

**Q. In addition to talking about adaptation and discussing how we will change practices and structures to live within the new climate reality, what are we doing to slow climate change and address the source of the problem?**

**A.** Unfortunately we are already changing the environment, and we need to make changes to our decision-making and day to day practices. The U-M operational goals address a need to run more efficiently and reduce our contribution to climate change. Likewise, through teaching and research, we are finding new ways to address the issue and also creating future leaders.

Local adaptation efforts allow us an opportunity to talk about the existing and future impacts of climate change in highly localized context. By introducing impacts as something familiar to the average person and promoting adaptation strategies that a city, neighborhood, or individual household could adopt we are able to give people control of the issue. When climate change is no longer just an image of a polar bear or distant island people may feel more empowered to act. In this way adaptation really becomes a back door to mitigation efforts.

**Q. Green-house effect & water vapor feedback loop – are there parts of nature that bring us back into balance?**

**A.** There are naturally occurring processes which help to rebalance the atmospheric make-up and thus the climate, such as sequestration. Carbon sequestration is the process of capture and long-term storage of atmospheric carbon dioxide. Another naturally occurring process is water vapor feedback, in which water vapor in the air traps heat, amplifying climate warming caused by increased levels of carbon dioxide. In turn, warmer temperatures increase the amount of water vapor in the air, thus creating a feedback loop. Unfortunately, the greenhouse gas effect can begin to cascade due to such feedback loops, making the future impacts on the environment exponentially more severe. We should try to prevent and also mitigate climate change as much as possible, however, once a tipping point has been passed, it is unlikely the earth will be able to rebalance itself. For this reason, we also need to be talking about adaptation.

**Q. How can students get more involved in adaptation projects?**

**A.** There are a number of student groups as well as classes that can be a good way to get involved. For example, the [Student Sustainability Initiative](#) connects interested students with university administration, and brings together sustainability related student groups across campus. [Planet Blue Student Leaders](#) take part in a one-credit seminar which trains them to become eco-reps in the residential halls. A broader [Planet Blue Ambassadors](#) program allows students, as well as staff and faculty, to become “certified” and take pledges to become more environmentally responsible. Each month, the program hosts information sessions, trainings and outings. Curriculum such as the [Sustainability and the Campus](#) (EVN 391) course allow students to use the U-M campus as a living-learning laboratory. Finally, the [Planet Blue Student Innovation Fund](#) (PBSIF) offers grants for student-initiated projects that reduce the university’s environmental footprint and/or promotes a culture of sustainability on campus.

**Q. What is the difference between a green roof, white roof, and “blue” roof?**

**A.** All these strategies have dual adaptation and mitigation benefits. White roofs are the most cost effective method of manipulating how your built environment interacts with the green-house gas cycle. By painting roofs white or putting some kind of light colored, highly reflective surface on a roof, in place of the typical black roof, more energy is reflected away from the building. This is useful strategy because the building system then requires less energy to cool and therefore puts less carbon out into the atmosphere. Green and blue roofs are more cost and labor intense endeavors. Green roofs include putting plantings or gardens on roofs which have dual purposes of creating a cooling effect and also capturing stormwater water. Finally, blue roofs are the newest addition to the mix. This approach is a middle ground in terms of cost. Blue roofs create mechanisms for water retention during storm events, but do not include building out plantings or garden areas, so tend to be less expensive than typical ‘green roofs’.

- Q. What is the university doing to reduce the amount of salt and sand used as winter sidewalk treatment? This is something to be considered when looking at the Huron River protection goal.**
- A.** U-M uses weather modeling and forecasting so that treatments can be applied prior to snow, which allows for less material to be used while still resulting in effective treatment. Additionally, a salt brine is used as pre-treatment so the application is more direct and controlled, rather than applying the standard salt-sand mix. More detailed information on the alternative winter maintenance practices can be found [here](#).
- Q. Should we focus on science and technology or behavior change? Which will better allow us to make the necessary changes to address climate change?**
- A.** Technology is important, but it can only do so much. For example, technology may make more energy efficient products, increasing efficiency and finding alternative energy sources alone is not likely to achieve the needed greenhouse gas reductions. We also have to find ways to simply use less energy, and that is where the social sciences can help. Social sciences can help us understand, for example, why people consume, how they make choices, and how formal and informal institutions enhance or inhibit wise choices. Knowing that, we can find ways to encourage and reward behaviors that reduce energy use and material waste.
- Q. Can you provide an update of the Planet Blue Ambassador online training tool?**
- A.** The PBA Online Training tool was launched in January of 2013, and already over 1,700 staff, students and faculty have completed the five (5) modules and become certified ambassadors. Once completed, ambassadors can visit their personalized dashboard which provides a tracking tool and resources to help them be a leader in sustainability. The program is continually gaining numbers of ambassadors, and many departments are requiring the training to be completed as part of new staff orientation, or as part of becoming a certified sustainable workplace. This allows existing and new students, staff and faculty to get an overview of sustainability issues, campus progress towards sustainability goals, and actions they can take to become more sustainable.
- Q. Researchers have tremendous influence and have potential for influencing the public sphere. How can the University encourage tenure for faculty to allow them to engage more in the public debate and solutions for climate change?**
- A.** This is a really important question. Traditionally, most universities value knowledge generation and scholarly publications over most other aspects of faculty activities. This is beginning to change as universities like U-M see engagement in real-world education and problem solving as a critical part of their mission. We have long sought opportunities for students to engage in programs and projects off campus, but there is an emerging sense that the university has an obligation to not only produce new knowledge, but to help in getting it used. A group of faculty have initiated an effort to better understand the opportunities and potential pitfalls of this broader engagement. A recent survey of our faculty resulted positive feedback from most schools and colleges on wanting further engagement. We will be hosting discussions with our faculty over the next year, and plan a National Conference on “Academic Engagement in Policy and the Public Discourse” next year. A critical element of this effort is to understand how this engagement adds to, not replace, the mission of knowledge generation.
- Q. Ethidium bromide, a carcinogen and mutagen, is an essential component of gel electrophoresis for research labs. A non-hazardous substitute does exist, but it costs 10x more. How does the university dispose of hazardous wastes like Et Br? If we consider costs of waste collection and disposal, how would its cost compare to non-hazardous substitute? Would the university consider subsidizing labs to purchase the non-hazardous substitute? This would save the university disposal costs and promote a healthier, more sustainable work environment.**

- A.** Gel Red, a safer alternative to Et Br is non-hazardous. Our studies have showed that using 2 uL for a gel of 100 mL is sufficient to get good results. At a discounted price of 10,000x 500 uL from VWR is \$70, which is sufficient to do 250 gels. The solid waste from Gel Red can go into the trash. Liquid needs to be collected the same as for EtBr. Contact Sudhakar Reddy at [redv@umich.edu](mailto:redv@umich.edu) for more details and also for a free trial sample. The Office of Campus Sustainability can work with the labs on a case by case basis to determine the level of support the University can provide. OCS believes it is the researcher's responsibility to look for safer alternatives to make their work place safer and more sustainable. OCS can provide technical support through the Sustainable Labs Recognition Program.
- Q.** **How can we change the university's mindset about waste when the culture of sustainability has not yet extended far beyond the environmental department and discipline?**
- A.** In order to reach the university's waste prevention goal, the entire university community must go beyond supporting and participating in the recycling program, and more closely examine other behaviors which contribute to the waste stream. For example, food waste comprises a significant portion of the waste leaving campus. The consumption of material goods (as inputs) for the university also then directly impacts the waste (outputs) eventually generated. Changing the culture of the university to prevent waste must include finding ways to divert materials from the waste stream, but also to avoid the accumulation of materials in the first place. Examining policies and procurement practices will be essential to having a lasting reduction of waste generated. Support for changes in these policies and practices require leadership support, as well as ground-up support from staff, faculty and students.
- Q.** **Can we incorporate more student entrepreneurship into UM sustainability efforts and better assist student-community collaborations?**
- A.** The [Planet Blue Student Innovation Fund](#) (PBSIF) offers up to \$50,000 in grants annually for student-initiated projects that reduce the university's environmental footprint and/or promotes a culture of sustainability on campus. There are a few examples of faculty encouraging student-community collaborations, including the U-M Sustainable Food Program. Other projects include the Brightmoor Community Garden, student involvement in the City of Ann Arbor's project to make rental housing more energy efficient, and a few other things that happen through specific courses.
- Q.** **How can we increase the transparency around food sourcing and addressing regulations?**
- A.** University of Michigan began tracking food purchases through our food vendors in FY 12. We found that we met our sustainable food goal in our baseline year. We are currently reviewing our food guidelines to potentially tighten these guidelines and improve the food category reporting. Food Safety remains a priority for U-M food service operators and we have no plans to change any of the food safety requirements in our guidelines.
- Q.** **What does UM do to promote sustainable development practices including protecting open spaces and mature trees? What more could be done?**
- A.** The ability to protect our campus natural resources requires both trees and open spaces to be considered as a system rather than project by project. Additionally, clear leadership and a process for decision making around managing open space and our campuses trees is critical, including setting clear, consistent goals, standards, and priorities to determine what areas will not be developed and which trees will not be removed. There are a number of things the university is doing to protect natural features, including maintaining [campus master plans](#) which guide development and consider environmental features. The university also follows [stormwater best management practices](#) to avoid negative impacts of infrastructure on the natural environment, minimize impervious surface coverage, and maintain a hydraulic balance in each watershed.

Additionally, the Plant Building and Grounds Services has a Campus Forest Management Plan which includes a Tree Preservation Policy. This policy states that preservation is the first priority, and larger trees or those with high location value or historical significance should be preserved when possible rather than relocated or removed. Implementation of this policy requires continuous tracking/monitoring. Properly tracking and monitoring trees across campus is a daunting and time-taking task. Efforts have been made to evaluate and categorize trees and set protection priorities that apply during maintenance and also construction projects on campus.

**Q. What is the university doing to divest from their investments in the fossil fuel industry that are largely responsible for climate change? As a national leader, we have an opportunity to address climate change and make a larger impact if we demonstrate to other universities the ability to divest from the fossil fuel industry.**

The University of Michigan's Investment Office has stated UM will not divest from investments in the fossil fuel industry. Their reasoning behind this position can be found in the following article which was written by Rafael Castillo and Erick Lundberg in the Investment Office. If you have further questions regarding UM's position on this topic please contact the Investment Office directly, unfortunately the Office of Campus Sustainability has no influence or decision making authority in this area.

<http://www.institutionalinvestor.com/blogarticle/3255584/why-endowments-should-resist-fossil-fuel-divestments.html>

**Q. What actions has the University of Michigan community taken to create a culture where individuals take personal responsibility for their impact on climate change? How effective have these actions been, and what are the next steps to develop an even stronger community of responsible people?**

**A.** A number of student and staff engagement programs are intended to build awareness and encourage action. One example is the Planet Blue Ambassador program which provides a personal sustainability dashboard or individual actions that address a variety of sustainability issues, including encouraging actions which directly reduce one's contribution to climate change. So far almost 2,000 staff, students and faculty have participated. More information on this program can be found at:

<http://sustainability.umich.edu/content/planet-blue-student-ambassador-program>

**Q. What is the best way to initiate an effort to get the Shapiro and Hatcher Libraries retrofitted for LEED certification?**

**A.** The most direct path for LEED certification for the Shapiro and Hatcher Libraries would be through the LEED-EBOM (Existing Buildings-Operations and Maintenance) program. This could be done by either Planet Blue or by Plant Operations. We do not have any LEED-EBOM certifications on campus yet and, even without formal certification, it would be interesting to see existing U-M buildings are performing when put up against LEED's standards.

The second path would be for the buildings to undergo a major renovation and apply for certification under LEED-NC (new construction). This path would require the services of the Architecture, Engineering & Construction office.