

Marriot Residence Inn

1) Trash. The emptying of dumpsters daily is necessary to control the litter and trash in the neighborhood. The presence of the homeless makes people uncomfortable when visiting the Historic Gateway District. People will feel safer if panhandling is eliminated.

2) They are good neighbors. Their building is a beautiful addition to the neighborhood and they keep it well maintained.

3) At least twice a day they are out on the streets picking up litter which is a big help.

4) They provide consistent improvement and quality development in the neighborhood.

5) No.

6) The homeless problem needs to be tackled for all to benefit. They are hurting businesses in the area.

7) If you want good development you have to get rid of the solicitation.

A.J. Rocco's Café

1) Too many cars. Most of the café's employees bike to work or use public transportation. The RTA is really associable here.

2) They are quiet neighbors that don't give too much to the community. A few years ago they were more involved locally, so it seemed.

3) Everyone feels safer with their presence.

4) It does a better job than the city when it comes to responding to local concerns.

5) Recycling programs throughout the city should be put into place. Right now we recycle independently through the Cleveland Botanical Garden.

6) Togetherness might be an issue among neighborhood. Would like to see a neighborhood recycling program started but docking space might be a problem for some businesses.

7) No

The Winking Lizard

1) Homeless People. There are a lot of them, they make customers feel unsafe or steal from customers. They scare people from the suburbs. People not from the city will give them money only adding to the population of homeless around the neighborhood.

2) They exist?

3) They clean a lot and pick up trash daily.

4) Most of the cleaning only takes place before big events (i.e. St Patrick's Day). Maybe they could be around more often? More presence at night would be good, would make people feel safer.

5) We would consider recycling if it were more convenient. I think there is a parking lot around here with a recycling bin somewhere? If there was recycling the bins would need to be secure, otherwise people would steal or move them and they would really be of no help.

6) Deal with the Homeless population better. Maybe put up a sign of where people could donate to help them instead of giving them money upfront.

7) No.

Panini's

1) Getting bums off the street.

2) They are not our neighbors.

3) They do a sufficient job. They help with security and keep streets clean.

4) No weaknesses.

5) Not enough parking, security

6) There is nothing to be done.

7) No.

Jerold's Optical

1) Need more retail is needed in the area.
2) Good neighbors, we get good business from them.
3) They're okay.
4) Don't do anything for me or my business.
5) Need more retail; we have been here for 63 years. There used to be a lot of retail and more customers, now we've become a far off destination due to lack of people shopping in this area regularly.
6) More retail establishments in the area.
7) No.

Read's Jewelry

1) Parking availability is an issue.
2) We get business from them.
3) They do a good job of doing what the city should already be doing. Costs $500 to be in it.
4) The cost of membership.
5) This neighborhood is safe, people think there is not enough protection and are afraid to come downtown because they hear of what happens at night, but during the day, it's safe.
6) Not Really.
7) No.

Appendix II

UCC Employee Surveys

In late September 2009 a survey was distributed to employees of the UCC headquarters concerning their commuting habits and opinions of their workplace, 23 were returned for interpretation. The following is a copy of the survey with all results:

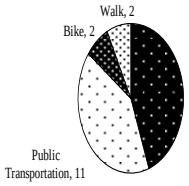
Employee Sustainability Survey

This employee survey is part of a semester long audit project being conducted by a sustainability class at Baldwin-Wallace College. Students in the class are analyzing various sustainability components of UCC headquarters and operations, including water, waste, energy, our relations in our local neighborhood, aesthetics, and our mission, vision, and core values. This survey will provide helpful information as they conduct their analysis and offer recommendations to our organization.

This survey is confidential and anonymous. Please return it directly to Alan Wolf by October 15 and he will forward them to students in the B-W class. If you have any questions about this project or this survey, please feel free to contact Alan (wolfa@ucc.org) or David Krueger, instructor of the B-W class (dkrueger@bw.edu).

1. What is your usual mode of transportation to and from work?

   23 responses.

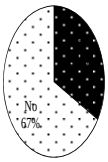


2. If driving, approximately how many miles per gallon does your vehicle obtain?
   13 responses.
   Average gas mileage is 30.54 miles per gallon.

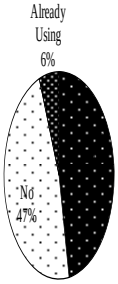
3. If driving, where do you park?
   14 responses.
   All employees utilize the parking garage across the street from the UCC headquarters.

4. If biking, where do you keep your bike during work hours?
   2 responses.
   Bikes are stored in the storage area off of the lobby or the second floor stairwell.

5. How far is your daily commute (In minutes)
   23 responses.
   Average daily commute is 28.7 minutes.
6. Would a discount on parking encourage you to carpool?
   17 responses.



7. Would a subsidized buss pass encourage you to use public transportation?
   20 responses.



8. How many days a week do you commute to UCC headquarters?
   23 responses.
   Average number of commuting days is 4.87 per week.

9. If you drive to work, what, if anything, would prompt you to seek alternative transportation (e.g., public transportation, car-pooling, biking)?
   10 responses.
   - *I live too far away for alternative transportation*
   - *Nothing really…*
   - *I want to drive everyday*
   - *Having someone to pick up my kids from school.*
   - *A more direct route from my house to work (right now I'd be taking 3 buses and a train)*
   - *The cost of gas and parking going up.*
   - *Cross-county busses with several time options including a bus stop close to the office since I work to 8 or 9 pm sometimes.*
   - *Car-pooling*
   - *Discovering a very near neighbor who also drives to downtown Cleveland everyday.*
   - *Have small children in school. If they get sick or hurt I'd want to be able to leave immediately so I don't know.*

10. How would you rate the air flow and ventilation in the building?

Excellent				Poor
5	4	3	2	1

23 responses.

Average response was 3.09

11. I would be willing to wear more clothing in winter because reducing indoor air temperature at work generates substantial energy savings and reduced fossil fuel emissions.

Yes				No
5	4	3	2	1

23 responses.

Average response was 4.13

12. I would be willing to wear less heavy clothing in the summer at work because increasing indoor air temperature generates substantial energy savings and reduced fossil fuel emissions.

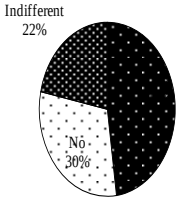
Yes				No
5	4	3	2	1

23 responses.

Average response was 3.69

13. Are there adequate places in the building for breaks and relaxation?

20 responses.



14. How would you rate the aesthetics of your indoor surroundings in the building?

Excellent Poor

5 4 3 2 1

23 responses.

Average response was 3.48

15. How would you rate re-cycling efforts in your building?

Excellent Poor

5 4 3 2 1

23 responses.

Average response was 3.4

16. Would you use a "green roof top" if it were available in warm months?

Yes No

5 4 3 2 1

23 responses.

Average response was 4.09

17. UCC headquarters does a good job of minimizing its paper consumption.

Yes No

5 4 3 2 1

23 responses.

Average response was 2.96

18. UCC headquarters does a good job of trying to model its mission, theology, and ethics (e.g., resolutions regarding environmental stewardship, climate change) in its own operations.

Yes No

5 4 3 2 1

Average response was 3.45

19. Please feel free to identify any additional issues that you think are relevant to a project that concerns sustainability at UCC headquarters.

8 responses.

I appreciate the efforts to use paper instead of Styrofoam in choices of disposable cups and plates. More work needs to be done in this area, and it's partly a Cleveland cultural thing. Many, many restaurants package takeout food in Styrofoam containers and this is regrettably true, I believe, even at the UCC related Radisson Hotel at Gateway. Finding a way to make the use of paper instead of Styrofoam both cost-effective and a matter of civic pride would be to lead in the use of compostable plates and utensils. This is done a few hours down the road at Ohio University in Athens. Could we partner with Cleveland's community gardens in composting?

Many of us have health issues (bronchitis, asthma, etc.) so I don't think reducing temperatures in winter is a good idea.

Have people bring their own plates (non-paper), cups, utensils to gatherings.

Staff needs to be educated about the most efficient thermostat settings (especially for air conditioning). Also need to be educated that opening a conference room door slightly will increase airflow and keep the room cooler.

People don't pay attention to signs "cans only", "paper only" etc. Trash is found in cans and plastics etc. Paper waste is still high and people don't put in proper place. Not enough storage for items being tossed instead (e.g. notebooks, desk items, folders etc). Truly thankful for recycles of plastics #1 and 2, and batteries along with cans.

Light sensors in conference rooms like we already have in bathrooms. When you leave your office turn off your lights; folks get hung up on making sure their boss knows they're here so they leave them on! Recycle from all floors paperclips, rubber bands and supplies. Break from photo-coping and try scanning and emailing, it needs to be preached.

Establish a public transportation mentoring program to introduce the use of buses and Rapid by pairing current user with a novice rider. Current coffee brewers waste energy. Purchase models that only use energy when brewing and store hot coffee in carafes rather than sitting on hot plates. Instruct office cleaning staff to turn off overhead lights after hours, install some motion sensor switches. Replace flush urinals with waterless ones. Regularly monitor staff's use of recycling containers in office space, I frequently see recyclable paper in the trash cans (perhaps a competition for the floor that has no recyclable materials in their trash). Encourage the use of scanners rather than copy-paper documents. Subsidizing parking with Flex Plan gives an economic incentive to drive a car to work; this seems to undermine green efforts. Establish purchasing guidelines for items purchased for staff parties and other events in the building.

Giving each employee an office-paper wastebasket is great!