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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 1 | Student | In the administration's own report on achieving carbon neutrality, which says that "financially responsible determinations should be made," it is clear that the UM admin needs to do a much better job at reflecting the serious crisis of climate change and make decisions accordingly. In the report, it says that "associated investments should reflect our responsibilities to achieve carbon neutrality," and yet, nowhere in the entire paper is the word "divest" used. The university needs to fully divest from fossil fuels, as acknowledged earlier this year by the Big Ten student body and by UM's Central Student Government. | A |
| 2 | Student | This report could do more to include nuclear power as an emissions reduction strategy. It's more reliable and energy-dense than proposed strategies. Having a university-owned reactor or reactors on or near campus would also help maintain Michigan as the #1 nuclear educator in the country. | B |
| 3 | Staff | The piece about commuting is concerning to me as a staff member who works primarily with students and will need to be on campus post-pandemic. Parking is already extremely expensive (the most expensive of any institution I've worked at), and I worry that increasing the price will be how we eliminate incentives for commuting in a personal vehicle. I would much rather see incentives for car pooling or using public transportation. (For example, allowing people to share parking passes could allow for more car pooling.) | C |
| 4 | Staff | Line 1545- "Solid Waste"<br><br>Composting seems to exclusively be a solution catered towards the reduction of food waste. At the University of Maryland, a roll-out program placed composting bins in all dorm bathrooms in order to divert paper towels from landfills as well. This indicates the opportunity for composting expansion beyond the scope of food waste reduction.<br><br>Additionally, at the University of Maryland, College Park there is a styrofoam ban which led to food facilities adopting compostable containers instead. Although this report indicates that the expansion of composting efforts will necessitate a great shift in campus culture, this initiative at UMD did not mark a culture shift in the student mindset because students did not have to make any conscious decisions about the use of compostable materials when they were provided in a top-down roll-out. | D |
| 5 | Staff | Line 2145 #4<br><br>This appears to be the only mention of plastic in the entire report, which is a very easy way to become more sustainable. Converting plastic items to compostable items (i.e. wooden utensils instead of plastic ones) is an easy way to reduce plastic use without the culture shift of encouraging reusable items. At the University of Maryland, College Park there are also incentives in every campus bookstore/convenience shop to not use a plastic bag (either a 5 cent fee for needing a bag or a 5 cent discount for bringing one's own bag), which are highly effective because students usually always have their backpack on them. Partnering with initiatives in the greater Ann Arbor area and those local eateries and city-wide type initiatives such as these two might be the most important way to reduce the use of plastics in the community. | D |
| 6 | Anonymous | Anonymous | E |
| 7 | Staff | Typo in section 3145. Should say $30,000, but instead says $30,00. | L |
| 8 | Anonymous | Anonymous | F |
| 9 | Anonymous | Anonymous | F |
| 10 | Other | I recommend that UoM establish a special emphasis on Climate-related research and related commercialization of successful research results. The Office of Research and Technology Transfer should jointly oversee this effort. The university should provide bonuses for faculty that secure climate-related R&D funding and enhanced royalties or payments for related technology transfer and/or commercialization. UoM funding that support SPARK should be re-directed to support this initiative. | G |
| 11 | Staff | I would like to see some recommendations in the arena of permaculture and edible landscaping, to be integrated into the landscape, with options for UM affiliates to collaborate and take breaks in nature through directed volunteer efforts (or even better, to assign everyone 5 percent of their job to attend to environmental activities on behalf of all these initiatives). There are opportunities with the School of Natural Resources and the existing Residential College garden projects to integrate edible options in the landscape of campus and ease food insecurity in the community, to help rescue pollinators, to better use water runoff, to learn about food production, to destress, and otherwise make sustainable choices in a visible and meaningful way.<br><br>Additionally, I would hope that the enforced work from home experiment of the pandemic would allow us to understand the impacts of decreased on-site work monetarily and environmentally, and it would be valuable to see this addressed. | H |
| 12 | Anonymous | Anonymous | D |
| 13 | Student | The goals of this commission are admirable, however, it is important to recognize the important connection between in Equity & Justice (line 510) and financial responsibility (line 540) as they pertain to this report.<br><br>University is already a massive financial burden which is prohibitive to many potential students especially from disadvantaged backgrounds. The goals stated in this report need to be designed so that they result in NO additional tuition increases for students. This includes student fees and on-campus living costs. If they do increase the cost of college attendance at all this commission will be denying many deserving people of an education. | I |
| 14 | Staff | I strongly support all of the recommendations related to commuting and parking permitting changes; and especially those recommendations related to embracing and incentivizing flexible telecommuting options for employees. | J |
| 15 | Alumni | This plan might be better with 100 percent zero carbon sources, including nuclear. This university has a very strong nuclear program and should understand recognize the importance of nuclear power in this plan. | B |

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| 16 | Staff | Thank you for your hard work on this critical topic. I believe this body has missed a vital opportunity in not including divestment from fossil fuel equities by the UM endowment as one of its recommendations. I understand that this body's charge is to generate a plan to reduce UM's carbon footprint, but I believe UM's total potential carbon reduction pales in comparison to the potential affect it could have through divestment. I served on a municipal pension fiduciary board and helped to spearhead our divestment strategy. Divestment is the only way to force fossil fuel companies and associated industries to make the structural, technological changes required to significantly reduce the effects of climate change. While I applaud UM for taking its carbon footprint seriously, any changes it could affect would be trivial in comparison to the global impact required to reverse climate change. Corporations like Exxon Mobile have had virtually no incentive to change their strategy; quite the opposite, they have had every incentive to stronghold the global economy to remain dependent on fossil fuels. More so, fossil fuels have perversely influenced highly questionable public policy decisions (e.g., preemptive war in Iraq) and have empowered despots and authoritative regimes for decades. Some institutional investors use the short sided argument that fiduciary duty restricts its ability to divest. All of the major fossil-fuel-free indexes have either outperformed or are on par with benchmark indexes. To this point, New York state just divested its $226 Billion pension fund of fossil fuels just this week. I realize that this body does not govern investment decisions, but I believe that divestment should be a primary recommendation for reducing UM's carbon footprint. In excluding from UM's carbon footprint the carbon generated from our endowment's financial returns, we are turning a blind eye to the simple ethics of benefitting from the ownership of publically traded equities. Again, thank you for your hard work and please let me know if I can provide any information from my experience with divestment. Stay safe and happy holidays. | A |
| 17 | Alumni | Please consider a more reasonable and rational power purchase goal - zero emissions vs. "100% renewable" sources. Nuclear power provides baseline, 24/7 generation with no carbon emissions. Solar panels don't last forever and eventually they are toxic waste, and yet they have gotten the "renewable" label and nuclear power has not. "Renewable" is a vague term without a consistent meaning. "zero-emissions" is more specific and well defined if not entirely accurate (emissions associated with construction, maintenance and fuel transport are non-zero for solar, wind, hydro and nuclear) term. | B |
| 18 | Alumni | Lines 927, 1023, and 1037 refer to "100 percent renewable" energy. This language should be changed to "100 percent zero carbon" to acknowledge the role of zero-carbon, non-renewable power sources, such as nuclear power. The University of Michigan is a world leader in nuclear energy development, and acknowledging the role of nuclear power in a zero-carbon future is vital to achieving climate goals. | B |
| 19 | Staff | I think the Univ of Mich is well poised to promote the use of Nuclear Energy to achieve the aforementioned goals. We are home to the best Nuclear Engineering Program in the US several years running. This makes logical sense. | B |
| 20 | Alumni | To whom it may concern,<br><br>As a graduate of Michigan's nuclear engineering department (the country's number one ranked nuclear engineering program incidentally), I am greatly disturbed and insulted by your lack of commitment to the only carbon free baseload source of energy. Treating nuclear as the same as coal or natural gas is absurd and unscientific. I will not be donating to Michigan Engineering this year. | B |
| 21 | OPT OUT | OPT OUT | |
| 22 | Alumni | The commission has recommended "purchasing power from 100 percent renewable sources," however such a proposal neglects the recommendations of the scientific community and sends an incomplete and misleading message to their staff, students, alumni, the academic community, etc. that we as an institution are choosing to polarize science rather than unite behind it. The International Energy Agency (IEA) has repeatedly urged countries to invest in all low carbon sources, including nuclear energy, if we truly want to mitigate the effects of climate change. The IEA has been very vocal recently as a result of increased polarization over the use of nuclear energy and the stark neglect of facts over sensationalizations. Nuclear energy and hydropower alone account for over 75% of all low carbon energy sources in use today worldwide (cited from IEA), and the IEA emphasizes that neglecting to recognize this fact will have devastating impacts on our ability to compact climate change. As the leading global academic institution for nuclear science and technology, it is incredibly telling if we as a university delegitimize science in favor of politics. Climate change is and will continue to have devastating effects on our environment and quality of life if we do not take action now, so I challenge you in taking action on climate change to be a leader of science and reason. | B |
| 23 | Alumni | Although I am all for minimizing fossil fuels in use today I find it totally outrageous to lump in Nuclear Power, the cleanest and most obvious choice to quickly limiting fossil fuels that exist. All other purely 'green' sources are not ready to be primary power generators and to EXCLUDE Nuclear is saying that the University cares more for politics than science, and is NOT a good look for a prestigious university such as U-Michigan. | B |
| 24 | Anonymous | Anonymous | B |
| 25 | Alumni | Line 925 addresses sourcing 100 percent renewable electricity from the grid. I believe this strategy would be improved by sourcing from 100 percent zero carbon sources, including nuclear power. In addition to supporting the overall strategy, this change would demonstrate continued support for the University's world-class Nuclear Engineering & Radiological Sciences program and for the partnership with DTE, owner and operator of a 1200 MW nuclear power plant in southeast Michigan. | B |
| 26 | Alumni | The lack of consideration of nuclear power discredits the entire effort. | B |
| 27 | Faculty | Perhaps I missed it, but there is little mention of the consideration of nuclear power to reduce carbon emissions. Strictly speaking it is not truly a renewable source (neither is solar nor wind), but it has the advantage of major carbon reductions from a small physical footprint. It is worth including. | B |
| 28 | Student | The proposal in line 925 discounts nuclear power as an energy source that UM will use in the future to become carbon neutral. However, intermittent electricity generation due to increasing usage of renewables needs to be balanced by a source of baseload power that can operate independent of weather conditions. Nuclear power provides carbon free electricity, and advanced nuclear reactors can load follow, thereby adjusting to current electricity supply from renewables while meeting the entirety of electricity demand. Discounting the clean electricity generated by nuclear plants establishes targets that are incredibly challenging to achieve without severely compromising on the reliability of electricity supply. UM needs nuclear! | B |
| 29 | Alumni | The plan would be better with 100 percent zero carbon sources—including nuclear power. | B |
| 30 | Alumni | Instead of "purchasing power from 100 percent renewable sources," please consider changing that to purchasing power with 100 percent zero carbon sources, such that nuclear energy is included. If we are to successfully achieve our climate goals in a succinct, effective, and cost efficient manner, we must diversify our zero carbon energy portfolio to include nuclear. | B |
| 31 | Alumni | It should be noted that the recommendation of "Purchasing power from 100 percent renewable sources" is not a proper, nor achievable goal. No power source is 100 percent renewable because of, well, entropy. So being an institution of higher education, I think UM should commit itself to being technically correct, and instead commit to purchasing power from sources that are 100 percent carbon neutral sources, or that can have a 100 percent or more (carbon negative) carbon off-set. As carbon is the issue, not "renewability." (After all the sun will die eventually, so also not renewable, technically.) And solar panels, wind mills, hydro power and electric cars cannot (as of today, or likely ever) be produced without carbon emissions of some kind in the supply chain. So let us commit to goals we can actually keep and to which we can adhere! And make logical sense. Go BLUE! | B |

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| 32 | Staff | This report should not focus on just renewable, the immediate goals are for the impact of carbon in our environment. All options for reductions balanced against operations and quality of life should be considered. Most notably Nuclear appears very absent which could significnatly speed to a zero carbon impact, and then migrate to maybe other options.<br><br>Specifically<br>" The Commission has concluded that sourcing 100 percent renewable electricity ...<br><br>Should be<br>"The Commission has concluded that sourcing 100 percent zero carbon electricity ....<br><br>This will make the goals much more achievable and maybe reduction in timing. | B |
| 33 | Staff | I have a nice home in Wyandotte, where I live near family and friends. Driving to campus (UM-Dearborn) is 25 minutes, door to door. I've taken public transportation several times to campus when my minivan was out of service, and it takes slightly over 2 hours door to door. Partially this is because of the long wait to change buses at Fort Street and Southfield Road, and this includes a half mile or so walk from the Dearborn Intermodal complex to the University Center, where I can then take a shuttle bus to FCN--a walk that would be ugly in rain or snow.<br>You might want to offer carbon offsets for this, namely, I borrowed a lot of money to superinsulate my house (including having insulation injected into the external walls) and replace my old HVAC system with a high efficiency system. That should count for something. | AB |
| 34 | Faculty | UM should establish a 100% zero carbon goal rather than a 100% renewables goal. Eliminating zero carbon sources such as nuclear energy (over 50% of the current U.S. zero carbon electricity) from possible use eliminates important sources that will contribute to a reliable zero carbon energy system. | B |

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| 35 | Student | COMMENT #35 (1/2)<br>I strongly applaud the PCCN's draft report on the whole.<br>I especially applaud the Scope 1 proposal focusing on geothermal energy. This deserves praise because it accurately reflects and responds to the scale of the emergency that UM is facing; it is the jewel in the crown of the PCCN's report. One small observation: the reader doesn't learn about it until the table after line 645. Might there be some benefit in foreshadowing the main takeaways of each section in an executive summary?<br>One note about audience. If the report's audience is President Schlissel and, presumably, also the Board of Trustees, the biggest obstacle from their perspective will be sticker shock. It is worth including a 1-page explanation of why this investment is not only necessary, but desirable for UM. Knowing your audience – and knowing that idealism alone will not persuade them to make a multi-billion-dollar investment – the bulk of this explanation should focus on the projected impacts on the university itself: both the bad things that will happen if UM doesn't rise to the challenge (--without these changes, will there even be a UM 100 years from now?), AND the good things that will happen if we do. For example: noticing that other universities are asleep at the wheel, making wise preparations today will position UM to become the top university by all metrics 100 years from now. In the medium-term, what's good for the climate also happens to yield savings, such as in annual energy costs. Therefore, UM will be in a much better financial situation over the medium and long term if it makes wise investments now. (All the better if you can calculate that the investment will pay for itself by year X, after which it will only generate net savings for the university's operations). Make the argument in such a way that even the most hard-nosed bean-counter would have to agree that the PCCN's recommendations are the right course of action.<br>It would also be extremely helpful if the executive summary could calculate how many annual tons of CO2 equivalent the report's recommendations will save, and what effect this will have on the climate.<br>Line 166: "Climate change is not a problem that can be solved and then walked away from." This should be rephrased; it misleadingly makes it sound like UM has already solved climate change.<br>Line 167: "Sustainability requires continual collective and institutional action." This too requires rephrasing. It sounds as if UM is simply doing maintenance on its already-good work. In reality, UM is still a long way from achieving true sustainability -- hence this report! This should instead read: the present climate emergency requires a transformation on a collective and institutional scale.<br>Line 323: "Methodologies and approaches pursued to achieve carbon neutrality must reflect the interdependence of environmentally, socially and economically beneficial outcomes." This is not clear. In the context of "sustainability," what does this mean? It sounds as though it is obliquely warning us that there might be situations when UM feels justified in leaving future generations to foot the bill (environmentally) for UM's present prosperity (economically). Is that right? If so, it runs counter to the concept of sustainability.<br>Line 324: "Solutions should provide positive benefits over the long term," – This is redundant (what benefits aren't positive?). This sentence is basically saying that the report is NOT proposing solutions that provide negative detriments. One would hope that would go without saying, so isn't that rather a low bar to set? Instead of filling the paragraph about sustainability with platitudes, seize the opportunity to articulate a clear vision of what it looks like or means for an institution to fully commit itself to the task of not compromising the ability of future generations to meet their needs.<br>Line 400: What seems strangely absent from this table is consideration of UM's waste-to-landfill: in other words, how UM sources and disposes of its materials. For example: in many parts of the university people don't give a second thought to (for example) ordering hundreds of low-quality T-shirts that will unravel after a single washing in order to commemorate a fleeting moment, such as a student org event or an orientation. How much greenhouse gas emissions did it take to grow the cotton to create those T-shirts, to power the mills to create the fabric, and to ship the shirts across the world? Where does UM get its paper for its copy machines and printers, for its stationery, its event posters, and for the books created at University of Michigan Press? What forest gets destroyed for that, or what monoculture plantation does it come from, and what are the climate effects of that? What does UM do with equipment that has become obsolete, or old torn-out carpet (etc.) when a building is renovated? Given the PCCN's seriousness about sustainability, the recommendations should start thinking about its material usage and disposal in terms of the total lifecycle of the materials used. **A logical place to integrate this would be in the discussion of the carbon pricing system, which begins on Line 1205; or alternatively, to re-visit and integrate a carbon pricing system in the Scope 3 section.<br>Line 575: In light of the PCCN's goal of engaging community stakeholders, the report should translate jargon such as "MTCO2". (Same goes for Table 1 at Line 755: add footnotes explaining what Solar PV and building conversion are).<br>Line 623: There is a disconnect between the PCCN's stated goal (re: climate change) and the terminology it uses to describe the kind of energy it will be seeking to use ("renewable sources"). Climate change is caused by the release of greenhouse gases. Some renewable sources of electricity (like burning biomass) *release* greenhouse gases, while others (like wind power or geothermal) do not. Therefore, it is important to specify here (even if only in a footnote) which "renewable sources" of electricity will and will not further UM's greenhouse-gas goals.<br>Lines 760-766: This must be rephrased. If the PCCN is recommending this investment, the PCCN must make a strong case for it. That has to happen here, because it is not a detail that your audience will gloss over. First order of business: do not quote Integral Group here. Not only are they using jargon (do non-specialists know what NPV is?) but their tone weakens your argument. Instead, address the sticker shock up front by discussing the payback period. The point isn't "this is a long time" (which is the current message of this paragraph). Focus instead on the main point: that this is not lost capital (it will pay for itself), and that one of the benefits of being a university with an endowment the size of UM's is that it can afford to make wise long-term investments in its infrastructure. Also, if you haven't had a chance to discuss any of this informally with any of the trustees, it would be wise to reach out to one of them. Find out from them: what is the opportunity cost (-- in other words, if not for this, what else would the university be spending this money on in the interim)? Then address those concerns here.<br>Lines 778-881: It's not clear why this is in quotes, or what it is quoting from. If it's quoting Integral Group's internal report, presumably Integral Group prepared its report for the PCCN to use. If that's the case, then it's OK for the PCCN to repurpose language from that report without quoting it.<br>791-792: Nix "is confident that it" (it waters the sentence down without adding information).<br>794-796: This sentence beats around the bush too much, to the point that it's not clear what it's saying. Say this more directly in fewer words.<br>950: This phrasing is easy to misunderstand ("is increasingly less expensive": "increasing" is the opposite of "less"). Instead, consider: "is falling steadily, and is already less expensive".<br>1015: "The cost impact will be less damage to sensitive laboratory equipment due to system failure" – something's amiss with the phrasing here.<br>REF section: This is excellent. The idea is solid, and it is explained and argued very well. | B, K, L, V, Y, AB |

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| 35 | Student | COMMENT #35 CONTINUED (2/2)<br>Line 1518: The report states in a couple of places that Scope 3 factors are “beyond U-M’s control”. But are they? For example: Transitioning an event’s catering menu from an omnivorous menu to entirely plant-based reduces that menu’s carbon footprint by 90%+. It’s irrelevant that U-M doesn’t control the cropland; what matters is simple arithmetic. If you feed the beans to people instead of to cows, you need a lot less farmland to produce that meal – and it also produces a lot less methane.<br>Lines 1570-1584: This is unjust to faculty, staff, and students who cannot afford the exorbitant housing prices in Ann Arbor. (Who has half a million to spend on a house?) Even Ypsilanti is too expensive for me to afford to live there. Please bear in mind that making parking more expensive doesn’t actually encourage people to drive less if those people have no alternative form of transportation. (Any chance you know of a bus that links Flint to Ann Arbor, and is sufficiently on-time to be a viable commuting option? I don’t.) Remember that you get more buy-in with carrots than with sticks -- by making the decarbonized choices cheaper and more convenient, rather than making life a lot more expensive for people who have no choice. Maybe a fairer way to structure the daily parking pass would be to provide free parking for EVs, and also, to create a subsidy fund to make it cheaper for U-M people to buy an electric car than to buy a used internal-combustion-engine car. Eligibility for the subsidy could operate on a sliding scale by income.<br>Line 1585: This does make the parking regime less unjust. However, it works at cross-purposes with the decarbonization goal. See my above recommendation about providing a subsidy to help members of the UM community purchase electric vehicles.<br>Also, why doesn’t UM promote electric Vespa-style scooters for commuting within the Ann Arbor metropolitan area? UM could partner with a local dealer to provide a discount, and also offer low-cost, premium-location scooter parking (maybe also with a free helmet storage locker so people don’t have to lug theirs around campus.)<br>1605-1619 and 1716-1720: Did you know that citizen- and non-profit actors in Flint are trying hard to expand commuter cycling infrastructure in Flint? I am thinking of the Crim Foundation’s work (contact Theresa Roach & Cade Surface), and most recently, Kettering University alum Joel Hurd has been taking the lead from the community end. In the past, those initiatives have fallen down due to inadequate bandwidth (community volunteers, including myself, have found that liaising with an ever-changing cast of city officials requires more time than what any employed person can donate on a volunteer basis). If UM could support these existing initiatives by donating just a portion of a staff member’s paid time to coordinate it, you could achieve a commuter-bicycle lane network in Flint allowing UM students, staff, and faculty to cycle (rather than drive) to campus.<br>1676-1686: It is odd that this paragraph treats EV usage rates as if they are something that UM can only passively monitor, rather than something that it can actively shape. See my previous few comments.<br>1780-1915: Excellent.<br>1995-2001: This data is strong and clear. By contrast, the PCCN’s recommendations on food are bafflingly weak and vague. In light of the data, why would the PCCN’s recommendations even contemplate keeping beef through chicken (on the graphic) as options? Why not simply establish a strong policy of ovo-lacto-vegetarian and vegan food options on campus, with a hefty carbon tax added to any meat-based options? (Meat of course should still be accessible to the tiny minority who require meat for a genuine medical reason, such as a bean allergy). It’s not as if such a policy would sacrifice one iota in terms of the variety, deliciousness, or satiety that on-campus food provides. People gravitate toward meat simply because of habit and convenience, and because of their own ignorance and stereotypes about plant-based food. Yet the whole point of an institutional decarbonization plan such as this one is to make the low-carbon options more convenient and less expensive than the high-carbon options, and to provide an opportunity for people to learn and grow along the way as UM leads by example. Therefore, why does the PCCN not set its recommendations for food squarely in line with the scientific data that it cites? I hope the final report will apply to this Food section the same data-based concreteness that the PCCN has applied to all the other portions of the report.<br>2019-2033: These are good. But per my point above, in contrast to the heating / electricity proposals, what is missing from the PCCN’s recommendations about food is a concrete target, such as a specific year after which the campus will be meat-free.<br>3773-3776: Cultures are never static; cultures have always changed in response to changing context (anthropologists have known that since Frans Boaz). With that in mind, please take a step back to consider the deference to “the preferences and cultures of individuals” with respect to food alone. Why such special deference for that here, specifically (with regard to meat)? Where was that special deference when the PCCN was seeking to change people’s individual and cultural preference to drive a gas-guzzling truck to campus? Hopefully you see my point is NOT that the PCCN’s recommendations should give these choices deference (the PCCN definitely shouldn’t do that. There is no "get out of climate change free" card). Rather, my point is that maybe it’s actually worthy and valuable, after all, to concretely incentivize people to modify those particular cultural practices that are actively imposing an unlivable world upon future generations. UM has found the courage to reject other cultural traditions that it has come to realize actively harm people in real ways, and that for that reason clash with our most cherished moral values. (That is why UM has taken action to cease to place colonizers and enslavers on a pedestal, to expand critical-inclusive pedagogies, and to create this de-carbonization plan.) As a community, we owe it to future generations to be equally compassionate and courageous when it comes to rejecting carbon-intensive food. | B, K, L, V, Y, AB |
| 36 | Alumni | With a history of 60+ years of producing CO2 free electric power (Big Rock Point Plant started in Michigan in 1958) nuclear power should be a favored option for green electricity in any U of M plan. The Ford-Phoenix test reactor on North Campus provided decades of safe operation for many aspects of nuclear research and this legacy should not be negated by ignoring the benefits of nuclear power in this study. | B |
| 37 | Anonymous | Anonymous | X |
| 38 | Anonymous | Anonymous | J |
| 39 | Staff | I like all of the recommendations. I think carbon neutrality by 2025 for emissions type 1 & 2 and zero emissions by 2040 are good goals. To achieve zero emissions, I was happy to see the report talk about transitioning to an electric vehicle fleet and all that. But when it comes to energy emissions, the report said green energy might cost U-M more, despite green energy decreasing in price: I encourage leadership to do everything to get to zero emissions, regardless of the cost. Green energy may not be "cost effective" for a while. Divert the money from some other place to afford it. We have to prioritize living past 2050. If we don't spend the money now, we're all sunk. Those are my thoughts. Let's get to work. | AZ |

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| 40 | Other | Situated next door to the University's St. Pierre Wetland Preserve is a 72 acre parcel "Mohican Lake Property" with incredibly massive wetlands, creeks, 3 lakes, and rolling wooded hills. The Huron River Watershed council spent many hours performing a bio-reserve assessment, and this property scored very close to the qualities of the UM's St. Pierre wetland next door. Next to the Mohican Lake Property 72 acre parcel is a 65 acre parcel, "Whitewood Property" with more extensive wetland, another 3 lakes and connecting creeks and more rolling wooded hills, also having a HRWC bio-reserve assessment (available from the HRWC) scoring nearly as high as the previously mentioned two properties. The St. Pierre wetland, the Mohican Lake and "Whitewood" property combined create an incredible "swath" of wetland unrivaled in the increasingly developed Hamburg Township area, or perhaps even the Southeastern Michigan region.<br><br>In 2017, I began working on getting these properties the environmental attention they deserve. Initially offered to the public for development, it was felt there had to be a way to protect these properties for all the environmental qualities they possess. The credibility of the Huron Watershed Council was the key, engaging their scientists to characterize the properties through their extensive, previously mentioned bio-reserve assessment. With the bio-reserve assessments, it's no longer me, the owners, the public, nor anyone else promoting the value of these critical environmental properties - it's the scientists at the Huron River Watershed Council.<br><br>My role with these properties is, among others, as a facilitator, a collaborator, drawing expertise, organizations, and other resources together to get these properties protected forever. Both of these properties have been credibly identified as environmentally critical, they are ready for purchase and protection forever. Timing is important as there is pressure from developers to purchase and develop them, an environmental tragedy in the waiting.<br><br>More specifically, one of my roles is the Listing Real Estate Broker for the 72 Mohican Lake property, and possible Purchasing Broker for the 65 acre Whitewood Property.<br>- Read on very carefully - I have already publicly, and will again here, pledge any and all labor, work product, commissions earned, etc. for any selling or purchasing efforts on my part as a donation to the cause of procuring and protecting these properties forever. I have made this pledge to a coalition of members I created to attempt to acquire these properties in 2018, of Livingston Land Conservancy, Ducks Unlimited, Michigan United Conservation Club, Huron River Watershed Council and the Michigan Nature Association among other advisors.<br><br>With the current price of these two properties, this commission donation is approximately $130,000, to be used in whatever way by the UM sees fit to purchase and protect these properties forever. Both my real estate company and my organization Natural Shorelines Forever are interested in one objective: to protect these and other properties from human development forever.<br><br>I would, however like one day to walk on these properties with my Grandchildren and explain to them how important they are and why. I'd like to think my Great Grandfather, Norman A. Wood, Curator of Birds University of Michigan Museum of Natural History, would be proud of my efforts to protect both of these 72 and 65 acre environmentally critical properties.<br><br>That aside, I have already provided the HRWC's reports for both properties to the PCCN. I understand these properties will be a high priority recommendation for UM procurement and protection to the President. My hope is they become a key part of UM's carbon neutrality goals.<br><br>I personally pledge my resources and those of both of my organizations to do whatever is necessary to help achieve this. | BA |
| 41 | Staff | Line 1570 - "Reform the university's parking policy on each of U-M's<br>three campuses and reduce or eliminate incentives for personal vehicle commuting."<br>The parking policy (and/or fee for parking on campus) should take into account the vehicle and fuel type used. For example, if I drive an all-electric vehicle that is charged by my own residential solar PV array, perhaps I shouldn't be disincentivized from my personal vehicle commute to the same extent as someone driving an internal combustion engine vehicle. Electric vehicle incentives could include on-campus charging OR (1) a discounted daily fee for using parking garages, and/or (2) premium (lower floor) space assignments in parking garages. | K |
| 42 | Alumni | I am strongly in support of a recommendation regarding an achievement of using 100% carbon-free energy sources, rather than 100% renewable energy sources. In the former, CO2 reductions will occur more quickly than in the latter. Carbon free sources include nuclear power, while renewable sources do not. Renewable sources include burning of carbon-rich biomass, while carbon-free sources do not. | B |
| 43 | Student | Quite a few recommendations regarding aspects like composting and recycling water do not appear to have any external reach. For example, the composting system does not seem to incorporate any business that could use such material. Farms could benefit heavily from local fertilizers, as there would be less shipping and nutrient recycling. Same can be said for the proposed water recycling measures. Partially filtered (grey water, or non-potable) could be pipped to local farms to offset the use of treated water to irrigate fields, reducing demand for treated water and it's carbon impact.<br><br>As for the various proposals about fines, taxes, or others., there should be a greater emphasis on how to mitigate the impact to lower income students and staff. Dearborn and Flint are not terribly affluent as Ann Arbor, and many would not fair better with more fines. Fines can already pass $700 per semester per student. Providing automatic adjustment based on FAFSA income data would help remedy this.<br><br>Finally, many of the proposals could help. However, many do not include dates of completion nor fines for failing to meet them. As noted in this paper, fines do incentives change, and a little could be used to encourage leaders to actually put rubber to the road. If there is no punishment or anything to keep progress going, then many proposals could just be ignored. | EJ, I, D |
| 44 | Alumni | As a proud alum of the University, I applaud its "leadership by example" as proposed in the PCCN report. There is, however, an inconsistency that should be addressed to both create a more impactful "scaleable and transferable" strategy - and thus one that might be more globally impactful, helping those that need it most. This latter opportunity is incredibly important at a time when emerging markets around the world are in dire need of clean energy solutions at-scale.<br><br>The inconsistency lies in the sole emphasis on one zero-carbon generation class, renewable energy, as strategic foundation. A strategy more consistent with the decarbonization and net-zero carbon objectives of the University would be to advocate a strategic thrust to obtain "zero carbon" sourced energy. A zero-carbon thrust is in fact the objective of two utilities, DTE Energy and Consumers Energy, referenced in the report. A zero-carbon objective also sets an example for the world, emphasizing that there are numerous technological opportunities to provide enriched lives though clean energy in a world approaching 8 billion people. These opportunities include options that may include renewable energy, carbon capture, nuclear fission and eventual nuclear fusion, combinations of which will need to be deployed globally to address the enormous global challenge of climate change. Simply stated, there are times and places for all of these zero-carbon sources and our global community need them all. The University, my University, is in a position to set the standard with a visionary, logical, and practical path to a clean energy future. Please do this by focusing on "clean energy". | B |
| 45 | Other | It should be embarrassing for the U of M, with the #1 rated Nuclear Engineering and Radiological Sciences program in the U.S., to commit to "Purchase power from 100 percent renewal resources." Instead, a better goal would be to "Purchase power from 100 percent carbon-free sources of energy." With a goal of reducing the adverse impacts on climate caused energy generated from fossil fuels, and with the increasing use of electricity for transportation, nuclear energy is needed to balance out the intermittent supply of wind and solar energy. | B |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 46 | Student | Nice job on the recommendations. Here are my suggestions:<br>•Line 766 – This system seems quite expensive based on the 30-year NPV. It might make sense to suggest bundling this project with another more profitable one, such as the revolving energy fund or other efficiency projects, to help offset the project costs.<br>•Line 847 – Might there be other options to add in for this section related to using bicycle or other human-powered transport for some things? I'd imagine this could also be applied to some of the others machines operated on campus as well; the use of push mowers instead of gas-powered lawn mowers could be another way to cut these kinds of emissions with low costs.<br>•Line 961 – It might be good to note whether the DTE MIGreenPower program credits are actually additional or not. If DTE was planning to build the extra solar capacity anyway, subscription to the program should maybe not be prioritized over the over options for U-M if additionality is a concern, which it ought to be to match the preference for additionality for the carbon offsets.<br>•Line 971 – For this section, it might be good to note that PPAs are limited-term contracts, thus it would also be good to specify what the plan ought to be when these contracts are up. We want to keep U-M carbon neutral indefinitely. Should U-M find new PPA contracts? This seems like the best option, but the size of the new contracts should also depend on the extent to which DTE and Consumers have cleaned up their operations.<br>•Line 973 – It might also be possible to consider doing an international VPPA.<br>•Line 1025 – A potentially interesting option that might emerge in the years ahead are small, modular nuclear reactors. It might be good to mention these, and U-M could be a great testing ground for these considering we have one of the best nuclear engineering programs in the world.<br>•Line 1079 – Many other universities have implemented revolving energy funds, thus there are many project application templates and other guidance available that may be useful to reference.<br>•Line 1418 – It might make sense in the Deep Building Retrofits section to explain how these goals will be supported by the revolving energy fund. As the fund will support the most economically beneficial efforts first, it's not totally clear why this separate, high-level analysis would be necessary.<br>•Lines 1470–1480 – The paragraph and figure on this page need work. Why are purchased goods not in the figure? Why aren't upstream and downstream food broken out? What's the difference between commuting and upstream commuting?<br>•Line 1547 – Installing a biodigester that burns methane from decomposing food and other solid waste could be another interesting way to reduce Scope 3 and Scope 2 emissions.<br>•Line 1890 – Virtual meetings and conferences also generate emissions, although the amounts are far less than those generated by physical travel and are primarily related to the computer, its energy use, and the energy used by the Internet to transfer data back and forth. A forthcoming paper in the International Journal of Environmental Studies titled "A framework to estimate emissions from virtual conferences" offers a calculator for these emissions, which may be of use to this section. Carbon offsets for purchased goods and carbon neutral Scope 2 operations would reduce the emissions from these significantly, but there will still be some emissions associated with Internet data transfer energy use that might be relevant to consider as part of Scope 3 emissions.<br>•Line 2019 – There are many vegan and vegetarian restaurants in Ann Arbor who could be great partners for a transition to being plant-forward. These include the Detroit Street Filling Station, Earthen Jar, Seva, Jerusalem Garden, Wolverine Sushi, and more.<br>•Line 2020 – The use of a program called DefaultVeg could be very helpful for the choice architecture recommendation here. It might be good to note how these changes can lead to substantial financial savings as well.<br>•Line 2031 – Using less carbon-intensive animal proteins, like switching from beef to chicken, can save on emissions but it can have serious impacts in the number of animals killed for consumption. It might be good to mention the importance of thinking about animal welfare in the university's food decisions.<br>•Line 2353 – Oxford just published some incredible guidelines for how to think about net zero offsetting that could be very informative for this section: https://www.smithschool.ox.ac.uk/publications/reports/Oxford-Offsetting-Principles-2020.pdf<br>•Line 2416 – Considerations of how the climate in Michigan might change will be vital for informing any biosequestration projects. GLISA at U-M could help with this.<br>•Line 2656 – While a single core course on climate change and carbon neutrality for all students across the university is likely unrealistic, it might be possible to require each college to teach their own such course with a focus on how climate intersects with the focus of that college. For example, the College of Pharmacy could teach a required course on something such as "Environmental and Pharmaceutical Interactions" that could discuss topics such as how the changing climate will affect biodiversity and thus the availability of certain pharmaceutical chemicals as well as how pharmaceutical companies can play a role in reducing emissions. LSA could teach a required class on the importance of the humanities and social sciences in understanding and solving the climate crisis. And so on.<br>•General – It might be useful to represent the abatement costs (now being called by some, like Prof. Julio Friedmann, the levelized cost of carbon abatement or LCCA) for different strategies proposed for Scopes 1, 2, and 3. Alternatively, if there is no time or data to calculate these, it might be good to at least recommend this methodology for future use, as it can help identify the best strategies to pursue first to reap the most gains or limit costs. This methodology can also help identify strategies that simply aren't financially viable and for which it may be cheaper to continue emitting but pay for expensive direct air capture and geological sequestration. For example, if the campus heating decarbonization would cost say $400 per metric ton of CO2 reduced but paying a company like Climeworks for direct air capture and permanent geological sequestration only costs like $300 per metric ton, then it makes more sense to continue emitting (factoring in upstream fuel emissions, of course) and just buy that quality offset.<br>•General – Are there any plans for helping students who are renting houses or apartments reduce the emissions generated by their homes (sorry if I missed it in the report)? While these emissions are not technically the responsibility of the university, there could be very easy and impactful ways through existing university resources like Beyond the Diag to encourage students to increase energy efficiency or even renewable usage in their rentals. | M, N, O, E, P, Q, T, U |
| 47 | Anonymous | Anonymous | J |
| 48 | Student | As a student who wants to spend more time on north campus, but is afraid of busses, I am so supportive of the high speed rail between north and central campus. The high speed rail would be amazing and as a student, I would love that. | J |
| 49 | SPAM | SPAM | SPAM |
| 50 | SPAM | SPAM | SPAM |

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|---|---|---|---|
| 51 | Staff | Tx to all who worked on this.<br><br>Re commuting emissions and urging U-M "to pursue a multi-modal transportation system by incorporating accessible and safe cycling paths" I would like to see a strong statement investing in making the Hoover-State-Eisenhower-Main superblock (largely U-M property, esp. at the north end) permeable to walkers and bikers.<br><br>E.g., U-M rejected a north-south bike path along the railroad tracks earlier saying it wasn't useful for "faculty or students." But hundreds of us normally work here (e.g., at ASB) and cars are the norm. The original Treeline plan would incentivize bike commuting AND walking to lunch at the Produce Station (instead of driving).<br><br>A *network* of cycling routes is key. We can't just have bike routes between U-M locations; we need htem all over town so that faculty, staff and students can get to campus AND drop their kids off at daycare, pick up their dinner on the way home, etc. The City has work of its own to do, but U-M needs to do its part to make its property permeable for cyclists and walkers. Central campus is great, but the athletic campus is a huge barrier -- the Stadium, Main, Eisenhower, State superblock forces cyclists onto high-speed multilane arterial roads. We need east-west and north-south all ages biking routes through this property like:<br>(1) an easy win -- make an official route from State Street to the Busch's through the tennis and soccer facilities. You can bike through there today with difficulty by threading your way through the parking lots and navigating around U-M's fences near the soccer stadium but it's difficult.<br>(2) harder: an east-west path that would get kids going to Pioneer off Stadium (my own kid was hit at the Kipke crosswalk, purportedly by U-M DPSS)<br>(3) a north south route connecting the many apartment complexes north of Eisenhower to campus and downtown<br><br>Thanks for your time and for the leadership U-M is showing! | V |
| 52 | Student | Apologies if I missed this somewhere- but I think offering additional programs online throughout all campuses would reduce the amount of commuting students would have to do. Though I see "alternate transportation" listed for students commuting, the reality is that students completing coursework online likely have non traditional schedules and more than likely will not rideshare. During COVID, all classes have been moved online- why shouldn't this continue? If not everything, greatly expand the amount of course offerings available through online learning. I am an online student, but likely will have to complete some in-person classes as well for my minor. If these classes were offered online, I would not have to commute form Lansing to Flint likely multiple times per week. | W |
| 53 | Student | Love the high speed rail! I think that would be extremely helpful | J |
| 54 | Student | The language on line 927, "sourcing 100 percent renewable electricity from the grid", should be amended to be inclusive of nuclear energy. Nuclear energy well meets the definition of sustainable provided on line 321 and is an essential tool in combating the climate crisis. An open embrace of nuclear power would be an excellent example of "challenging the status quo" (line 325) and would set a necessary example to others seeking to reduce carbon emissions. | B |
| 55 | Faculty | This comment does not have to do with specific line numbers because it is more holistic. The report is very comprehensive and contains many excellent plans that I am completely in support of. However, I would also like to point out that many of these plans will be harder to accomplish at UM-Flint and Dearborn because of a lack of resources (especially financial resources). Furthermore, while many of these ideas are excellent, there isn't enough attention paid to the intersections of social and environmental disparities. Being in Flint or Dearborn adds other environmental issues regarding water and brownfields. Our students are more likely to suffer from food insecurity and lack access to healthy food. Our faculty have less and less funding available to support conference travel, so adding more cost to the travel will be an additional burden. We need to be more efficient, consume fewer resources, and find sustainable practices where available. How can this happen without causing greater hardship for those of us in communities already struggling with basic necessities? | X |
| 56 | OPT OUT | OPT OUT | Y |
| 57 | SPAM | SPAM | SPAM |
| 58 | SPAM | SPAM | SPAM |
| 59 | SPAM | SPAM | SPAM |
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|---|---|---|---|
| 68 | Other | Greetings from the Better Food Foundation, and I hope this submission finds you well in these difficult times. As the “Leaders and Best,” the University of Michigan has a key opportunity to lead the charge in bringing about a more sustainable food system. To this end, we encourage you to adopt the following food-based recommendations and to urge President Mark Schlissel to support them:<br><br>Increase the overall number of plant-based dishes and food options available;<br><br>Restructure choice architecture within dining halls and retail outlets;<br><br>Reduce the amount of counter space devoted to serving animal protein;<br><br>Ensure that the protein option is an “opt-in” choice or is added last to plates;<br><br>Control protein portions at all-you-care-to-eat facilities;<br><br>Employ taste-focused labeling to re-brand dishes through use of fresh ingredients, complementary seasonings, and the combination of two or more fruits and vegetables to build flavor; and<br><br>Emphasize plating and the visual appeal of plant-based foods with a focus on rebalancing plates such that vegetables serve as entrees and protein is an accent on the plate.<br><br>The coronavirus has revealed that replacing our way of eating—menus dominated by cheap meat from factory farms that are hotbeds for disease and fast-paced slaughterhouses that abuse workers—with a new norm is more urgent than ever before. These policies, on the other hand, align with an innovative food strategy that has been adopted by institutions across the country, DefaultVeg (www.DefaultVeg.org)— the simple idea of offering plant-based foods by default to reduce our environmental footprint, especially around climate change: DefaultVeg meals can reduce food-related emissions by 63 percent. By embracing such a strategy, the University of Michigan will take the first step in fundamentally altering the norms around food that have contributed to environmental, health, and animal welfare crises.<br><br>We also strongly urge against pursuing the recommendation to swap ruminant meat with poultry and fish, given that factory-farmed chicken is associated with eutrophication of waterways, high levels of waste production, greenhouse gas emissions, and environmental injustice. Further, the consumption of fish entails destructive practices like trawling, which reduces biodiversity, destroys habitats, and unintentionally kills everything in its wake. A policy that drops red meat for poultry and fish will be trading one problem for another and should not be considered serious progress.<br><br>We at BFF know that UM is a world leader in research and leadership. We are hopeful, then, that UM will align its food policies with a vision of the future that is far more sustainable and just. | AS, BC |
| 69 | Student | Overall, I would like to state my support for a least-cost approach to carbon neutrality. While I commend the University's efforts to promote locally-based initiatives, I don't think those goals should be at the detriment of large scale, more cost effective carbon neutrality efforts that can be pursued elsewhere (e.g., investing in large scale solar installations in the Southwest). I further would like to commend Dr. Moore and Dr. Stolper's economic analysis on these matters and urge the PCCN to embrace their findings. | Z |
| 70 | SPAM | SPAM | SPAM |
| 71 | SPAM | SPAM | SPAM |
| 72 | SPAM | SPAM | SPAM |
| 73 | SPAM | SPAM | SPAM |
| 74 | Staff | Just my 2-cents of thought / reflection:<br>How many employees actually live in Ann Arbor? By punishing people who have to drive by making it more expensive to park (i.e. the daily park being $5.50 vs monthly of $78) doesn't help the U as itself become carbon neutrality. What about those of us who are essential staff that have to come onto campus? (Nurses, Doctors, IT, Custodial sfaff, ect)<br>This just seems like something that's only going to cost your employees money not help create a culture of "Carbon Neutrality". | C |
| 75 | Staff | Line 5 - Do these recommendations cover the Detroit Center, medical clinics like Briarwood, Wolverine Tower, Camp Michigania, the BioStation, or Camp Davis?<br>Line 40 - is the PCCN suggesting this be our official U-M wide land acknowledgement? Having a U-M wide official acknowledgement would make my life easier because I wouldn’t have to choose between the various versions that different departments use.<br>Line 210 - In what ways did we learn from other institutions who made plans for carbon neutrality before us? It might be useful to call out (with maybe some sort of visual cue) that information/those institutions. It would demonstrate more of the work that went into this report and show how we’re following proven strategies.<br>Line 210 - I don’t see this specific idea of “U-M bringing up the next” reflected much in the recommendations. There might need to be an added recommendation(s) regarding which institutions we’re aiming to collaborate with and how we plan to share our work with them.<br>Various Lines - We should consistently represent the University’s core mission. It is listed slightly differently throughout this document - sometimes including DEI, sometimes including health care, sometimes neither. For example in Line 190 “U-M’s core missions of research, education, scholarship, service, health care, and reflecting the principles of diversity, equity, and inclusion” but then in Line 290 “U-M’s mission of education, research, and service” and then in line Line 315 “ U-M’s mission of education, research, health care, and service" and so on throughout the document.<br>Line 240 - While I know the commission welcomes future engagement, it has to make time for it and have recommendations to staff/fund that part of the process appropriately. Publishing a document is one thing, but getting a diverse group of people excited to engage with it is entirely another. After two years of work, only 164 comments indicates a striking lack of engagement from a U-M community made up of hundreds of thousands of people (especially if you include alumni in that number - and alumni are the people who are likely to fund this work, so we should definitely include them). | AC, L |
| 76 | Staff | Line 500 - I’m glad we’re recommending to follow IPCC recommendations of limiting warming to 1.5 degrees. It is aggressive and puts weight and purpose behind the effort. U-M pursuing something alone wouldn’t be meaningful, but getting behind a science-based, global goal is purposeful. Indicating what other institutions/entities are aiming for this same goal might be reassuring information for those who aren’t deeply involved in this work. Most people will not have heard of the IPCC, but they will have heard of other institutions like Ohio State or Indiana University < note I do not know if these schools are following IPCC guidance they are just examples of other institutions people would be familiar with. | L |

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| 77 | Staff | Hello, and thank you for this opportunity.<br>I am submitting this potential research idea, which involves sequestering atmospheric C02 via the production and application(s) of Biochar; specifically in tandem with the cultivation and utilization of industrial hemp (not marijuana), which was recently approved by the State of Michigan for agricultural research initiatives. Source: https://www.michigan.gov/mdard/0,4610,7-125-1569_74018---,00.html<br>In a nutshell:<br>Cultivation of industrial hemp has been purported by various organizations as a Carbon-Negative process due to the plant's superior ability to absorb atmospheric C02. Along with the documented 10,000+ uses and products made from hemp, ranging from bioplastics to carbon-negative construction materials such as 'hempcrete', this plant can also be dried and burned (via pyrolysis) in a controlled environment to produce biochar in an environmentally sustainable manner.<br>We then put the biochar (carbon) back into the soil to decompose very slowly over time and provide an ideal habitat for indigenous microbes and nutrients. Because of biochar's ability to adsorb a wide range of organic compounds, many people and organizations have reported increased crop yields and soil quality with diminished net carbon emissions and reduced leaching of pesticides and nitrates.<br>The basic research idea is this:<br>Grow industrial hemp -> turn the stalks into biochar -> place biochar back into the ground<br>I will now expand this basic idea a bit, as there are still many more benefits to this process that I have only implied:<br>1."Grow industrial hemp" - Not only is the life cycle of the plant itself carbon negative, it can be used to create a large number of useful, local products; so many that I will leave it to the reader to further research if warranted.<br>2. "Turn hemp into biochar" - Many great technological advances have been made in the arena of biochar production. Not only do their methods greatly reduce the amount of greenhouse gases released during pyrolysis, they can also capture the gas (termed SynGas) in containers which can be used the same way as natural gas mined from the earth. Additionally, they can collect and separate the various plant oils for beneficial use in agriculture. Another benefit of these systems is that they can turn an astounding variety of agricultural products (ie waste products) into biochar. One example is wood chips from routine tree cutting that is commonly dumped into landfills. These could instead be dried and turned into biochar (carbon) and placed back in the earth to decompose at a much slower pace.<br>3. "Place biochar back in the ground" - Now that we've grown a carbon-negative plant and created multiple local sustainable products/resources, we get to put the majority of the carbon physically back into the earth for the additional benefits of increased crop yield, water retention, reduced need for additional fertilizer, and more.<br>3a. As a side note, this research could also be extended to study the effects of biochar in remediating local water systems. ie removing excess nitrates and pesticides from lakes, or mitigating the effects of nitrate runoff from manure, etc.<br>3b. From there, I am wondering if you could take the biochar, which was soaked in a highly nutritious aquatic environment, and place it back into the soil as a microbial and nutritional inoculant? More research is needed to tell.<br>Most sources I've investigated, who either support or deny the above claims to varying degrees, almost all agree that more research is necessary - which is why I am proposing it here. I would hazard to guess that the process could be highly specialized/optimized to the local environment to produce the best results with the least amount of input.<br>Along with the sequestration of greenhouse gases, the symbiotic benefits to agricultural production could very likely have a compounding benefit to the environment and consequently the University's goal of carbon neutrality.<br>Below I am providing a small sample of sources that provide context to the above claims. Thank you again for your commitment to Carbon Neutrality and the betterment of our communities, large and small.<br>https://pubmed.ncbi.nlm.nih.gov/26590867/<br>https://pubmed.ncbi.nlm.nih.gov/30640344/<br>https://www.aph.gov.au/Parliamentary_Business/Committees/House_of_representatives_Committees?url=ccea/24march2011/subs/sub035.pdf | BD |
| 78 | Student | It is particularly concerning that the draft report does not mention the Go Blue Guarantee at all (pertaining to line 510). If all three campuses are to unite in tackling climate change, the underlying inequalities between them must be resolved. Climate change is not just about emissions, but also omissions. That is to say if the university continues to absolve itself from providing assistance to students in their daily lives, the university should not expect much in the way of climate engagement from UM's most marginalized. By extending the Guarantee to Dearborn and Flint, trust in university administration could begin to be restored. The One University organization has created a proposal report of their own which, if implemented, would empower students and staff.<br><br>Another issue on the Dearborn campus is the prevalence of grass monocultures and invasive species (line 2720). Planting native meadows and removing invasive species would save the university money, promote biodiversity, and sequester additional carbon. Moreover, it would make the notion of sustainability more prominent in people's daily lives spatially. A tree inventory of the EIC Natural Area is also needed.<br><br>Lastly, the role of student organizations is not mentioned in the draft report either. Collaboration with a consortium of student organizations across all three campuses, on top of establishing a tri-campus sustainability office with a presence on each, would allow for additional climate engagement. Each campus could also be adorned with QR codes or even touch screens with real time information on how it is progressing in its short and long term sustainability goals (i.e., assuming Dearborn and Flint are given the capacity to track environmental metrics like Ann Arbor). | AD, AH |

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| 79 | Staff | Line 585 - When we say we need to use offsets to achieve our scope 1 & 2 2025 neutrality goal, we might emphasize how using offsets is in line with what many other institutions are doing. Also, we might indicate some criteria for selecting offsets with co-benefits that would be particularly appealing to our campus community - local to michigan, resulting in health benefits, providing educational opportunities for our students or others, etc.<br>Line 610 - Are we changing our baseline for scope 1 and 2 emissions from 2006 to 2018? For our existing 2025 sustainability goals we use a 2006 baseline. Also, it occurs to me that there isn't much discussion of how these recommendations mesh with the existing 2025 sustainability goals.<br>Line 630 - If readers skip down to this emissions chart or end up seeing it separated from the context of the paragraph above (like in a presentation or slide deck), it would help if we indicate on the chart itself that the red line is business as usual (spell that out), and the black line is if we execute the draft recommendations. | L, AE |
| 80 | Alumni | Line 865, "the mobility electrification analysis group's recommendation"<br>I am extremely disappointed and very discouraged to see no mention at all of encouraging the use of bicycles or e-bikes and e-cargo bikes for UM employees and departments. Bicycles and cargo bikes not only use much less parking space than electric cars. Electric cargo bikes used for on-campus transportation and logistics do not require new infrastructure for charging. They use standard outlets, and use about half a kilowatt hour of electricity to carry, say, 500 pounds for a minimum of 10 miles. I implore you to research electric cargo bikes and trikes as a truly cost-saving, energy efficient alternative to some other, heavier vehicle that requires a special charger. We can demonstrate for you. We use them ourselves! Please view our use (3 minutes): https://youtu.be/67y9rG2JFFY | E |
| 81 | Student | Line 2627: The orientation should not just introduce UM's goals and strategies but also why this it is important that the member do it. Basically "Line 2674" should be started at this point of time and then be a continuous process. Also a short introduction to the psychology of denial may also help with forming a scientific understanding and good skepticism of various subjects, not just specific to climate change.<br><br>Line 2654: I agree very much that there should be courses specific to each department since that may better help students understand the importance of climate change to something they love and hence likely take better action than a generic climate change course. I personally would have not paid much attention if I had to take a mandatory, generic course unless it has something related to what I do or am interested in (at least on a level I can notice and relate to). | AF<br>J |
| 82 | Anonymous | Anonymous | X, BE, BF, BG, BH, BI |
| 83 | Alumni | The Sustainability Map contains 12 ArborBike bike share locations that DO NOT EXIST. Neither the City of Ann Arbor nor the University of Michigan have a functioning bike share program. People visiting from other cities are usually astonished to learn this, and are often very disappointed, having counted on a public bike share option for their transportation while visiting (I know this because they call out store asking about it). You should remove these sights from your map, until they are functioning again. | BJ |
| 84 | Staff | Line 720 - 20,000 boreholes - that's a lot of open space to preserve above those holes. What a great co-benefit! That will preserve the community's ability to get outside, enjoy nature, and recreate. Mhealthy champions will be all excited about this.<br>Line 780 - because we could sequence the geo exchange systems in any order, I wonder what role DEI and visibility should play in the calculation. Why is Flint the last system - seems to fuel the idea of that campus not being as important as the others. Also, athletics provides such a visible communications forum for sharing about this amazing project, so I was surprised to see that starting later as well. | BJ |
| 85 | Alumni | 300, 305, 320<br>Given that 320/Sustainability is only defined by 300/Carbon-neutrality and 305/Carbon-offsetting, it reveals an intent more rooted in maintaining status quo than reducing environmental impacts of energy production and use.<br>Here is a report from the NCSE of several much smaller colleges doing a better job and succeeding at reducing their carbon footprint (not merely transferring it elsewhere in the world or into another ecosystem (i.e. CCS)).<br>https://www.ncseglobal.org/sites/default/files/inline-files/CCHandbook_Ch3%20copy.pdf | AG |
| 86 | Other | The Commission should consider advocating for nuclear electricity generation in addition to renewables. This comment applies to multiple sections of the report. | B |
| 87 | Staff | I forgot this one when I submitted my earlier heat and power infrastructure comments.<br>Line 810 - If we have to re-assess the feasibility of the heat and power infrastructure project every 5 years, what is the plan to involve students in this? I feel like this would be vital in training the next leaders and best and developing expertise within U-M too. | AH |
| 88 | Staff | I read this closely one day and then skimmed it just now. The technical approaches seem about right for the task at hand - they're going to be the best that they could ever be given limits. I was more concerned with the social impact, and in particular how Ypsilanti would be involved. Glad to see the city mentioned in the Appendix. Continue strengthening that bond between A2 and Ypsi. I suspect it'll only become more important as the response to climate change continues.<br><br>Tangentially related history: I'm a commuter graduate of the class of 2012, I ended up for 3 years commuting from my parents' home in Superior Township to the AAATA Park and Ride on South State St by the Athletic facilities. Got there in the morning, left in the evening. It saved a lot of money given the cost of housing on campus. I would hope there would be greater opportunities for local students to take advantage of that option, if not skip the car altogether and efficiently board a bus somewhere. Tele-lectures should be taken advantage of too: much of my schooling could have been done from home, saving resources for those who have physical/in-person lab work to do. It did not seem like this draft report was drifting from that aim, so I am satisfied on that end.<br><br>As for my duties as a staff member: due to the pandemic, I've been working from home, and it has been alright all things considered. I hope to continue to do so, with the occasional in-person meet-ups just to touch base post-pandemic. My actual office is off-campus as well, but I occasionally meet with people on campus.<br><br>As a general programmer/analyst, I'm an IT person, essentially, so I always look for efficient ways to compute, including shutting down the machine each night, unless there's a long running script going. Even then, there should be clear options to outsource that work to a HPC, which for where I work, we have and I do use.<br><br>Given those two paragraphs, I think the draft recommendations support such a scheme, and making improvements on it. Can't be too specific, I recognize. | W |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 89 | Other | As U of M well knows, a plant rich diet and plant forward planning and messaging is key to immediate GHG reductions. After reviewing the Food Analysis Final Report, I believe one key element is missing from the planning and implementation of moving U of M to a plant forward diet, and that is plant-based nutrition education.<br><br>Most people believe that you have to have meat for protein or iron, and dairy for calcium and vitamin D. Both of these are of course incorrect, but long term conditioning inhibits many people from making a change as they don't believe that it can be a healthy lifestyle and diet.<br><br>Washtenaw Optimal Wellness believes that nutrition and lifestyle EDUCATION is one of the keys to sustainable change. Please consider adding plant-based nutrition education to your Carbon Neutrality plan.<br><br>We have many Lifestyle Medicine professionals associated with our organization and are happy to assist in the educational process. https://washtenawoptimalwellness.org/ | AI |
| 90 | Alumni | Thank-you for considering the following five suggestions.<br>1. Incentivize electric bikes.<br>Regular bikes are too hard to ride up the hill to North Campus!<br>2. Buy “carbon offsets” from the City of Ann Arbor.<br>The City should finance a world-class pedestrian/bicycle system by selling carbon offsets to the university, which would serve to decrease UM’s Scope 3 emissions at the same time. A win-win-win for both the City and the University.<br>3. Institute pay-for-what-you-eat meal plans.<br>While you have many ideas to reduce the consumption of meat, which is admirable, your section on reducing food waste has a glaring omission: you should make all food plans pay-by-weight so people take only what they will eat. I once heard a grad student here from China say she was shocked at how much waste UM students created, compared to students in China where there is virtually no food waste because “pay-as-you-go” food plans are standard at the universities there. An added benefit: leafy greens are far lighter than meat, so salads and other vegetables may sell better and be eaten more! Since it seems to be such an easy way to reduce food waste, I am wondering why this type of food plan isn’t included in your recommendations?<br>4. Reverse the University’s contribution to Scope 3 emissions in Lower Town.<br>I propose that the University build a “human-scale” structure on the UM surface lot in Lower Town which is on the east side of Broadway at Wall Street. It is currently a UM surface parking lot, and with all that empty cement space and nothing to look at, cars zoom through too fast to be safe for pedestrian/bicycle traffic.<br>It wasn’t always this way. For most of its history, buildings lined both sides of Broadway, providing a sense of destination, vitality, and community. Check out the large number of buildings in the center of Lower Town on this map from 1853. The UM parking lot in question used to contain the “Huron Block,” which housed grocery and variety stores, saloons, a meat market, and a bakery, until it was torn down in 1959.<br>The lack of a building of interest or utility there contributes to UM’s Scope 3 emissions through encouraging car speeds and discouraging safe pedestrian/bicycle use. It is well known that UM bought up and/or moved many houses in Lower Town, and the Kroger store had to shut down due to lack of business. Although it is a very accessible location–walkable to downtown Ann Arbor, the University of Michigan Hospital (the region’s largest employer) and both UM campuses–the University has created a car-centric area dominated by parking structures and surface lots, encouraging commuting instead of living near work or school.<br>UM could build housing and/or offices on that surface parking lot and, ideally, lease the lower floors to retail. If surface parking is still needed, it would be fine behind the building(s) that line Broadway. But facing Broadway should be a pedestrian-friendly streetscape.<br>5. Do not encourage compostables.<br>I do not agree with the goal of increasing the use of compostable food service supplies. Rather, UM should go back to dining services with dishwashing equipment. Yes, washing dishes takes energy, but compostable food containers require more energy, if their entire lifecycle is considered: growing and processing the feedstock they are made from, manufacturing and transporting them to the consumer, and then transporting them to the compost facility, where compost processing machinery is required. On top of that, their decomposition creates emissions. Not to mention that compostables have serious issues that should be weighed against any benefits. For instance, they are made from GMO soy and corn that are taking over thousands of acres out west, threatening the Monarch butterfly migration, AND compostables are commonly made with PFAS chemicals—polluting the drinking water near their manufacturing plants. So please, do not get caught up in the illusion that compostables are “the way to go”! | AJ, AK, AL, AM, AN |
| 91 | Alumni | I skimmed the draft report and was disappointed to find that nuclear was not considered as a potential mitigation against carbon-based fuels. It is important that nuclear is a part of the mix in fighting global climate change because it is a very easy substitute for the current carbon-based fuels. While nuclear is not renewable, it certainly is a step in the right direction and should be considered part of the mix moving forward. | B |
| 92 | Alumni | 1000: Suggest that preference should be granted to local installation of emission reducing methods, minimizing onsite removal of trees or other green infrastructure. Any renewable energy installation should enhance ecosystem services, and should not reduce existing green infrastructure quality or quantity. Installation of renewable energy systems such as solar panels should be on existing buildings, and parking lots/structures or other available brownfield land. | AO |
| 93 | Alumni | Line 40: Land Acknowledgement is a welcome component of the report. I suggest contacting members of the indigenous tribes to enhance the statement and to review the entire document to obtain insights on how to support the respect for land, air, and water that will be consistent with the respect and responsibility that is lived by the Anishinaabe people. In other words, the philosophy of the land should be embodied in the report, and I am concerned that the draft document should have more support that the initiating statement. | AP |
| 94 | Alumni | Line 945: Purchased power from DTE will result in deferred decarbonization, because the University will continue to use fossil fuel through 2050/2040 via DTE/Consumers. UM Scope 2 emissions would be ongoing through that time, even though offset, our local e communities will continue to experience environmental injustice, and would be negatively affected. GHG reduction via offsets is on the planetary level, not local. UM should not pollute our regional community. | AQ |
| 95 | Other | The Food Internal Analysis Team did a wonderful job in tying (GHG) emissions to animal food products. The one major void may be helping students and staff understand the health benefits of moving to a whole food plant-based diet. If the food service team might need help with menus; or help with professional staff education please e-mail me at the above address and I can put the University in touch with appropriate professionals. | AI |
| 96 | Alumni | Line 945: Purchased power from DTE will result in deferred decarbonization, because the University will continue to use fossil fuel through 2050/2040 via DTE/Consumers. UM Scope 2 emissions would be ongoing through that time, even though offset, our local e communities will continue to experience environmental injustice, and would be negatively affected. GHG reduction via offsets is on the planetary level, not local. UM should not pollute our regional community. | AQ |
| 97 | Alumni | Line 1480, footnote 19, p. 47: Broken link to Carbon Accounting Team report. | L |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 98 | Alumni | I commend the Food team for their outstanding job of evaluating the GHG impact of U-M food purchases. Please see my comments:<br><br>1. I read the rationale for using GWP100 to calculate methane emissions rather than GWP* and I recognize the scientific debate and ongoing uncertainty regarding which calculation strategy to us. I am wondering whether you also considered using GWP20 for methane since some researchers argue that it more accurately reflects the significantly-damaging short-term impact of methane emissions. (Please see Goodland & Anhang, http://www.chompingclimatechange.org/wp-content/uploads/2015/01/Livestock-and-Climate-Change-What-if-the-key-actors-in-climate-change-are...-cows-pigs-and-chickens.pdf; McKinsey & Company: https://www.mckinsey.com/~/media/mckinsey/industries/agriculture/our%20insights/reducing%20agriculture%20emissions%20through%20improved%20farming%20practices/agriculture-and-climate-change.pdf).<br>2. Farmed Fish: Regarding fish purchases, I would like to see the PCCN consider setting a policy to purchase only U.S. produced fish and seafood. The reason is that it is my understanding that we have little visibility into the GHGe mitigation practices, sustainability practices, food safety and animal welfare practices of farmed fish operations in other parts of the world. It may well be that foreign farmed fish producers are not regulated as U.S. farmed fish operators are and may not meet the sustainability and ethical standards the University of Michigan would uphold.<br>3. Wild-caught Fish: I saw that PCCN recommended separating the goals of decarbonizing food purchasing from the Sustainable purchasing guidelines. Thus, my comment here may not be appropriate for the PCCN team. However, I would ask if you could please forward it to the Sustainable Purchasing Guidelines team. If this is not already the case, I would suggest that U-M only purchase fish from U.S. suppliers. The reason is very similar to above: we have little visibility into the fishing practices of foreign producers and it is well-known that many nations, including China among others, are recklessly overfishing our oceans. I am not an expert in this area, but from my limited reading, many fishing vessels are either not regulated or ignore regulations with impunity and our fisheries and marine mammal populations are declining precipitously. I hope U-M is taking a stand against this reality by purchasing only fish caught by U.S. fishing vessels which are among the most highly-regulated in the world. Many of our U.S. fishermen and women are also suffering due to competition from cheap fish and seafood imported into the U.S. Much of this inexpensive fish and seafood is unequivocally cheap due to the complete lack of regulation and respect for the oceans. We need to support U.S. fishermen and women who are respecting regulations and our oceans.<br>4. Animal Welfare: Again, this comment is outside the scope of PCCN but I would appreciate if you could route it to the appropriate individuals. If this is not already the case, I would ask UM food procurement to set a policy that UM purchase meat, dairy, eggs, fish only from those suppliers who meet the highest-certification of animal welfare standards.<br><br>Many thanks for your consideration of my comments. | AR, AS |
| 99 | Other | Concerning Carbon Sequestration: You can kill two birds with one stone when it comes to food systems and purchases, and planting trees for carbon sequestration by planting food / fruit bearing trees. | AT |
| 100 | Alumni | Urban Sustainability Center. (Vancouver City Studio Model) Many of the interactions among City and University staff are ad hoc and based on the personal relationships among City and University staff. Currently, there isn't a formal mechanism to provide the University with City challenges or upcoming funded projects. Similarly, there is no formal mechanism for the University to share current research efforts or upcoming research proposals where the City might add value as a partner. There could be a model where the City and University jointly fund (or seek funding for) a center where applied problems can be housed and led by City staff and faculty advisors. The center could provide applied problems to students including Law, Business, Urban Planning, SNRE (or its new incarnation), Ford School, Information and Public Health. The City has problems that students can walk to and most problems are scalable to other communities. Furthermore, a center could maintain continuity for projects that span semesters and build on previous team efforts.<br><br>Off Campus Housing. The University supplies 7,000 new renters to the off campus housing market each year. Half of all housing units in the City are rental units and the percentage is higher in Ypsilanti. In order for the City to meet its climate goals (25% reduction in GHG by 2025), the City needs to support efficiency investments in the rental market. Currently, the University does not "own" the GHG emissions from students, staff, or faculty housed in the City but off campus. The City has partnered with several other sustainability directors to develop a web-based tool to provide renters with information on rental rates and past energy use (RentRocket.org). Currently, our investor owned utility will not provide these energy data. We believe that students would be willing to crowd source their energy data to provide information to next tenants especially if the tool were supported by the University. We believe a consortium of universities and cities could maintain such a system efficiently. In addition, this tool could create a large data set for evaluating the effects of efficiency investments and education on behavior change and energy reduction. | AU, U |
| 101 | Other | One of the things that is not addressed in the report is walkability. In order to ensure that urban sprawl is limited and that vehicles are used less, is addressing the need for ensuring walkalbility of the campus and the city of Ann Arbor. All students should be able to walk to a grocery store or pharmacy easily, and reliance on vehicle transportation for basic needs should be considered and eliminated. | AM |
| 102 | Alumni | The Huron River Watershed Council (HRWC) is pleased to support many of the recommendations described in the Biosequestration Analysis report submitted to the U-M President's Commission on Carbon Neutrality.<br>We agree UM should protect all their existing natural-land properties, as they provide $250 million/year in ecosystem services (including carbon sequestration value). HRWC is happy to see U-M valuing land for something more than its real estate value, which land protection organizations and programs currently must rely on to fund land protection. As noted in the report, ecosystem services are rarely included in cost-benefit analyses of new construction or development, leading to projects where costs far outweigh the benefits. Natural lands in the Huron watershed are especially important, as they provide, among other services, groundwater recharge storage and water purification services, which keep the Huron clean and cool for the City of Ann Arbor's drinking water supply. Residents upstream of Ann Arbor draw this groundwater, filtered through these natural lands, for their own drinking water. Therefore, HRWC fully supports this recommendation:<br>"We recommend any development and/or expansion planning consider the ecosystem service values of undeveloped lands—including those within urban systems—to fully acknowledge the inherent and economic values of open spaces."<br>HRWC is happy to see the two properties HRWC has identified as high priority for protection listed as recommended for purchase for their carbon sequestration values. As the report describes, in the first six months of ownership, ecosystem services provided by these sites will outweigh the listed purchase cost. HRWC and its partners (members of the Mohican Lake Protection Collaborative: Livingston Land Conservancy, Hamburg Township, Ducks Unlimited, Michigan Nature Association, and the Michigan United Conservation Clubs) stand ready to work with U-M on this land protection project and to raise awareness about the importance of these wetlands to ecosystem and community health.<br>HRWC has mapped all the remaining natural areas in the Huron watershed and prioritized them based on their ecological importance. This map can be a resource to UM in your carbon sequestration efforts. Also, HRWC is developing a tool to make the search for ways to fund natural land protection more proactive. HRWC would like to partner with UM to achieve its carbon sequestration goals through land protection. HRWC would welcome thoughts from the commission. | AV. EP |

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| 103 | Other | Two Comments:<br><br>Comment Number 1 - Carbon Neutrality Research. I applaud the goal of increasing funds for carbon neutrality-related research. I recommend the university launch an equally dedicated technology transfer effort to ensure the robust commercialization of successful research results. Also, I recommend that any associated royalties be allocated to a new dedicated fund to support the initiative.<br><br>Comment Number 2 - Scope 2 Purchased Electricity. I believe the PCCN report greatly underestimates the ability of the university to influence emissions from purchased electricity and the CCP's natural gas. Methane, the main component of fracked natural gas, is of particular concern because it can warm the planet more than 80 times as much as the same amount of carbon dioxide over a 20-year period. When methane leaks into the air before being used – from a leaky well heads and pipes, for instance – it absorbs the sun's heat, warming the atmosphere. For this reason, it's considered a greenhouse gas, like carbon dioxide.<br><br>While methane doesn't linger as long in the atmosphere as carbon dioxide, it is initially far more devastating to the climate because of how effectively it absorbs heat. In the first two decades after its release, methane is 84 times more potent than carbon dioxide. Indeed, it is estimated that as little as three percent of fracked gas leaked into the atmosphere will do more climate damage than the continued use of coal. For example, the American Geosciences Institute notes,<br><br>"Methane is the main component of natural gas, a cheap, abundant, and versatile source of energy that produces less carbon dioxide than other fossil fuels when burned. However, methane itself is a more potent greenhouse gas than carbon dioxide. Methane leaks from wells, pipelines, or processing equipment can substantially increase the greenhouse gas emissions of the natural gas sector, while also wasting resources as methane escapes into the atmosphere"<br><br>Of particular concern is a study of the impact of fugitive methane on climate change, published by Nature, notes that the fossil fuel industry routinely leaks – or intentionally releases – methane gas into the air. In addition, Robert Howarth, an earth system scientist at Cornell University, finds that North American gas production was responsible for about a third of the global increase in methane emissions over the past decade.<br><br>A June 2018, InsideClimateNews study also found that the amount of methane leaking from oil and gas fields was 60 percent higher than the official EPA estimate. Finally, a study has found that leaks of methane suggests that in major cities along the U.S. eastern seaboard many of methane leaks come from homes and businesses—and could represent a far bigger problem than leaks from the industrial extraction of the fossil fuel itself.<br><br>I believe the university can demand that electricity and natural gas that it purchases come exclusively from fracked gas that does not generate fugitive methane leaks (well-heads, process and transportation). Towards that end, I recommend the PCCN incorporate the following into Scope 1, 2 & 3 emission remediation efforts:<br><br>First, the university should work exclusively with suppliers that are linked to the Oil and Gas Climate Initiative (OGCI). OGCI is a group of member companies that aims and works to accelerate the transition to a low-carbon future. OGCI notes that, "Energy used in power, industry, transport and in the heating and cooling of buildings accounts for almost three-quarters of global greenhouse gas emissions." OGCI further notes that, "reducing member companies' methane emissions to near zero is a top priority for OGCI. We also aim to expand our impact by engaging across the natural gas value chain and in collaboration with others".<br><br>Second, the university should require electricity and gas suppliers to adopt a blockchain technology that would allow fracked gas to be accurately identified and tracked through the supply chain, enabling the university to know when they are buying sustainably fracked (clean) fuel.<br><br>Third, the university should directly lobby public policy makers for the enactment of laws that would require responsible permitting agencies to establish and mandate reasonable fracked gas fugitive methane leakage limits, aligned with detection, for all well heads and T&D pipelines from source and storage location to point of delivery.<br><br>Fourth, the university should directly lobby public policy makers to require the Michigan Public Service Commission to plan, pilot and launch a new MIGreenGas program (modeled after the MIGreenEnergy program), whereby electricity and natural gas suppliers will provide electricity and/or natural gas to MIGreenGas customers (i.e., the University of Michigan) that is secured from fracking operations that do not leak fugitive methane. | G, AW, AX, PO |
| 104 | Student | UM has achieved 5% of its goal for reducing Greenhouse Gas Emissions based on Schlissel's Committee on Greenhouse Gasses; what mechanisms are in place to ensure that this report is not completely ignored? I am not as familiar with the Committee on Greenhouse Gases, so the accountability structure of those recommendations may have been weaker than this report, but I encourage the PCCN to consider accountability and the actions that might be necessary to achieve accountability. If a reliable accountability process is not something that can be achieved within the context of the report, the PCCN should let the community know.<br><br>Carbon offsets will be used until 2040. These offsets will allow UM to continue to produce emissions. I would caution about offsets such as 'planting trees' that do not take environmental justice into account: https://www.theguardian.com/commentisfree/2019/jul/09/planting-trees-planet-people-nature-climate-crisis-communities<br>Because it may require a lot of work to understand the offsets and ensure that they align with environmental justice, it may be more reasonable not to rely on these offsets.<br><br>People within the top 10% of wealth in the world contribute 50% of the carbon emissions. One of my recommendations to the PCCN is to address how UM is contributing to the concentration of wealth and the fact that those who are wealthier contribute more to emissions. Wealth provides an individual with the ability to emit more carbon and also cocoons them from both the impacts of the climate catastrophe and experientially understanding these impacts. How does this plan hold individuals, for whom 'UM' creates wealth, accountable? The top 10% of wealth in the world is approximately the accumulation of $100,000. One recommendation that may lead to reduced emissions as well as environmental justice would be to reduce the salary of everyone at UM to $100,000.<br><br>Finally, I would encourage the report to include a section on future work. For example, reducing emissions to 0 does not address all of the carbon emissions that UM has contributed to date. Should UM also work to capture all of the carbon that it has ever produced? I know companies such as Microsoft have committed to ideas such as this and I would be interested in hearing whether the PCCN thinks it should also be considered. | EJ , BM, JT, BN |

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| 105 | Faculty | I have deep concerns about the recommendation of UM investment in EVs when no exit strategy has been developed for the batteries and associated materials used in such vehicles.<br><br>1. The battery materials are often sourced from the global south to benefit the populations of the global north. There are significant human rights and environmental concerns about the source of the raw materials used in EVs.<br><br>2. Electronic waste is a significant concern that is only increasing, with no solution in sight. There are currently no practical strategies for battery-end-of-life, recycling or battery re-use. There are significant social justice and equity concerns regarding electronic waste now. An increase in EVs will only exacerbate these issues. UM should not invest in EVs without having a clear exit strategy for the batteries and other associated electronic waste. Notably, EVs will create battery waste in a relatively short period of time ~5-10 years.<br><br>3. Transitioning to EVs without a secured carbon-free source of electricity can lead to higher CO2 emissions. Carbon-free electricity should be sourced first.<br><br>4. EVs remain expensive and therefore less accessible to people with less wealth. Reserving parking and other incentives suggested in the PCCN report for EVs thereby penalizes people with less disposable income. EVs are also less accessible to people who maintain their own vehicles, creating another (perhaps less visible) barrier to ownership.<br><br>5. Creating a charging infrastructure for EVs on campus addresses "half" the problem. EV owners will also require charging infrastructure at their homes. Given the current roll-out of EV charging infrastructure and the disproportionately high electricity rates in certain regions Michigan, the lack of home charging will become another issue of social inequity to already underserved populations. | E, BO, BP, BQ |
| 106 | Faculty | I love the idea of a large scale geothermal energy infrastructure project. While this is an expensive pathway, it has potential to catapult UM into a leadership position not only among national universities, but also for the larger global community. While there will undoubtedly be some setbacks along the way for such a massive project, the learning outcomes and practical demonstrations will be unique and powerful.<br><br>As noted in the report, a carbon free electricity source must be secured for geothermal to be carbon neutral. So that path must be secured in parallel to the development of geothermal heat and power. | BJ |
| 107 | Faculty | It is clear that as the Human Population Grows, the goal of ``carbon neutrality'' becomes impossible to attain. To attain ``Carbon Neutrality'' it is essential that we stabilize Human Population level quickly. This can be achieved by enacting ``Maximum 2-children policy''. Under this, if a lady become pregnant for the 3rd time, she should have the freedom to have an abortion, or at the time of her delivery either she or her husband should undergo sterilization.<br>In this respect I admire Argentina, which made abortion legal recently. | BS |
| 108 | Student | The section of the draft that this comment pertains to is on Scope 3 emissions. I did not see any mention of investments in the fossil fuel industry contained within the Scope 3 emission section of the document, while I have read that U of M has frozen any new investments in the fossil fuel industry, I believe it would be disingenuous to claim carbon neutrality without full divestment from the fossil fuel industry. Thank you. | A |
| 109 | Alumni | No mention is made with regard to the embodied energy of existing buildings or for their cultural/historic contribution to campus. This is a huge oversight and should be addressed in the final document. | BT |
| 110 | Student | To avert climate catastrophe, it is absolutely crucial that UM reach carbon neutrality by 2030, no later. The IPCC has stated unequivocally that the entire world needs to reach carbon neutrality by 2050. This means that it is imperative that institutions like UM that not only have the necessary resources, but are uniquely positioned to serve as a model for the rest of the world, need to reach neutrality by 2030.<br><br>Reaching carbon neutrality by 2030 cannot include carbon offsets. Offsets presents a number of issues:<br><br>- Offsets give wealthy institutions like UM license to continue burning fossil fuels indiscriminately at the expense of the rest of the world, shirking our responsibility to lead in reducing our own emissions. Fundamentally, reliance on offsets demonstrates that UM is not serious about keeping carbon in the ground<br>- Robust research has demonstrated that offsets are incredibly difficult to track, and often worse than doing nothing at all<br>- Offsets also bring with them a host of environmental justice issues. Offset programs have in many cases been responsible for the displacement of indigenous peoples, and they allow powerful institutions to continue polluting frontline communities. In our case, relying on offsets means continuing to pay DTE for an extremely carbon-intensive fuel mix until 2040--instead, UM needs to use its power to force DTE to transition away from fossil fuels as quickly as possible | BL, JS, JT, AQ, BU |
| 111 | Student | We are very concerned about the fact that this initial report does not include a carbon budget, which would lay out exactly how much carbon UM is allowed to emit prior to achieving full carbon neutrality. Without such a budget to guide campus energy use and construction, there is no mechanism to prevent UM from burning fossil fuels indiscriminately until 2040. It is absolutely crucial that UM develops a long-term plan to ensure that all future construction is done as sustainably as possible, and a carbon budget is essential for that.<br><br>An established carbon budget acts as an institutional recognition that, when it comes to forestalling the worst consequences of climate change, it is not the rate at which we emit or the rate at which we reduce emissions in any particular year that matters, but the sum TOTAL of what our emissions are. Reaching carbon neutrality in 2040 will not mean much if our emissions between now and then are through the roof.<br><br>It is critical to recognize that we're not talking about interim dates for neutrality, but the ACTUAL AMOUNT of carbon that we're emitting | BV |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 112 | Student | As CAM described in a detailed memo to the PCCN on August 10th, it is absolutely critical that the recommendations propose an accountability structure. Without a set of mechanisms to ensure that the recommendations are actually implemented, there is little reason to believe that this report will not befall the same fate as the 2015 greenhouse gas emissions committee report (largely ignored). Moreover, the process of implementation in such a vast institution will be deeply complex, and thus a high level of planning and coordination is imperative to ensure its success. President Schlissel made clear in his initial charge that the PCCN not only recommends a target date for neutrality, but also describes “how to get there,” which requires careful consideration of the ways in which policy and organizational structure can either foster or inhibit institutional progress.<br><br>In our August 10th memo, we presented an outline for a potential structure. See the full memo here: https://docs.google.com/document/d/1Sm_z2iIerLCcUaBRKUBxPivY0WFXcaQ4dTnS-NjGvKs/edit<br><br>The key points are as follows:<br>- Recommendations should have defined goals with associated SMART criteria<br>Adoption of recommendations should be a public process, with commitment from highest levels of administration<br>- Development of an implementation plan should be done through deep collaboration with community groups active in areas of overlapping interest (e.g. unions, advocates of public transit and affordable housing)<br>UM should employ a paid team devoted to overseeing implementation of recommendations<br>- Itemized progress reports should be published every six months<br>- Every school, college, and department within LSA should employ a sustainability coordinator dedicated to ensuring the successful implementation of the PCCN’s recommendations (and further sustainability measures) within their unit<br>- Public facing dashboard tracking progress | HQ, HR, HS, HT, HU, HV, EM, EN |
| 113 | Student | The decision to rely almost entirely on DTE to provide clean energy, instead of prioritizing on-site renewable generation, is disappointing and concerning. While they say they aim to transition to 100% clean energy by 2050, DTE’s demonstrated commitment to a swift transition to carbon neutrality is weak--just two years ago, they broke ground on a new natural gas burning power plant. DTE is also a notoriously bad service provider, creating serious environmental justice issues by leaving Detroiters without power at exceptionally high rates, all the while paying exorbitant dividends to shareholders.<br><br>While more expensive in the short term, on site generation (i.e. rooftop solar) would considerably reduce UM’s reliance on DTE, and in demonstrating our willingness to potentially cut ties, it would put serious pressure on DTE to accelerate their transition to clean energy. Failing to do so demonstrates to DTE that we are perfectly comfortable with very slow rate at which they are transitioning away from fossil fuels, and in tying UM’s fate entirely to DTE’s energy generation decisions renders us entirely subject to their whims (which, of course, will be the whims of the market).<br><br>A potential counterargument would be that UM can use its buying power to push DTE to transition more quickly (this, of course, is only possible if UM presents a credible threat of cutting ties, which is only possible by building on-site generation). But while DTE may begin building more renewable generation capacity in the coming years that UM can choose to source its energy from, it is crucial that DTE verifies that this is additive capacity; i.e. was built specifically for UM. Otherwise, this arrangement will likely result in UM snapping up all new renewable generation capacity that DTE builds, and declaring that it is carbon neutral while the rest of DTE’s customer base continues to rely on fossil fuel generation | N, AO, AQ |
| 114 | Student | While including the equity and justice considerations to each recommendation is an important step toward ensuring that environmental justice is a central consideration in the implementation of the plan, it is indeed only a first step. Through the entire planning process, environmental justice has been deprioritized, beginning with the failure of the administration to select an environmental justice expert to serve on the commission. And while an EJ IAT was then formed, it seems that they disappeared somewhere along the way, as no EJ IAT report was ever produced. This represents an alarming institutional disregard for the justice implications of the plan, and helps explain some of the more serious issues with the plan. As addressed in another comment, carbon offsets also present serious environmental justice threats; if an EJ expert had sat on the commission, or the EJ IAT had produced a report, such concerns would have been a central part of the decision making process.<br><br>There are very local environmental justice concerns that the plan fails to address as well, namely, those related to housing. UM has become a powerful agent of gentrification in Washtenaw County, largely responsible for the astronomical increases in the prices of rental units, which now makes it near impossible for service workers earning minimum wage to live in the city. As the city becomes increasingly unaffordable, even many students are now moving to Ypsi, accelerating gentrification there as well. Along with being an urgent crisis in its own right, housing is intimately linked to climate mitigation and resilience. The greater the percentage of UM’s students, faculty and staff that cannot afford to live in Ann Arbor and must live elsewhere and commute into the city, the higher our emissions are. And the more people that are forced out of housing entirely because of inordinate prices, the more vulnerable our city’s population is to climate threats (i.e. increasing extreme heat days and potentially dangerous storms and flooding).<br><br>Thus, it is absolutely imperative that this housing crisis be addressed as quickly as possible, and not punted to another plan to be completed before 2025, which will only be fully implemented by 2040. More specifically, it is critical that the PCCN take heed of the commuting IAT’s recommendations to build sustainable, affordable housing units for students, faculty and staff on land that the University already owns, as quickly as possible. As the IAT very clearly describes, this is both feasible and urgently important. Moreover, given that UM is exempt from property taxes, and thus weakens the City’s capacity to promote affordable housing, it should contribute directly to both Ann Arbor and Ypsi’s affordable housing funds annually, to the tune of $5-$10 million per year, as described in GEO’s 2020 bargaining platform. | BW, BX, IB |
| 115 | Alumni | * General<br>In several places the PCCN's draft recommendations include payback periods (PBPs). PBPs should be calculated two different ways, (1) using normal cash flows and (2) using normal cash flows but also including the internal cost of carbon proposed under Scope 2 Emissions starting at Line 1230. Both PBP values should be reported! As the draft report states, the proposed carbon pricing system and its amount reflect the best current social cost of carbon; those are real costs to society but not captured in normal financial (PBP) calculations because dumping CO2 into the atmosphere is a Tragedy of the Commons. Granted U-M does not directly incur those social costs but it, like every entity, bears them, too. | BY |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 116 | Alumni | * Scope 3, Commuting up Line 1570<br>I endorse all of the PCCN's draft recommendations related to commuting! Adding housing is especially important to reduce vehicle miles traveled and the associated GHG emissions. It would also address a number of social equity issues and help support the A2Zero Plan and lead to greater regional cooperation, a desire clearly articulated by President Schlissel.<br>Beyond the current draft recommendations, I would like to see an explicit recommendation that U-M cooperate with the Treeline Conservancy, the City of Ann Arbor and other entities to help realize the Treeline Trail, not just the initial 2.5 mile section but the expanded 14-mile route version which includes sections east along Plymouth Road, south on Huron Parkway to Washtenaw and then west on Washtenaw and Stadium to Michigan Stadium. This loop, bisected by Washtenaw County Boarder-to-Boarder Trail and combined with the U-M Connector, would provide outstanding biking and walking connectivity for U-M students, staff and faculty as well as A2 residents to all major U-M areas, including any new housing, and employment, retail and entertainment centers, including recreational areas along the river. This would be a huge community asset. I can provide a PowerPoint slide of the expanded Treeline Trail, if desired. | V, BX |
| 117 | Staff | An early step in increasing bike transportation to campus from staff and faculty is creating spaces where bikes can be stored out of the elements and secured. Ebikes are increasing in popularity because they make travel by bike more accessible to people who otherwise would drive short distances - these are expensive (as are most commuter style bikes) and it would incentivize people to buy and use them if they knew they could be stored securely indoors while they work, and they can get on a dry seat when they're ready to go home. There are a few "bike lockers" or "bike houses" downtown that are similar to what I am suggesting, but there are not enough of them and they aren't located in places that are more suitable for campus use than downtown use. Seattle would be a good reference for the types of spaces I am suggesting. Some could include showers and locker rooms, others could just be as simple as putting a shelter above existing bike racks so they're out of the elements. Bike lanes aren't the only barrier to keeping people from commuting by bike.<br><br>Eliminating annual or monthly parking passes is a short-sighted. You need to do a study of how far most faculty and staff live from campus. The cost of living close to campus is overblown and out of budget for most of us due to the capitalist need for over-priced, under capacity "luxury apartments" for students whose parents are footing the bill, or have been swindled into more student loans than they should be borrowing. The idea of a pro-rated parking pass based on payroll is a good idea, but incentivizing peripheral lots and making them actually accessible via frequent shuttle is a better solution than to jack up the cost alone. These peripheral lots should also have secure and sheltered bike storage.<br><br>As far as transitioning to a full-electric vehicle fleet, I think there should still be some consideration of travel greater than 250 miles and some hybrid vehicles should be maintained until the range capacity of the vehicles is extended, or there is a more accessible rapid charging grid. My program routinely uses multiple mini-vans with all 6 seatbelts filled on trips longer than 250 miles - this is a lower carbon option than taking a charter bus, which is probably what the students would choose to do rather than take 30% more of the smaller, electric vehicles that will take them longer to travel to their destination due to charging times and ensuring that they are reaching appropriate charging stations within the range of the vehicle. Or we should buy multiple electric charter buses. | C, E, BZ |
| 118 | Staff | 1780 "Preliminary Draft Recommendation: Embrace and incentivize flexible telecommuting options for employees"<br>I would just like to note that this is key, and would not only help to reduce the amount of vehicles on the road every day (yay!), but would additionally create a less stressful work life for many employees. When I first started working for Michigan Medicine, there were entire seminars about parking and commuting, and that was the most stressful part of adjusting to UofM. Allowing for flexible work hours (Working 10-6 or in chunks as opposed to a strict 8-4 or 9-5), along with continuing to allow and encourage working from home when we'd like, will reduce rush hour traffic, crowded parking lots, and the additional walk/bus ride people make after parking.<br>This particular section isn't just green-minded, but allows for a far more healthy and forward thinking work/life balance for employees! | BF |
| 119 | OPT OUT | OPT OUT | C |

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| 120 | Student | COMMENT #120 (1/2)<br>Response to the President's Commission on Carbon Neutrality (PCCN) Draft Report. From the Energy Club at Ross PCCN Review Committee<br>We appreciate the effort of the PCCN and recognize the progress this committee has made on the University of Michigan's (the University) journey towards carbon neutrality. While there are many encouraging and promising recommendations in the report, such as the emphasis on additionality and impact in Michigan, the report fails to put the University on a path to be the Leaders and Best in terms of achieving carbon neutrality.<br>Achieving carbon neutrality stands as a defining challenge for the University and all of humanity. It requires innovative solutions, technical rigor, and interdisciplinary work. However, this is not a new fight. The vast majority of the University's students were not alive when the United States President committed to stabilizing greenhouse gas emissions to combat climate change at the Rio Earth Summit in 1992. Inaction and apathy squandered valuable years while global temperatures and climate-induced disasters increased. The Energy Club at Ross PCCN Review Committee, selected for both our industry experience and desire to improve the University, identified several areas where the report could be improved to adequately address the urgent need for the University to achieve carbon neutrality:<br>1. Improve implementation, accountability, and transparency measures<br>2. Implement carbon pricing before 2025<br>3. Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid<br>4. Set Scope 3 emissions targets by 2022<br>5. Procure carbon offsets by 2022 and set maximum offset targets<br>6. Increase the size of the Revolving Energy Fund (REF)<br>7. Implement ESG metrics for endowment investment decisions<br>1. Implementation, Accountability, and Transparency<br>The University's carbon neutrality undertaking must emphasize timely implementation plans, coupled with increased accountability and transparency. It is critical that the responsible units start planning and implementing the recommended actions swiftly – the next steps should not be another series of feasibility studies that simply delay real progress (e.g. line 1279). In order to facilitate such a massive change in a short period, a project management office (PMO) should be constituted to support the proposed carbon neutrality leadership position. The PMO should formulate a high-level project plan, integrate detailed unit-level plans, ensure that the milestones from the plans are met on time, and facilitate regular reporting to the University community. The draft report should also recommend specific unit-level reporting, monitoring, and enforcement mechanisms to ensure that unit leaders meet their carbon neutrality targets.<br>2. Carbon Pricing<br>The reommended internal carbon pricing measure, in concert with the REF, offers a compelling mechanism for incentivizing and financing efficiency measures in existing buildings. However, the proposed five-year implementation timeline is too long. The carbon pricing system should mature (reach the full $50/MTCO2) at the latest contemporaneously with the Scope 1 and 2 goals of carbon neutrality by 2025 (including offsets) and preferably earlier to minimize the offsets required.<br>3. Scope 2 Emissions<br>While we appreciate the establishment of a Scope 2 carbon neutrality goal, we think that the University should do more to leverage its clout and purchasing power within the state of Michigan and take on a more active role in decarbonizing the state's power supply at a broader scale and on a faster timeline. We understand the need to pursue stopgap measures such as Virtual Power Purchase Agreements (VPPAs) in the immediate term; however, achieving Scope 2 carbon neutrality through these means can be accomplished by 2023 instead of 2025 given current rates of project development. Furthermore, the projects developed through VPPAs could be located in Michigan to boost renewable energy jobs in the state. In parallel, the University must actively utilize its political capital to advocate for faster change at the utility and state levels. For example, this can take the form of lobbying the Michigan Public Service Commission for further deregulation of the power sector to allow front-of-the meter Power Purchase Agreements along with other regulatory policies to improve the viability of utility-scale renewable projects in the state. Additionally, the University should do more to independently increase renewable generation in Michigan, such as setting specific targets for distributed energy resources (DERs) on campus, including standalone solar + storage installations and mandated rooftop solar on new buildings. | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |

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| 120 | Student | COMMENT #120 CONTINUED (2/2)<br>4. Scope 3 Targets<br>Our review committee was disappointed by the recommendation to delay setting Scope 3 emissions goals until 2025. While these emissions are more ambiguous due to the University's lack of control over them, that should not prevent goals from being established, since goals will help to spur innovative ideas. We have already fallen behind institutions such as the Ohio State University, Duke, and Yale, which have included Scope 3 emissions in their sustainability strategies (see Figure 8). Our recommendation is that the University should establish Scope 3 emissions targets by 2022 (including purchased goods), while simultaneously beginning the food and travel emissions estimates.<br>5. Carbon Offsets<br>We appreciate the Commission's acknowledgement of the limited role offsets should play in a carbon neutrality plan. Two key issues remain regarding the use of offsets. First, 2025 is unnecessarily long for assessing and procuring credible offsets, especially given the Commission's clear guidelines for determining offset quality. Unless delaying offsets can realize additional benefits for the local community, offsets should be procured by 2022. Second, the absence of specific maximum offset targets between 2025 and 2040 leaves too much room for inaction on direct reductions. The recommendations should include quantified intermediate goals for the maximum number of offsets to increase accountability and align with the Commission's emissions trajectories shown in Figure 2. These milestones would serve a similar purpose as a carbon budget, by limiting the actual emissions emitted by the University.<br>6. Revolving Energy Fund<br>The Commission recommends a $25M REF seed for the Ann Arbor campus, citing optimal economic benefits for the school. However, the goal of carbon neutrality is not solely to produce economic gains, and many energy efficiency measures supported by the REF will yield CO2 reductions at a lower cost per ton compared to other PCCN recommendations. A larger REF with appropriate additional staffing would shorten the timeline for realizing the substantial benefits of increased energy efficiency and would also support more expensive proposals, such as deeper building retrofits, which have greater long-term benefits.<br>7. ESG Requirements for Endowment Investments<br>The University of Michigan cannot consciously strive for carbon neutrality while simultaneously investing in firms, like ExxonMobil, that plan to continue increasing carbon emissions in the coming decades. To show consistency in both word and action, ESG requirements should be set for all investments made with university endowment funds, in order to more thoughtfully invest these funds in alignment with a broader mission. This will demonstrate the University's commitment to fighting climate change while also encouraging sustainability in the corporate world and enabling the University to join the ranks of institutions like Harvard that already consider ESG factors in their endowment investment decisions. Additionally, endowment funds could be reinvested within the University through a program like the REF, targeting ECM projects with predictably short paybacks and high IRRs to continue to realize the intended fund returns.<br>Our review committee appreciates the PCCN draft report's broad focus on different sources of emissions, as well as the recommendation to make the University a global leader in geothermal technology. Overall, however, our review committee is disappointed by the lack of ambition and follow-through shown in the PCCN draft report given the vast resources at the University's disposal and the strong collective interest of stakeholders. We know that the University community can work together to define a better path towards achieving carbon neutrality and addressing environmental justice issues, thereby enabling the University to truly become Leaders and Best on the world stage at such a crucial moment in history.<br>Thank you for considering our feedback,<br>The Energy Club at Ross PCCN Review Committee | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 121 | Anonymous | Anonymous | CA |
| 122 | Staff | I'd be interested in seeing what the carbon effect was of those who telecommuted during the pandemic to determine with greater accuracy what the carbon emission impact was. Seems like an updated analysis should provide more details on whether telecommuting actually increased carbon emissions. Another idea is doing telecommuting seasonal, for example. Many of us who got to work from home might prefer to continue to work at the office during the busy months (fall/winter) but would prefer to telecommute (and save carbon emission) during the summer months. | BF |

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| 123 | Student | COMMENT 123 (1/2)<br>Response to the President's Commission on Carbon Neutrality (PCCN) Draft Report<br>From the Energy Club at Ross PCCN Review Committee<br>We appreciate the effort of the PCCN and recognize the progress this committee has made on the University of Michigan's (the University) journey towards carbon neutrality. While there are many encouraging and promising recommendations in the report, such as the emphasis on additionality and impact in Michigan, the report fails to put the University on a path to be the Leaders and Best in terms of achieving carbon neutrality. Achieving carbon neutrality stands as a defining challenge for the University and all of humanity. It requires innovative solutions, technical rigor, and interdisciplinary work. However, this is not a new fight. The vast majority of the University's students were not alive when the United States President committed to stabilizing greenhouse gas emissions to combat climate change at the Rio Earth Summit in 1992. Inaction and apathy squandered valuable years while global temperatures and climate-induced disasters increased. The Energy Club at Ross PCCN Review Committee, selected for both our industry experience and desire to improve the University, identified several areas where the report could be improved to adequately address the urgent need for the University to achieve carbon neutrality:<br>Improve implementation, accountability, and transparency measures<br>Implement carbon pricing before 2025<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid<br>Set Scope 3 emissions targets by 2022<br>Procure carbon offsets by 2022 and set maximum offset targets<br>Increase the size of the Revolving Energy Fund (REF)<br>Implement ESG metrics for endowment investment decisions<br><br>1. Implementation, Accountability, and Transparency<br>The University's carbon neutrality undertaking must emphasize timely implementation plans, coupled with increased accountability and transparency. It is critical that the responsible units start planning and implementing the recommended actions swiftly – the next steps should not be another series of feasibility studies that simply delay real progress (e.g. line 1279). In order to facilitate such a massive change in a short period, a project management office (PMO) should be constituted to support the proposed carbon neutrality leadership position. The PMO should formulate a high-level project plan, integrate detailed unit-level plans, ensure that the milestones from the plans are met on time, and facilitate regular reporting to the University community. The draft report should also recommend specific unit-level reporting, monitoring, and enforcement mechanisms to ensure that unit leaders meet their carbon neutrality targets.<br><br>2. Carbon Pricing<br>The recommended internal carbon pricing measure, in concert with the REF, offers a compelling mechanism for incentivizing and financing efficiency measures in existing buildings. However, the proposed five-year implementation timeline is too long. The carbon pricing system should mature (reach the full $50/MTCO2) at the latest contemporaneously with the Scope 1 and 2 goals of carbon neutrality by 2025 (including offsets) and preferably earlier to minimize the offsets required.<br><br>3. Scope 2 Emissions<br>While we appreciate the establishment of a Scope 2 carbon neutrality goal, we think that the University should do more to leverage its clout and purchasing power within the state of Michigan and take on a more active role in decarbonizing the state's power supply at a broader scale and on a faster timeline. We understand the need to pursue stopgap measures such as Virtual Power Purchase Agreements (VPPAs) in the immediate term; however, achieving Scope 2 carbon neutrality through these means can be accomplished by 2023 instead of 2025 given current rates of project development. Furthermore, the projects developed through VPPAs could be located in Michigan to boost renewable energy jobs in the state. In parallel, the University must actively utilize its political capital to advocate for faster change at the utility and state levels. For example, this can take the form of lobbying the Michigan Public Service Commission for further deregulation of the power sector to allow front-of-the meter Power Purchase Agreements along with other regulatory policies to improve the viability of utility-scale renewable projects in the state. Additionally, the University should do more to independently increase renewable generation in Michigan, such as setting specific targets for distributed energy resources (DERs) on campus, including standalone solar + storage installations and mandated rooftop solar on new buildings. | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |

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| 123 | Student | COMMENT #123 CONTINUED (2/2)<br>4. Scope 3 Targets<br>Our review committee was disappointed by the recommendation to delay setting Scope 3 emissions goals until 2025. While these emissions are more ambiguous due to the University's lack of control over them, that should not prevent goals from being established, since goals will help to spur innovative ideas. We have already fallen behind institutions such as the Ohio State University, Duke, and Yale, which have included Scope 3 emissions in their sustainability strategies (see Figure 8). Our recommendation is that the University should establish Scope 3 emissions targets by 2022 (including purchased goods), while simultaneously beginning the food and travel emissions estimates.<br><br>5. Carbon Offsets<br>We appreciate the Commission's acknowledgement of the limited role offsets should play in a carbon neutrality plan. Two key issues remain regarding the use of offsets. First, 2025 is unnecessarily long for assessing and procuring credible offsets, especially given the Commission's clear guidelines for determining offset quality. Unless delaying offsets can realize additional benefits for the local community, offsets should be procured by 2022. Second, the absence of specific maximum offset targets between 2025 and 2040 leaves too much room for inaction on direct reductions. The recommendations should include quantified intermediate goals for the maximum number of offsets to increase accountability and align with the Commission's emissions trajectories shown in Figure 2. These milestones would serve a similar purpose as a carbon budget, by limiting the actual emissions emitted by the University.<br><br>6. Revolving Energy Fund<br>The Commission recommends a $25M REF seed for the Ann Arbor campus, citing optimal economic benefits for the school. However, the goal of carbon neutrality is not solely to produce economic gains, and many energy efficiency measures supported by the REF will yield CO2 reductions at a lower cost per ton compared to other PCCN recommendations. A larger REF with appropriate additional staffing would shorten the timeline for realizing the substantial benefits of increased energy efficiency and would also support more expensive proposals, such as deeper building retrofits, which have greater long-term benefits.<br><br>7. ESG Requirements for Endowment Investments<br>The University of Michigan cannot consciously strive for carbon neutrality while simultaneously investing in firms, like ExxonMobil, that plan to continue increasing carbon emissions in the coming decades. To show consistency in both word and action, ESG requirements should be set for all investments made with university endowment funds, in order to more thoughtfully invest these funds in alignment with a broader mission. This will demonstrate the University's commitment to fighting climate change while also encouraging sustainability in the corporate world and enabling the University to join the ranks of institutions like Harvard that already consider ESG factors in their endowment investment decisions. Additionally, endowment funds could be reinvested within the University through a program like the REF, targeting ECM projects with predictably short paybacks and high IRRs to continue to realize the intended fund returns.<br><br>Our review committee appreciates the PCCN draft report's broad focus on different sources of emissions, as well as the recommendation to make the University a global leader in geothermal technology. Overall, however, our review committee is disappointed by the lack of ambition and follow-through shown in the PCCN draft report given the vast resources at the University's disposal and the strong collective interest of stakeholders. We know that the University community can work together to define a better path towards achieving carbon neutrality and addressing environmental justice issues, thereby enabling the University to truly become Leaders and Best on the world stage at such a crucial moment in history.<br><br>Thank you for considering our feedback,<br>The Energy Club at Ross PCCN Review Committee | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 124 | Alumni | First, I should complement the University on the amount of work that has been done on this very important enterprise. The following comments are mine alone and are based on a somewhat less than complete review of all of the work so I apologize if I missed something.<br>General:<br>1) Although there is a comment on “growth” on line 1335 and its effect on the capacity of the University to achieve net zero, I think there should be a much more extensive conversation on whether the U needs to or should be allowed to continue to grow. Continued growth is not in the long run sustainable. Every new building will require more carbon materials in its construction and more energy of some kind for its operation. Additionally, there is the impact that growth has on the surrounding community. More growth puts a strain of traffic, infrastructure, housing costs, etc.. Although, the U can be an economic plus for the surrounding community it has an impact on who can afford to live there and effects their daily life.<br>2) In addition to the above, a case can be made that the U owes something to the community for these impacts and with its resources should become a more active player in converting the entire community to being carbon neutral.<br>3) Another item that is not addressed in the report, and might be considered part of Scope Three is the University’s investments in fossil fuel industries. Financing fossil fuels with the U’s endowment investments helps perpetuate the use of fossil fuels and their inherent emission of GHGs. Instead of investing in these often far-a-field endeavors the U should consider investing in the local communities or at the very least in its own conversion away from GHG emissions.<br>Details in the Plan<br>Line 600: Talks about closing the Central Campus Power Plant by 2040. This means that the U will continue to burn natural gas with all of its methane and CO2 emissions until then. The time line should be speeded up. As I am notorious for saying: “it is the area under the GHG emission curve that is important”. Ending the consumption of natural gas sooner will reduce the amount under the curve. The 2040 date may be a result of two assumptions a) that the $50M spent on the conversion requires continued operation in order to realize the value of the money spent or b) the conversion to a geo exchange system will take that long to be completed. The U needs to come clean and admit that the $50M was not the best use of the funds and move on more quickly. Additionally, the Ball State Geo exchange system was completed in 7 years and so the Us could be completed sooner. Perhaps the huge amount of funds needed to complete the Geo exchange system is part of the reason for the plan’s slow adoption period. It that is the case, perhaps an interim measure of converting at least some of the campus buildings to air source heat pumps which can be done much quicker with less disruption with an eventual conversion to the geo system if it is warranted at the end of the life of the air source heat pumps.<br>Line 760: Talks about a 61 year payback on the geo-exchange system. I have several concerns bout this. One is that the long payback(and inherent high cost) will tilt the decision making process to go to a “let’s just buy RECs” approach. The study mentions the Ball State geo-exchange district system and there is a study on that system done by Oak Ridge National Labs(https://info.ornl.gov/sites/publications/files/Pub71170.pdf) that claims a payback of 16 years. Although that seems a little optimistic to me, 61 years seems quite long.<br>Line 830: talks about if higher peak electrical usage requires DTE infrastructure costs that the U has to absorb that the overall cost will be higher. A no growth policy along with a more stringent energy conservation policy can avoid that.<br>Line 3360: Shows average overall energy retrofit reductions of only 20 to 30% for everything except residential structures. Architecture 2030 requires a 50% reduction in energy consumption across the board and the U should aim for that higher number for retrofits.<br>Somewhere the report also talks about limiting retrofits to perhaps 2 or 3 buildings per year because of the limited amount of tolerable disruption or the limited availability of space to move programs to other facilities during retrofits. A series of residential buildings in NYC are being retrofitted to Passive House standards without moving any of the tenants. The U needs to be more creative and move ahead with a much faster retrofit schedule.<br>Line 3415 and the appendix: I do not have access to the Study of the Art and Architecture Building that is referenced here, but I think there is some problems with it. It is important for you to understand that I have been a registered architect since 1984, actually finished my degree in that building and have focused on energy related architecture for my entire career, so I do have some expertise in this the field of energy conservation. The numbers in the chart in the appendix stating that LED lighting retrofits for that building will have a payback of 901 years seems totally ridiculous to me. LED retrofits are one of the most often energy efficiency measures undertaken and usually have a payback of a few years at most. If they were anything like 100 let alone a 901 year payback items no one would be doing them. Additionally, the quote of 129 years for PV, especially for such a large system is not credible and I estimated that the per peak watt cost of that system seems to be about $11/peak watt also doesn’t make any sense given that residential PV systems are going in at under $3/ peak Watt. And these two items were the ones that had the fastest paybacks. Now, I must admit it was a pretty terrible building when I went to school there and I remember students wearing gloves in the studio because it was so cold up there, but that would usually mean that improvements would be more cost effective. Without having access to the complete report (which you should make available) it is hard to know how off these values are, but I would say it would be wise for you to not use them as a means of evaluating how much energy efficiency vs. Geo exchange, PV and RECs should go into the mix.<br>One other thing to note(I admit that I haven’t totally reviewed the entire156 page report) that in the Infrastructure Report I noticed that it seems to imply that even when the Geo-system is complete the U will still be burning natural gas(see tables 5.2,5.4,5.7). I believe there is a concern that either the imbalance between annual heating and cooling loads might cause a long term decrease in bore hole temperatures or that adding additional bore holes to cover that last percentage is not worth the expense. The U needs to stop burning natural gas. This should be looked at.<br>Lastly, the report seems to very strongly recommend moving toward a very expensive geo-exchange district system. It appears that air source heat pumps were not considered because they are not as efficient. I think this is a mistake. Certainly some use, as I mentioned above is warranted in order to reduce the Us GHG emissions sooner. Additionally, I am concerned that there may be a too optimistic idea of the efficiency of geo systems over Air Source Heat Pumps.<br>The study maintains that ground source heat pumps systems have a COP of 5.4 compared with air source of 2.5. The 2.5 is probably close, but I found an Oak Ridge National Lab study of the Ball State geo system and is states:<br>The analysis shows that the average system Effective Coefficient of Performance (ECOP) during the monitoring period was about 3.74±0.2, while the chiller ECOP is about 4.28±0.2. The fraction of the central system plant monthly pumping power (excluding the local pumps in each building to distribute the hot water [HW] and chilled water [CHW] provided by the district GSHP system) ranges from 8% to 18% of the total system power consumption. Lower pumping power percentages during the heating season are due to the low flow rate in the ground loop resulting from the low heat extraction load.<br>The tendency is to always go for the highest efficiency system. Certainly, Geo Systems are more efficient than Air Source Heat Pumps, but when figuring tin the cost difference, it may be a better deal to buy more PV. Air Source Heat pumps may be a more cost-effective solution that can be implemented much more quickly.<br>If you have any questions, please feel free to contact me. | A, CH, CI, CJ, CK, CL, DY |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 125 | Student | This proposal, if exercised, would disproportionately affect underprivileged and middle class students. At my Flint campus many people commute because it is the cheapest and only safe method of transportation. The fact that shootings occur close to campus and even at bus stops make this a poor alternative and ridesharing is expensive. Unless you magically come up with a method of transportation that is just as cheap as driving a car, many students on my campus will not approve of this decision. Many students here live off-campus, such as Lapeer and to say that the school could create a viable and economical alternative is unrealistic considering the several different locations my colleagues live.<br><br>Secondly, to say that the Flint campus could afford paying upwards of $233 million for your drastic carbon proposal is a pipe dream and would lead to students paying substantially increased tuition. Considering that my campus gives an average quality of education, most students will leave for a comparable university with less cost. As it is, the graduation rate is well-below 50% and half of the staff have been laid-off. If this campus truly cares about serving students who could not otherwise afford education, they would not implement this regressive plan and instead would focus on improving the only thing that a university is supposed to focus on: quality and affordability of education.<br><br>My campus' new and wasteful spending on the STEM center is a poor attempt to increase enrollment (after deciding to cut funding for vital Bloomberg financial terminals which cost less than 1/5 of the building) and to now come up with this expensive carbon plan at the expense of students and taxpayers is a disgrace. Surely, all U of M campuses have more important things to fund during this pandemic than to burn it all. | |
| 126 | Alumni | I have a number of concerns about the recommendations about to be submitted to the Regents, but in this comment I will address my worry about what happens after the recommendations are submitted, and what the PCCN can do right now to make sure you use this critical moment to further carbon neutrality and climate justice at UM going forward.<br><br>The first point has been raised before, but is worth reiterating: we cannot let this report have the same fate as the 2015 Greenhouse Gas Reductions Committee Report, that was, by in large, dropped. If you believe in the recommendations, you must make sure to set the context for maximum implementation by the Regents. That is tricky because the PCCN works for the administration, not the other way around, but there are actionable steps you can take. The most obvious is mandating that intermediary reports are filed every six months to track the administration's progress on acting on the recommendations. This will itself serve as an accountability mechanism to the University, as well as make it easier for outside groups to apply pressure on the University to accept the recommendations.<br><br>The other thing the University should to to maximize its impact in pursuit of climate justice is call for additional plans and action in sectors technically outside the PCCN's specific charge, but that its commissioners wish was included. The PCCN has set a precedant for such actions. When President Schlissel gave the PCCN its charge, it was restricted to Scopes 1 & 2 emissions. The commission acknowledged that the charge was incomplete when it called for the University to develop future plans around making Scope 3 emissions carbon neutral as well. The PCCN should take that as an example of how to give directions of future work beyond its scope, which doesn't include many aspects of climate justice. Though we argue that the commission should include more in its scope, if the PCCN deems certain things to be outside the scope of the charge, but critical for the University's climate justice agenda, it should make it clear. We hope the commission includes a section of points that were not included in the official recommendations, but are directions of future work. These might include divestment from fossil fuels to make its endowment carbon neutral, shutting down the Central Power Plant immediately to get on-site emissions carbon neutral, or providing social housing to offset the gentrification the University has contributed to throughout Washtenaw County.<br><br>I hope the PCCN commits to considering its recommendations with wider lenses, both from carbon neutrality to the broader landscape of climate justice and from the recommendations to how the recommendations will be received and acted upon by the U-M community. | BN, EN, EJ |
| 127 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 128 | Student | Support for Energy Club at Ross PCCN Review Committee's Letter<br><br>I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 129 | Alumni | Dear To Whom It May Concern,<br><br>As a recent graduate of the University of Michigan–and as someone who is broadly concerned about existential risks–I completely support the work that the PCCN is engaging in. Fighting climate change is, without a doubt, one of the most significant threats of our lifetime.<br><br>However, as a student of philosophy, I also have to consider my other ethical commitments. Just as seriously as we take climate change, I think we also must take the threat of antibiotic resistance seriously. And, as we know, antibiotic resistance has its home on factory farms:<br><br>https://www.wired.com/story/farm-animals-are-the-next-big-antibiotic-resistance-threat/<br><br>So when I saw that the PCCN was recommending replacing ruminant meat with poultry and fish, even if only slightly, this got me a little concerned.<br><br>I acknowledge that sometimes it's hard to balance the things we care about in a way that pleases everyone. Indeed, sometimes compromise is difficult. But this is not one of those cases. We *can* replace beef with veggie options- like beans, lentils, wheat gluten, vegetables, soy, and tubers- in a way that is both better for the climate *and* better for fighting the impending antibiotic resistance crisis.<br><br>Please, then, reconsider the recommendation to swap beef with other animal protein, it is not the way forward.<br><br>Best, | Y |
| 130 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br><br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 131 | Faculty | Overall, the commuting internal-analysis team is very pleased the the draft report's adoption of its recommendations. I'd like to add a comment regarding the potential for housing development on University-owned land to reduce carbon emissions. The report (p. 58, line 1813) recommends prioritizing student-housing development over faculty and staff housing because students' smaller living spaces imply that density could be greater with housing geared at them. This is true, but students have a much smaller commute-carbon footprint when they live off-campus than do faculty and staff. Living close in to campus would therefore reduce faculty and staff carbon more than it would student carbon. This benefit may be enough to compensate for faculty and staff's demand for more living space. With extensive University land holdings in Ann Arbor (documented in our report) there appears to be enough room for housing development for all three groups. Housing can be developed incrementally. For example one could start with one neighborhood of a few dozen faculty/staff units to gauge market interest. Rents and sales prices in downtown Ann Arbor suggest a strong market for well-located housing, even if it is not in single-family structures.<br><br>Many thanks to the President's Commission on Carbon Neutrality on its leadership and hard work in developing this comprehensive report. | CB |
| 132 | Staff | As a staff member who used to travel 30-45 minutes each way every day, Monday - Friday, I have greatly enjoyed the benefit of working remotely during the pandemic. I fully support "embrac[ing] and incentiviz[ing] flexible telecommuting options for employees." | BF |
| 133 | Student | I agree that it is essential that UM work with DTE as much as possible in facilitating the distribution and transmission upgrades in A2. I worked for DTE during 2018 when the company was evaluating the logistics of installing EV charging infrastructure in Kerrytown. This project means that DTE's distribution team has created recent studies of A2's distribution system. | CC |
| 134 | Student | DTE has NOT announced "decarbonization" of its electric grid as stated on pag 33 lines 930-31. At least not in the sense that the company's entire electric generation portfolio will be carbon-free. Rather, they've announce carbon neutrality, which will include offsets. I think the cited lines are a bit misleading as currently written and would suggest that they be amended to state that DTE and Consumers have announced a goal of carbon neutrality. | CD |
| 135 | Student | A major obstacle to A2 meeting its goal of installing massive amounts of solar panels throughout the city is the availability of roof space. UM has a great opportunity to partner with the City in providing roof space. A2 could potentially pay for all or part of the cost of the panels. | CE |
| 136 | Student | An additional incentive to adopting EVs is to dedicate particular or prime parking spots to EVs on campus. Alternatively, the university could reduce or waive entirely the daily parking pass fees for EVs. If the goal is to reduce commuters using ICE vehicles, then EV drivers should not be penalized with the proposed parking pass reforms. | K |
| 137 | Student | Students could get directly involved in the work of the PCCN through the use of a problem solving initiative (PSI). UM already has PSIs for a number of policy issues like MI's foster care system or healthcare. These classes bring together students from the law school, business school, Ford, and even undergrads to solve the most pressing policy issues of our time. A PSI might be used to examine how UM can push for more progressive climate change policies in the State of Michigan, or how such policies might be crafted to ensure that the state's transition to a cleaner energy future does not negatively impact impoverished communities in Michigan. | AH |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 138 | Student | My biggest concern with this entire program is how it will impact the cost of energy for those communities in Michigan already struggling with energy affordability. Utility generation, distribution, and transmission assets are paid for over time by distributing their costs over their entire ratepayer base through monthly electric bills. If wealthy customers, like those at UM or in A2, remove themselves from DTE's ratepayer base, the burden of paying for electric assets falls more heavily on the shoulders of the state's most vulnerable citizens. I love the idea of UM pushing forward with a progressive energy future for our state. But please, please, please let's do so in a way that doesn't leave people outside our direct community behind. Let's advocate for state level reforms that more equitably distribute the costs of this process. Let's advocate for direct relief for those trapped in energy poverty. Let's do all we can to make sure the poor of our state have access to the new green economy. UM has so much influence in this state. Please use it to benefit all of us, not just Ann Arborites and Wolverines. | CF, CN |
| 139 | Faculty | Dear PCCN,<br><br>I applaud all the hard work and commitment that went into this report, not least that of the students who worked with me on the Energy Consumption Policies team. As you know, our team concluded that we can probably achieve a 40% or greater reduction in GHG emissions with a positive NPV.<br>The report prepared by Michael Moore and Sam Stolper and shared with the PCCN estimated that the costs of carbon offsets would also be modest, and range somewhere between -$5/ton (Arizona solar PPA) to $20/ton (DTE PPA).<br>These figures come in well under the social cost of carbon that has been estimated by scholars such as Nobel Laureate William Nordhaus, which is on the order of $40 - $50/ton in 2020. As a public university, U-M obviously wants to be financially responsible as it addresses the existential challenge of climate change. Any GHG reductions we can make that are cheaper than the damages caused by GHG emissions make sound financial sense for society.<br>What struck me the most in the PCCN Draft Report were the financial implications of converting the current heat and power infrastructure to a geothermal system. Line numbers 760 to 765 summarize these financial implications, and I reproduce them below for convenience:<br>“While the proposed energy system transformation would result in lower utility costs for<br>each campus, the upfront capital costs of the prospective transaction are massive. Seen<br>through a traditional lens with standard assumptions, the payback is long. Using<br>traditional analysis, the nominal payback period would be 61 years; the 30-year NPV is ($2.01B).”<br>In 2020, U-M's Scope 1 emissions, almost entirely from burning natural gas, were 289,050 tons (lines 570-575 in the Report). Suppose the geothermal system eliminates these entirely for the next 50 years, yielding a total reduction of 14,452,500 tons. Table 1 in the Report (lines 755 to 760) estimates total costs to achieve this reduction of $3.368 billion (in 2020 dollars). That works out to a cost of $233/ton of GHG reductions.<br>The geothermal project will come in at a cost many times higher than the estimated social cost of carbon. From a social perspective, this is a highly inefficient way to cut GHG emissions. We could deploy that $3.368 billion beyond the perimeter of the campus to cut a much larger amount of GHG emissions. Alternatively, we could cut 14,452,500 tons of emissions much more cheaply by expanding the scope of our planning beyond the perimeter of the campus. Indeed, if we achieved those cuts at a cost of $50/ton, we would save roughly $2.65 Billion, which could be used for student scholarships, faculty research, or many other things.<br>I understand that many stakeholders may clamor for us to focus locally on our campus operations, and not think globally about how to solve the climate crisis in the most socially efficient way possible. I understand that we will be accused of "buying our way out" and that some stakeholders will feel that spending the extra $2.65 Billion on GHG reductions is better than using it for other purposes. But as an economist, I feel that somebody needs to stand up for efficiency. This project would be a very costly way to signal our virtue to the world.<br>Thank you for your consideration. | Z |
| 140 | OPT OUT | OPT OUT | E, M, U, CG |
| 141 | Student | The heavy use of and reliance on carbon offsets by UM gives the institution the freedom to keep using fossil fuels. The report says it will use offsets "until 2025", but there is no accountability in place for actually stopping their use after that. There is also a lack of consideration of the communities affected by the use of carbon offsets. Frontline communities experiencing environmental injustices don't want offsets, they want to see efforts to reduce fossil fuel use. | BL, JT |
| 142 | Student | I am concerned about the lack addressment about the urgent crisis that is housing in Ann Arbor, both for the University community and the Ann Arbor community (which is linked to the University in many ways). This report offers no solutions to the issues of gentrification, rising rent prices, and inefficient housing (especially student off-campus housing,) which is concerning because the University has the ability to set standards and make a large impact. New housing (built on existing University land) that is affordable and sustainable, and new policy defining and ensuring affordable housing is a logical step to address this crisis. | BX |
| 143 | Other | I am a Michigan-based Professional Engineer with 40 years of engineering experience including millions of SF of geothermal heat pump systems around the globe. I also Chair the ASHRAE Technical Committee that deals with these systems.<br>Overall, I think this is a good plan, however, I think the addition of wastewater energy recovery and also Solar PVT (Solar PV + hydronic thermal panels to the back of the solar module) instead of separate solar PV and solar thermal arrays will reduce both the energy consumption and also the cost of the proposed implementation.<br>Some of their cost estimates are a bit confusing to me. They appear to suggest that geothermal pipe in the ground is $53/LF on Page 144 based on a recent project at UM. This seems very high, but maybe includes site restoration, etc. Regardless, if the loops cost $53/LF and there are two pipes in a geothermal borehole this is $106/borefoot.<br>Their study then suggests that they need 150 feet of geothermal loop per ton (page 54). If we use their number of $106 per borefoot this is equivalent to $15,900 per ton (again this seems very high - my own experience would have this as much less, more like $4,000 to $5,000, which is still not inexpensive).<br>If we look at the cost of a wastewater energy recovery system, it can be on the order of $1,500 to $3,000 per ton (many variables of course) AND have the benefit of providing constant capacity over time where a geothermal borefield can potentially get hotter or colder as time goes on (they correctly noted a concern with unbalanced thermal loads on two campuses) and the result is a reduction in system efficiency and more energy consumption. We typically see higher system efficiencies with wastewater energy recovery than with geothermal ground heat exchangers alone.<br>I think a refined approach would first identify where the wastewater mains are, their current flow rate and then apply wastewater energy recovery while keeping the geothermal borefields, but smaller. This approach could pull millions of dollars out of the proposed solution if there is sufficient wastewater where we need it.<br>Bottom line: I think adding wastewater energy recovery has the potential to reduce the first cost AND reduce the operating cost! I am happy to assist with this important effort! Well done! | CS |
| 144 | Student | U of M should work towards generating more of its own power in clean methods instead of relying on DTE. The PCCN draft lays out energy procurement options without pushing hard for a clean option, and it's important that the final draft fixes that issue. UM efforts to address this should include 1) lobbying (or donating to organizations who lobby) for the repeal of harmful legislation that, for example, strengthens DTE's monopoly, or prevents/makes it hard for entities to install rooftop solar panels, etc. 2) doing whatever it can around current laws stifling clean energy production/use to generate its own clean electricity. | AQ, CN |

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| 145 | Student | U of M should definitely make it a priority to develop a working Carbon Pricing System for campus buildings and put it into action as soon as possible! Our success would be a great precedent for other educational institutions to follow, and an example for larger-scale carbon cap-and-trade systems (e.g. on the municipal or district level) to be implemented. This system would encourage innovation of buildings to reduce emissions, and help establish U of M as a leader in climate action! | CV |
| 146 | Student | I appreciate that the University included dates for achieving carbon neutrality in the report that fall in line with IPCC recommendations. However, I still feel that they are not ambitious enough. While achieving carbon neutrality by 2040 falls within the IPCC guidelines, it is not soon enough for the university to become a climate leader. Within the report, it is stated that the university's implementation is meant to guide other institutions towards carbon neutrality so that we can contribute to making the world carbon neutral and not just our university. However, our target date of 2040 is not ambitious enough to make that change. With all the money and resources that our community has, we should be commit to being carbon neutral without offsets by 2030. This goal is ambitious and allows our economically privileged community to make the first strides while leaving time for less privileged places to use what we have generated to implement their own successful plans. 2030 is ambitious but we must be ambitious because the alternative is calamity. To be the leaders and best, we must be ambitious. | BU |
| 147 | Faculty | I am a cyclist and (used to) travel to/from the office. The commission has recommended "the Commission proposes U-M create a workable Central-to-North Campus bike route, and establish an on-campus bike-service facility." Unfortunately, this ignores the need for better safety t make cycling more attractive campus wide. There is a dearth of safe bike lanes and the streets around campus should be improved to include independent lanes for biking. Some of this must be coordinated with the City of Ann Arbor but it's my understanding that at least some streets on campus are the purview of the university. Without attention to creating a safer street environment I fear the committee recommendations will not result in significant changes in non-motorized transport on campus. | V |
| 148 | Student | U of M should rely on Carbon Offsets as little as possible, as this is a hugely responsibility-shifting move and prevents people and the administration from taking GHG emission reduction seriously. Carbon Offsets should be bought as a LAST RESORT.The University also needs to be absolutely transparent about who they buy carbon offsets from, and those companies need to be certified by organizations such as Gold Standard, Verified Carbon Standard, Green-e, etc.<br>Independent watchdog organizations, whether third-party or student-lead, should be established to make sure the University is not abusing its ability to purchase Carbon Offsets when it could do better at reducing its emissions AND to make sure it is strictly adhering to the criteria & safeguards for buying Carbon Offsets/Credits. | BL, CX, EI, JP |
| 149 | Faculty | Carbon offsets made in several recommendations will be more expensive in the future. The committee should investigate expected impacts on offset markets in future and consider how potential future cost increases may impact recommendations. | CW |
| 150 | Student | While carbon offsets can possibly be used in a productive way to help us achieve carbon neutrality, this report relies too heavily on offsets to help us reach our goals. Since part of our goal is to create a just world, we must be aware of the specific environmental justice issues that can come with offsets. This is especially important considering that the report begins with a land acknowledgement. Carbon offsets have historically harmed indigenous communities, which are key players in helping to create a more sustainable world and are also people by right worthy of autonomy, respect and protection. If offsets are to be used, we must have more specific guidelines for purchasing and funding them. The guidance "compliant with social and environmental safeguards" is not sufficient to protect habitats and indigenous communities. We could end up doing more harm than good with these offsets if we are not explicit in creating guidelines with the help of environmental justice experts, of which there are currently none on the PCCN. | BL, JQ, JT, |
| 151 | Faculty | Aside: Finding he sections for this form is a non-trivial task. Perhaps change it to simply a relevant page number?<br><br>Bravo on the recommended policy on travel. While virtual meetings clearly do not engender the valuable opportunities to schmooze over food and drink with colleagues it is not dissimilar ro the discussion of wearing masks to rduce the spread of COVID-19. My attitude is that we should offer this as an opportunity and responsibility to do good for our world and search for ways beyons Zoom sessions to allow would-be travelers to organize, schedule and conduct virtual meet-ups in that get closer to recreating a more social environment (including buying a colleague dinner or drinks and sharing the consumption virtually). Like the need to wear masks for COVID-19 we must be willing to embrace new opportunities for the good of all. | CY |
| 152 | Student | Line 3795<br><br>This section of the draft makes brief mention on how the University will plan to educate its students regarding sustainability. The section quickly states that "through required sustainability courses, online training and orientation activities" the process to change the behavior of the U-M community can be "accelerated". I feel that this statement is severely lacking in specificity. As a student coming from the Engineering department, I can attest to the extreme lack of sustainability-based course work in my studies. Beyond a quick mention of "ethical engineering" in ENG 100 that all students are required to take, there is little to no discussion regarding the influence of sustainability in design. It is rather terrifying to me that an institution that prides itself on being a leader in climate research and action is pumping out generation upon generation of engineers who have thought so little about how sustainability will play a role in their careers. I would like to see the draft expand upon this section, and create a more specific and robust model that outlines recommendations for what these sustainability courses will/should be, who will be required to take them, how existing course work will change to be more sustainability-based, and what the costs and estimated timeline for implementing these changes will be. Under the current draft I fear that it will be all to easy for the University to institute basic surface-level changes that do little more than trick the public into thinking the UofM student community has actually changed and become more educated regarding sustainability. Without specific guidelines and a robust plan, there is no accountability and there is no action. | FM |
| 153 | Faculty | This comment pertains to page 56, lines 1711-1715. The cycling environment beyond the borders of campus is crucial to the bike-friendliness that students, faculty, and staff experience but it is ordinarily beyond the direct control of the University. There is a potential notable exception to this in Ann Arbor, however. The "Treeline Trail" is a bike-pedestrian facility planned by the City of Ann Arbor as a north-south swath through much of town. Once completed, it will connect directly to the Diag via the William Street bikeway. U-M can greatly expand the facility by reserving an easement for it along the ~1 mile diagonal stretch through U-M-owned land from the former Fingerle property in the northwest to State Street north of Eisenhower in the southeast. | V |
| 154 | Alumni | The Land Acknowledge (Lines 40 - 50) is a wonderful starting off point. Unfortunately, I believe it is the only statement in the draft recommendations document which addresses native communities and sovereign tribal lands. If so, that speaks volumes.<br><br>If the commission is serious about redressing past wrongs and applying the principles of equity and justice to develop carbon neutrality recommendations which positively impact the region and beyond and all communities, including native and indigenous ones, it should do so with the land acknowledgement in mind. There are ample opportunities for U-M to design carbon neutrality actions around engaging with and benefiting native peoples and lands. They include but are certainly not limited to carbon offsets & sinks (e.g. biosequestration), off-campus renewable energy generation, research and education, and external collaboration.<br><br>The commission and its staff should brainstorm with members of native communities to come up with and then include specific recommendations in the final report that demonstrate that the commission is serious about it's land acknowledgement! | AP |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 155 | Student | I am disappointed that draft report does not recommend and/or outline an accountability structure aimed at ensuring that recommendations adopted by the President and Regents are actually implemented. Embarking upon a plan for carbon neutrality WITHOUT creating a framework that allows us to track and share progress with the community is an egregious omission that presents an unacceptable risk, given the urgency by which we as an institution -- for the sake of our planet -- must achieve the goal of carbon neutrality. We can no longer afford to make empty promises as an institution, and must use our economic and cultural might to LEAD the charge! As such, I recommend that the PCCN add a section detailing explicit reporting requirements, and ensure that these requirements emphasize transparency to the community.<br><br>It's one thing to list out a bunch of things we SHOULD do; it's another thing to set up a framework that keeps us on track to actually DELIVER these things. The UM has commissioned reports and plans for carbon neutrality before, and these plans have historically collected dust and not seen real action -- just take a look at the 2015 Greenhouse Gas Reduction Committee Report. Nothing really came of that process, and issues of accountability (or lack thereof) are largely to blame. Someone must be held responsible for the University's goals in this space. I echo the Ross Energy Club recommendation (https://ross.campusgroups.com/energy/pccn-committee-letter/), calling for the creation of a Project Management Office accountable to work stemming from PCCN recommendations that is subsequently adopted by the President/Regents. To ensure PCCN recommendations are actioned, we need a central body setting milestones, tracking their progress, and sharing the results widely across the UM community. Making this information digestible and accessible to the layman is paramount to ensuring community buy-in and authentic engagement.<br><br>I recognize that planning for and implementing a just transition to a decarbonized campus (and ultimately, to a decarbonized world) is an inherently iterative and contested process that certainly won't be solved by the prescriptions of a single report in isolation. In service of promoting transparency, and helping the community stay abreast of the UM's progress towards carbon neutrality, I recommend that, as part of the explicit laying out of reporting requirements I describe above, that UM commission the design of a publicly accessible dashboard which clearly and concisely communicates our progress towards the goal of carbon neutrality (and charge the central Project Management Office with dissemination and maintenance of the report). Choosing key performance indicators that encapsulate our institution's progress towards our carbon neutrality and sustainability goals will not be straightforward or simple, but an easy-to -understand and accessible dashboard will promote transparency and give the community insight into the process. This will provide "social accountability," and empower the community to critique and call for remedial action where goals are slipping, and give positive feedback when goals are being met or exceeded over time. I implore the PCCN to review the sum total of its recommendations and propose an initial set of indicators that encapsulate the spirit and goals of the report as laid out in the charge provided by the President. As an example of what this could look like, see the Imagine Austin (A strategic plan for the city of Austin, TX that includes sustainability indicators) Dashboard: https://data.austintexas.gov/stories/s/b2dw-5rzd | CZ, EJ, EK, EL, EM |
| 156 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 157 | Faculty | There is very vague language and little information about efforts to increase accessibility for electric vehicle charging. As a new, recent plug-in hybrid EV car owner, I am dismayed over the lack of EV charging stations across UM. Only 14 spots TOTAL?! I work at Taubman and Mott and park in P3, where there are a total of 0 spots for EV charging. I have the option to walk an extra 15 minutes to get a spot to charge at the Ann Structure, which I have done only once in the past month, because every other time I have driven by (both early in the morning before 7:30 AM and at lunch) the 2 spots are already being utilized. The one time I did get a spot I had to use my 30 minute lunch break to move my car to a new spot since we are only allowed 4 hours to park there. It is essentially impossible to charge my car at work. Since I commute 45 miles and the EV range is only about 33-40 miles in my car, I am effectively not able to utilize the EV mode for my commute home, ever. I am very disappointed in the poor infrastructure and availability of EV charging at UM and hoped to see this more of a focus in the draft statement. | DA |
| 158 | Faculty | I applaud the fact that this report came out. It's great that U-Michigan is paying attention to climate change. Please move as quickly as humanly possible to move U-M to a carbon neutral position. U-M can set a good example by moving quickly. Climate change is an order one problem for human civilization and time is of the essence. | DB |
| 159 | Alumni | This plan might be better with 100 percent zero carbon sources—including nuclear. DTE generates 30% of its electricity from nuclear, which has zero GHG emissions. | B |
| 160 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br><br>1) Improve implementation, accountability, and transparency measures;<br>2) Implement carbon pricing before 2025;<br>3) Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>4) Set Scope 3 emissions targets by 2022;<br>5) Procure carbon offsets by 2022 and set maximum offset targets;<br>6) Increase the size of the Revolving Energy Fund (REF); and,<br>7) Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |

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| 161 | Alumni | A recommendation should be included in the final report to investigate district wastewater heat recovery as a means of heating U-M's built environment. Such a system could augment / partially replace the proposed ground-source geothermal system proposed by the Integral Group (see the draft recommendations beginning with lines 665), likely at a much lower cost.<br>Moreover, this investigation could be an opportunity for regional community involvement (e.g. with Ann Arbor, Dearborn, and Flint) with the aim of helping all of the entities achieving their GHG reduction goals (per the principle outlined starting with line 515). Potentially such a system could be a shared asset, especially when U-M properties are islands or peninsulas surrounded by municipal property.<br><br>Here is a link to a recording of a meeting on the topic of wastewater heat recovery:<br>https://us02web.zoom.us/rec/share/_tMIIjfhMw1jiUW4yv3eDf9xpL2fUK55nPqTIjh3YT8cD3yqMW3gA74rYGsBdRqt.pt0nVe6cbXq4MeUa<br>There is additional information in the public domain and the Integral Group should also be familiar with the technology. | CS |
| 162 | Student | Hello PCCN team,<br><br>I'm excited to hear about UMich's initiatives to reduce carbon emissions! I have heard that one of the recommendations for the PCCN draft is replacing beef with chicken and fish to reduce emissions. While this does reduce CO2 emissions, this will lead to many more animal deaths, since chicken and fish are much smaller animals than cows and many more are killed to provide the same amount of meat. For example, one chicken only provides about 2-4 pounds of meat, whereas one cow provides about 400 pounds of meat (the numbers may not be exact, but I am certain there is a stark difference between the meat provided from each animal). Considering that in the US, chicken and fish have very few ethical protections - ex, both are not protected under the Humane Methods of Slaughter act and can essentially be killed however, no matter how painful (cows, on the other hand, must be stunned before slaughter) - it is very important to consider how much the ethical drawbacks of this choice compare to the CO2 benefit. Additionally, considering the fact that fish and chicken farms similarly use large amounts of land and water and produce comparable amounts of waste to beef farms, the net benefit is marginal compared to the increase in animal suffering. I would strongly encourage either taking out this recommendation or adjusting it to replace beef with vegetables, rather than encouraging more consumption of the animals that are forced to suffer the most. Please let me know if there is more information I can provide regarding this request. Thank you for your time, I really appreciate the consideration and look forward to seeing the finalized document.<br><br>Sincerely, | Y |
| 163 | Student | This report includes many wonderful suggestions, and I'm happy that the University of Michigan is invested in helping to mitigate some of its impacts on the environment. But I do take issue with the suggestions emphasized in lines 1995-1999 and 2031 of the report. Replacing ruminant meat (e.g., beef) in dining halls with poultry and fish is not a decision which should be made on the basis of potential carbon emissions alone. The 'lived experiences' of U-M community members are ostensibly important to the Commission, given that they are mentioned in the directions for filling out this form. But what of the lived experiences of those chickens, turkeys, and fish who will be slaughtered in order to feed U-M's community members? I ask the Commission to take into consideration the amount of suffering the decision to serve more poultry and fish would cause. Environmentalism, while important, is often in some sense an anthropocentric pursuit. Some environmentalists care about the environment and climate change not because they care about the environment itself (consider it a thing with intrinsic value), but because they care about the ways in which the destruction of our planet will impact future and current human lives. I urge the Commission to avoid this kind of environmentalism, and to instead engage with the possibility of the environment, human lives and welfare, and animal lives and welfare, as each holding intrinsic importance. Needless to say, carbon emissions impact future and existing animal lives as well as human ones. But so do the conditions of factory farms. This is not to mention the badness of death itself for animals.<br><br>Weighing these considerations can be difficult. I urge the Commission to consider reducing *all* consumption of animal products on campus, rather than approving the slaughter of more birds and fish in order to make up for a lack of red meat in dining halls and elsewhere on campus. This must be balanced with respect for human religious and cultural traditions, too, of course, but perhaps there is a related silver lining: vegan and vegetarian options rarely violate religious dietary restrictions.<br><br>I've studied animal ethics for four years now with various members of U-M's philosophy department. I'm now writing a senior thesis on vegetarianism as abstention from posthumous harm to animals. I am also a co-president of the Michigan Animal Ethics Society (AES). AES and/or I would be happy to help the Commission bring animal lives and animal welfare into view, and can be reached at the email address associated with this comment (bessar@umich.edu).<br><br>Thank you for your time! | Y |
| 164 | Student | Support for Energy Club at Ross PCCN Review Committee's Letter<br>I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 165 | Alumni | Line number 137-144. This is an incomplete and misleading summary of the SR 18 IPCC report. The SR18 report qualifies the 2050 net zero target date in four ways: Achieving net zero by 2050 only provides a 50 percent chance of staying at 1.5 degrees; the models assume widespread deployment of carbon capture and negative emissions technologies, which cannot be assumed and does not appear likely; the report explicitly does not consider feedbacks like arctic permafrost melting and loss of albedo in polar regions; and the 2050 target date does not take into consideration the principle of global equity and justice, which dictates that rich countries, which have benefitted the longest from an advanced carbon-based economy and have emitted vastly more per capita than poor countries, must decarbonize first in order to give poor countries more time to catch up in development using carbon fuels. Taking all this into account, a 2035 target date for net zero--at the very latest--is now the consensus norm for rich countries. Not 2050. See Kevin Anderson , John F. Broderick & Isak Stoddard (2020): "A factor of two: how the mitigation plans of 'climate progressive' nations fall far short of Paris-compliant pathways," Climate Policy, DOI: 10.1080/14693062.2020.1728209. Thus the PCCN plan is compromised from the outset by a too-distant target date for achieving net zero emissions. | DH, DI |
| 166 | Alumni | Lines 207-211. The acknowledgement of the university's legacy emissions and outsized responsibility to mitigate its own emissions, especially with respect to developing countries, does not go nearly far enough. We must eliminate our emissions well before we ask developing countries to do so. This should be stated explicitly. | DJ |

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|---|---|---|---|
| 167 | Alumni | Lines 596-599. Because the IPCC SR18 report's 2050 target date offers only a 50% chance, does not consider feedbacks, assumes widespread deployment of carbon capture technologies, and does not factor in the principle of global climate justice and equity, a 2040 target date for eliminating direct Scope 1 emissions is too late. This should be done by 2035 at the latest. This may not be achievable, but is the date that the best science, together with the principle of equity and justice, dictate. | DI |
| 168 | Alumni | Lines 630-631. Offsets categorically should not count against the university's emissions. The general idea behind offsets is that the atmosphere doesn't care where the emissions reductions come from, so to the extent we can't eliminate emissions here, we can invest in emissions reductions elsewhere. If we do this now, the argument goes, that will make an immediate impact, and will reduce the area under the curve. In the long run will offset our local emissions, and enable us to reach carbon neutrality. We should, the advocates say, prioritize projects that are new, and that wouldn't happen without us--that's the additionality principle. They will retire fossil fuels, and will not just replace existing renewables. Finally, these projects will be in environmental justice communities if possible.<br>That's all good, but these projects shouldn't offset the university's emissions. There are two main reasons. First of all, emission offsets don't offset the upstream feedback effects of those emissions on the market. For example, each time we pump gas at the local Speedway, that signals the market to make more gas stations and more refineries and to drill new wells, and each time the furnace clicks on in our homes, that ultimately brings about more fracking and expanded gas pipelines and gas furnaces. We're feeding back into that whole vast fossil fuel infrastructure. Instead we should be starving it and investing those funds in renewables. Carbon offsets and credits do not account for that market feedback effect. Secondly, offsets create a kind of moral hazard, defined as an incentive to act in ways that we otherwise wouldn't without the protection. Specifically, offsets enable us to avoid tackling the hard problems and finding the hard solutions. To quote University of Manchester climate scientist Kevin Anderson, "Offsetting, on all scales, weakens present-day drivers for change and reduces innovation towards a lower carbon future." | JW, CX |
| 169 | Alumni | Line 664-667. The recommendation for building electrification using geo-exchange and heat recovery chiller technology is ambitious and commendable. To mitigate the very high cost, the PCCN should consider air source heat pump technology for certain buildings, especially VRF (variable refrigerant flow) systems, which are now cost-effective and work well in our climate. Air source heat pumps can go in a lot more quickly and with less disruption than geo-exchange. | DY |
| 170 | Alumni | Lines 741-742. The timeline for completion of the university's geo-exchange project should be 15 years, not 20, consistent with a science-based and global equity and justice-based 2035 net zero emissions target. | DI |
| 171 | Alumni | Lines 786-788. . Completion timelines for all these campuses should be reduced to 15 years. The reference to football parking as an obstacle to completing the geo-exchange project on the Ross athletic campus in a timely way reflects skewed priorities. Football fans can certainly be inconvenienced in a crisis, as the current pandemic has made clear. | DI |
| 172 | Alumni | Lines 936-947. The U-M should not participate in MIGreenPower, since DTE is charging a premium for clean electricity, which it then uses to meet its renewables mandate under state law. The U-M would thus be subsidizing DTE, a for-profit corporation. DTE should develop its renewables portfolio without ratepayer subsidy. | DK |
| 173 | Alumni | Lines 949-954. The statement, "the electricity generation costs from new renewables is increasingly less expensive than the generation costs associated with building new fossil fuel plants," is only true if referring to the levelized cost of energy (LCOE). That's the lifetime cost of generating electricity divided by the total electricity delivered. But the LCOE doesn't take into account storage or land use. Storage especially is necessary at the utility level due to the intermittency of solar- and wind-based electricity generation. Large-scale renewables for full-time electricity generation are still not competitive in the marketplace, and are 1.2 to 1.6 times more expensive than fossil fuels, all considered. This is why utilities, including DTE, continue to build new fossil fuel-fired power plants, and why we cannot count on the marketplace to solve the problem of dirty electricity. These five lines should be removed from the report, or qualified to indicate that total cost parity for renewables has not been achieved, and thus electricity from renewables will require substantial investment on the part of the university. | DL |
| 174 | Alumni | Lines 970-986. Purchasing VPPAs can be helpful, but as offsets VPPAs should not count against the university's Scope 2 emissions or contribute to meeting its emissions reduction targets. | DM |
| 175 | Alumni | Lines 1362-1364. Why should ANY new construction or major renovation include fossil fuel infrastructure? That just adds major HVAC renovation costs to the building's ultimate conversion to zero emissions. Instead, build everything with a zero emission standard, unless there is a compelling reason not to. Thus the phrase, "all new and renovated buildings at U-M should be designed and constructed such that they can be easily converted to a medium temperature hot water system," should be changed to "all new and renovated buildings at the U-M should be designed and constructed with a medium temperature hot water system, connected to a geo-exchange system or an air source heat pump system." | DN |
| 176 | Student | Please set University of Michigans goals as aggressive and commit to being Carbon Negative in the near future. Lead other Universities in following suit as well. | DB |
| 177 | Student | Line 920 (page 33): Rather than looking only at renewable energy, if the goal is to get to net zero carbon, it would make more sense to look at any low carbon technology. Of the four major low carbon technologies (wind, solar, hydro, and nuclear), nuclear has the largest grid share in the US by far and it doesn't make sense to discount it as a technology that can help the university achieve its goals. | B |
| 178 | Alumni | Thank you for accepting comments. The draft report is a good start. I believe the following additional elements should be addressed: A greater sense of urgency for U-M to meet IPCC 2030 goals must be reflected, Re-evaluation of growth and rapid implementation of new building standards must be added, Scope 3 goals must be set within the next year including initial metrics to track progress, measures for Michigan Medicine must be added particularly regarding the new hospital and CN leadership and culture, and more authority for a high level U-M executive resourced to lead implementation of CN report. | DB. CH, CO, DO, DP |
| 179 | Anonymous | Anonymous | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |

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| 180 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br><br>- Improve implementation, accountability, and transparency measures;<br>- Implement carbon pricing before 2025;<br>- Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>- Set Scope 3 emissions targets by 2022;<br>- Procure carbon offsets by 2022 and set maximum offset targets;<br>- Increase the size of the Revolving Energy Fund (REF); and,<br>- Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 181 | Student | Support for Energy Club at Ross PCCN Review Committee's Letter<br><br>I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>1. Improve implementation, accountability, and transparency measures;<br>2. Implement carbon pricing before 2025;<br>3. Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>4. Set Scope 3 emissions targets by 2022;<br>5. Procure carbon offsets by 2022 and set maximum offset targets;<br>6. Increase the size of the Revolving Energy Fund (REF); and,<br>7. Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 182 | Student | Support for Energy Club at Ross PCCN Review Committee's Letter<br>I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 183 | Alumni | President Schlissel's charge to the PCCN called for the involvement of the regional community and to create scalable and transferable models. This was reflected in the Commission's Principles for Goal-Setting and Strategies, Regional community involvement (Line 515). However, many important opportunities for such involvement and collaboration were missed when it came to specific recommendations, including:<br>1. Collaborating on projects and sharing best practices and lessons learned with other colleges and universities in the SE MI region and the state, for example: a multitude of community colleges, Eastern Michigan University, Wayne State University, Michigan State University, Lawrence Technological University, Kettering University, University of Detroit Mercy, small liberal arts schools, and many more. Joint activities could range from biosequestration projects with MSU to sharing district geothermal solutions.<br>2. Commuting and transit projects with AAATA, A2-based and U-M spin-off May Mobility, the City of Ann Arbor on its proposed transit center, and other entities, not just in Ann Arbor but also in Dearborn, Flint and Detroit.<br>3. Educational and intern programs with public and private K-12 schools in Ann Arbor, Dearborn, Flint and Detroit.<br>4. Joining the Ann Arbor and Detroit 2030 Districts, just as Carnegie Mellon University, Duquesne University and the University of Pittsburgh have joined the Pittsburgh 2030 District, and helping form 2030 Districts in Dearborn and Flint.<br>3. Explicitly supporting and enabling Ann Arbor's A2Zero and Washtenaw County's Carbon Neutrality Plans and similar GHG reduction plans in Detroit, Flint and Dearborn.<br><br>All of these would create opportunities for transferring and scaling solutions, establishing win-win relationships, building U-M's leadership position in the state and its brand, attracting future students, and more.<br><br>Frankly, it is revealing that the PCCN and IAT processes did not generate more specific recommendations like these and other detailed proposals. The PCCN should consider creating an ad hoc team to brainstorm and detail more such ideas. | DQ, DR, DS, DT |

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| 184 | Student | Support for Energy Club at Ross PCCN Review Committee's Letter<br>I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
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| 187 | Alumni | Something is seriously wrong with the current process for identification and implementing of energy conservation measures (ECMs) which the PCCN needs to address in its final report. The recommendation to create an Revolving Energy Fund (REF; line 1075) and increase the size of the current energy management team (line 1140) are a good start but simply not enough.<br><br>As the draft report points out with regard to ECMs, "the ROI of projects over the past 13 years shows no sign of decreasing over time, which suggests that U-M is underinvesting in ECMs." Furthermore, the Energy Policy report states that ECMs have only been implemented at the rate of $1.2M per year in spite of the fact that U-M has 38M ft2 of building space!! These are indicators of significant leadership and process problems, most likely centrally but also at all three campuses and within each unit, especially considering U-M has had the target to reduce GHG emissions 25% by 2025 since 2011 and it is having to take extraordinary measures (CPP and DTE PPA) late in that timeframe to meet that target.<br><br>I have three suggestions for recommendations in the final report:<br>1. Reevaluate the leadership of the energy management team(s);<br>2. Set more aggressive targets for it (them); and<br>3. Develop and deploy across all three campuses and all units a process where cross-functional teams are created for each building (or group of smaller ones or portions or extremely large ones) which are responsible for ECMs. The teams should include representatives from the energy management team, facilities management for the building, and a group of students, staff and faculty which use (or 'reside' in) the building. These teams should meet on a fixed schedule to (a) identify ECMs, for example by taking regular tours together, and then (b) implement them using good project management processes (developed centrally and deployed system-wide).<br>More is likely necessary.<br><br>Likely more needs to be done.<br><br>As the draft report points out lighting - and I would add the unnecessary running of electrical devices - is a tip-of-the-iceberg indicator of the magnitude of the problem. Any walk by or through buildings reveals lights on when not needed (most easily seen late at night), computer monitors on (I was given a tour of NCRC over the holidays and walked by a computer room where every monitor was on and no one was in the room), equipment like refrigerators which could be shared, and more. That's all WASTE that is generating GHGs. Moreover, it's simple stuff indicating there's a lot more lurking under the water. And ECMs generally are among the least expensive, best ROI and fastest GHG reduction measures (as reflected on p. 24). | DU |
| 188 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br><br>1. Improve implementation, accountability, and transparency measures;<br>2. Implement carbon pricing before 2025;<br>3. Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>4. Set Scope 3 emissions targets by 2022;<br>5. Procure carbon offsets by 2022 and set maximum offset targets;<br>6. Increase the size of the Revolving Energy Fund (REF); and,<br>7. Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
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| 190 | Anonymous | Anonymous | DV |
| 191 | Staff | Developing/developed world categorization is becoming less relevant and groups such as the World Bank have phased out these descriptors (https://blogs.worldbank.org/opendata/should-we-continue-use-term-developing-world). Consider restructuring this section to simply emphasize U-M's role in and responsibility to the global community. These categories are also used in the Recommendations section. | DW |

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| 192 | Student | I'm glad the report is finally being published, but the university leadership must realize that they are greater than half measures. We are one of the greatest public education institutions in this country, and I have to say I'm astounded that with the truly incredibly innovative, capable, and smart people that study and work for this university that the best this commission could come up with was half measures. Our target goals are far behind even the proposed timeline of the incoming Biden administration. Universities are in a unique position to lead the future, not play catch-up with the rest of the world. We can do so much better than this, and we have the means to do so. What kind of message does it send to the young people who come to this university to create their future when they are attending an institution that is actively undermining the ecological balance of this planet? I know that we are greater than this. | DX |
| 193 | Student | Support for Energy Club at Ross PCCN Review Committee's Letter<br>I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 194 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br><br>-Improve implementation, accountability, and transparency measures;<br>-Implement carbon pricing before 2025;<br>-Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>-Set Scope 3 emissions targets by 2022;<br>-Procure carbon offsets by 2022 and set maximum offset targets;<br>-Increase the size of the Revolving Energy Fund (REF); and,<br>-Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
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| 196 | Student | "Commit to the goal of carbon neutrality (inclusive of offsets) for Scope 1 emissions across all three campuses by 2025."<br>"Prioritize direct emissions reductions for Scope 1 by setting a goal of eliminating them across all three campuses by 2040"<br>I don't think that this recommendation is aggressive enough. We should be switching to sustainable, green energy as soon as possible, and eliminate emissions as soon as possible. I think the timeline of 2025 and 2040 is way too slow to make progress towards these goals. | DB, BU |

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| 197 | Faculty | Thanks for the huge amount of thinking, expertise, consultation, and work behind this draft report. Amazing! As co-chair of the Arts Initiative, I am in awe of all you have accomplished.<br><br>As dean of architecture and urban planning, I am excited to see some big picture approaches to the built environment of our campuses among the recommendations, and also some concrete recommendations (e.g. regarding parking and its alternatives including the campus connector). I've gathered my comments and suggestions in this spreadsheet, indexed by line number as requested https://docs.google.com/spreadsheets/d/1y0PGqM4r4Y6rPUN8RM7MKmErIINVQuibCy75dRC4vOY/edit?usp=sharing<br><br>My primary recommendation is to amplify significantly the built environment components of the recommended strategy, since buildings and planning are the biggest nexus of potential emissions gains across so many categories. I ask you to call out specifically the role of embodied emissions in the procurement/construction of buildings and other campus infrastructure, and to recognize that stronger, more comprehensive, more real campus planning is essential to achieving PCCN goals.<br><br>I welcome further conversation and collaboration! | H, L, V, BT, BX, DC, DD, DE, DF, DG, BL |
| 198 | Alumni | Lines 2031 & 1997: Remove the call to replace beef with chicken and fish;<br>Line 2030: Remove recommendation of blended plant and animal protein and recommend plant-based meats instead;<br>Line 2034: Emphasize connection between animal agriculture and environmental/climate justice through campus-wide educational programs. | Y, DZ, EA |
| 199 | Student | Demands include:<br><br>A greater sense of urgency for U-M to meet IPCC 2030 goals must be reflected;<br><br>● Re-evaluation of growth and rapid implementation of new building standards must be added;<br><br>● Scope 3 goals must be set within the next year including initial metrics to track progress;<br><br>● CN measures for Michigan Medicine must be added, particularly regarding the new hospital and CN leadership and culture<br><br>● Critical role of community collaboration and partnering must be strengthened;<br><br>● More authority for a high level U-M executive resourced to lead implementation of CN report; and<br><br>Also, public private partnerships must be considered to fund this Carbon Neutral plan, environmental justice MUST be intertwined and considered throughout the report, and UM must look at and compare and learn from peer universities that are succeeding in CN plans.<br><br>It is not enough to say, "this is currently being accomplished with Diversity, Equity and Inclusion (DEI) efforts at U-M, and similar approaches are required for carbon neutrality."This section sounds like an empty promise to commitment to environmental and social justice. | CH, CO, DB, DO, DP, EB, EC, ED, EE, EF, EG |
| 200 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br><br>1.) Improve implementation, accountability, and transparency measures;<br>2.) Implement carbon pricing before 2025;<br>3.) Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>4.) Set Scope 3 emissions targets by 2022;<br>5.) Procure carbon offsets by 2022 and set maximum offset targets;<br>*minimize offsets wherever possible and ensure they are effective when used<br>6.) Increase the size of the Revolving Energy Fund (REF); and,<br>7.) Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Regards, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |

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| 201 | Student | Support for Energy Club at Ross PCCN Review Committee's Letter<br>I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 202 | Faculty | UM should involve itself in public-private partnerships to improve energy efficiency on campus.<br>UM should also incentivate people who work/study on campus to get to where they need to be by foot, bike, bus, train, and not by private car. | ED, EO |
| 203 | Student | I recognise and commend the efforts to promote plant-forward food at the University of Michigan. The research is sound and I celebrate the shift away from carbon-heavy products. However, I think it's important to note that food procurement comes with ethical issues as well as environmental issues.<br><br>The plant-forward food initiative more heavily emphasises the consumption of fish and poultry in the place of red meats such as beef and lamb. But fish and poultry produce a smaller mass of food than cows and sheep do per life. Farmed chicken are known to live in terrible conditions compared to sheep and cows. Farmed fish are also thought to suffer from overcrowding and asphyxiation, which are both unpleasant conditions. And emerging research supports that fish feel pain and fear as other animals do.<br><br>I am concerned about the suffering incurred by plant-forward initiatives. Personally, I still support this movement because I am even more concerned about the carbon emission problem. I just think that that this strategy could be a step back ethically. I encourage even more emphasis on plant-based foods and more ethical sourcing (e.g not from animal farms, cage-free food products) to address this problem.<br><br>Thank you for the excellent work, and for opening the floor to students and faculty to comment. | Y |
| 204 | Alumni | Beginning with Line 650, the draft report endorses the Integral Group's recommendation to implement district-level heat and cooling infrastructure, specifically geo-exchange or geothermal heat exchange and heat recovery chiller. The draft estimated nearly 20,000 boreholes, with most going below ground roughly 600 feet (line 723). This will come at considerable expense, as outlined elsewhere in the draft report.<br><br>There are products which claim to reduce the length of boreholes by 30 - 60%, for example Geothermal Innovation Gi-4 product (see: https://gi-4.com/) and Agreenability's TWISTER product (see: http://www.agreenability.com/). If so, such products could result in significant advantages, including a significant reduction in cost and in disturbances to U-M's campuses due to less drilling activities. It is thus advisable - indeed imperative - that all such claims be investigated and verified before proceeding with standard ground-loop products and practices. This could be done by engineering specialists at the Integral Group or U-M CoE staff.<br><br>If such claims are verified or at least promising, even if the improvement is only in the range of 10%, I recommend U-M consider launching an R&D project to further develop and optimize such geo-exchange tubing products and bring them to market, potentially jointly with Geothermal Innovations and/or Agreenability (as they have patent / intellectual property protections). The need to electrify heating across the nation and world translates to millions of geo-exchange boreholes (even assuming air-to-air heat pumps are deployed in many cases). An improved ground-loop heat exchanger product would fulfill the PCCN's Principle for Goal-Setting and Strategies of implementing solutions which are scalable and transferable. | EP |
| 205 | Staff | Line 935 - How do we reflect this PPA/wind farm on campus? How do we use it to educate and engage? What a cool story to miss out on telling.<br>Line 1000 - I don't think the Block M solar panel is mentioned anywhere in this. As something that was supported by SSC, this or other demonstration projects might warrant mention if only for the importance of seeing our values represented on campus.<br>Line 1050 - How renewable energy investments will be paired with research/educational opportunities is not very clear. Will this be specified in contracts? I know PBAs would be excited about an annual tour of a wind farm, but will we be allowed to do so? I'd also love to have more specific educational materials about our renewable energy projects. Where are they located? How much energy do they provide? What's the story of the farmer who makes a little extra money each month from having these wind turbines on his land? | EQ, ER |

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| 206 | Staff | Line 1090 - we are definitely not out of low hanging fruit. PBAs complain in almost every presentation about some window that has to be left open in winter because the heat is too high.<br>Line 1100 - there are some things that basically have basically no up-front cost besides someone taking the time to do them. Like an office indoor comfort survey. Would the REF be able to pay for staff time to do things like this?<br>Line 1110 - if we create multiple REFs, please create a way to talk/guide decisions between them, or else how will the people operating them learn from each other? In addition, existing funds already exist on campus. How will these new, much larger funds relate to PBSIF and the Renewable Energy Demonstration Fund?<br>Line 1115 - The current regional energy managers are likely to underestimate the amount of staffing needed to communicate about the REF. People will want to know about the REFs, and not every inquiry should be dealt with like an ITS ticket to be resolved as quickly as possible. We need to give tours/have posters made about the improvements or online spark stories. Also, are there ways for students to help with the implementation or the evaluation of proposals? Incorporating student involvement is something the REMs don't do currently, and that takes time.<br>Line 1150 - You mention increasing the number of energy managers for the general fund REF, but there isn't any mention of staffing for the auxiliary until REFs. Alex Bryan, Chris Victory and Paul Dunlop cannot take on that additional work without additional staff.<br>Line 1155 - Tracking carbon emissions/energy use by building is one thing. But more granular data would be very helpful for engagement as well as more real time data. We can't do any sort of competition to get residence hall students or offices to reduce energy use without better data.<br>Line 1160 - People are going to notice the Dearborn and Flint REFs being 10x smaller than the A2 REF. Would people be more accepting of that if it were represented in the context of how much smaller the other campuses are? You might consider a quick reiteration of how big each campus is.<br>Line 1170 - I would highlight this recommendation of expanding data collection at Flint and Dearborn more. Why is it not listed in the summary of recommendations? Also, I would like to see better data collection and display on the A2 campus as well.<br>Line 1180 - I like how there are things clearly outlined here that would indicate if we're on track in years 1 and 2. All recommendations in this report need this. | ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC |
| 207 | Staff | Line 1230 - love how you point to other peer institutions doing carbon pricing here. We should do this for all the recommendations we can!<br>Line 1295 - I think U-M suffers from the fleeting nature of committees like the PCCN. Why is there not a standing advisory body on carbon neutrality / sustainability? It could have working groups on carbon pricing, and university sponsored travel, but really all portions of this report need a group to continually reevaluate and guide implementation not just carbon pricing. These groups would support the one new high level staff person created in the culture section (who is going to have an enormous job to do alone). | FD, FE |
| 208 | Staff | Line 1335 - A2 has grown 6.5 million gsf In 10 years. However, there isn't anything in this that explores limits to growth, or requires evaluating occupancy / use of existing space before expansion. https://sustainability.illinois.edu/whats-the-real-impact-of-campus-net-zero-space-growth-policy/<br>Line 1355 - If we have to develop a CO2 standard for buildings, can we partner with others on it? I worry about U-M going out on a limb and then a group like AASHE STARS rewarding something like Living Building Standard instead of whatever we come up with.<br>Line 1365 - This hourly metering is imperative for any sort of building competition to reduce use. Students aren't interested in last month's energy data. They want to know how much more energy their dorm is using than another today. | CH, EZ, FF |
| 209 | Staff | Line 1445 - I would still be curious to see what a study of the research and clinical building types would turn up in terms of retrofit potential. I looked at the OCS building energy dashboard, and it's easy to compare the Life Sciences Institute Building which in FY20 produced 10,719 metric tons CO2 for 298,399 gsf to the Biological Sciences Building which produced 3,441 metrics tons CO2 for 312,211 gsf. That's a BIG difference for very similar building functions. | FG |
| 210 | Staff | Line 1465 - People are really confused by the wording here. Make it more obvious that we will set goals for some scope 3 things immediately, some in one or two years, and some for harder things like general purchasing not until 2025. Giving a tentative year for some of the things you anticipate being able to set earlier might help. Students interpret this as kicking the can for all scope 3 decisions until 2025. | FH |
| 211 | Staff | Line 1475 - The range for purchased goods is extraordinary. I don't think people recognize that the upper half of this range would be more than what our Scope 1 and 2 emissions are. Right now, because of COVID, everyone is dealing with additional limitations on purchasing (compared to "normal"), so it might be an easier time to get data on the purchases we are making now because they are likely being more heavily documented. | FI, FJ |
| 212 | Staff | Line 1510 - Love the chart of what other schools are doing about different types of Scope 3 emissions! Clearly indicates the challenge, and the opportunity for U-M leadership, and also potential partners!<br>Line 1525 - I find these graphs difficult to understand because they don't indicate what the different actions are that cause the difference in the black and red lines. It would be easier to see the impact of each recommendation and relatively how important they are if the actions were listed in these charts individually as wedges, not just lumped together as "all recommendations in this report." | FL, FK |
| 213 | Student | Lines 2031 & 1997: Remove the call to replace beef with chicken and fish;<br>Line 2030: Remove recommendation of blended plant and animal protein and recommend plant-based meats instead;<br>Line 2034: Emphasize connection between animal agriculture and environmental/climate justice through campus-wide educational programs. | Y, DZ, EA, |
| 214 | OPT OUT | OPT OUT | X, BG, FN, FO |

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| 215 | Staff | Line 1580 - Daily parking is a good idea for Ann Arbor. As a result, U-M may receive increased revenue from staff parking in U-M garages in the evening for events. For Dearborn or Flint this could keep students who commute from participating in evening activities, so that would be a negative.<br>Line 1580 - For folks worried about how daily parking fees will disrupt their morning commute time, you might implement a system that, like ez pass, lets you pay without much additional time. It might also be valuable to implement a system that better tracks how many spots are actually available in a given lot. I see lots of staff wasting time and gas circling around in parking garages that don't have any spots - while daily parking might be something the average staff member dislikes, they might be more open to it if you give them the capacity to spend less time searching for spots.<br>Line 1585 - Linking parking rates to salary seems very equitable. And not mandating that students pay for it also seems good.<br>Line 1590 - If departments are footing the bill for the $172 parking subsidy, I'm sure they'd be excited to know they won't be paying for this anymore.<br>Line 1625 - What's considered a "day" is important in these recommendations related to daily parking rates. For staff who work nights at the hospital, or for residents and medical students who work 24 hour shifts on certain rotations, be sure to investigate that they aren't being punished for having a schedule different than 9-5.<br>Line 1655 - Not only would exploring incentives for home chargers be good, but exploring what U-M can do to help lower-income staff afford an EV would be key. Otherwise all this effort about EVs is really not very equitable. Perhaps giving those who carpool or vanpool designated EV charging spots would be good.<br>Line 1695 - When it comes to helping with alternative commutes, the emergency ride home service is key. BUT NO ONE KNOWS ABOUT IT! I feel like I'm sharing some sort of dark secret when I share this service in the PBA training. And as more people use it, let's make it not a private taxi but a small group bus that picks people up in waves and takes them to their destinations together. Also, let's make sure it has car seats for kids. Yes it will take you to pick up your kid from school and drive you both home, but if you don't have a car seat on hand, that's not a very viable option.<br>Line 1695 - Making showering and changing facilities more available will be key for alternative commutes as well. The clothes I walk to work in are not at all what I wear while at work.<br>Line 1700 - "matchmaking and incentives" for ridesharing is a bit vague. Do they get an EV and a designated charging spot? Or is it an app and a slightly cheaper parking fee?<br>Line 1700 - Also, is there a way to encourage occasional ride sharing? The vanpool system seems to work for people with very consistent schedules, but not for folks who need more flexible arrangements. Also, could there be an incentive for groups smaller than 6? Even getting three people to ride together would be a positive thing. The carpool incentives seem very vague on the LTP website.<br>Line 1715 - It would be great to have a better network of bike lanes and routes, not just a connection between north and central campus. I hear there is a way to get to the Campus Farm via bike, but that's not promoted anywhere. It would also be great to see a stronger partnership between Mhealthy and Planet Blue on healthy commutes. Heck, how about an annual bike to Dearborn event to connect our campuses and raise awareness about biking?<br>Line 1770 - If doing the campus connector with busses would speed implementation that might make sense at first. Maybe specify a date at which to consider when these buses should be phased out for a light rail based on the expected life of those buses.<br>Line 1780 - We need better procedures to shut down areas or flex areas if telecommuting is to become more regular. Staff and students are using additional energy at home now during COVID, but I don't think campus energy use has decreased much at all, certainly not equal to the home increase.<br>Line 1780 - Especially in a world where U-M incentivises teleworking and takes into account Scope 3 emissions, the Office of Campus Sustainability cannot solely focus on "on campus" activities only. They claim time and time again, that they can't comment or provide any help with at home energy or waste savings because their funding prevents them from doing so. I think that's a ridiculous limitation that needs to be eliminated. What people do at home they will do at work and vice versa. Let's establish good habits everywhere.<br>Line 1800 - This needs to be a key recommendation that is highlighted in the summaries and made more specific. "Prior to the approval of any new construction, the university should prioritize enhanced space utilization in existing facilities…." How? Do they have to do a space assessment? Is there a cap on growth? Can a unit "bank" space that they decommission?<br>Line 1810 - When it comes to affordable housing, I'd prioritize students and staff and leave faculty out of it. We see in the SCIP data they live much closer to campus than staff do - by ~15 miles on average or something like that. | K, V, BG, BZ, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA |
| 216 | Alumni | Dear President's Commission on Carbon Neutrality,<br><br>As an alumnus of the University of Michigan, I was happy to hear that my alma mater is taking carbon neutrality seriously by establishing the President's Commission on Carbon Neutrality (PCCN). It is no longer a secret that climate change is an existential crisis, and we will need to be leaders in solving it. The PCCN is a great first step in doing that.<br><br>However, as someone who cares deeply about our food system, and wants to ensure that it is more sustainable, I have concerns about lines 1997 and 2031 of the report. These lines regard the swapping of beef with other animal proteins, specifically chicken and fish. On the surface, this seems like a good idea, given beef's extreme carbon requirements. However, I believe that there are serious problems with this recommendation. Consider, for example, that poultry farms have their own particular environmental concerns (e.g., food waste and poisoning the water of nearby communities). These issues, among others, are not peripheral issues that should be ignored for the larger ends of carbon neutrality; they are significant problems with their own environmental and moral externalities that must be considered on their own terms. This article from Vox lays out these issues well:<br><br>https://www.vox.com/future-perfect/2019/12/4/20993654/chicken-beef-climate-environment-factory-farms<br><br>While it should also be acknowledged that Michigan aims to procure animal protein locally (to the extent possible), I am skeptical that this could be done on the scale necessary. In other words, we may not be able to rely on low-carbon, regenerative farms to meet the protein needs of the university. Thus, I am urging Michigan to recommend that, when the replacement of beef occurs, it is replaced with plant-based food, and not poultry or chicken.<br><br>Thank you for your time and your consideration, | Y |
| 217 | Student | (1030) "Engage with the Cities of Ann Arbor, Dearborn, Detroit, Flint, and other entities…" is too broad of a recommendation. Whereas "engagement" should be a goal, specific recommendations on how to engage, and metrics to evaluate successful engagement are lacking. One idea is to recommend the hiring of a designated communications/social media coordinator for sustainability engagement - between the various platforms and responding to emails, it is more than enough work for a full-time employee. The impact of an effective media person more than pays itself back in terms of having community as a support instead of a barrier (from a local policy perspective, e.g.) in implementing sustainability strategies. | GB |
| 218 | Student | Accountability is a term thrown around a lot without much more substance, but it is true that the report draft lack any specific mechanisms for holding the university accountable. Very specific recommendations for progress reports, including updated timelines, should be integral to the commission's recommendations. Yearly reports would be a good start and may necessitate the hiring of a full-time employee to track and compile such reports. In the grand scheme of U-M's carbon neutrality finances where heating infrastructure will cost hundreds of millions of dollars, employees devoted solely to neutrality on salaries of 1/10th of 1 million dollars can and will have an outsized impact on the success of the overall effort. | EN, GC |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 219 | Student | (3031) U-M must be assertive with DTE and Consumers Energy. Rather than passively wait for these utilities to decarbonize, U-M must use its influence as a major stakeholder to push for their accelerated transition to renewable energy sources and grid stability solutions. | GD |
| 220 | Faculty | COMMENT #220 (1/3)<br>Dear PCCN, We, as members of Voices for Carbon Neutrality (VCN), applaud the PCCN and the Internal Analysis Teams for the incredible amount of work scaffolding draft recommendations to move the University of Michigan (U-M) to carbon neutrality. The result of your work is a strong proposal. The purpose of this letter is to highlight areas where we think the plan can be made even stronger.<br>General<br>As the flagship university for the state of Michigan and one of the leading universities in the world, U-M has a responsibility to achieve carbon neutrality in a timeframe consistent with the recommendations of the Intergovernmental Panel on Climate Change (IPCC) and to live up to our motto of Leaders and Best. Achieving carbon neutrality will not be easy. It will require bold leadership and strict accountability. Success can only be achieved if U-M leadership translates the vision of the PCCN into reality. We must not fear fluctuations, disturbances or imbalances, for these can become sources of creativity. We must work to build consensus by actions that positively impact our shared global community. We cannot overstate the importance of the work yet to be done. U-M must inspire every member of our community to be the change we want to see; it must serve as the convener and catalyst of living, learning laboratories and collaborative efforts. It is the responsibility of President Schlissel, the Board of Regents, and the entire U-M administration to live up expectations. History will judge us for what we accomplish, not for what we promise but fail to achieve. There is no time to waste.<br>Environmental and Climate Justice<br>The intentions of the PCCN with respect to equity are appropriately stated in the draft report's introductory comments, lines 196 - 200: The Commission recognizes that the climate crisis poses the most harm to communities that are historically and unfairly disadvantaged and disenfranchised. Each proposed university action brings with it a different set of environmental justice considerations. Accordingly, environmental justice must be comprehensively interwoven throughout U-M's climate action plan, rather than added as a supplementary step. However, the draft report fails to interweave environmental justice throughout the U-M action plan. It mentions diversity, equity and inclusion (DEI) frequently but inappropriately, considering that DEI, environmental and climate justice, and equity are related but distinct concepts. Only when discussing Scope 3 recommendations does the draft begin to discuss recommendations through the lens of equity.The reason for omission of having equity at the core of the Commission's recommendations may be because the PCCN's equity intention was not reflected in the Commission's "Principles for Goal-Setting Strategies" where equity was redefined in a different way (line 510), omitting mention of the plan's impact on disadvantaged communities and on students and employees who are people of color. The underemphasis on climate justice, and any consideration of restorative justice, must be corrected in the final report. The equity and justice considerations in the appendices provide a good starting point for this change. Additionally, given there was not an internal analysis report for climate justice, the Commission should now take advantage of the extensive environmental justice expertise within the U-M faculty for a timely review, resulting in implementation of justice-oriented changes throughout the entire report, before the report is finalized. This is not only the right thing to do but failure to do so will be a major barrier to implementation since climate justice has been the primary framework and motivation for U-M students and many others who have participated in this process.<br>Speed and Urgency<br>The criteria used to evaluate the draft recommendations do not include a principle related to the speed of implementation (lines 480 - 545). IPCC and related United Nations reports make clear that urgent action is imperative. We urge the PCCN to add a principle of speed so that recommendations and future actions will always be judged against alternatives with the objective of maximizing the rate of carbon neutrality implementation and thus minimizing the area under U-M's emission curve. The lack of such a principle resulted in draft recommendations which would allow the Central Power Plant to burn natural gas until 2040. Not only does this demonstrate a lack of urgency, but it is also out of line with the U.S. president-elect's plan to eliminate fossil fuels from the power sector by 2035. If U-M maintains the current timeline, we will be lagging, not leading.<br>Local and Regional Community Involvement<br>Carbon neutrality cannot be achieved by U-M and other entities in Michigan without greater energy competition, choice and freedom. We were greatly encouraged to read the draft recommendation (starting at line 1030) calling for "potential policy changes" and the pursuit of government funding to unlock tools such as community choice aggregation, microgrids, community solar, and more. However, the draft lacks emphasis on teaming and advocating with external partners to accelerate the implementation of these options and to leverage them to ensure that the impacts are widely and quickly scalable, replicable, just, and equitable. Specifically, U-M should act as a regional convener (with the cities of Ann Arbor, Flint and Dearborn, and other entities) to coordinate and drive strong climate policy advocacy at the local, state, and federal levels. U-M needs to use its influence to broaden the discussion to the role of investor-owned utilities (IOUs) and regulatory frameworks. More must be expected from key partners such as DTE Energy.<br>Finally, the scale of policy change needed at all levels to combat climate change will require substantial popular support which can only emerge from a society that embraces climate action as a sustained priority. This can be accomplished only through broad equity- and justice-centered consultation, collaboration, and partnering with everyone from frontline and vulnerable communities, Native communities, labor unions, civic groups, academia, government and business to citizens of all parties, geographical areas, and ideological persuasions. | DB, EE, GY, GZ, DV, BT, CH, FX, GY, HA, HD, HE, HF, HG, HH, HI, CN |

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| 220 | Faculty | COMMENT #220 CONTINUED (2/3)<br>Special needs of Michigan Medicine<br>Michigan Medicine (MM) deserves greater consideration in the final report because its share of U-M's total GHG emissions is so significant. It is important to note that in the US, the Kaiser Permanente hospital system just became carbon neutral, and the Boston Medical Center is working towards that status; they can serve as exemplars and partners.<br>MM will soon have a new $920M adult inpatient hospital that would benefit from further envelope upgrades to reduce its carbon footprint; a comparable hospital is being built in Frankfurt Germany that will be the world's first "Passive House" hospital.<br>MM would profit from having its own Chief Sustainability Officer and its own goals and timelines for energy conservation. These approaches would be facilitated by MM having its own revolving energy fund and retaining most of its proposed carbon tax. MM also has satellite facilities, such as West Ann Arbor and Brighton Health Centers, located outside the six areas listed in the report; these will need planning and retrofitting, probably including geoexchange systems and photovoltaics. Improvement of the culture at MM in relation to carbon neutrality may be a special challenge (as with certain other U-M units). Involvement of faculty, residents, students, and staff in planning and implementation would be of benefit, and recognition of the adverse effect of our fossil fuel consumption on human health may facilitate such culture change. Finally, the importance of constant and reliable power to hospitals is a special challenge that deserves mention in the report.<br>The Built Environment<br>The PCCN's draft recommendations appropriately address standards for new construction, the retrofitting of existing buildings, and energy conservation measures (lines 1325 - 1445). However, U-M's built environment requires reexamination based on several paradigm shifts.<br>First, the assumption of continued growth needs reevaluation, both on an overall basis and building-by-building. Modifying the academic calendar so that the full suite of classes is offered year-round, telecommuting and virtual instruction, and moving from dedicated to shared spaces (for example for offices, often referred to as "hoteling") all offer significant space reduction opportunities.<br>Second, the preservation and reduction of embodied energy must be included in decision-making; existing buildings like the Fleming Administration Building should be reimagined, repurposed and renovated; new construction should use low embodied-energy concrete, steel, mass timber and products; and construction and demolition waste should be recycled instead of going to landfill.<br>Third, tougher building standards, e.g., meeting Passive House envelope standards for most if not all new building categories and those in planning or early construction (e.g., the new MM hospital), performance targets which are pegged to ASHRAE 90.1 energy standards as they are tightened over time, not the 2013 edition, and adherence to the ZEROCode should all be considered. While low-embodied energy construction and tougher standards could be costly upfront, costs would likely be recouped over time and future deep-retrofitting costs avoided; moreover, buildings will be more comfortable.<br>Fourth, forming cross-functional operations teams tasked with conceiving and implementing energy conservation and other measures (ECMs) for each major building, including for Flint and Dearborn, will accelerate and improve their quality.<br>Finally, on-site rooftop solar, including on new parking carports, should be maximized across all campuses. A single RFP would maximize the return on investment, accelerate the benefits and be a highly-visible symbolic quick win. | DB, EE, GY, GZ, DV, BT, CH, FX, GY, HA, HD, HE, HF, HG, HH, HI, CN |

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| 220 | Faculty | COMMENT #220 CONTINUED (3/3)<br>Scope 3 Goals<br>The 5-year timeline for establishing Scope 3 goals (lines 1485 - 1510) fails to reflect the need for speed and the need to address the urgency of reaching carbon neutrality. Progress in reducing carbon emissions due to commuting, waste management, upstream fuel and electricity sourcing, and travel can and should be achieved rapidly; goal setting here is needlessly constrained by the requirement that they be “measured and tracked” before they can be addressed. Accounting methods applied post hoc should be sufficient to measure and track impacts of policies and practices that are being implemented.<br>Definitions and strategies for achieving Scope 3 goals exist in publications of the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD): The Greenhouse Gas Protocol for the US Public Sector and the GHG Corporate Value Chain (Scope 3) Accounting and Reporting Standard. The PCCN report neither lists nor weighs options for inclusion of a comprehensive list of Scope 3 goals as described in these documents. A glaring omission is that of holding fossil fuel-based equities in the U-M endowment and other investments. We believe these should be addressed within the framework of Scope 3 emissions. For example, PCCN draft Figure 7 (Scope 3 baseline GHG emissions FY18) does not include fossil fuel equity shares as an emissions category even though this category is included in the WRI/WBSD framing documents. Moreover, a growing number of our peer universities, including the University of California system, have transferred investments out of fossil fuels or have committed to doing so.<br>U-M, with its commitment to carbon neutrality and social justice, is obligated to recognize the gross inconsistency of continued investment in fossil fuels. We recommend the PCCN’s final report include:<br>● a statement on how holding of fossil fuel equity shares supports an increasingly obsolete industrial sector responsible for inflicting harm on our world and its people- especially on economically disadvantaged populations, particularly communities of color; ● a statement whether such investments are at risk of becoming under-performing assets as world energy markets shift; and<br>● recommend the development of a framework for ethical investing and an associated timeline for transfer of investments out of the fossil fuel sector.<br>Financing<br>While President Schlissel’s charge to the commission (lines 280 - 290) did not explicitly include or exclude financing the plan’s implementation, VCN feels that the PCCN’s final report must include high level input on the topic in contrast to the statement under Financial Analysis (lines 2870 - 2873). Absent this, the commission cannot claim to have outlined “a timeline, pathway and approaches for achieving” carbon neutrality that is “financially responsible in the context of U-M’s mission of education, research and service” as per the charge.<br>VCN suggests the PCCN consider the following:<br>● U-M leadership and the Regents must formulate a strategy for immediate, mid-, and long-term capital for the proposed changes. An action plan that is not accompanied by a financial plan which fully resources it from the onset has little chance of meeting targets.<br>● Given the high projected cost of the plan, U-M should get a second opinion or supplement the recommendations of the Integral Group by consulting other experts.<br>● The university should be prepared to hire highly qualified independent contractors where they can add value.<br>● Applying best practices and lessons learned by other entities, not just from academia but also government and business.<br>● U-M has a host of financing options that could include any of the following: floating public bonds; the creation of a CN endowment fund and explicit CN donation requests of major donors to support future generations and U-M’s brand, including strategies on how to appropriately recognize donations; and public-private partnerships (which could, for example, transfer ownership of U-M energy assets in exchange for a multi-billion dollar upfront payment), as used by other academic institutions as related in the VCN webinar University Approaches to Carbon Neutrality: A Conversation with Leaders from MIT, OSU and Iowa - YouTube.<br>Implementation<br>U-M will soon approach the pivot to the high-risk implementation of the PCCN recommendations across the large and complex U-M system together with regional partners essential to achieving impact at scale. The societal responsibilities of U-M require President Schlissel to authorize and lead the robust changes recommended in the report.<br>The report speaks of a new executive position reporting to the President that is primarily advisory and consultative in nature with limited authority or direct oversight (lines 2480 - 2550). This will not get the job done. Internally, this executive must lead climate neutrality activities with the full support of the President and have the authority to work big levers of policy and university-level goals and metrics and their deployment including due dates and review structures to drive system level impact, unit level responsibility and accountability, and broad individual action across the three U-M campuses. Externally, this executive, together with the President, must partner with local and regional stakeholders and bring the gravitas of the university to bear on critical external enablers (see Community section above). This individual must bring a systems view that recognizes that the climate crisis, the crisis of inequity (racial, economic, environmental), public health, and societal economic prosperity are highly interdependent. We are at an inflection point in history, and U-M must lead with solution sets and metrics that balance the urgent needs of people, planet and prosperity.<br>This new executive must have the broad change-leadership experience and deep expertise to hit the ground running. This calls for a new hire, external or internal, to move U-M rapidly beyond its relative inaction of the past. This person, in conjunction with President Schlissel and the Regents, must drive decisions about:<br>● how U-M funds this $3 - 5B plan; ● the role of U-M-led public-private partnerships to deliver the necessary capital and energy expertise; ● what Advisory Councils of U-M and industry experts are needed;<br>● what partnership forums will convene local and regional stakeholders; and ● how high-impact donors can be brought to the table.<br>We are at an inflection point in history, and U-M must lead with the solution sets that balance the urgent needs of people, planet and prosperity. To that end, we recommend that you highlight key implementation recommendations in the executive summary and at the beginning of the report.<br>In closing, climate neutrality cannot not be viewed as part of a zero-sum game, one where it and other mission-critical priorities like DEI or filling COVID-related budget shortfalls are viewed to be in conflict. That type of thinking has led to delays for years. Difficult times demand out-of-the-box thinking, paradigm shifts, and creative solutions that aggressively pursue carbon neutrality while elevating equity and justice. This will preserve - indeed enhance - U-M’s brand and reputation.<br>We would be happy to meet with the PCCN co-chairs or entire committee to discuss any of our recommendations or to review other aspects of the proposal. Thank you. | DB, EE, GY, GZ, DV, BT, CH, FX, GY, HA, HD, HE, HF, HG, HH, HI, CN |

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| 221 | Student | COMMENT 221 (1/2)<br>From the Energy Club at Ross PCCN Review Committee<br>We appreciate the effort of the PCCN and recognize the progress this committee has made on the University of Michigan's (the University) journey towards carbon neutrality. While there are many encouraging and promising recommendations in the report, such as the emphasis on additionality and impact in Michigan, the report fails to put the University on a path to be the Leaders and Best in terms of achieving carbon neutrality.<br>Achieving carbon neutrality stands as a defining challenge for the University and all of humanity. It requires innovative solutions, technical rigor, and interdisciplinary work. However, this is not a new fight. The vast majority of the University's students were not alive when the United States President committed to stabilizing greenhouse gas emissions to combat climate change at the Rio Earth Summit in 1992. Inaction and apathy squandered valuable years while global temperatures and climate-induced disasters increased. The Energy Club at Ross PCCN Review Committee, selected for both our industry experience and desire to improve the University, identified several areas where the report could be improved to adequately address the urgent need for the University to achieve carbon neutrality:<br>Improve implementation, accountability, and transparency measures<br>Implement carbon pricing before 2025<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid<br>Set Scope 3 emissions targets by 2022<br>Procure carbon offsets by 2022 and set maximum offset targets<br>Increase the size of the Revolving Energy Fund (REF)<br>Implement ESG metrics for endowment investment decisions<br>1. Implementation, Accountability, and Transparency<br>The University's carbon neutrality undertaking must emphasize timely implementation plans, coupled with increased accountability and transparency. It is critical that the responsible units start planning and implementing the recommended actions swiftly – the next steps should not be another series of feasibility studies that simply delay real progress (e.g. line 1279). In order to facilitate such a massive change in a short period, a project management office (PMO) should be constituted to support the proposed carbon neutrality leadership position. The PMO should formulate a high-level project plan, integrate detailed unit-level plans, ensure that the milestones from the plans are met on time, and facilitate regular reporting to the University community. The draft report should also recommend specific unit-level reporting, monitoring, and enforcement mechanisms to ensure that unit leaders meet their carbon neutrality targets.<br><br>2. Carbon Pricing<br>The recommended internal carbon pricing measure, in concert with the REF, offers a compelling mechanism for incentivizing and financing efficiency measures in existing buildings. However, the proposed five-year implementation timeline is too long. The carbon pricing system should mature (reach the full $50/MTCO2) at the latest contemporaneously with the Scope 1 and 2 goals of carbon neutrality by 2025 (including offsets) and preferably earlier to minimize the offsets required.<br><br>3. Scope 2 Emissions<br>While we appreciate the establishment of a Scope 2 carbon neutrality goal, we think that the University should do more to leverage its clout and purchasing power within the state of Michigan and take on a more active role in decarbonizing the state's power supply at a broader scale and on a faster timeline. We understand the need to pursue stopgap measures such as Virtual Power Purchase Agreements (VPPAs) in the immediate term; however, achieving Scope 2 carbon neutrality through these means can be accomplished by 2023 instead of 2025 given current rates of project development. Furthermore, the projects developed through VPPAs could be located in Michigan to boost renewable energy jobs in the state. In parallel, the University must actively utilize its political capital to advocate for faster change at the utility and state levels. For example, this can take the form of lobbying the Michigan Public Service Commission for further deregulation of the power sector to allow front-of-the meter Power Purchase Agreements along with other regulatory policies to improve the viability of utility-scale renewable projects in the state. Additionally, the University should do more to independently increase renewable generation in Michigan, such as setting specific targets for distributed energy resources (DERs) on campus, including standalone solar + storage installations and mandated rooftop solar on new buildings. | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |

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| 221 | Student | COMMENT #221 CONTINUED (2/2)<br>4. Scope 3 Targets<br>Our review committee was disappointed by the recommendation to delay setting Scope 3 emissions goals until 2025. While these emissions are more ambiguous due to the University's lack of control over them, that should not prevent goals from being established, since goals will help to spur innovative ideas. We have already fallen behind institutions such as the Ohio State University, Duke, and Yale, which have included Scope 3 emissions in their sustainability strategies (see Figure 8). Our recommendation is that the University should establish Scope 3 emissions targets by 2022 (including purchased goods), while simultaneously beginning the food and travel emissions estimates.<br><br>5. Carbon Offsets<br>We appreciate the Commission's acknowledgement of the limited role offsets should play in a carbon neutrality plan. Two key issues remain regarding the use of offsets. First, 2025 is unnecessarily long for assessing and procuring credible offsets, especially given the Commission's clear guidelines for determining offset quality. Unless delaying offsets can realize additional benefits for the local community, offsets should be procured by 2022. Second, the absence of specific maximum offset targets between 2025 and 2040 leaves too much room for inaction on direct reductions. The recommendations should include quantified intermediate goals for the maximum number of offsets to increase accountability and align with the Commission's emissions trajectories shown in Figure 2. These milestones would serve a similar purpose as a carbon budget, by limiting the actual emissions emitted by the University.<br><br>6. Revolving Energy Fund<br>The Commission recommends a $25M REF seed for the Ann Arbor campus, citing optimal economic benefits for the school. However, the goal of carbon neutrality is not solely to produce economic gains, and many energy efficiency measures supported by the REF will yield CO2 reductions at a lower cost per ton compared to other PCCN recommendations. A larger REF with appropriate additional staffing would shorten the timeline for realizing the substantial benefits of increased energy efficiency and would also support more expensive proposals, such as deeper building retrofits, which have greater long-term benefits.<br><br>7. ESG Requirements for Endowment Investments<br>The University of Michigan cannot consciously strive for carbon neutrality while simultaneously investing in firms, like ExxonMobil, that plan to continue increasing carbon emissions in the coming decades. To show consistency in both word and action, ESG requirements should be set for all investments made with university endowment funds, in order to more thoughtfully invest these funds in alignment with a broader mission. This will demonstrate the University's commitment to fighting climate change while also encouraging sustainability in the corporate world and enabling the University to join the ranks of institutions like Harvard that already consider ESG factors in their endowment investment decisions. Additionally, endowment funds could be reinvested within the University through a program like the REF, targeting ECM projects with predictably short paybacks and high IRRs to continue to realize the intended fund returns.<br>Our review committee appreciates the PCCN draft report's broad focus on different sources of emissions, as well as the recommendation to make the University a global leader in geothermal technology. Overall, however, our review committee is disappointed by the lack of ambition and follow-through shown in the PCCN draft report given the vast resources at the University's disposal and the strong collective interest of stakeholders. We know that the University community can work together to define a better path towards achieving carbon neutrality and addressing environmental justice issues, thereby enabling the University to truly become Leaders and Best on the world stage at such a crucial moment in history.<br>Thank you for considering our feedback, The Energy Club at Ross PCCN Review Committee | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 222 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>1. Improve implementation, accountability, and transparency measures;<br>2. Implement carbon pricing before 2025;<br>3. Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>4. Set Scope 3 emissions targets by 2022;<br>5. Procure carbon offsets by 2022 and set maximum offset targets;<br>6. Increase the size of the Revolving Energy Fund (REF); and,<br>7. Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 223 | Anonymous | Anonymous | EE, GE |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 224 | Alumni | Justice and Equity<br><br>Lines 195-200; 390-395:<br>The University should incorporate racial and social justice into the administrative structure of the carbon neutrality efforts. This should include a mission statement that makes clear the University's commitment to environmental justice, the deployment of qualified staff sufficient to identify potential adverse impacts of climate strategies on minorities, and the intentional engagement of communities of color into the decision-making process. Racial and social equity should be considered in decision-making with respect to all Scope 1-3 strategies. The University's Diversity, Equity and Inclusion efforts (referenced at Line 2460 but not defined) will not be sufficient to fulfill this mission.<br>Lines 390-395; 1450-1460; 1485-1510:<br>The strategies coming out of these policies could have an adverse impact on minorities. In particular, the strategies associated with Scope 3 may be susceptible to adverse impact on minorities. Internal energy consumption policies, changing commuting habits, and altering campus culture are all susceptible to adverse impacts on persons of color and should be scrutinized for that purpose. Where the culture shift is high (e.g. commuting and travel), decision makers should look carefully for unintended impacts on minorities.<br>Lines 768-776:<br>The Commission recommended that "the decarbonization of U-M's heat and power infrastructure be done in stages across the six campus districts." It is not clear how long each stage would be or what each stage would consist of. The principles governing the choices for staging should include racial and social justice factors, for example when considering "local impacts on the affected populations, and campus and community disruption."<br>Line 780; 870-885:<br>". . . [T]he campuses can be sequenced in any order that works best for U-M." The demographics of the various campuses should be considered to make sure there is no adverse impact on students/faculty/staff of color among the campuses. Why doesn't Flint have a campus bus or shuttle service? Why was the Detroit Connector discontinued? Why would UM Flint not begin for 15 years? Why would it take 10 years to complete? If there is an impact on minority communities or individuals, perhaps those projects can be re-prioritized.<br>Timelines<br>Lines 555-560; 740-745; 785-790; 1450-1460:<br>The timeline for the elimination of Scope 1 emissions is too long. Did the Commission consider short-term goals instead of a 20-year timeframe? An aggressive short-term goal would bring the University and the larger community together around a common challenge.<br>Scope 3 neutrality goals should be established and reached much earlier.<br>Financing<br>Lines 800; 2870<br>Although the Commission was not charged with making financing recommendations, that effort should be undertaken as soon as possible. The Commission noted that ". . . [If] significant external sources of capital become available . . . then the university should consider accelerating the timeline to the degree possible . . ." Launching a robust capital campaign as soon as cost estimates are available could change the timelines significantly. The infrastructure for a massive campaign is (generally) in place, and a visible capital campaign would facilitate collaboration with the local community and with the entire University community, including alumnae.<br>Climate Resilience and Adaptation<br>Are there separate recommendations for climate resiliency? Washtenaw County (and possibly Wayne and Genesee Counties) are likely to suffer from more extreme weather events and flooding, which could interrupt power transmission, transportation systems and access to medical care (among many other things). Is the University planning for these events, and if so should that planning be integrated with emissions reduction and conservation programs? | CO, GF, GG, GH, GI, GK, GL, BR, EP, GM |
| 225 | Other | If all of our 'purchased' electricity is procured under a green purchase method (such as a wind power purchase agreement, so that the CO2 associated is 0), and ECMs are judged strictly on their carbon impact, this means that any ECM that reduces electric consumption, will likely not be pursued. This seems problematic both from a fiscal point of view (purchasing 'green' power costs more) and simply from a wasteful point of view, it's an equity concern that we're 'wasting' power because it's green...when there are people in the world (and even the US) that don't have access to reliable power. Simply basing all ECMs strictly on carbon reduction cost / ton...seems problematic. U-M must give some consideration to the ECMs that save $ and avoid wasteful utility consumption. | GN |
| 226 | Other | Line 1385: If buildings will be designed with more sophisticated controls and technologies, U-M will need to make provisions for better (and ongoing) training of staff on how these systems work, so they are not bypassed, defeated, and otherwise modified in the field when there are heating/cooling issues. Many people would be shocked to learn how much technology and additional sensors and controllers are involved as buildings increase in efficiency. | GO |
| 227 | Other | Line 845: What is the carbon /environmental impact of all of the batteries required for an electric vehicle? Disposal? Lifespan? Has this been considered? Some batteries (and other 'green' technologies) have a very toxic footprint once they have outlived their usefulness or a better technology comes along. Drinking water quality would likely be the most impacted in the future by the disposal of these items. | BO |
| 228 | Other | Line 800: There is no mention to the skilled trades impact. Heat recovery chillers will require more chiller mechanics. Sophisticated building controls will require more DDC tech. In general, higher efficiency buildings are likely to require more skilled maintenance to keep them operating efficiently. | GO |
| 229 | Student | Environmental justice has been institutionally deprioritized throughout this process, resulting in a set of recommendations that do not meaningfully take environmental justice issues into account.<br><br>Necessary changes: The next plan, which will be written by 2025 to address scope 3 emissions, must center climate justice throughout the writing process. Moreover, as UM expands its research programs to produce climate-related technology and models, it must serve as a benevolent patenter, and not contribute to the green tech imperialism of the global south.<br><br>Details:<br>Despite the fact that UM is a worldwide leader in EJ research, no EJ expert was chosen to work on the PCCN.<br>While the PCCN did form an internal analysis team to examine the EJ dimensions of the plan, this team seemingly dissolved, never producing a report.<br>Climate justice must be a central focus in future planning and implementation of carbon neutrality initiatives. | BW, GQ |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 230 | Faculty | MEMORANDUM: TO: Members of the President's Commission on Carbon Neutrality (Stephen Forrest and Jennifer Haverkamp, co-chairs) : TOPIC: Recommendations to take a principled approach to carbon emissions reduction as the means of counterbalancing Scope 1 and Scope 3 emissions, and to use non-local investment in emissions reduction as the generic label for carbon offsetting in the PCCN Report and Recommendations<br><br>We applaud the PCCN for recommending that U-M achieve carbon neutrality by 2025 in Scope 1 and Scope 2 emissions and for recognizing that non-local action is essential for accomplishing this. By non-local action, we mean CO2 emissions-reduction projects beyond the physical setting of U-M, and potentially far beyond, as in other states or countries. We have long identified non-local action as essential if U-M is to achieve CN on an ambitious timeline.<br>Our Recommendations: The PCCN Draft Report refers to carbon offsets as the means to counterbalance Scope 1 and Scope 3 emissions. We recommend that, rather than leaving open the possibility of buying carbon offsets directly in a market, the PCCN instead commit explicitly to a "principled" approach to offsetting, in which U-M pursues new non-local projects whose additionality and other attributes have been carefully considered. We recommend further that the PCCN report use non-local investment in emissions reduction as the generic label to describe the means to achieve CN in Scope 1 and Scope 3 emissions.<br>Discussion:<br>"Carbon offsets" conceptually include any action that reduces carbon emissions from activities beyond the extent of an organization's carbon footprint. However, the term tends to evoke the purchase in a carbon offsets market of offsets from a project that has already been completed. This is but one way to attempt to reduce emissions non-locally. We wish to distinguish between this way and a more principled strategy, and to emphasize the importance of terminology in communicating strategies for non-local emissions reduction.<br>The problem with carbon offset markets. A carbon offset market is a mechanism by which buyers and sellers transact offsets as a commodity used to counterbalance CO2 emissions. Individuals or organizations can purchase, in a matter of minutes, claimed CO2 emissions reductions via an online marketplace for carbon offsets. Yet carbon offsets are controversial due to serious empirical challenges related to their validity, such as verifying that an offset project is operating properly or demonstrating that a project's emissions reductions are additional. The university would need to confirm the validity of purchased offsets; completing that due diligence seems a daunting challenge.<br>We thus oppose use of carbon offset markets as part of the university's plan; U-M can and should do better than purchasing carbon offsets from a marketplace as a means to achieve its CN goals. The report should disavow use of carbon offset markets as an element of the CN program.<br>A side note on replacing the generic label "carbon offsets." Using the label carbon offsets to describe activities in U-M's CN program will generate substantial opposition from stakeholders who associate "carbon offsets" specifically with off-the-shelf purchases from carbon offset markets. We propose a new label, non-local investment in emissions reduction, and we explain the notion below.<br>We favor U-M investments in new carbon reduction projects to counterbalance Scope 1 and Scope 3 emissions. An investment in a carbon reduction project involves U-M financial support of a CO2 emissions reduction project, such as a forest project or a livestock project. In a similar vein of project investment, the PCCN Draft Report anticipates that counterbalancing Scope 2 emissions will require investments in utility-scale renewable energy projects (through power purchase agreements). U-M should view these two categories of projects as analogous. The carbon reduction projects can entail 20-30 year investments to counterbalance Scope 1 emissions; their timing can match the completion of the proposed geo-exchange project on campus (i.e., 2040 to 2050). These same projects, or same type of projects, can also counterbalance Scope 3 emissions along a specific timeline.<br>The notion of "principled" non-local investment. In brief, principled action describes an emissions reduction project that is new, collaborative, and certifiable.<br>We believe that U-M's careful consideration of proposed new carbon reduction projects can produce principled action. To begin, this would involve a partnership between U-M and an organization in the early stage of developing a new large-scale emissions reduction project. (This could involve multiple organizations and projects if multiple projects were necessary to achieve carbon neutrality.) U-M faculty and students would assist in assessing the projected emissions reduction from the project and its additionality. For example, the project could be an afforestation project on which forest carbon experts at the university would engage in research projects and student training. The final goal of the development stage is certification, i.e., a formal finding by a third-party certifier that the project generates authentic emissions reduction, or carbon offset credits. As with all reputable certification registries, the credits must meet the standard criteria of real, permanent, quantifiable, verifiable, enforceable, and additional. A contract would govern the relationship between U-M and the partner organization. Under the contract, the organization would own and operate the project; U-M would purchase and own the project's emissions reductions, i.e., its certified carbon offset credits. This process can be described as principled non-local investments in emissions reduction.<br>Principled non-local projects can encompass justice considerations. Non-local projects – like all projects – vary in their attributes beyond emissions reduction, attributes such as cost, local air quality effects, and reputational effects. Here we highlight the ability to target projects based on the concepts of restorative and distributive justice. Non-local projects offer the opportunity to partner with a historically marginalized community; this community would receive a project's local environmental and/or economic benefits. For example, Los Angeles Department of Water and Power is planning to partner with Navajo Nation to construct renewable power capacity in Page, Arizona. The site is a former coal power generating station, whose closure in 2019 caused hundreds of workers to lose their jobs and was expected to reduce Navajo Nation income by 40 million dollars (or 23%) in 2020. Large-scale renewable construction there would thus provide significant economic benefits to an Indigenous group that has been marginalized throughout US history. While the equity argument for the Navajo Nation project is based on jobs and tribal revenue, U-M could alternatively pursue projects that produce environmental quality improvements for disadvantaged communities – for instance, new renewable capacity that is effective at inducing the premature closure of a particularly dirty coal-fired power plant. | UT, UU |
| 231 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br><br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 232 | Student | There has to be a much greater emphasis on bike infrastructure throughout campus and not just connecting the two campuses. | V |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 233 | Alumni | Thank you for the outstanding work on the University-Procured Food section.<br><br>1. I recommend considering completely eliminating purchases of ruminant meats. Scientists around the world, including those at the UM CSS, are telling us that we do not have the luxury of deciding where our GHGe reductions come from since our climate is in a state of emergency. We know that producing ruminant meats and especially beef not only results in substantial and potent GHGe, but results in devastating biodiversity loss (including on our federal lands and grasslands of the Great Plains). Thus, if we are serious about taking a stand for the earth, which is by default a stand for humanity, then it is incumbent upon us to do what it takes to save this planet. As a world leading university, I recommend that U of M be bold and do what is radically-good for the planet, not to mention human health: stop buying beef (and lamb as well if that is ever purchased).<br>2. I disagree with the recommendation to "Separate the goal of decarbonizing food purchasing from the existing Sustainable Purchasing Guidelines and current goal." When it comes to food, sustainability and climate change are tightly-linked and it would be unwise to decouple them. When you look solely at the GHGe contribution of animal-source foods, it is tempting to de-prioritize diet change and food procurement policies since these foods contribute fewer GHGs than for example, transport. However, when you look at the devastating toll that production of animal-source foods takes on the planet (described below), you see that diet change and food procurement policies should be among the very top priorities. Since beef is the #1 driver of tropical deforestation around the world, and the production of animal-source foods in general is a leading cause of water pollution, water depletion, soil degradation & erosion, emergency of antibiotic resistant bacteria, and emergence of zoonotic pathogens, it is urgent that we swiftly contribute to a global shift in plant-rich diets to combat these emergencies which are of equal importance to climate change.<br>3. I will reiterate a recommendation I made in a separate comment: Please set a policy that the University will only purchase fish and seafood caught in U.S. waters by U.S. fishing vessels. Our oceans are on the verge of collapse, perhaps by the middle of this century due to illegal, unregulated and unreported (IUU) fishing. It is widely-reported that Chinese fishing vessels lead the world in IUU fishing. Thus, for example, U-M would be within its right to reject any fish caught in China to take a stand in solidarity with our oceans. A study published Jan 19, 2021 in PNAS (https://www.pnas.org/content/118/3/e2016238117) describes the possibility that Taiwanese longliners, Chinese squid jiggers, and Chinese, Japanese, and South Korean longliners are using forced labor on their ships. I don't know whether U-M puchases fish or seafood from these countries, but the point is unless we have clear visibility into the fishing practices of other nations and we have credible proof that their fishing practices are sustainable, I believe we should reject purchases from those nations. I also believe that, if possible, U-M should require proof that any U.S. caught fish is sustainably caught.<br>It is time that we all put the health of our planet and ALL of her beings first, not just the health and well-being of humans. Thus, I recommend that U-M be bold and take actions that are "radically-good" for all beings, even if those changes require some adjustments by us humans.<br>Thank you. | AS, DZ, GS |
| 234 | Student | The report has language acknowledging the need to include stakeholders and underrepresented constituents, but weak to no language on how to actually do this. The recommendation to work with the Office of Government Relations, Business Engagement Center, and the Ginsberg Center to identify the relevant stakeholders demonstrates a frightening lack of understanding of the importance of community groups and organized labor. (e.g. Pg. ~83 in draft)<br><br>Necessary changes: Explicitly include mention of community and student advocacy organizations, as well as representatives from EJ organizations and organized labor as constituencies to engage and help identify stakeholders.<br><br>Details:<br>The PCCN's refusal to engage with community and student advocacy groups created an antagonistic relationship that eroded rather than built community buy-in to the process. This is a good example of what NOT to do.<br>Advocacy organizations are usually formed because members have a specific stake in the issue, making them an obvious and important constituency<br>E.g. folks working on the WorkForMeDTE campaign have very acute knowledge of DTE's EJ record<br>With representatives from a large portion of U-M's staff, the All-Campus Labor Council can help identify stakeholders for UM carbon neutrality efforts. Engaging them early is critical to achieve community buy-in and address stakeholder needs.<br>Text: "recommends that the unit tasked with leading U-M's carbon neutrality efforts work with U-M's existing external relationship managers, such as the Office of Government Relations, Business Engagement Center, and the Ginsberg Center, to help identify external stakeholders who should be engaged. This will help U-M identify the different types of engagement strategies and approaches that will be required for success" [line 2780]<br><br>Specific examples of where EJ could have informed recommendations:<br>Collaboration with organized labor for hiring recommendations for all building renovations<br>Recommendations for biosequestration projects could have been coupled with a call from Indigenous groups for land-grant universities to institute trainings for all land managers, and co-management programs that center traditional ecological knowledge<br>Multiple recommendations throughout the report call for collaboration with DTE, a utility company with not only one of the dirtiest energy mixes in the country, but also one with one with some of the highest rates and lowest reliability (consistently shutting off energy in lower-income neighborhoods) [More information found in DTE section]<br>The inclusion of carbon offsets completely disregards the environmental justice implications of those projects. Carbon offset projects are notorious for displacing communities, particularly Indigenous communities from their land, while allowing large, wealthy institutions to continue to extract and burn fossil fuels. Any use of carbon offsets must be done with rigorous EJ criteria included. [More information found in Carbon Offsets section]<br>This report does very little to position U-M in the global context of climate justice. One particularly glaring issue is the development of a research program for carbon neutrality-related technologies with no plan for how those technologies will be shared. The current patent and profit-driven model of tech transfer reinforces imperialist dynamics between developed and developing countries and poses a barrier to truly addressing the humanitarian nature of this crisis by limiting access to the resources necessary for a green transition to a wealthy few.<br>Scope 3 emissions are postponed for another set of recommendations to be formed in 2025 and implemented by 2040. While accounting for all of scope 3 is complex and may very reasonably take more time, if this report were truly formed with community input and was accountable to community need, one aspect of scope 3 that should have been addressed immediately is affordable, sustainable housing. [More information found in Housing section]<br>On top of being astoundingly poorly developed, the scope 2 recommendations put forth (purchased electricity) considered none of the myriad aspects of EJ such as - where and how the energy is sourced, implications of continued partnership with DTE, energy democracy, and integration of U-M's purchasing practices with the energy grids of surrounding communities such as through the process of municipalization (something U-M could serve as an active barrier to should it choose not to collaborate)<br>Recommendations related to food were extremely limited and relied solely on an increase in plant-based menus when, if they had integrated an environmental justice lens, they could have included aspects such as labor practices and growing practices that do not result in toxin accumulation in agricultural communities | BX, HJ, GW, GT, GU, GV, JT, JQ |

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| 235 | Student | The PCCN preliminary recommendations set 2040 as a target date for full carbon neutrality (excluding carbon offsets), which is far too late.<br><br>Necessary change: Full carbon neutrality by 2030<br><br>Details<br>The IPCC has stated that the entire world needs to reach carbon neutrality by 2050; wealthy institutions like UM need to reach neutrality far sooner (i.e. 2030 at the latest)<br>President Biden calls for 100% renewable generation of electricity by 2035--falling 5 years behind his administration's goals for the entire country is embarrassing | DX, DB |
| 236 | Student | The plan relies heavily on using carbon offsets to achieve "carbon neutrality" by 2025, but carbon offsets are very hard to track and bring with them a host of environmental justice issues (~Pg. 71)<br>Necessary change: If UM is going to use carbon offsets, explicit environmental justice considerations must be central criteria in choosing where to buy offsets ("compliant with social and environmental safeguards" is vague and unenforceable — these safeguards must be made explicit)<br><br>Details<br>Offsets give wealthy institutions like UM license to continue burning fossil fuels indiscriminately at the expense of the rest of the world, shirking our responsibility to lead in reducing our own emissions<br>They don't address the root causes of the crisis; they serve to perpetuate the structures that brought it about<br>Robust research has demonstrated that offsets are incredibly difficult to track (and thus offset providers often get away with, for example, not actually planting forests that they promise to plant)<br>Offsets present many environmental justice issues. Offset programs have in many cases been responsible for the displacement of indigenous peoples, and they allow powerful institutions to continue polluting frontline communities. | JQ, BL, JS, JT |
| 237 | Student | The recommendations do not include a carbon budget, which would lay out targets for the cumulative amount of carbon UM can emit prior to reaching full carbon neutrality by 2040<br><br>Necessary change: The final set of recommendations must include a carbon budget to ensure that UM does not keep burning fossil fuels indiscriminately prior to achieving neutrality<br><br>Details:<br>Climate change is driven by the total amount of carbon in the atmosphere. A carbon neutrality date says we will stop adding carbon by that date, but says nothing about the total amount of carbon we emit in the meantime, and thus our actual contribution to global warming. Construction and other one-time carbon costs will not be accounted for or incentivized without a science-based carbon budget.<br>Without a budget, there is no mechanism to prevent UM from continuing to continue building indiscriminately<br>A budget holds us accountable to meaningfully limiting our emissions; carbon neutrality by a certain target date means very little if our emissions between now and then are through the roof<br>Figure 2 showing the projected offsets needed already provides a rough estimate for a Scope 1 and Scope 2 emissions budget<br>Critically, setting a carbon budget is very different from setting interim dates for neutrality--a budget lays out the actual amount of carbon we can emit between now and the point at which we achieve neutrality | BV |
| 238 | Student | Problem 1: There are few mechanisms in place to ensure accountability and transparency in the implementation of the plan. Many of the recommendations lack specificity about deliverables, responsible parties, and timelines, erecting barriers to implementation. As it stands, there is nothing to prevent these recommendations from sitting on a shelf, as committee reports all-too-often do.<br><br>Problem 2: The relationship between the PCCN report and the Internal Analysis Team (IAT) reports is unclear. The IAT reports contain disclaimers saying that they are not endorsed by the commission, and the main report only very rarely points to the IAT reports. The main report is much reduced and thus vague in many places, seemingly relying on the respective IAT report for additional guidance on each given recommendation.<br><br>Necessary changes:<br>The recommendations must include an accountability structure with actual guidelines and explicit reporting requirements. It is especially important that an itemized report be produced no less frequently than once per six months, which details progress and lack of progress on each recommendation.<br>Reference the IAT reports more prominently for more guidance on specifics (even if the exact specifics themselves are not the "official" recommendations).<br><br>Details<br>There needs to be some guarantee that this report does not meet the same fate as the 2015 Greenhouse Gas Reduction Committee Report, which more or less sat on a shelf<br>Important components of accountability structure (more detailed outline in this memo):<br>Recommendations should have defined goals with SMART criteria<br>Itemized progress reports should be published every 6 months, and there should be a public facing dashboard to track progress<br>Adoption of recommendations should be public process<br>Paid team should oversee implementation<br>Every department should employ a sustainability coordinator to ensure implementation<br>Development of an implementation plan should be done through deep collaboration with community groups active in areas of overlapping interest (e.g. unions, advocates of public transit and affordable housing)<br>It is critical to identify areas where we have not seen improvement, and thus may need more attention<br>An itemized report ensures that every item is considered at least once every six months and items aren't left unattended.<br>Transparent reports are necessary for community accountability, but also community buy-in. Demonstrating that the University is being honest about its commitment to true carbon neutrality is important to bring about community buy-in and culture shift. | EH, HQ, HR, HS, HT, HU, HV, EM, EN |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 239 | Student | Problem 1: The report has little to no investigation of onsite electricity generation or reducing the carbon load of purchased electricity. It recommends generic possibilities for further study, containing even less study than the preceding 2015 GHG Reduction Report.<br><br>Problem 2: The report does not address the EJ components of energy procurement. DTE manipulates regulatory policy to suppress distributed energy generation, which would decrease cost and increase reliability in underserved communities. They have made it harder for Michiganders to install renewable energy<br><br>Necessary changes:<br>Explicitly recommend inclusion of EJ experts in assessing energy procurement decisions and study of the environmental injustice that is supported by procuring UM's energy from DTE.<br>In the report, acknowledge the co-benefits and prioritize (1) purchasing/producing electricity elsewhere and (2) working to empower communities through legislative lobbying for democratic energy policy.<br>Recommend funding study and implementation of how U-M can further a just and sustainable transition through legislative engagement, education, and advocacy.<br><br>Details:<br>DTE has some of the highest rates in the country yet is among the worst in terms of reliability, while also shutting off power to 5000 - 25000 people every month, making it a leading target for Enivronmental Justice advocates in Michigan.<br>DTE and Consumers Energy "manipulated regulatory regimes via policy misinterpretation to deter or hinder the proliferation of DG [distributed energy generation] in favor of maintaining the existing interests in centralized, fossil fuel-based electrical energy production."[Michigan Tech study from 2019]. [Press link], link 2]<br>DTE has repeatedly made false statements to strangle the growth of distributed renewables, such as claiming that residential solar increases prices for homes without solar and low-income folks, when this has been debunked numerous times, including by SEAS researchers working with DTE.<br>In 2018, the Union of Concerned Scientists used DTE's own software to demonstrate that DTE was presenting faulty analyses to regulators, stating "Taken together, the evidence suggests that the analysis was specifically designed to support DTE's desired conclusion that Michiganders "need" this $1 billion natural gas plant, despite real-world evidence to the contrary".<br>This coincides with DTE's massive investments into gas storage and transportation, which make up an increasing share of its profits.<br>DTE is far behind the curve on transitioning to renewable energy. Their current fuel mix is astonishingly dirty (59% coal, the 3rd dirtiest in the country), and in 2018 they broke ground on a new natural gas power plant<br>Committing to getting all of our renewable energy from DTE signals that we're comfortable with the slow rate at which they are transitioning<br>Instead, we need to put pressure on them by presenting a credible threat that we will generate energy elsewhere<br>There must be a guarantee that any renewable energy generation capacity that UM purchases from DTE is additive, meaning that UM is not just snapping up all renewable capacity and then claiming neutrality while the rest of the state still relies heavily on fossil fuels<br>The lack of any analysis on on-site generation or energy procurement after two full years is highly concerning, especially since the recommendations are to electrify all heat and power infrastructure. Especially since they do not reference or use any of the studies that have already been done on this very subject for U-M:<br>Renewable Energy Potential at U-M, by Tim Arvan<br>2015 Report from President Schlissel's Greenhouse Gas Reduction Committee<br>PPAs for U-M by the Clean Wolverines | CN, GW, AQ |
| 240 | Student | The problem: The plan pushes urgent questions about addressing the local housing crisis off to another plan to be written by 2025, which will chart a path to achieving Scope 3 emissions by 2040. Housing is an urgent crisis right now, and is critical to address for both mitigation and community resiliency/adaptation purposes.<br><br>Necessary changes:<br>UM needs to commit to building affordable, sustainable housing on land that the University already owns<br>Collaborate with the cities of Ann Arbor and Ypsi to promote affordable housing policy, including co-funding necessary development projects (to account for the lack of property taxes paid)<br>Perform an immediate analysis on the carbon intensity of development projects for new housing. Using these numbers, institute a required ratio of new housing units per capita increase of the incoming undergraduate class and limit other development projects in accordance with this required housing need and a carbon budget that aligns with the goals of the IPCC.<br><br>Details:<br>UM is a powerful agent of gentrification in Washtenaw County, pushing working class people out of the city and out of their homes<br>A crisis for climate mitigation: As rent prices continue to skyrocket, more and more people that work in Ann Arbor are forced to live outside of the city and commute in, vastly increasing our carbon emissions<br>A crisis for climate adaptation: Skyrocketing rent pushes people out of their homes, and for obvious reasons, people experiencing houseelessness are far more vulnerable to the impacts of climate change (e.g. severe storms and heat days). UM needs to actively contribute to local resilience<br>UM is exempt from local property taxes; contributing to an affordable housing fund represents a small step to make up for this reduced tax revenue<br><br>The problem: Off-campus student housing (where most students live) is notoriously inefficient, except for newer housing that is only accessible to high-income students. Students are left paying high utility bills, contributing to the affordability crisis and pushing students out of town, and the landlords have no incentive to improve things.<br><br>Necessary changes: The commission should adopt the recommendations that the Energy Consumption Policies analysis team made for U-M to address off-campus housing emissions (appendix H).<br><br>Details:<br>The IAT's proposal to partner with RentLab would increase transparency by collecting and posting data on the real utility costs for student rentals, which would contribute to shifting cultural norms and incentivize landlords to reduce utility costs<br>The IAT's proposal to assist local tenants in utilizing the Department of Energy SCORE program would "provide UM students with real-world, nationally accredited experience in performing energy audits. This would not only allow the University to be a leader in creative solutions for carbon neutrality but would also continue its excellence in preparing graduates for the professional world<br>These actions would lower the utility cost burden on renters, while reducing Scope 3 emissions.<br>These would help increase affordability while addressing Scope 3 emissions | BX, HC, U |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 241 | Student | Hello, I'm not sure if this is the right place, but I have a sustainability suggestion that I'm not sure has been considered yet. Getting some Terracycle boxes in a few places on campus would be really helpful for reducing community waste. It's not financially reasonable for most college students to have their own Terracycle boxes, especially in small dorms and living spaces. Terracycle boxes would allow students to drop off all sorts of waste items that Terracycle can recycle but that do not get recycled otherwise.<br><br>Thanks! | HK |
| 242 | Student | It is not clear to me whether the Ann Arbor community at large is going to be engaged in a meaningful way. By this, I mean summarizing the document into salient points that will impact the local community at large and distributing these points in a variety of ways (internet, mail, potentially radio for blind residents) in order for them to truly be informed (rather than just providing the entire document that is not feasible for an average person to read) about what could potentially impact them and allow a forum in a multitude of ways (including virtual events, as well as write-in comments) for concerns or how they would like the community to change for the better. | HL |
| 243 | Student | I believe that this PCCN Draft is a great first step towards net zero and it shows UofM's initiative. However, I think it is important that there is an accountability process in place so that we know that UofM isn't just saying all of this for publicity, and instead, that they actually take action. Having an unbiased, third-party that keeps track of UofM's progress towards net zero and that publishes reports for the public to see could be useful. One example of such reporting could be a dashboard that updates weekly so that the community can see the weeks in which UofM is making substantial progress, and likewise, the weeks in which it isn't. Another thing that may help keep UofM accountable is by having a carbon budget that keeps track of how much carbon UofM is allowed to emit each year until 2040 so that we know that UofM wouldn't be putting off its carbon emissions all the way until the very last year. | EN, CZ, BV |
| 244 | Anonymous | Anonymous | HM |
| 245 | Alumni | I am both an alumni and a current graduate student at the University. These conversations have been ongoing for years - but unfortunately - have only been conversations. Given the long proposed timeline of this initial research phase, my question is: are there any 'no regrets' moves that can be made in the interim? Could we potentially leverage our entrepreneurial and private sector communities to adopt an agile mindset to begin activating some solutions here?<br><br>Furthermore, I agree with the environmental justice and overall skepticism on carbon offsets. Not all offsets are created equal. Projects located in close geographic proximity should be prioritized. Offsets should not be a default, but a last resort following PPAs (for more than 75 MW), onsite renewables generation (have we engaged our entrepreneurial community on this?), and efficiency / end-use electrification.<br><br>Proactive community engagement should inform recommendations - this has been a challenge for the University in the past 5 or so years on a variety of topics (ranging from COVID-19, to topics as trivial as football tickets, to the divest + invest campaign, etc.). Students, community members, and faculty members want to help: consider inviting them to the table, and having regular dialogue from the onset. Prevent this us vs. them mentality from developing so intensely.<br><br>I have a lifetime love for and loyalty to this University, and it is my hope that we can live up to the standard of Leaders & Best in this realm. The University has a lot to learn from the City of Ann Arbor, many competing Universities (dare I say our neighbors to the south), and experts that it employs: I'd encourage it to listen and act boldly. | HN, CX, EC, JR |
| 246 | Student | My name is Pablo and I have some recommendations on the PCCN draft report about cycling. I read it over and there seems to only be a small portion that is dedicated to cycling. I believe that Michigan can be a great campus that promotes biking like other universities across the United States like Stanford. In order for students to be biking, they must feel safe doing it. The university should invest money into creating easy to navigate bike lanes with maps with bike routes. Students should ride their bikes without having to use their phones which could be a distraction. I was in this situation when riding around Ann Arbor. Instead of using google maps for directions, it would be nice to make maps across campus on stone or something. The university could also construct more stoplights, barriers, and bright lights during the night to make students feel safe biking. I also think that the University should have a bike shop on campus where students can go to get their bikes fixed. There should also be a course students can take to learn about bike safety. Michigan should also create a bike rental system for students who can't afford a bike. DEI is very important here. I don't want the university to cater to students who come from a privileged background because topics like sustainability tend to go in that direction. The university must contact multicultural organizations on campus so that there is a diverse pool of people being heard. This is coming from a Latino student. | V, HO |

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|---|---|---|---|
| 247 | Alumni | This is my third comment, so if possible, please combine this with my other two comments.<br>I want to bring the Commission's attention to a critically important study if you haven't yet read it: Hayek et al, "The carbon opportunity cost of animal-sourced food production on land". Nature Sustainability, 7 Sep 2020. , https://www.nature.com/articles/s41893-020-00603-4?proof=t<br>This study demonstrated that if the entire planet adopted a plant-rich diet and reduced meat intake by 70%, we humans could liberate a vast amount of land (currently used to graze livestock and grow feed crops) back to nature for regrowth of vegetation. That newly-wilded land could absorb 335 Gt of CO2 from our atmosphere by 2050. This is equal to the last 9 years of fossil fuel emissions. Not only is this far superior to nascent carbon capture and storage technology (because it is proven, it's natural, it can happen today, it would restore desperately-needed habitat for endangered/all species, its clean, its healthy, it poses absolutely zero risks to the planet or to humanity), but it would provide humanity desperately-needed time and wiggle room to roll-out green energy with a good chance of staying under 1.5 degrees celsius of warming. In fact, this global land-use strategy increases our current carbon budget by nearly 100% since the earth could absorb nearly the entire current budget. And we could still produce more than enough protein for all humans on earth on the remaining land. But humans must shift to plant-rich diets immediately. I am making this comment because I would like to see U-M be a GLOBAL leader and propose this strategy to the world. It is completely feasible since the highest meat consumers are those of us living in countries where we are blessed to have plenty of food available to us to replace meat. Please read this study and consider taking a bold, "radically-good" stand for nature and the planet and humanity by proposing to the world, loudly and boldly, that we support radical dietary shift now.<br><br>Here is another critical study demonstrating that even if we were at net zero emissions from all non-food system sources today (including fossil fuels), emissions from the food system alone will blow right past the 1.5 d Celsius warming limit by mid-century. Most of those emissions come from production of animal-source foods. Food waste is also a major cause of emissions. We have no choice but to radically-reform our diets and food system if we wish to have any chance of saving our climate and planet from destruction:<br>Clark et al. "Global food system emissions could preclude achieving the 1.5° and 2°C climate change targets." Science. 6 Nov 2020. https://science.sciencemag.org/content/370/6517/705<br><br>Last: Please read this article and see this study published 13 Jan 2021: "Worried about Earth's future? Well, the outlook is worse than even scientists can grasp". https://phys.org/news/2021-01-earth-future-outlook-worse-scientists.html<br><br>Bradshaw et al. "Underestimating the Challenges of Avoiding a Ghastly Future." Frontiers in Conservation Science. 13 Jan 2021. https://www.frontiersin.org/articles/10.3389/fcosc.2020.615419/full<br><br>Our earth is in much worse condition that we realized. This is an emergency. We must pull out ALL of the STOPs and put EARTH FIRST.<br><br>Thank you. | R |
| 248 | Student | COMMENT #248 (1/2)<br>Environmental justice:Environmental justice issues seem deprioritized in favor of a technocratic solution. This approach fails to sufficiently acknowledge the political, social, and economic causes and consequences of climate change and the university's role in contributing to climate change within each of these contexts.<br>For example, line 1480 cites commuting as a major source of scope 3 GHG emission. However, the report fails to substantially acknowledge that a lack of affordable housing in Ann Arbor is what leads to majority of commuting in the first place. The university has had a major hand in this problem, continually increasing its student population without investing in the infrastructure needed to house them. This has led to the gentrification of Ann Arbor and its surrounding communities ultimately resulting in university staff, faculty, and students being forced to live farther and farther from campus.<br>Line 1816 states the need to engage with the campus community on the topic of housing. But how can such engagement happen when the university has regents with direct interests in the real estate business? How can such engagement happen with the university's business model of rapid and continual student population expansion directly contradicts a plan for affordable housing development? As we move to implement carbon neutrality we need to develop a plan on how to resolve these existing conflicts of interest and prevent future ones from developing in the first place.<br>The fact is, UM is a worldwide leader in EJ (environmental justice) research and no EJ expert was chosen to work on the PCCN. While technological innovations and solutions are undoubtedly important, the use of the university's political and social capital in EJ must also be a central focus in future planning and implementation of carbon neutrality initiatives.<br>Specific examples of where EJ could have informed recommendations:<br>Collaboration with organized labor for hiring recommendations for all building renovations<br>Recommendations for biosequestration projects could have been coupled with a call from Indigenous groups for land-grant universities to institute trainings for all land managers, and co-management programs that center traditional ecological knowledge<br>Multiple recommendations throughout the report call for collaboration with DTE, a utility company with not only one of the dirtiest energy mixes in the country, but also one with one with some of the highest rates and lowest reliability (consistently shutting off energy in lower-income neighborhoods)<br>The inclusion of carbon offsets completely disregards the environmental justice implications of those projects. Carbon offset projects are notorious for displacing communities, particularly Indigenous communities from their land, while allowing large, wealthy institutions to continue to extract and burn fossil fuels. Any use of carbon offsets must be done with rigorous EJ criteria included.<br>This report does very little to position U-M in the global context of climate justice. One particularly glaring issue is the development of a research program for carbon neutrality-related technologies with no plan for how those technologies will be shared. The current patent and profit-driven model of tech transfer reinforces imperialist dynamics between developed and developing countries and poses a barrier to truly addressing the humanitarian nature of this crisis by limiting access to the resources necessary for a green transition to a wealthy few.<br>Scope 3 emissions are postponed for another set of recommendations to be formed in 2025 and implemented by 2040. While accounting for all of scope 3 is complex and may very reasonably take more time, if this report were truly formed with community input and was accountable to community need, one aspect of scope 3 that should have been addressed immediately is affordable, sustainable housing.<br>On top of being astoundingly poorly developed, the scope 2 recommendations put forth (purchased electricity) considered none of the myriad aspects of EJ such as - where and how the energy is sourced, implications of continued partnership with DTE, energy democracy, and integration of U-M's purchasing practices with the energy grids of surrounding communities such as through the process of municipalization (something U-M could serve as an active barrier to should it choose not to collaborate)<br>Recommendations related to food were extremely limited and relied solely on an increase in plant-based menus when, if they had integrated an environmental justice lens, they could have included aspects such as labor practices and growing practices that do not result in toxin accumulation in agricultural communities | BX, BW, GU, GQ, GV, GW, HJ BV, U, HC, IB, JQ, JT |

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| 248 | Student | COMMENT #248 CONTINUED (2/2)<br>Carbon Budget:<br>The recommendations do not include a carbon budget, which would lay out targets for the cumulative amount of carbon UM can emit prior to reaching full carbon neutrality by 2040.<br>The final set of recommendations must include a carbon budget to ensure that UM does not keep burning fossil fuels indiscriminately prior to achieving neutrality.<br>Climate change is driven by the total amount of carbon in the atmosphere. A carbon neutrality date says we will stop adding carbon by that date, but says nothing about the total amount of carbon we emit in the meantime, and thus our actual contribution to global warming. Construction and other one-time carbon costs will not be accounted for or incentivized without a science-based carbon budget.<br>Without a budget, there is no mechanism to prevent UM from continuing to continue building indiscriminately.<br>A budget holds us accountable to meaningfully limiting our emissions; carbon neutrality by a certain target date means very little if our emissions between now and then are through the roof.<br>Figure 2 showing the projected offsets needed already provides a rough estimate for a Scope 1 and Scope 2 emissions budget.<br>Critically, setting a carbon budget is very different from setting interim dates for neutrality--a budget lays out the actual amount of carbon we can emit between now and the point at which we achieve neutrality.<br>Housing:<br>The plan pushes urgent questions about addressing the local housing crisis off to another plan to be written by 2025, which will chart a path to achieving Scope 3 emissions by 2040. Housing is an urgent crisis right now, and is critical to address for both mitigation and community resiliency/adaptation purposes.<br>UM needs to commit to building affordable, sustainable housing on land that the University already owns.<br>Collaborate with the cities of Ann Arbor and Ypsi to promote affordable housing policy, including co-funding necessary development projects (to account for the lack of property taxes paid).<br>Perform an immediate analysis on the carbon intensity of development projects for new housing. Using these numbers, institute a required ratio of new housing units per capita increase of the incoming undergraduate class and limit other development projects in accordance with this required housing need and a carbon budget that aligns with the goals of the IPCC.<br>UM is a powerful agent of gentrification in Washtenaw County, pushing working class people out of the city and out of their homes.<br>A crisis for climate mitigation: As rent prices continue to skyrocket, more and more people that work in Ann Arbor are forced to live outside of the city and commute in, vastly increasing our carbon emissions.<br>A crisis for climate adaptation: Skyrocketing rent pushes people out of their homes, and for obvious reasons, people experiencing homelessness are far more vulnerable to the impacts of climate change (e.g. severe storms and heat days). UM needs to actively contribute to local resilience.<br>UM is exempt from local property taxes; contributing to an affordable housing fund represents a small step to make up for this reduced tax revenue.<br>Off-campus student housing (where most students live) is notoriously inefficient, except for newer housing that is only accessible to high-income students. Students are left paying high utility bills, contributing to the affordability crisis and pushing students out of town, and the landlords have no incentive to improve things.<br>The commission should adopt the recommendations that the Energy Consumption Policies analysis team made for U-M to address off-campus housing emissions (appendix H). | BX, BW, GU, GQ, GV, GW, HJ BV, U, HC, IB, JQ, JT |
| 249 | Student | Dear PCCN,<br><br>I am writing in support of the Energy Club at Ross PCCN Review Committee's feedback and to provide several personal comments regarding the PCCN's draft report.<br><br>In regard to the Energy Club at Ross, I strongly encourage the University to implement the following seven recommendations in the final report:<br>1. Improve implementation, accountability, and transparency measures;<br>2. Implement carbon pricing before 2025;<br>3. Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>4. Set Scope 3 emissions targets by 2022;<br>5. Procure carbon offsets by 2022 and set maximum offset targets;<br>6. Increase the size of the Revolving Energy Fund (REF); and,<br>7. Implement ESG metrics for endowment investment decisions.<br><br>From my own personal review, the following comments outline additional areas to address:<br>1. Increase bike lanes across the Ann Arbor community to enhance safety and ease of low carbon commuting options (i.e. bike or scooter).<br>2. Address the housing challenges with partnership with the city of Ann Arbor to reduce commuting miles for graduate student populations and professors. Justice issues area also present in the continued housing crisis. These must be addressed with housing and justice experts here at the university.<br>3. In addition to more plant based options, the university must address the variation in waste disposal programs across campus. Moving forward, standardization of waste disposal stations would streamline decisions for students/faculty/staff and reduce contamination of streams.<br>4. The University should investigate alternate waste disposal and recovery technologies such as waste to energy (Emerson) and surplus food recovery/donation models (Goodr), respectively.<br>5. Closer partnership and supply chain integration with the campus farm is critical to reduction of GHG associated with food production and transportation. Integrating the Campus Farm into the current inventory system of MDining would reduce barrier to purchase from local sources. Additionally, sourcing contracts should prioritize local and seasonal to reduce transportation and input emissions.<br><br>While this report is a good start, we can do better. The University of Michigan is uniquely positioned to lead the way forward through bold goals. We have the faculty, research facilities, students, and drive to make it happen. This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the leaders and best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |

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| 250 | Student | (594, 1205) As an alternative to carbon offsets, implement a more aggressive internal carbon price and use the generated windfall to fund carbon neutrality projects on campus. This expanded carbon tax should reflect the cost of carbon offsets but keeps the funds internal to the university instead.<br>(1030) “Engage with the Cities of Ann Arbor, Dearborn, Detroit, Flint, and other entities…” is too broad of a recommendation. Whereas “engagement” should be a goal, specific recommendations on how to engage, and metrics to evaluate successful engagement are lacking.<br>(932) The commission should be more assertive in their timeline recommendations. Rather than refer to another point of reference, make it your own recommendation.<br>(3031) U-M must be assertive with DTE and Consumers Energy. Rather than passively wait for these utilities to decarbonize, U-M must use its influence as a major stakeholder to push for their accelerated transition to renewable energy sources and grid stability solutions.<br>(2800) To “tailor carbon neutrality communication and education for specific audiences” should include specific mention of social media platforms. As a hugely influential means of communication now and in the future, no recommendations around utilizing social media platforms or hiring social media specialists is grossly ignorant.<br>Explicit discussion of and recommendations about accountability are essential to the success of this report and U-M’s carbon neutrality effort. While the report and its recommendations are non-binding, recommending mechanisms for accountability is the next best effort the commissioners can make towards ensuring the administration and community take this report seriously. Accountability— specific recommendations on how to hold the university accountable—impacts every recommendation in this report and therefore cannot be neglected prior to submitting it to President Schlissel.<br>(845 & 890) The report does not provide any timeline for converting U-M’s vehicle fleet, nor does it provide any timeline for building charging infrastructure.<br>(1845) In the university-sponsored travel section, it is recommended that departments will purchase offsets once appropriate carbon accounting measures are in place but what if professor/students are associated with two or more departments and funding is provided through a third-party/Rackham, etc.<br>(2100) If the university will make purchasing decisions based on production emission data submitted by vendors then there should be third party verification as well to make sure that these data submitted by vendors is not skewed.<br>(2638) Rep0rts suggest publicizing educational materials on the climate-friendly retirement investment options for employees but lack to hold U-M accountable to make climate-friendly investments.<br>(610) The report identifies the Central Power Plant upgrade as a method to meet the 2025 Scope 1 Emissions goal of carbon neutrality, however, it fails to recognize the expansion’s shortcomings in addressing the 2040 goal of eliminating all GHG emissions.<br>(198, 2538) The report mentions multiple times that environmental justice should be integral to U-M’s climate action plan. However, these statements seem weak because there seems to lack of substantive action items for how to actually integrate environmental justice into the Commission’s recommendations. There should be actual steps and recommendations listed that specifically address how environmental justice must be interwoven into U-M’s climate action plan. In addition, there seems to have been an environmental justice subgroup. However, there is no team analysis report listed on the website and their work does not appear in this final draft report.<br>(2510) The report states that “a new leadership position reporting directly to the President with responsibility for planning and organizing the overall effort across all three campuses” is needed. The report then goes on to mention how this one single individual would hold a very large range of responsibilities which include working with a very large set of individuals. Why should all these proposed responsibilities only be held by one person? Why not delegate these to multiple individuals or a designated committee?<br>(2527) The report mentions that this leading individual will be in charge of “regularly convening high-level internal and external carbon neutrality advisory bodies.” While it can be important that one individual is responsible for reporting back to the president and being the leading figure in carbon neutrality at U-M, the actual development and recommended steps of forming these advisory bodies and committees are not discussed at all. | HP, GD, GB, EJ, A, BW, EE, GC, FE, HW, HX, HY, HZ, IA |
| 251 | Student | I support the Energy Club at Ross PCCN Review Committee’s feedback in response to the PCCN’s draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>- Improve implementation, accountability, and transparency measures;<br>- Implement carbon pricing before 2025;<br>- Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>- Set Scope 3 emissions targets by 2022;<br>- Procure carbon offsets by 2022 and set maximum offset targets;<br>- Increase the size of the Revolving Energy Fund (REF); and,<br>- Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 252 | Staff | Dear Carbon Neutrality Commission,<br><br>I support the Energy Club at Ross PCCN Review Committee’s feedback in response to the PCCN’s draft report: https://ross.campusgroups.com/energy/pccn-committee-letter Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br><br>1. Improve implementation, accountability, and transparency measures;<br>2. Implement carbon pricing before 2025;<br>3. Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>4. Set Scope 3 emissions targets by 2022;<br>5. Procure carbon offsets by 2022 and set maximum offset targets;<br>6. Increase the size of the Revolving Energy Fund (REF); and,<br>7. Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address Environmental Justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |

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| 253 | Staff | I believe that it would benefit the PCCN report's strength to address the embodied emissions of construction. The previously submitted recommendations of the Global CO2 Initiative and Center for Low Carbon Built Environment provide steps that can be taken to account and reduce the embodied emissions of construction on campus. In addition to addressing a large component of emissions implementing these recommendations would demonstrate further leadership in the carbon neutrality space. | BT |
| 254 | Other | There needs to be a greater sense of urgency or better execution of actions to meet the IPCC 2030 goals. The 2017-2020 GHG emissions data presented (Line 570) shows only a 4% and 12% reduction in 2020 GHG emissions by natural gas and electricity, respectively, compared to 2017. The latter reduction could be impacted by the pandemic. Where is the university in meeting its goal of GHG reduction of 25% below 2006 levels by 2025 (Line 165). Considering that university has the SEAS, the Erb Institute, the Graham Institute, and states in the report that their research facilities are second to none (Line 2560), then one could conclude their is a lack of urgency and effective execution in reducing GHG.<br><br>Scope 3 emissions goals should not be deferred for 5 years, but should be set by the end of 2021given all of the expertise at the university (Lines 228, 1450+).<br><br>The high level executive at the university should be given near absolute authority (like a Czar) as opposed to limited authority to progress effectively toward carbon neutrality. The less authority, the more the university unit heads will find reasons not to make significant strides in achieving CN. Also, make sustainability and CN a part of unit heads performance review or incentive programs (Lines 1318, 1380+, 2480+, 2510+)<br><br>Within Scope 3 there is concern about finding it challenging to set targets on suppliers of food, energy, etc. I suggest that the university use its purchasing power to put onus of GHG reduction on them. This can be done by requiring all suppliers of goods and services to the university to either by signers of the UN Global Compact or to have a written policy with is at a minimum consistent with the tenets of the UN Global Compact and targets for GHG reductions. The university makes an effort to do business with minority and women owned businesses. This is just another criteria to place on your suppliers. For those suppliers who do not yet have a sustainability program, have the university provide consulting to those businesses that want to have a formal sustainability program. (Lines 1445-1470, 2040, 2070+)<br><br>There seems to be more of a reliance on REC and CP as opposed to demand side management of power to approach CN. While both are needed, there needs to be more urgency of reducing the power demand and losses. Are there sufficient meaningful REC available for the University to procure? (Lines 625-630,1060+)<br><br>Germany has some excellent technology for reducing electricity transmission and distribution losses. This should be looked at. (Lines 813, 2225).<br><br>Partnerships and collaborations with the community need to be strengthened (Lines 1040, 2745+) | DB, AE, CO, IC, HM, CX, EP, EC |
| 255 | Student | I think it is very important for the university to divest from fossil fuels. Given that pollution from fossil fuels disproportionately impacts communities of color, I don't believe there is a way for the university to be committed to environmental justice and antiracism without divesting from fossil fuels. | A |
| 256 | Other | Line 1380: Mentions building standards will require the engagement of deans and other unit leaders to achieve buy-in, but doesn't address what happens if they don't buy in. Given the wide range of potential objections (cost, equity, perception of giving up control, etc.) this recommendation and caveat seem weak. | ID |
| 257 | Faculty | My concerns after reading through the PCCN Draft Report relate to the specific recommendations for solutions to GHG emissions from UM's Transportation Services. The scope of what is recommended is exclusively focused on electrification of transit vehicles and University service vehicles. There was no discussion of addressing the University's GHG emissions by using low carbon fuels. Such fuels are making their way into the marketplace and are commercially available. There is already large market pull in California in response to that state's Low Carbon Fuels standard and with the edict to ban fossil diesel fuel from the California market by 2045. Replacement of fossil diesel fuel with biodiesel (mono-alkyl esters of animal fats and vegetable oils) and renewable diesel fuel (hydrodeoxygenated vegetable oils and animal fats) is occurring today. Some 3 billion gallons per year of these fuels (~ 2.6 billion gallons of biodiesel and 400 million gallons of renewable diesel fuel) are being produced annually in the US. That supply will expand as the market demands these fuels. The PCCN should consider the implementation of drop-in low carbon fuels (renewable energy content > 70%) in parallel and in competition with electrification. Which path will be more effective at reducing GHG emissions? The carbon intensity of the grid is decreasing by that process will take decades. Adoption of low carbon fuels has immediate and overnight major reductions in GHG emissions. We can start with small demonstrations and compare the value proposition between drop-in biohydrocarbons and battery electric vehicles. Don't put all our eggs in the electrification basket! As a former owner of a Chevy Volt (a wonderful vehicle design), I can personally attest to the practical issues of challenges with recharging (slow) and battery fade during cold weather (range dropped from 40 miles per charge to 17 miles per charge in Jan-Feb). | IE |
| 258 | Faculty | Line 650: The first paragraph in Scope 1 mentions the most influential strategy to reduce the CO2 emission by using Geothermal heat pump technologies. The use of geothermal heat pump systems is proposed by the Building Standard group as well. However, only the Integral Group is mentioned in this paragraph. We would appreciate if the Building Standard group will be mentioned in the first paragraph.<br>Line 680: The expression Geo-Exchange and heat exchanger chiller system is not known between experts in building science. We would propose the expression geothermal heat pump. Please consult the AEC team.<br>Line 692: The use of heat exchanger Chiller systems is proposed by the Building Standard group and the Smith Group. The different groups have used a different expression for almost the same approach. Both groups have used the expression Variable Refrigerant Flow system VRF. The VRF system for larger buildings is doing exactly what is explained in this paragraph. We would appreciate if the Building Standard group and the Smith Group will be mentioned in this paragraph.<br>Figure 4: In the first paragraph, the high efficiency of the geothermal heat pump system is compared to an electric resistant heating system. Currently, UM uses boiler systems and district heat power co-generation plants for heating. | IF, IG, II |
| 259 | Staff | In line 1725, the document states that, "The university currently provides free access to Ann Arbor Area Transportation Authority (AAATA) buses for all students, faculty and staff. The Commission recommends the extension of universal-access transit agreements to all students, faculty, and staff on the Dearborn and Flint campuses." It is unclear whether there has been any discussion with AAATA to discuss the intended increase on their system in the Ann Arbor area. Will there be conversations with AAATA about how UM wants to direct people toward their system? Additionally, many folks do not live within the boundaries of the AAATA due to the lack of affordable housing in the Ann Arbor area and instead live in surrounding areas and commute in. I know that in line 1750, communication with the City of Ann Arbor is mentioned in relation to developing the Campus Connector, but it's not mentioned in line 1725. Ultimately, how will this impact residents of Ann Arbor that are not faculty, staff, and students of UM? Has this been considered in the process? | IJ |
| 260 | Staff | Line 2455 is the beginning of the Organization and Culture section of the report. I am writing to express my concern about the lack of justice-oriented work being recommended in the report. While it's fantastic to recommend more research on carbon sequestration and living-learning labs on topics related to carbon neutrality, I think it would be a missed opportunity if there were not more research being done on the intersectionality of carbon neutrality and power and privilege in our society and how racial and social justice is at play with environmental justice -- not only as a learning opportunity for students and members of the UM community, but to acknowledge how this is at play even within this report and project. | EE |
| 261 | Staff | When considering paying $ for offsets in the initial phase of the carbon neutrality goals, please leverage these funds by working creatively with regional partners first. Examples may include:<br>- PACE funds for local landlords to insulate, upgrade windows, HVAC etc. on houses often rented by students.<br>- joint funding of low-carbon regional transit (electric commuter trains)<br>- joint funding of community microgrids | EP |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 262 | Staff | - 4075: Criteria: Who will be responsible for creating this criteria? A collaborative effort between various diverse groups will be productive.<br>- 4080: This is already in place for most of our leases and will be easier to implement.<br>- 4085: This is doable; however, it will likely come at a cost premium since most Ann Arbor office space is older.<br>- 4090: This is doable and is more of a UM mindset. How will different units be willing to share space?<br>- 4105: This concept sounds good; however, I caution as this approach will add time to the lease negotiation process, which at UM already requires more time than private tenants. Landlords may tire of this and/or add cost premiums for "holding" a space in order to recoup those costs.<br>- 4110: This sounds great. Per my previous comment, this will likely cost a premium as older systems will need to be upgraded to meet new requirements. I'm interested if ROI will be considered in these decisions or is GHG reduction the only criteria?<br>- Financial Considerations: Will additional monies be available to units for GHG reduction in leased spaces? Individual unit budget limits is something we run into quite often. HVAC and duct work is not cheap, so I flinch when I see the phrase "Financial costs of these recommendations will be negligible" since we've not made certain HVAC upgrades due to the cost previously.<br><br>Also, the following phrase is a current unknown, "Limiting leased space will save the university money." For the past decade, we've averaged 2.5% space growth each year. I know all units are questioning remote work, but no one knows how that will impact talent, productivity, morale, etc. Also, while the focus pre-pandemic had been on minimizing the per employee footprint to maximize space (think open concept), the post pandemic office trend points to the opposite in order to provide adequate social distancing without future space modifications going forward. These are all current unknowns, which is why I point them out. They also cost more.<br><br>Great report! | IK, IL, IM, IN |
| 263 | Staff | Line 756 - the note states that electrical infrastructure costs are not included and could be substantial. What order of magnitude could the electrical estimated costs be? Could the costs in Table 1 be off my a scale of 10%? 20%, more? | IO |
| 264 | Staff | Line 765 - payback of 61 years. What are the anticipated lifespans of these system strategies? If systems need to be replaced more frequently than the payback period, how does this effectively contribute to sustainability? | IP |
| 265 | Staff | 1190, 1315, 1385: No mention is made of Recommissioning energy conservation measures, both those implemented through the REF, and those implemented as a part of new building construction or major renovations. It is also not mentioned in the ECP report, though the need for M&V is. Retro Commissioning (commissioning existing systems to assure they are operating in the most energy/carbon efficient manner) is also not mentioned. The value of Recommissioning and Retro Commissioning is widely recognized by the sustainability community, including ASHRAE and LEED. These practices have been implemented to a limited extent at U-M in the past, however it is recommended that they be made an integral part (standard practice) of U-M's carbon neutrality plan. | IQ |
| 266 | Staff | 1405: Recommends that all new bldg. construction be net zero. This is different than the recommendation on line 1345, that new construction must meet a CO2 targets based on building type. Clarification is needed. | IR |
| 267 | Staff | 2475. The Organization and Culture section states: "Expand and prioritize carbon neutrality curriculum, training and literacy programs to all members of the UM community across all three campuses". Advanced training regarding the design, operation, and maintenance of the systems that will be implemented to reach carbon neutrality is needed, in particular for AEC, OCS, and FM technical staff, to effectively implement the PCCN recommendations. U-M should cultivate subject experts within our staff, to avoid over-reliance on outside consulting firms. Certain individuals should be identified in these organizations to become deep knowledge experts, curriculum identified and training funded, as opposed to "learn it as you go". It is recommended such a training plan be implemented as one of the first steps of the carbon neutrality plan. | GO |
| 268 | Staff | 1395, 3405: Re. the cost to implement new construction/renovation CO2 targets: "These costs should be met by embedding them in the fund raising for the new constructions, in the same manner as all energy saving and operating costs are now included before a building is permitted to be constructed" (3405). It will be very important to set the expectation that new projects will be more expensive than previous benchmark projects which didn't have CO2 goals. This is already a significant challenge with energy saving measures. | IS |
| 269 | Alumni | Section 265. Reference is made to "Michigan Medicine" but not specifically Michigan Medicine Facilities and Operations. I see no mention of them in the document. It would seem as though they would be a critical participant. | DO |
| 270 | Alumni | Section 1440. By far and away the majority of buildings on campus for the next 20 years will be pre-existing structures. It seems as though making a recommendation based on an Initial Study of one building (Art and Architecture) seems unwise. I do not understand what "Integral's district-level approach..." means. Reference is made at Section 2970 to "Integral Group" but I don't see any definition of what or who "Integral" is. It would appear that dealing with individual existing buildings is not even being considered moving forward which on the face of it does not make much sense. | IT |
| 271 | Other | Lines 131-135: Considering citing sources either here or in the footnotes.<br>Line 187: Considering the Commission has not designed anything yet- does it make sense to change the word design' to 'propose'? "The Commission has strived to PROPOSE solutions aligned..." | L |
| 272 | Other | Line 393 (Table): Category Column- By UM's definition, building retrofits should be Scope 1 Emissions: "greenhouse gas (GHG) emissions produced by sources that are owned or controlled by the University of Michigan, such as the Central Power Plant, building boilers, and buses"<br>Consider defining "Demand-side Management" and elaborate on where this falls in the priority list.<br><br>Line 393 (Table): Topic High-Efficiency Building Retrofits, under Scope of Work- The Analyses of two buildings was done on U-M's Ann Arbor campus. Consider adding ANN ARBOR. | L |
| 273 | Alumni | Section 2070 This section seems to be written by a modeler with little plain language. Many issues such as recycled content, plastics, length of service, etc. are factors that may or may not be addressed by the "EOI". It seems to say it is complicated but clear actionable policies should be recommended that reduce waste, prolong lifespan, etc. that would translate down to the level of department level purchases. | IU |

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|---|---|---|---|
| 274 | Student | COMMENT #274 (1/2)<br>I support portions of feedback from both the Climate Action Movement and Energy Club at Ross in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following recommendations from each in the final report<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br># # # Energy Club at Ross Recommendations # # #<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br># # # Climate Action Movement Recommendations # # #<br><br>TARGET DATE<br>The problem: The PCCN preliminary recommendations set 2040 as a target date for full carbon neutrality (excluding carbon offsets), which is far too late.<br>Necessary change: Full carbon neutrality by 2030<br>Details<br>The IPCC has stated that the entire world needs to reach carbon neutrality by 2050; wealthy institutions like UM need to reach neutrality far sooner (i.e. 2030 at the latest)<br>President Biden calls for 100% renewable generation of electricity by 2035--falling 5 years behind his administration's goals for the entire country is embarrassing<br>Carbon offsets<br>The problem: The plan relies heavily on using carbon offsets to achieve "carbon neutrality" by 2025, but carbon offsets are very hard to track and bring with them a host of environmental justice issues (~Pg. 71)<br>Necessary change: If UM is going to use carbon offsets, explicit environmental justice considerations must be central criteria in choosing where to buy offsets ("compliant with social and environmental safeguards" is vague and unenforceable — these safeguards must be made explicit)<br>Details<br>Offsets give wealthy institutions like UM license to continue burning fossil fuels indiscriminately at the expense of the rest of the world, shirking our responsibility to lead in reducing our own emissions<br>They don't address the root causes of the crisis; they serve to perpetuate the structures that brought it about<br>Robust research has demonstrated that offsets are incredibly difficult to track (and thus offset providers often get away with, for example, not actually planting forests that they promise to plant)<br>Offsets present many environmental justice issues. Offset programs have in many cases been responsible for the displacement of indigenous peoples, and they allow powerful institutions to continue polluting frontline communities.<br>CARBON BUDGET<br>The problem: The recommendations do not include a carbon budget, which would lay out targets for the cumulative amount of carbon UM can emit prior to reaching full carbon neutrality by 2040<br>Necessary change: The final set of recommendations must include a carbon budget to ensure that UM does not keep burning fossil fuels indiscriminately prior to achieving neutrality<br>Details:<br>Climate change is driven by the total amount of carbon in the atmosphere. A carbon neutrality date says we will stop adding carbon by that date, but says nothing about the total amount of carbon we emit in the meantime, and thus our actual contribution to global warming. Construction and other one-time carbon costs will not be accounted for or incentivized without a science-based carbon budget.<br>Without a budget, there is no mechanism to prevent UM from continuing to continue building indiscriminately<br>A budget holds us accountable to meaningfully limiting our emissions; carbon neutrality by a certain target date means very little if our emissions between now and then are through the roof<br>Figure 2 showing the projected offsets needed already provides a rough estimate for a Scope 1 and Scope 2 emissions budget<br>Critically, setting a carbon budget is very different from setting interim dates for neutrality--a budget lays out the actual amount of carbon we can emit between now and the point at which we achieve neutrality | A, CM, CN, CO, CR, BU, JT, BV, EH, EJ, EN, HQ, HR, HS, HT, HU, HV, GW |

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|---|---|---|---|
| 274 | Student | COMMENT #274 CONTINUED (2/2)<br>ACCOUNTABILITY STRUCTURES<br>Problem 1: There are few mechanisms in place to ensure accountability and transparency in the implementation of the plan. Many of the recommendations lack specificity about deliverables, responsible parties, and timelines, erecting barriers to implementation. As it stands, there is nothing to prevent these recommendations from sitting on a shelf, as committee reports all-too-often do.<br>Problem 2: The relationship between the PCCN report and the Internal Analysis Team (IAT) reports is unclear. The IAT reports contain disclaimers saying that they are not endorsed by the commission, and the main report only very rarely points to the IAT reports. The main report is much reduced and thus vague in many places, seemingly relying on the respective IAT report for additional guidance on each given recommendation.<br>Necessary changes:<br>The recommendations must include an accountability structure with actual guidelines and explicit reporting requirements. It is especially important that an itemized report be produced no less frequently than once per six months, which details progress and lack of progress on each recommendation.<br>Reference the IAT reports more prominently for more guidance on specifics (even if the exact specifics themselves are not the “official” recommendations).<br>Details<br>There needs to be some guarantee that this report does not meet the same fate as the 2015 Greenhouse Gas Reduction Committee Report, which more or less sat on a shelf<br>Important components of accountability structure (more detailed outline in this memo):<br>Recommendations should have defined goals with SMART criteria<br>Itemized progress reports should be published every 6 months, and there should be a public facing dashboard to track progress<br>Adoption of recommendations should be public process<br>Paid team should oversee implementation<br>Every department should employ a sustainability coordinator to ensure implementation<br>Development of an implementation plan should be done through deep collaboration with community groups active in areas of overlapping interest (e.g. unions, advocates of public transit and affordable housing)<br>It is critical to identify areas where we have not seen improvement, and thus may need more attention<br>An itemized report ensures that every item is considered at least once every six months and items aren’t left unattended.<br>Transparent reports are necessary for community accountability, but also community buy-in. Demonstrating that the University is being honest about its commitment to true carbon neutrality is important to bring about community buy-in and culture shift.<br>RELIANCE ON DTE AND LACK OF ONSITE GENERATION<br>Problem 1: The report has little to no investigation of onsite electricity generation or reducing the carbon load of purchased electricity. It recommends generic possibilities for further study, containing even less study than the preceding 2015 GHG Reduction Report.<br>Problem 2: The report does not address the EJ components of energy procurement. DTE manipulates regulatory policy to suppress distributed energy generation, which would decrease cost and increase reliability in underserved communities. They have made it harder for Michiganders to install renewable energy<br>Necessary changes:<br>Explicitly recommend inclusion of EJ experts in assessing energy procurement decisions and study of the environmental injustice that is supported by procuring UM’s energy from DTE.<br>In the report, acknowledge the co-benefits and prioritize (1) purchasing/producing electricity elsewhere and (2) working to empower communities through legislative lobbying for democratic energy policy.<br>Recommend funding study and implementation of how U-M can further a just and sustainable transition through legislative engagement, education, and advocacy.<br>Details:<br>DTE has some of the highest rates in the country yet is among the worst in terms of reliability, while also shutting off power to 5000 - 25000 people every month, making it a leading target for Enivronmental Justice advocates in Michigan.<br>DTE and Consumers Energy “manipulated regulatory regimes via policy misinterpretation to deter or hinder the proliferation of DG [distributed energy generation] in favor of maintaining the existing interests in centralized, fossil fuel-based electrical energy production.”[Michigan Tech study from 2019]. [Press link], link 2]<br>DTE has repeatedly made false statements to strangle the growth of distributed renewables, such as claiming that residential solar increases prices for homes without solar and low-income folks, when this has been debunked numerous times, including by SEAS researchers working with DTE.<br>In 2018, the Union of Concerned Scientists used DTE’s own software to demonstrate that DTE was presenting faulty analyses to regulators, stating "Taken together, the evidence suggests that the analysis was specifically designed to support DTE’s desired conclusion that Michiganders “need” this $1 billion natural gas plant, despite real-world evidence to the contrary”.<br>This coincides with DTE’s massive investments into gas storage and transportation, which make up an increasing share of its profits.<br>DTE is far behind the curve on transitioning to renewable energy. Their current fuel mix is astonishingly dirty (59% coal, the 3rd dirtiest in the country), and in 2018 they broke ground on a new natural gas power plant<br>Committing to getting all of our renewable energy from DTE signals that we’re comfortable with the slow rate at which they are transitioning<br>Instead, we need to put pressure on them by presenting a credible threat that we will generate energy elsewhere<br>There must be a guarantee that any renewable energy generation capacity that UM purchases from DTE is additive, meaning that UM is not just snapping up all renewable capacity and then claiming neutrality while the rest of the state still relies heavily on fossil fuels<br>The lack of any analysis on on-site generation or energy procurement after two full years is highly concerning, especially since the recommendations are to electrify all heat and power infrastructure. Especially since they do not reference or use any of the studies that have already been done on this very subject for U-M:<br>Renewable Energy Potential at U-M, by Tim Arvan<br>2015 Report from President Schlissel's Greenhouse Gas Reduction Committee<br>PPAs for U-M by the Clean Wolverines | A, CM, CN, CO, CR, BU, JT, BV, EH, EJ, EN, HQ, HR, HS, HT, HU, HV, GW |

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|---|---|---|---|
| 275 | Other | After Line 545: Consider adding RESILIENT to the Principles for Goal-Setting and Strategies. Potential bullet points could include:<br>1. Is prepared to communicate and withstand the sudden impacts of unanticipated events, including extreme weather, cyber impacts, and social events<br>2. Recognizes that infrastructure is a critical tool for social mobility, and establishes and communicates safe-havens/places of refuge across campus.<br>3. Seeks to understand how U-M's leadership within the region and state can help to seek to immediately address issues of community vulnerability at crisis including access to broadband, and lack of equity.<br><br>Line 558 (Table): Consider adding Scope 3 emissions- "the result of activities form assets not owned or controlled but directly impact its value chain..." This is a suggestion considering travel emissions not being captured as Scope 2, and the push for carbon materiality to soon arise. The University could recognize that these emissions are difficult, but move towards the development of estimating/encouraging individual carbon footprintining as a means of estimating Scope 3 Emissions from travel and purchasing/procurement.<br><br>Line 581 (Table): The graph appears to be 781 ktCO2e versus charts above. Scope 1 indicates an Emissions Total of 302,400 + Scope 2 Emissions Total of 379,000 = 681,400 MTCO2. Are these different measures? Buildings seem to represent 85% -90% of the totals. Is this correct?<br><br>Line 646 (Table):<br>a. "Embark Upon a phased..." Consider adding the caveat that that infrastructure changes require building-level retrofits to align mechanical system with plant, including adding buildings that are not tied to the campus plant.<br>b. "Establish best-in class CO2..." Is the intent that the phase "major renovations" aligns with the current U-M sustainability program that indicates a 'major' as $10M or greater?<br>c. Consider supporting the vehicle electrification discussion with a connection to utilities. The phrasing may be something like this..."Engage, encourage, and promote the broader shift towards a cleaner grid in the state of Michigan to ensure further benefits of electrification and to help shift the region's clean energy supplies towards an affordable energy price for all income levels."<br><br>Line 675: Considering not all buildings are on the central plant, does this goal involve adding stand-alone buildings to the campus loop? One suggestion to address stand-alone buildings may be to add a line something like this, "identify immediate electrification options/solutions including deployment of rooftop solar where possible for peak-shaving for stand-alone buildings." | IV, IW, IX, AO, IY, IZ, JA |
| 276 | Other | Line 1242: Has the Commission considered adding a point recognizing the Governor's recent Executive Order on climate? Maybe the phrasing could be something like... "Collaborate/evaluate where possible the opportunity to help the state of Michigan join RGGI"<br><br>Line 1360 Table 3: It isn't clear what the intent of this table is. We were expecting to see instead, the table posted in Appendix I (line 3360), which is about the target Carbon Intensities for the 9 building types on campus. Please confirm this table is meeting your intent.<br><br>Line 1443: Is this intent that this approach is solely at the building level?<br><br>Line 1458/Figure 6: Something to consider- Embodied carbon of construction materials represents 11% of global GHG emissions (Global Alliance for Buildings & Construction, 2018 Global Status Report). Where is the embodied carbon of the buildings that are constructed being considered? It is a significant source of emissions, and the University has the ability to influence it. One could argue embodied carbon of construction has medium (if not high) ability to influence it, and medium confidence on ability to estimate emissions. Again, something to consider.<br><br>Line 1473: Please clarify if purchased building construction materials are part of "purchased goods". This is important because consultant designers, acting on behalf of U-M, specify construction materials - a process very different from other University purchasing, we suggest the Commission considers creating a separate unique category for the purchased materials used to construct U-M buildings. | JB, L, BT |
| 277 | Other | Line 1528/Figure 9: One of the labels on the right indicate "Buildings (upstream). Please define the intent- Is this the operational energy use of buildings that U-M leases space in?<br><br>Line 1547/Table: Under "Purchased Goods"- Consider having embodied carbon of construction as a separate line from "purchased goods". Potentially, U-M creates a goal to ensure all new construction projects achieve an embodied carbon reduction of XX% over a baseline building. (A 10% reduction goal is a prerequisite in ILFI's Net Zero Carbon program. LEED v4.1 also has credits around conducting a whole building LCA of a building's structure and enclosure, with points for reducing the embodied carbon of those elements by 5, 10, and 20%)<br><br>Line 1554/Table: Under "Purchased Goods"- A potential recommendation might be to require that all new construction projects conduct a whole-building life-cycle assessment to measure the embodied carbon of structure and enclosure systems.<br><br>Line 2067 Purchased Goods: U-M purchases all materials used to construct new buildings on campus. These materials have a major impact on GHG emissions. Construction materials do not appear to be included in the purchased goods discussion. Consider including construction materials as a category on it's own and including it in the U-M GHG inventory (emissions from constructing new buildings or renovating existing buildings).<br><br>Line 2757: Should this be five-fold in lieu of four-fold? | JC, JD, JE, BT, L |
| 278 | Other | Line 3353: Perhaps clarify this is Carbon Neutrality Impact of buildings' operational energy use, and does not include buildings' embodied energy impacts. Both are significant parts of the total carbon footprint of buildings.<br><br>Line 3362-64/Table:<br>a. ASHRAE 90.1 2013, kg CO2/sqft: Cite the source for the carbon intensities by building type (designed to comply with 90.1 v2013). We know EPA TargetFinder and CBECS can be used to provide carbon intensities for average buildings, but not for code-compliant buildings. Consider also clarifying the assumptions by noting what the carbon emissions would be for every 1 kWh of electricity consumed.<br>b. ASHRAE 90.1 2013, kg CO2/sqft, Educational Building (no lab): Power Profiler (EPA web-based resource) for Ann Arbor shows 1 kWh produces .625 kg CO2e. Based on that, a "no lab education building" could consume 55 kBTU/yr and still meet CO2 goal. It would be useful to cite the source for CO2 from electricity. If the Power Profiler data source was used, an EUI of 55 kBTU/sf-yr for a classroom building seems a very high target. U-M may wish to consider more aggressive targets.<br><br>Line 4379: When we click on the link- it indicates "Page Not Found". | JF, L |

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| 279 | Student | Within the Land Acknowledgement (pg. 4), I would like to suggest adding a disclaimer that while this land acknowledgement is a step towards renouncing the colonialist powers that continue to rob the Anishinaabe of their way of life, that it does not relinquish the responsibility of U-M to continue striving towards fulfilling their promise of providing education to those who wish to obtain it nor decolonizing the residual systems that remain in place. | JG |
| 280 | Student | The IPCC has stated that the entire world needs to reach carbon neutrality by 2050; wealthy institutions like UM need to reach neutrality far sooner. Full carbon neutrality should be reached by UM by the year 2030! | DB |
| 281 | Student | The recommendations say that there will need to be a culture shift before U-M can fully commit to plant-based diets. However, I think it would be helpful to also mention opportunities to reduce animal products in ways that don't require a culture shift. For example, many baked goods require the use of dairy and eggs. These products could easily be made with plant-based alternatives without having to market them as "vegan" or "plant-based." Although the nutritional information/ingredients will still need to be available (i.e., so people are aware of allergens), I don't think there will need to be as much of a culture shift in these situations, and I think the recommendations could include a greater emphasis on these types of efforts.<br><br>In general, I would like to see a greater emphasis on the role of dairy in greenhouse gas emissions. Right now, the report only mentions dairy when it says that among the animal-based proteins in plant-forward diets "fish and poultry are prioritized, dairy and eggs play a supporting role, and red meats are limited." Although this is true, dairy directly supports the beef industry, and I think this should be explicitly stated so that U-M also works toward reducing dairy consumption rather than just focusing on reducing meat consumption.<br><br>Line 2034 suggests greater campus-wide educational programs providing rationale for the shift toward plant-based diets. I would like to see educational programs also include information on the positive impacts of plant-based diets for environmental and social justice, animal welfare, and nutrition. Although the recommendations suggest a partnership with MHealthy, I think partnerships with other stakeholders working in these areas (e.g., organizations working with animal welfare, nutrition, etc.) can also improve the educational programs. I don't think that everyone will shift toward plant-based diets just for environmental reasons, but I think increasing knowledge of benefits in other areas (health, animal rights, etc.) could increase the number of people who do.<br><br>Line 2030 suggests using products that incorporate a blend of plant and animal proteins. Although I understand that some people may prefer a blend when first starting the transition to a plant-based diet, I would prefer to see a greater emphasis on entirely plant-based proteins. For example, this could include a plan for gradually decreasing the percentage of animal proteins included in the blend over time, or offering 100% plant-based meats in the majority of dining halls.<br><br>Finally, in lines 1997 and 2031, I would encourage less emphasis on replacing carbon-intensive foods, such as beef, with fish and poultry. Fish and poultry still contribute significant greenhouse gas emissions compared to plant-based proteins such as beans. Although I recognize that it may not be possible to immediately replace all animal-based products with plant-based proteins, I think the report should first and foremost emphasize shifting toward plant-based options whenever possible and using fish/poultry only when necessary (rather than suggesting that fish/poultry are adequate solutions since they emit less carbon than beef).<br><br>Thank you for all the work you are doing and for taking our comments into consideration! This work is very important and much appreciated! | JH, AI, EA, DZ, Y |
| 282 | Student | Carbon neutrality definition: A suggestion to assure that sequestration projects will not be invested in that displace or further colonize land from indigenous peoples, as is often done. These sequestration projects should be investigated and then properly approved by a task force or committee. | GV |
| 283 | Student | Within the Scope Emissions definitions, I'm unsure where affiliated organizations who hold contracts with UM who do largely invest in fossil fuel industries would fall within these definitions? Is this something being acknowledged elsewhere or overlooked? | A |
| 284 | Student | Support for Energy Club at Ross PCCN Review Committee's Letter<br>I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, EJ, EK, EL, EM |
| 285 | Student | There are key gaps in the report a which were identified by the Faculty/staff-led Voices for Carbon Neutrality (VCN) organization.<br><br>● Gap: public private partnerships much be considered to fund U-M's CN Plan.<br>● Gap: environmental/climate justice must be interwoven throughout the report<br>● Gap: U-M must learn from peer universities succeeding with their CN plans<br>● A greater sense of urgency for U-M to meet IPCC 2030 goals must be reflected;<br>● Re-evaluation of growth and rapid implementation of new building standards must be added;<br>● Scope 3 goals must be set within the next year including initial metrics to track progress;<br>● CN measures for Michigan Medicine must be added, particularly regarding the new hospital and CN leadership and culture;<br>● Critical role of community collaboration and partnering must be strengthened;<br>● More authority for a high level U-M executive resourced to lead implementation of CN report; and<br>● VCN's full letter to the PCCN can be read here | ED, EE, EF, DB, CH, CO, DO, EC, DP |

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|---|---|---|---|
| 286 | Student | I would like to second the extremely important issues the Climate Action Movement brought up in their critique of the PCCN's Preliminary Recommendations.<br>These concerns are in the areas of:<br>Lack of meaningful commitment to environmental justice<br>Target Date<br>Carbon offsets<br>Carbon Budget<br>Accountability Structure<br>Reliance on DTE and Lack of Onsite Generation<br>Housing<br><br>These concerns must be addressed for the PCCN to make a plan that adequately addresses the needs of the University of Michigan and the larger, imperative need for climate action worldwide. | BW, BX, IB, JQ, JT, AQ, BU, BV, AO, AQ, EM, EN, HQ, HR, HS, HT, HU, HV |
| 287 | Staff | Supporting alternative forms of transportation to campus is really important. A major reconstruction project has bern going on outside of the MSRB labs on Zina Pitcher/Catherine. The bike parking there was removed and replaced and none of the new parking is covered. Historically snow and ice are not removed from these areas either. Adding an awning of some sort would be a trivial cost compared to the massive parking structures UM builds. The covered parking at BSRB is nice except the hoops were placed too close to the concrete wall to be able to fit 2 bikes to a hoop without one of them falling over. There seems to be no policy in place to remove abandoned bikes either. This one small section of parking alone has 3 bikes that have not been touched in over a year. The non-motorized community should not be ignored. Car emisions are tremendous and the environmental cost is huge even with electric vehicles. | BZ, EP |
| 288 | Staff | While I agree the Campus Connector would be a highly visible demonstration of U-M's support for carbon neutrality, I believe even greater gains in both sustainability and equity could be found by the University becoming an active partner in other, existing regional transportation initiatives. A large percentage of university staff live beyond the campus or City boundaries (the majority coming from the north and the east), and would not be likely to utilize on-campus housing. In addition to pursuing the Campus Connector project and exploring options for on-campus housing, U-M should work with the surrounding communities to support existing efforts to establish both transit and workforce housing. A few examples include the proposed commuter line linking Ann Arbor to Brighton/Howell, the Ann Arbor Transit Oriented Development initiative, and the ReImagine Washtenaw Avenue project which aims to strengthen both transit and housing between Ann Arbor and Ypsilanti. The latter is tightly connected to issues of income and housing inequality in our County and affects many of our essential workers. | JI, EP |
| 289 | Faculty | The overall draft plan is ambitious and well-conceived. A sincere thanks to all PCCN and IAT members who put hard work and much thought into developing it, as well as to the PCCN chairs for soliciting public comments. I offer what is intended as a constructive criticism that I hope will be seriously considered in framing the final PCCN report and recommendations.<br><br>The potential positive impacts of the PCCN report and plans for achieving greenhouse gas emission reductions and carbon neutrality along a timeline consistent with IPCC reports is severely constrained by the avoidance of any discussions or mention of options for moving U-M investments (endowment and other) to avoid supporting and profiting from fossil fuel-based industries. The PCCN and the U-M must acknowledge that investing in fossil fuel production, processing, marketing and distribution contributes to greenhouse gas emissions responsible for the climate crisis we now face and the looming and irreversible climate catastrophe that will ensue if Earth's mean temperature exceeds a 1.5 degree C increase.<br><br>The PCCN is greatly but needlessly constrained by a U-M investment strategy that ignores the social costs of investing in industries and activities that damage human health and well-being. As such, the PCCN should recommend development of an overall investment framework that would provide a context for weighing the financial benefits as well as the social benefits and cost of current and future institutional investments. A number of our peer institutions are now on such a path, including Stanford University, which has developed guidelines and processes for investment decision-making that are embodied in that institution's Ethical Investment Framework (at https://smc.stanford.edu/wp-content/uploads/2018/12/SMC-Ethical-Investment-Framework.pdf) and the Stanford University Statement on Investment Responsibility (https://stanford.app.box.com/v/stmt-investment-responsibility). The investment philosophy and actions guided by these documents have enabled Stanford to reduce "…active investment holdings in fossil fuels [by] more than 90% to now represent less than 1.5% of the university's Merged Pool" (See Stanford News, June 12, 2020 at (https://news.stanford.edu/2020/06/12/trustees-commit-accelerating-transition-to-net-zero-greenhouse-gas-emissions/). Importantly, this remarkable achievement did not come at a financial cost to Stanford. The U-M could move to match or even exceed this reduction in fossil fuel investments by forming a high-level committee such as the Stanford Board of Trustee's Special Committee on Investment Responsibility, which meets regularly to consider proposals and initiatives to evaluate the university's investments within a social as well as financial framework. This would address an important Scope 3 category that was entirely omitted from the PCCN draft report. | A |
| 290 | Student | Make specific recommendations, remove hedging language. For example, change recommendation at Line ~1465.<br>OLD:<br>"The Commission also recommends that, in 2025 and at regular subsequent intervals, U-M actively consider including additional Scope 3 categories in its goals, if the University can accurately measure and reasonably influence emissions in that category."<br>NEW:<br>"The Commission also recommends that, in 2023 and at regular subsequent intervals (e.g. every 2 years), U-M include additional Scope 3 categories in its goals, if the University can accurately measure and reasonably influence emissions in that category." | JJ |

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|---|---|---|---|
| 291 | Faculty | 1/22/21<br>Response to the President's Commission on Carbon Neutrality (PCCN)<br>From<br><br>The Commission is to be congratulated on what is overall a forward looking and complete report on a pathway leading to carbon neutrality for the U-M by 2040 and is within the capability of the University to carry out. The cost is a bit jaw dropping but it can be pointed out that it will be spread out over 15 to 20 years. The initial use of offsets to reach net carbon neutrality by 2025 responds to the urgency of the climate crisis while the complete replacement of fossil fuels by 2040 will give the required time to eliminate scope 1 emissions and achieve net neutrality for scope 2 and 3 emissions. Energy conservation measures and the installation of solar PVs are both important ways of reducing the amount of external energy needed. Much of the report on energy usage in buildings depends on the work of the Integral Group and I recommend including their complete Summary as an appendix. Based on my knowledge, I present the following comments to take into account for improving the final report.<br><br>The material starting on line 651 to eliminate Scope 1 and 2 emissions divides U-M infrastructure into six geographical areas for each of which heating and cooling will involve a centralized geothermal heat exchange systems connected by medium temperature hot water. At the end of this material there needs to be a section recognizing that the U-M also contains many smaller units ranging from single residences such as caretaker homes in the Arboretum to small campuses such as the Biological Station in Northern Michigan, the West Ann Arbor Health Center and the planned U-M Center in Detroit that need to be subject to the same planning processes and most likely the same but smaller scale solutions. Most of these buildings belong to a specific U of M unit such as LSA or Michigan Medicine who need to be responsible for working with facilities management to bring about the conversion from burning fossil fuels to using renewable electricity. This could be aided by each School or Unit with dispersed property having a Sustainability Director, a faculty and staff advisory committee and to create an implementation plan and timeline. Although cost estimates for these smaller properties are not available, some estimate or just the acknowledgement of extra unknown costs should be included. Each School/College should prepare a list of all off campus buildings owned or leased and by the end of 2022 have prepared a action plan/timeline for making them CN.<br>I was pleased to see the recommendation for local solar PV to reduce the need for external sources of electricity. This appears to have come from the Integral Group Report. The material on page 93, line 3036 suggests there is not unanimous support for this proposal as the report states that the same effect could be obtained from a PPA or offsets. This weakens the recommendation. The main negative to solar PV is their intermittent nature and the cost and perceived low return for the money although the costs are continuing to decrease. The advantages are that the power goes directly to our usage (buildings) and secondly, that solar PVs are a visible sign of our commitment to clean alternative energy. These are both very important considerations. The immediate cost factor can be reduced in some cases by the U-M partnering with an electricity provider who builds and owns the solar array and charges an agreed on price for the electricity produced. This latter approach is most likely to work for larger arrays over parking lots. Some peripheral locations such as the Biological Station and West Ann Arbor Health Center have land for ground mounted systems as well as larger roof area to volume ratios because their buildings are relatively low rise. The price of batteries for storing solar power has also been rapidly decreasing. I encourage you to make the report more positive about solar PV and encourage immediate movement to establish pilot projects in this area. As long as PVs produce only part of the power used in a building they can be behind the meter.<br><br>As a faculty member within Michigan Medicine and because Michigan Medicine accounts for a considerable amount of space and approximately half the University's budget and employees, I feel it should be required to develop its own implementation plan within the framework outlined by the PCCN and be given the mandate and responsibility to decarbonize. In the draft report the Medical Campus is combined with Central Campus for heating and cooling probably because of their geographical proximity leading to their being served by a centralized power plant or geothermal array. However, this may encourage a business as usual position. Michigan Medicine will be the largest contributor to the proposed internal carbon tax and they are more apt to take an active role in Energy Conservation Measures and the addition of solar PV to their various centers if they have control of their carbon tax funds and their own REF. Constant and reliable power is of paramount importance to a medical center. Michigan Medicine should have a chief Sustainability Officer who answers directly to the Vice President for Medicine. Embedding sustainability within Michigan Medicine will help enable buy in from all faculty and staff. This also applies to all units of U of M but is not well developed in the draft report. In addition, the PCCN should note that patient travel is also a contribution to Scope 3 emissions.<br><br>As illustrative of the fact that Michigan Medicine is lagging other leading medical systems, Kaiser Permanente Health System, a large multistate system has just announced achieving carbon neutrality and eliminated a 800,000 ton annual carbon footprint. https://about.kaiserpermanente.org/content/dam/internet/kp/comms/import/uploads/2020/09/kaiser-permanente-path-to-carbon-neutral-guide_20200923.pdf Kaiser uses offsets to cover its use of natural gas in heating and cooling. Their planning was begun in 2016 with a goal of eliminating Scope 1 and 2 and selected Scope 3 emissions by 2020. Boston Medical Center (BMC) has become known as a "Green Hospital" uses solar and partners with MIT for a solar farm in North Carolina. They developed a small gas fired combined heat and powerplant installation which has also provided emergency power. BMC aims to become the first CN hospital in New England. The organization Practice Greenhealth can provide information for planning purposes. In the area of applying rigorous building standards to reduce energy consumption, a Frankfurt Germany hospital under construction (Klinikum Frankfurt Hochst) which is bigger than the planned new U-M hospital has been certified as meeing "Passive House" standards which can mean reducing energy use by 90%. U-M can learn from these and other existing programs to reach CN.<br><br>Finally, the draft report needs attention to making figures readable and having consistency in dimensional units. On page 21 the units and size of GHG profiles for U of M do not match in the table and graph. If it is stated that all GHG emissions are reported in metric tons of CO2 equivalents, then the only use of M should be if referring to millions of tons. On page 25 MT appears to be used as metric tons while kt is used as kilo tons. On page 37, line 938 MW is used as an abbreviation for Mega watts. However on line 949, M is apparently used again for metric in MTCO2. Other tables such as Table 3 on page 23 are almost impossible to read and this impedes understanding of the material presented. Even on a monitor screen it has to be shown at 400% to be understandable. I would assume that many if not most readers will print out the report so all material should be readable at that size. Fig 6 is an example of an easy to read table. | JK, JL, EM, AO, HE, HH, JM, L |
| 292 | Student | It's really important to give *specific* recommendations for who should be tasked with each recommendation and a recommendation for *when* it be completed by, otherwise it is very difficult for anyone to know whose responsibility a given task is and to measure if they are actually on target. There are almost no benchmarks or recommended target dates for any of the recommendations.<br>Every recommendation should have a recommended time-frame for completion, even if it carries the caveat that it is just an estimate and actual results may vary depending on other factors as implementation progresses.<br>This is pretty standard practice (see e.g. Integral Group's report, with the timeline copied in Table 2 on pg. 29), and seems an essential component of a Commission tasked with informing U-M how to get to carbon neutrality by a given date. Failing to include estimated timelines to help guide U-M and the responsible subgroups would be an egregious oversight. | FC, JN |
| 293 | Staff | Line 3475 - the conclusion appears incomplete. To state that there are opportunities to significantly reduce emissions, but to omit that simple payback ranges from 500 to 1000 years, is not fully stating the conclusion. | EP |

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|---|---|---|---|
| 294 | Student | Include a recommended carbon budget, which recommends a ceiling for the total amount of carbon U-M can emit. This is the relevant quantity for climate change. The emission reduction scenarios of the Carbon Accounting Modeling Project report should already provide much of the information needed for this purpose. Figure 2 (p.23) demonstrates an example trajectory, and many may *assume* a fairly steady trend downward toward neutrality at 2040, however this is by no means guaranteed.<br>Indeed, we have only reduced our emissions by 5%, relative to our current 25% reduction commitment, despite being 2/3rds of the way through the time period. The "area under the curve" is thus much larger, with much worse climate impacts, than if we had made steady progress, but are no goals or metrics currently to capture this.<br>Furthermore, only measuring by "emissions" completely fails to capture one-time emissions such as from the construction of buildings. Again, these numbers can be easily computed using trajectories for emissions reductions -- all it requires is including this integrated carbon content as a recommendation so as to guide future "carbon investments". | BV |
| 295 | Anonymous | Anonymous | C |
| 296 | Student | Lines 1140-1145: The Energy Consumption Policies (ECP) team specifically recommended increasing the size of U-M's energy management team from 4 to 12, based on detailed analysis. The Commission has removed this specific recommendation, instead just recommending an "increase". The quantitative recommendation from the ECP team should be retained.<br><br>Furthermore, and perhaps even more egregious, the Commission has *added* the following language, which is NOT SUPPORTED BY THE ECP's analysis:<br>"Currently, DTE provides three on-site energy managers to help U-M Ann Arbor identify and develop new energy efficiency opportunities. An increase with the level of activity might require bringing on additional DTE resources and staff. More information can be found in the ECP analysis report, Appendix D."<br><br>No where does the ECP state that UM may need to "bring on" additional DTE resources and staff, and certainly not in the Appendix referenced. That appendix *does* give detailed recommendations of what staff support positions should be created to implement these recommendations (Appendix D.3), yet these are no where referenced in the Commissions recommendations.<br><br>The decision implicitly recommended expanding hiring of DTE and not take the ECP's recommendations is likely to be viewed quite negatively if retained, especially given that the Commission refused numerous public and private appeals to make clear how it would ensure that its recommendations were not unduly influenced by DTE, who maintains a significant conflict of interest with how U-M procures it's energy.<br><br>Recommended wording change for lines 1140-1145:<br>"To provide adequate expertise across the Ann Arbor campus to fully utilize the REF and achieve the desired emissions reductions, the Commission recommends that U-M increase the size of the current energy management team from 4 to 12 in accordance with the ECP report's recommendations. The Commission recommends the creation of additional staff positions to adequately meet the additional implementation and accounting demands, using the ECP report as a guide (see e.g. Appendix D)." | JO |
| 297 | OPT OUT | OPT OUT | JX, JY, JZ, C, A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |
| 298 | Alumni | I strongly support all of the PCCN draft recommendations designed to reduce Scope 3 GHG emissions related to commuting, including the one to expand on-campus housing for faculty, staff and students (line 1797).<br><br>U-M must step up and recognize that its growth and that generated by spin-off entities is leading to a significant mismatch between housing demand and supply in the surrounding community with wide-ranging negative consequences for - but not limited to - its students and employees, including financial and social equity repercussions that spill over into DEI reverberations. Ann Arbor is becoming a place where people can't afford to live where they study, work (including teach and research) and play. Longtime residents and U-M's own students, staff and faculty are being pushed out. Commutes are becoming longer, more expensive and more GHG-emissions intensive. The greater Ann Arbor region has become the 8th most economically segregated metropolitan area in the United States and is getting worse. As the largest landowner in a constrained market, U-M can't wash its hands and claim that its mission excludes housing and that the domain is the responsibility of private developers. Indeed, the University has provided housing students for decades. Moreover, peer academic institutions do the same as well as for faculty and staff, as documented in the Commuting IAT report.<br><br>I am also a Stanford grad. Stanford and the surrounding communities have similar housing problems. Confronting those problems, Stanford recently completed new graduate student housing not mentioned in the Commuting IAT report that will enable 75% (!) of graduate students to live on campus; see: https://news.stanford.edu/2020/09/03/escondido-village-graduate-residences-open-inaugural-residents/. The University even jointly operates Stanford Faculty Staff Housing "to provide affordable, high-quality transitional housing to eligible faculty and senior level staff"; see: https://fshrentalhomes.stanford.edu/.<br><br>U-M can and must do the same, particularly for the A2 campuses. It should reimagine its growth and dedicate some of its expansive tracts of property to housing its community, not just on its perimeter but also closer to key employment centers. It should also do so in cooperation with the City of A2 so as not to create university-ghettos but vibrant, mixed-resident, mixed-use 15'-walkable neighborhoods according to urban planning best practices (in contrast to the isolated housing on North Campus that are at the bottom of everyone's preference lists - even though they are fully occupied because other options are even worse).<br><br>The commuting recommendations are a well-designed, interdependent package that jointly comprise a holistic approach to reducing U-M's Scope 3 GHG emissions as well as addressing other critical problems. Include - and reinforce them - in your final report! | BX |

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| 299 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br><br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |
| 300 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |
| 301 | Anonymous | Anonymous | KA |
| 302 | Staff | COMMENT #302 (1/2)<br>Line 2465 - I don't believe this paragraph adds anything. If certain members of the commission need this statement included to keep their jobs or something, list it once. Don't repeat it in every section because it just makes it seem like none of the ideas in this report have the full weight of the commission behind them.<br>Line 2480 - This paragraph buries two important and distinct recommendations by combining them. Change to be discernible, independent recommendations. 1) Create a carbon neutrality position that reports directly to the President. 2) Require every school, college, and campus unit to create and update annually a sustainability plan addressing its unique needs and opportunities.<br>Line 2485 - Creating a single position doesn't seem appropriate to me. One final decision maker / spokesperson would be great because we lack leadership, but you have outlined far too much work for one human to do across three campuses. Some sort of restructuring of existing staff or establishment of a standing committee that will support this person needs to be included in these recommendations or this person will not succeed.<br>Line 2485 - I know this new high-level position will come out of a carbon neutrality report, but I think the university would be better served by this being called a "Sustainability" position. Carbon neutrality is just one aspect of sustainability. Also, carbon neutrality is something you all have shown that U-M can achieve by 2040. So, I wouldn't want this new high-level role to be eliminated in 2040 when we will inevitably have a lot of work left to do.<br>Line 2485 - Do you recommend this person be hired immediately? What's the timeline?<br>Line 2490 - Would we explore combining our DEI and Sustainability Offices or maybe the reporting structures for these two units? Certainly we would want the DEI initiative to be as excited if not more excited about this collaboration. Other universities have done this: https://www.tmcc.edu/diversity; https://csumb.edu/diversity/; https://www.ocadu.ca/services/odesi. Honestly, there are three separate culture change goals at U-M that might be better served by uniting: Mhealthy, DEI, and Planet Blue. It's a bit out there but consider it! All involve engagement, communications, data tracking, events, unit reporting, unit champions/leads/ambassadors, behavior change… just on different but overlapping subjects.<br>Line 2500 - So, if we don't know if we have the right staff in the right places - we should recommend an internal staffing audit of some sort and a timeline for conducting it.<br>Line 2505 - Also, in a way similar to DEI goals, programmatic/unit goals related to carbon neutrality need to build up to something central.<br>Line 2505 - It's unclear what you mean by create a network. Will that be a standing committee with lots of working groups that can get interested students and staff involved in solving some real problems? Would that look like the DEI unit leads? If so, would we mandate every unit have one? We already have Ambassadors and Green Teams so how would this new network of people fit? What would it replace or elevate?<br>Line 2510 - We clearly need more staff at our other campuses. We should summarize here all the staffing and expert committee needs mentioned elsewhere in the recommendations.<br>Line 2530 - "working across all units in a consultative role" - this is going to take a lot more than one person. How could one person be a consultant to all units across Flint, Dearborn, Michigan Medicine, Athletics, Student Life, and A2 general fund? They are all such different communities!<br>Line 2535 - When it comes to communications, it can't be just a once a year report. There needs to be a constant drum beat. We need to be telling stories, collecting photos, recording videos, and giving a real human picture of what this transition to carbon neutrality really looks like or else it will constantly be overlooked by other initiatives that engage stakeholders better.<br>Line 2575 - Is growing research funding from 5 to 10 million on par with what other universities are doing? Is it way less, way more - I bet people don't have a sense of this. Is this an opportunity for leadership or an area where we need to catch up?<br>Line 2610 - Can we recommend that we should expand PBA to all three campuses?<br>Line 2615 - OCS funding needs to allow them to consider life at home which is off-campus for the majority of U-M community members. If U-M is working on carbon neutrality of scope 3 emissions, we have to help our staff and students who live off campus make the connections between sustainable behaviors at work and at home. | L, KB, GC, KC, KD, KE, EM, FY, GZ, HB, KI, KJ, KK, KL, KM |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 302 | Staff | COMMENT #302 CONTINUED (2/2)<br>Line 2630 - we piloted the sustainability module in orientation this past summer. That already happened, so this text should be updated.<br>Line 2640 - Promoting the sustainable retirement fund options at the point of hiring would be key because that's when people are making those decisions. We need to advocate for additional, more transparent options there as well. Also, since TIAA and Fidelity advisors are present at all orientations, why don't we recommend that they do a very brief introduction to these funds during regular orientation? Also, should we recommend that U-M accounts default to the most carbon neutral fund unless employees choose otherwise?<br>Line 2655 - When it comes to curriculum we need to be specific if we are talking about establishing sustainability literacy or carbon neutrality literacy. And, we need to include assessment in this to see if the curriculum is working. How often should that assessment be done?<br>Line 2655 - integrating course provisions into annual reporting would be awesome. Then it would be easier to report to STARS. Also it would be easier to promote those courses across all schools and colleges.<br>Line 2675 - More signage. More emails. More presence. Not just of Planet Blue, but what it means. I'd recommend we did an audit of U-M social media platforms and ensure that carbon neutrality stories were elevated as often as other presidential initiatives.<br>Line 2685 - Additional avenues to reach community members = sporting events, campus tours, digital signs, bus signs, admissions materials, graduation materials, the canvas dashboard, social media, ….<br>Line 2710 - Living learning labs have a sort of town-gown justice component to them. We can enable students to use their own space as a pilot testing ground for making mistakes before we send them out into the community. This is particularly the case for Detroit and other vulnerable communities.<br>Line 2725 - It would be good to include a summary of all the ways to use the preceding recommendations in the report for educational purposes.<br>Line 2755 - When it comes to external collaboration, we have many different departments liaising with different external groups, but we don't have a way to share that information internally. Oftentimes one department will meet with the Big 10 and Friends sustainability group, or UC3, or the Michigan Environmental Justice Coalition, or other colleges in Michigan working on sustainability, but other departments will have absolutely no idea.<br>Line 2760 - Community engagement, especially with vulnerable communities takes TIME. The process for forming these recommendations was not exemplary when it comes to consistency of outreach, or giving communities enough time to engage with the report or enough variety of engagement mechanisms.<br>Line 2805 - We need to tailor internal outreach and engagement opportunities too.<br>Missing items:<br>- A presidential sustainability / carbon neutrality award<br>- An annual symposium like DEI has<br>- Evaluations for staff related to their sustainability efforts<br>- Summer reading books for students about carbon neutrality<br>- Anything related to Athletics<br>- SCIP is not mentioned<br>- Visible symbols, demonstration projects.<br>- A campus free store / thrift store as an expansion of the maize and blue cupboard.<br>- Anything related to graduation. If we don't require the 3-credit course the IAT recommended, we could encourage it with a chord.<br>- Anything to do with alumni, alumni weekend, alumni volunteers, alumni education, the go-blue rewards for alumni.<br>- Anything to engage with hospital visitors.<br>- Any sort of mention of U-M traditions - like not stepping on the M (We're trying to have a lighter carbon footprint, so there has to be some connection there!) the squirrels, painting the rock, walking through the fountain, or tailgating on the golf course. Also, what are the Flint and Dearborn traditions? | L, KB, GC, KC, KD, KE, EM, FY, GZ, HB, KI, KJ, KK, KL, KM |
| 303 | SPAM | SPAM | SPAM |
| 304 | Anonymous | Anonymous | KN, KO |
| 305 | Staff | Thank you for the opportunity to comment on the President's Commission on Carbon Neutrality. I like the progress the Commission is making but have concerns that the steps taken are not bold enough. I believe we should be modeling ourselves after other institutions which have taken bolder steps and have included people affected by Environmental Justice. MIT, OSU and Iowa are miles ahead of us and our approach and can be used as a template for actions. Additionally, the report does not include the urgency necessary to meet the IPCC 2030 goals. I believe that there needs to be a re-evaluation of growth and rapid implementation of new building standards must be added. The Scope 3 goals must be set with the year with metrics to assess progress. Michigan Medicine needs to be added especially considering the plans for a new hospital. The hospital still uses styrofoam cups, for heavens sake! I do not understand why MM does not have a sustainability coordinator. MM impacts the climate of not only Ann Arbor, but Brighton, Northville, Ypsilanti and Midland and could be a model for those cities, if sustainability were a goal and included in their mission of medical justice.<br><br>Thank you once again for accepting this feedback about this urgent matter. | DB, CH, EB, CO, DO |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 306 | Alumni | (Note: I provided similar but less detailed comments in a virtual meeting between A2Zero Community Partners and the PCCN Co-chairs and other commissioners. After I spoke, co-chair Prof. Forrest recommended that I submit them in writing via this portal.)<br><br>Achieving carbon neutrality (CN) is a massive change initiative. As such, the implementation phase must be structured after best change-management practices and lessons learned. Figuratively speaking, there are graveyards across the globe which are littered with failed plans, not because the entities' visions were wrong or the plans were poorly devised but because not enough focus was placed on important implementation considerations. In the case of CN, local failures or delays, especially on the part of those entities which are needed to lead like U-M, will have dire consequences. Moreover, it would be a huge waste of resources, resources which could been applied to many other important causes.<br><br>The share vision or objective - in this case U-M net CN by 2025 and gross CN by 2040 - provides direction to the organization but there are a host of other important - indeed necessary - change elements, including at least the following:<br>1. A sponsor, champion and multiple unit-level champions - The sponsor has to be President Schlissel. The champions are the new proposed U-M-wide CN leader (line 2480) and unit-level leaders (line 2505). The deans and heads of other units like Michigan Medicine and Athletics must also serve as champions. Responsibility AND accountability must lie with them and must be delegated through them to others. This must be EXPLICITLY stated. See also Voices for Carbon Neutrality's letter to the PCCN for additional recommendations related to this element.<br>2. Rewards and recognition - With responsibility and accountability must be tied to rewards and recognition, not just at the top of the organization but throughout the organization down to teams and individuals. U-M must design a system of CN related rewards and recognition or decide how to use existing ones for the purpose of CN. They should be used frequently and tied to specific achievements. Initially they should come from the sponsor and champions but later involve or include student-, staff- and faculty-level design and decision-making input. Change initiatives needs heroes. Unfortunately, in some cases accountability also demands penalties in various forms. Carrots and sticks must be consciously designed and applied. This element appears not to have been addressed in draft recommendations.<br>3. Measures, milestones and feedback - SMART (Specific, Measurable, Attainable, Relevant and Time-bound) goals must be deployed across the U-M system and progress against them must be in rigorously reviewed in meetings up and down the organization. CN will need strong project management (and thus trained, even certified, project managers). Annual if not monthly targets should be set; in addition to being SMART, they need to minimize the area under U-M's GHG emissions curve over time to minimize their negative impacts. Plan Do Check Act (PDCA) cycles need to be consciously used to drive continuous improvement. Some aspects of this element also appear not to have been addressed in draft recommendations.<br>4. Policy, Procedure and System Alignment - A review of U-M policies, standard operating procedures and systems ranging from budgeting to purchasing, personnel, planning and beyond need to be reviewed and aligned so that they all promote - or at least not undermine - CN. Old systems often have created norms and drive behaviors which, if they continue to be reinforced, will doom C-N progress. Change is not possible without supportive systems and structures. As above, this element appears not to have been addressed in draft recommendations.<br>5. Communication and best practice exchange - People adopt change at different paces; there will always be 'leaders', early and later adopters, and laggards. Communication is needed to keep momentum going and to offer reminders. It must occur across the organization and to students, staff, faculty, alumni, donors, vendors and their employees, and the public. It should flow through established and new channels, from a new CN agenda point in meetings, to all of the formal and inform media and forums the U-M community uses. Communication also must include internal and external best practice (BP) and lessons learned (LL) exchanges, including with community partners - academic networks, Ann Arbor, Flint and Dearborn, the State of MI, NGOs, etc. - as called for by President Schlissel in his charge. BPs and LLs accelerate change and save resources. Again, this element appears not to have been fully addressed in draft recommendations.<br>6. Quick Wins and Local Innovation - Early successes build momentum. For that reason, low-hanging fruit should be harvested first. Pilots, beta sites and demos focus resources and can then be communicated (see above) and serve as BPs and LLs, good ones to be repeated and the bad to be consciously avoided; they can also differ from campus to campus and unit to unit. The quick win aspect of this element also is not sufficiently addressed in the draft report although some elements of local innovation, such as R&D and living, learning labs, are included, but not as a part of the design of an element of a system-wide change management toolbox.<br>7. Symbols and Signals - These provide credibility to sponsors, champions and leaders in general. They convey the significance of change and that they mean what they say. If highly visible and well communicated, they provide tangible reminders to the effort underway. The reflect the importance of participating in the CN initiative. If done well, quick wins can be particularly effective symbols and signals of progress, especially when follow-up with a series of similar actions. The value of this element also is not sufficiently recognized in the draft report.<br>8. Education, Training and Action Tools - People, from the top of an organization to its far reaches, need new knowledge and skills to support a change initiative. Just being fed exhortations and hearing or reading material isn't enough. A train-the-trainers approach is particularly effective, starting with senior leaders learning and then leading the 'teaching' process in their meetings with students and subordinates because it demonstrates leadership buy-in and commitment. External experts can be brought in when appropriate. This element is reasonably well addressed in by draft recommendations (see section beginning with line 2687) but leadership and senior faculty and staff levels must also be target audiences.<br>9. Guidance Structure and Processes - Structures and processes built specifically around CN will be necessary; when appropriate, they can be aligned with or piggy-back off existing ones. Organizational reporting, steering committees and review meetings structures for CN champions and unit-level champions down to departmental- and building-level teams must be devised. Templates and standards for action planning, metric reporting, consolidation and PDCA loops will be need. Without structure and processes, old daily work and routines will crowd out change work; change needs management and organization; it is not enough to simply have a shared vision, SMART goals and plans. This element is covered quite well in the draft report starting with line 2495.<br><br>All of these change elements are absolutely necessary and must be intentionally designed, explicitly named and directly linked to U-M CN in order for U-M to achieve CN as quickly, efficiently and effectively as possible. As noted above, many are addressed by draft recommendations; however, they must be viewed and implemented as an interdependent system of change drivers and it is helpful if the recommendations are linked to a change initiative system, not just individual recommendations.<br><br>I recommend the PCCN and U-M CN leadership engage with world-class change-management and continuous-improvement thought leaders and consultants to deepen these concepts and to act as sparring partners accompanying the U's CN journey. The Ross Business School certainly has such resources. | KP, KQ, HQ |

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|---|---|---|---|
| 307 | Student | I am very concerned at the Report's cavalier handling of environmental justice. President Schlissel specifically charged the Commission with creating recommendations aimed at creating a more sustainable AND just world, and I believe the Commission has come up short on the second charge (though I do applaud the report's many great, transformative ideas at affecting sustainability, such as the campus-wide geo-exchange system for heating and cooling).<br><br>Despite the fact that UM has one of the best environmental justice programs in the world, and a wealth of scholars with expertise in the area, none of these experts were enlisted as members of the commission. Like many others, I am perplexed as to why an Environmental Justice IAT group was formed, but, without notice or announcement, was seemingly dissolved without delivering a report. What we are left with instead is a surface level treatment of justice and equity that is generally mentioned section by section, but not, in my estimation, thoroughly addressed in a comprehensive way.<br><br>As such, I recommend that, as the Commission is making edits to each section of the Report before final delivery to the President's office, that a thoughtful and engaged effort is made to integrate climate and environmental justice throughout EVERY line of the report. "Environmental justice" and "climate justice" are not even defined as Key Terms between Lines 295 and 360. This is but one nitpicky example, but to me, this signals a failure of the report to put equity and justice FIRST and holistically address these objectives throughout the report.<br><br>How can we accomplish this? I would encourage the Commission to bring experts such as those discussed above, as well as outside groups -- such as Governor Whitmer's Michigan Advisory Council for Environmental Justice (I will link the Governor's announcement of this group and its membership at the bottom of my comment), which includes UM EJ faculty and community experts around Michigan in the EJ space -- into deliberations and meetings aimed at responding to and integrating public comment (and, where relevant, to compensate them or onboard them as formal consultants). More experts of these types should have been included in this process from the get-go, and I implore the PCCN and future similar bodies to prioritize community and institutional partnerships much more aggressively in the future. I am also quite disappointed that existing campus resources like the Ginsberg Center (and specifically, experts like Amanda Healy) were not consulted as part of this process. Resources like the Ginsberg Center must receive FINANCIAL and strategic support from leadership to support PCCN efforts, so that they can actually be empowered to spend PAID time working on behalf of the PCCN and meeting strategic university goals at achieving carbon neutrality in a just manner. This critique should be compared by my previous comment echoing the Ross Energy Club's call for the creation of a Project Management Office to coordinate these efforts. If we're serious about carbon neutrality, we need deep institutional buy-in at ALL levels.<br><br>What can these experts focus on in their review? Every section of the report would benefit from a detailed assessment of how the recommendations offered by the PCCN perform with respect to distributive and procedural justice outcomes. I will briefly define these terms, and position them in the context of the PCCN report. I also suggest that these terms are defined by the Commission, included as Key Terms in the Final Report, and addressed throughout the report.<br><br>Distributive Justice: An equitable distribution of environmental risks, impacts, and benefits (e.g. cleaner air, cheaper/more reliable energy, healthier food, etc.). Describing, planning for, and achieving distributive justice must be central to efforts at achieving EJ through the Commission's work, because environmental injustice is intrinsically linked to the health and wellness of our SE Michigan community.<br><br>Procedural Justice: Achieved when all people, regardless of race, ethnicity, income, national origin, gender identity, educational level, etc. have meaningful involvement with environmental decision making. If procedural justice is thoughtfully implemented as part of the Commission's report, then distributive justice is all the more attainable. When all communities are included in the dialogue, each community is able to communicate its unique situation and defend themselves against the imposition of unjust environmental burdens. I highlight some of the Commission's missed opportunities to facilitate engagement with its many constituencies above. If this Commission has not achieved procedural justice, it follows that distributive justice is not achieved by this Report in its current state.<br><br>Parsing a 135 page report, especially with only a couple of weeks at the start of the semester, is not attainable for everyone. I am disappointed at the scale of public education and engagement at this phase of the process. Additionally, I lament the Commission's historical attitude towards engaging with its students who are so passionate about a carbon neutral future The PCCN must be better at positively engaging with its students in the future -- the loss of the members of the Student Advisory Panel after its efforts were brushed aside by the Commission is a huge failing. I KNOW in my heart of hearts that all the commissioners feel the same things students do about the urgency of the climate crisis, and that we ultimately want the same thing for our community. But, to get there, we HAVE to work together. Please listen to, and thoughtfully integrate, public comments into the report. Thank you for reading this particularly long comment.<br><br>Link to Whitmer's announcement of the Michigan Advisory Council for Environmental Justice: https://www.michigan.gov/whitmer/0,9309,7-387-90499-517922--,00.html | BW, EE, KR, EC |
| 308 | Student | In 2019 our REF SFCE task force created a REF proposal for UM and presented here at the UM Energy Institute. I think it would be helpful for you all to see our detailed report here: https://energy.umich.edu/wp-content/uploads/2020/06/Revolving-Energy-Fund-for-U-M-2019.pdf in order to possibly implement this much faster. Also, I have heard that you all may have looked at our report in your paper and wonder if there were some aspects you didn't like if you would like to go over them with our team. I'm glad the REF is on the right track to get started, but I just think we can make it happen much more quickly if we work together & you can use our info that we spent cultivating for months! :) | R |
| 309 | Student | We request more specifics regarding a sustainability orientation module/workshop for first-year students to ensure it holds par to the other alcohol and sexual violence awareness modules (not merely a one-page Planet Blue section).<br>As pertains to each department developing their own sustainability curriculum elements (81), UM must also ensure there is continuity between departments and a basic standard set by the university.<br>We also appreciate and respect the committee's recommendations to include daily educational cues (signage and art installations) as reminders to students of their relationship with their environment.<br>We demand more specifics into how UM would support student sustainability organizations in general and how receptive they would be to the daily educational cues and sustainability workshops recommended.<br>We also ask the University to release a simplified version of the report for the general public - make it more digestible to the public and the student body. This will ensure transparency on UM's behalf as well as another avenue for students and student organizations to get involved in the carbon neutrality process.<br>The University of Michigan has the right people and the right research, they are simply not implementing the ideas. UM must include all departments with regard to energy efficiency with little transparency and utilize more local sources for energy.<br>The university should include UM economists to give their views on cost-effective technologies and work with research teams to decide where implementation could occur best on campus. | JX, JQ, GJ, KS, KT |
| 310 | Student | It's great that Scope 3 emissions were included, but we must come up with Scope 3 recommendations NOW with goals to achieve Scope 3 neutrality by NO LATER than 2030.<br>Have the PCCN set smaller interim goals to achieve leading up to or in place of (currently) the larger projects that may not be started for years to come.<br>The university should start working toward reducing scope 3 emissions NOW and align itself with Washtenaw County's goal of scope 3 carbon neutrality by 2030.<br>The University should collaborate with Washtenaw County and local departments to bring about the most efficient transitions with regard to transportation and scope 3 emissions.<br>Implement a student-led water reduction challenge, similar to PITE's waste reduction challenge with a point system for all trash you throw away. A similar approach could be taken with clothes washing, showering, etc.<br>In the next report, mention divestment from fossil fuels for the organizations and individuals protesting. Include this either in the scope 3 emissions section or in a separate section. | CO, FY |

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| 311 | Student | We recommend ensuring the University maintains the long term carbon offsets they've currently invested in even after emissions and have been cut completely.<br>If UM is going to use carbon offsets, explicit environmental justice considerations must be central criteria in choosing where to buy offsets (“compliant with social and environmental safeguards” is vague and unenforceable — these safeguards must be made explicit)<br>If UM is going to use carbon offsets, explicit environmental justice considerations must be central criteria in choosing where to buy offsets (“compliant with social and environmental safeguards” is vague and unenforceable — these safeguards must be made explicit)<br>The recommendations must include an accountability structure with actual guidelines and explicit reporting requirements. It is especially important that an itemized report be produced no less frequently than once per six months, which details progress and lack of progress on each recommendation.<br>Reference the IAT reports more prominently for more guidance on specifics (even if the exact specifics themselves are not the “official” recommendations). | KU, JT, EJ, EN, EH |
| 312 | Student | Explicitly recommend the inclusion of Environmental Justice experts in assessing energy procurement decisions and study of the environmental injustice that is supported by procuring UM’s energy from DTE.<br>In the report, acknowledge the co-benefits and prioritize (1) purchasing/producing electricity elsewhere and (2) working to empower communities through legislative lobbying for democratic energy policy.<br>Recommend funding study and implementation of how U-M can further a just and sustainable transition through legislative engagement, education, and advocacy.<br>The committee should recommend to the university to renew a PPA with DTE energy for renewable energy sources. | GW, CN, KO |
| 313 | Student | With regard to compost, waste, and water usage, we greatly appreciate the committee's recommendation for MDinin for "try a taste" stations upon university reopening to reduce the amount of food waste from students.<br>We ask the committee to recommend banning the sale of single-use plastic water bottles on all three UM campuses.<br>We ask the committee to recommend working with MDining to find better packaging for to-go dining hall meals.<br>We ask the committee to demand specifics on food waste from UM dining halls versus food donated per semester.<br>We ask the committee to recommend installing low-flow faucets or automatic faucets in all bathrooms in each building across all three campuses (flint, dearborn, ann arbor).<br>We ask the committee to recommend UM recycle resources from previous construction projects (flooring, etc.) for new construction.<br>We ask the committee to recommend to UM to install water misers within new construction projects/buildings to reduce water flow by up to 50%. | KV, KW, KX, KY |
| 314 | Student | As a graduate student in the School for the Environment and Sustainability, I would like to make clear that I fully support the issues raised by the Climate Action Committee. As I read the report, I was shocked at the lack of input from the community itself, especially those who have expertise regarding the impacts of climate change, carbon offsets, and environmental (in)justice on the community outside the University.<br><br>The University of Michigan sets the standard for other public universities across the country, and its research has far-reaching affects. The values that it shows will shine a light for not only the state, but the entire country. However, the use of carbon offsets, lack of planning for housing, and lack of inclusion of environmental justice at every level shows that this is a plan only for the elite, and not for everyone, everywhere. Only with revisions that include justice will it become world-class. | KA, EM, EN, HQ, HR, HS, HT, HU, HV, BL, AQ, BU, BV, AO, AQ, BW, BX, IB |

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| 315 | Alumni | INTRODUCTION:<br>Line 195 Equity. The Introduction acknowledges that the climate crisis poses the greatest threat to disadvantaged communities and that equity "must be comprehensively interwiven throughout U-M's climate action plan..." Yet there was no Interna or External anaysis team to consider this issue, only a subgroup to comment on it. The lack of emphasis on equity is evident throughout the recommendations.<br>Line 233 Scope 3 Goals. It should not take 5 years to establish initial Scope 3 Goals. Even if goals are tentative and subject to change later, goals should be established soon. Perhaps within the next year.<br><br>COMMISSION RECOMMENDATIONS:<br>Line 605 This section mentions an outside consultant, Integral Group. Given that the carbon neutrality wil cost billions of dollars over the next 10 years +, will the University be getting another opinion from another leading expert firm to review the Integral Plan?<br>Line 647 In the tabe on p.24 why would the cultural shift of engaging with neighboring cities that could be partners in advocating for renewable electricity policy changes in the state be a High Cultural Shift? While it may be a radical change in behavior for the University, the shift is only with a small group of people at the U while the benefits to the U could be very substantial.<br>This shift of working with neighboring cities would also be beneficial if the University and neighboring cities would pool its negotiating strength to provide a greater incentive to utilities to serve the changing needs of our area.<br>Line 910 UM should work with City of AA to optimize the relationship between UM's system and local/regional systems.<br>How about working with the surrounding areas to develop a purchase agreement for new buses and other vehicles to try and lower the cost both for the U and for the local governments who will have less ability to pay the premium, at least initially, for electric vehicles?<br>Line 1022 - 1025 Given this statement, which makes a lot of sense, why not put out an RFP to utilities throughout the U.S. to make sure that DTE is competitive with other suppliers? Also, why not outsource energ purchasing as other Universities have done?<br>Line 1030 Per comments related to Line 647, why isn't the partnering portion of the recommendations stronger? This one is very good but partnering should be much broader than advocacy in Lansing.<br>Nice work on the balance of this section as well.<br>Line 1145 Is it wise to have so much counsel from DTE regarding our internal operations, and to be considering more, when it is not clear that DTE should be the University's energy suppier?<br>Line 1375 - 1383 With the U-M's reluctance to kick off new and more ambitious building standards, what will be the timeline for requiring the new standards before buildings can be approved. How will the U -M craft its messaging so that the community will understand when and how it will phase in the new standards and why they won't be/aren't currently being applied to new, approved buildings that are still In the planning stage or are very early in the construction phase? The U-M has little credibility when it comes to requiring more strict building standards so the Commission should think about adding more specificity to this section. It should also consider lowering the threshold for remodeling projects from the current $3 million level.<br>Lines 1560 1825 While the Commission's recommendations rarely reveal how they are or are not equitable to all, as intended, these sections are particularly critical to examine from the view of disadvantaged communities and the employees and students who come from them.<br>Line 2381 This is another place in the recommendations where the Commission could have said something about the impact in local disadvantaged communities.<br>Line 2403 Shouldn't co-benefit #2 (second bullet) be more flexible so that location within the state of Michigan is a medium term goal but is not necessary initially when the U-M is trying to get this program up and running and trying to lower emissions as quickly as affordably possible?<br>Lines 2445 - 2454 Great proposal. How about considering inviting other local institutions with similar goals, like the City of Ann Arbor to be able to participate and share in the learning and the negotiated rates for purchasing carbon offsets?<br>Line 2500 The recommendations are correct that the U - M needs to find the right people to implement its plan. However, it fails to mention a third option for ensuring that it has the right talent and experience level and that is to also consider retaining specialized service providers and or contractors to supplement or replace U of M personnel as needed. This approach is often even more cost effective than hiring additonal staff.<br>Line 2510 - 2544 These responsibilities have some serious limitations and should be re-evaluated. Concerns:<br>- None of the responsibilities address the need for establishing a dashboard of key metrics by which to evaluate the University's progress in achieving its goals.<br>• The word accountability doesn't appear anywhere<br>• Another opportunity to stress the need for equity at the core of this initiative is lost. No mention of it. A close working relationship with the DEI office is helpful but climate justice is not just about diversity but more about avoiding harm to disadvantaged communities and avoiding racist decisions that harm lives and opportunities of communities.<br>• Even the reporting language is vague with respect to timing of reporting. "Periodically" does not imply regular reporting and accountability<br>Line 2545 then undercuts the responsibility of the position by reaffirming the obvious, this position "will have limited authority or direct oversight over executing much of the critical work that is needed." Report expresses concern that more authority would set this position up for failure. If so, then who will have the ultimate authority and why wouldn't the same logic apply to that person. The only person higher than this position would be the President of the University.<br>Line 2770 The mapping discussed in paragraphs 2775 to 2800 are too narrow and ignore two of the priorities established in paragraphs 2775- 2768:<br>3. Identify collaboration opportunities and potential obstacles to be overcome.<br>4. Coordinate activities with external partners in pursuit of shared carbon neutrality objectives<br>This appears to be an oversight since the need for collaboration and partnerships with community and other value added stakeholders has been discussed in the Draft Report in numerous places.<br><br>Line 2825 This section comes the closest to putting equity, NOT DEI, at the core of the carbon neutrality plan. Good work. More of the recommendations need to demonstrate this sensitivity to equity!<br><br>The draft recommendations have great potential to put the University on a path to carbon neutrality. Hopefully, the final report will fill in the gaps and result in a truly outstanding plan with recommendations. Thanks for all of the hard work on this. | BW, KZ, LA, DQ GR, JO, EB, EE, CZ, AY, UM, NY |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 316 | Student | Line 363-367<br>I applaud the scope and inclusivity within the Commission. However, it seems evident that 17 members lack some important areas of focus and limits the issues looked at by the commission. For example, it seems in the authors and credits that none of the members are financial experts, or none are behavioral psychologists or social workers. As a result, I think the financial capabilities throughout the rest of the section and draft are left vague at best and unachievable at worst. If the members of the commission do not possess adequate abilities to present a comprehensive plan for how this plan will be paid for, then additional experts or members should have been consulted to make a more realistic financial plan. If this knowledge is planned out, it should be presented more clearly on the draft rather than being left as vague as it is. Such an ambitious draft should not have any uncertainty in the financial experts drafting it or the ability to fund it. | LC |
| 317 | Student | Line 670<br>The draft fails altogether to acknowledge the University Power Plant or any energy stakeholders in the university. The implementation of Geo-exchange heating and cooling is a much-needed inclusion and is undoubtedly beneficial to limiting the Universities carbon output. However, surely one of the leading contributors to the Universities emissions is the Power Plant on the Ann Arbor campus, and the current draft offers no solution to this or other energy investments. The Power Plant is currently running on natural gas, and under the constraints of the draft would continue to emit until 2040. This is unacceptable. There should be a clear and concise effort to convert the Plant to the renewable effort, as well as either invest less in harmful energy companies (ie. DTE) or holding them accountable. | IA |
| 318 | Student | Line 2112 - 2117<br>The importance of composting, promoting composting on a more regular basis in the student body, or creating the infrastructure to allow for higher weights of composting is greatly understated in the draft. This past academic semester, the university invested in containers for M Dining that were compostable but neglected to educate the student body or provide enough receptacles or bins for collecting compost. There was an overwhelming problem with not having enough bins and compostables being thrown in the trash. If composting efforts (or any community-oriented efforts towards reducing waste or emissions) are to be successful, there needs to be a greater investment in educating the student body on how or what to compost, and ensuring that there are enough bins. | D |
| 319 | Student | Line 508, Line 510-515<br>The draft frequently brings up the initiative of Diversity, Equity, and Inclusion, but fails to integrate it into the goals of the draft. Clearly, DEI is an important aspect of U of M culture, but the draft does not acknowledge the disproportionate impacts that climate change, pollution, and emissions have on minority groups and homeless or lower-income communities. Specifically, in Ann Arbor, the homeless community is the most directly affected by the University's Actions. Implementing more affordable housing options for lower-income students, providing more sustainable housing options, and more actively reducing the carbon footprint of on-campus housing. The draft mentions DEI frequently but does not outline the recommendations to uphold it. | EE |
| 320 | Student | A sustainability module should be incorporated into orientation with specific learning goals and criteria. | JX |
| 321 | Student | UM should support student sustainability organizations for them to design daily educational cues and sustainability workshops. | GJ |
| 322 | Student | Include UM economists in further discussion and revision of this carbon neutrality plan to robustly understand the cost-effectiveness of a rapid transition to carbon neutrality and also include UM behavioral psychologists to properly effect culture change toward a rapid transition to carbon neutrality, especially regarding scope 3 emissions. | GX, KT |
| 323 | Student | This draft, as is, does not properly address environmental justice and shows that environmental justice is not prioritized institutionally. The next plan, which will be written by 2025 to address scope 3 emissions, must center environmental justice throughout the writing process. | EE |
| 324 | Student | While carbon offsetting would allow UM to claim it is on track for carbon neutrality while continuing to burn fossil fuels, it is likely that such carbon offsetting would displace communities from their land, especially at risk are Indigenous communities. If UM is going to use carbon offsets, this document must provide more explicit methods of considering environmental justice than “compliant with social and environmental safeguards” when choosing where to buy offsets. | JT |
| 325 | Student | The final set of recommendations must include a carbon budget to keep UM accountable so that the university does not keep burning fossil fuels in an unregulated manner as it moves toward neutrality. | BV |
| 326 | Student | As it stands, there is nothing to prevent these recommendations from sitting on a shelf, as committee reports like the GHG commission report have in the past. Therefore, the recommendations must include an accountability structure with actual guidelines and explicit reporting requirements. | EJ |
| 327 | Student | The report hardly investigated onsite electricity generation for UM, let alone methods for reducing the carbon load of purchased electricity. This report should prioritize purchasing or producing electricity elsewhere and working to empower communities through legislative lobbying for democratic energy policy. | CN, GR |
| 328 | Student | UM needs to commit to building affordable, sustainable housing on land that the University already owns and also to collaborate with the cities of Ann Arbor and Ypsi to promote affordable housing policy. This should include co-funding necessary development projects. | BX, U |
| 329 | Student | This report should be heavily considered. It is student led and thoroughly comprehensive of revolving energy funds directly applicable to the University of Michigan. https://energy.umich.edu/wp-content/uploads/2020/06/Revolving-Energy-Fund-for-U-M-2019.pdf | R |
| 330 | Staff | The report highlights in paragraph 755 and 825 that the future electrical infrastructure design and the costs associated with this upgrade, are not factored into the current report or financial analysis. Based on my experience in the energy sector, I would recommend that the commission performs a thorough review of the electrical systems across all campuses prior to committing to a path of full electrification. This review is critical, considering the commission is proposing to electrify all of the heat and chill infrastructure in the future. Here are a few points that should be considered in the electrical review:<br>• What level of electrical redundancy is required at each building across the Campuses (N+1/2/3)? This will provide clarity to how much electrical storage or backup generation is required at each building.<br>• At present the CPP provides inertia support to the Central Campus electrical system and this is not factored into this report. At present, the rotating mass of the generators assist the electrical system “ride through the bumps” when we have electrical supply issues from our provider (voltage and frequency fluctuations). It is envisaged that the CPP will be retired in 2040 therefore the electrical systems review must consider inertia and this could be addressed by installing synchronous generators, large battery systems, new digital invertor inertia control systems, etc.<br>• The recommendations of the Electrical systems review must be aligned with all of the Presidents charge detailed in paragraph 260. In particular, they need to be fiscally responsible to the University and be scalable and transferable to the community. For example; at present the proposed heat and chill geo-exchange system is not aligned with the Presidents charge due to the vast financial payback (paragraph 760) and cannot be easily transferred to a community environment. | LD |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 331 | Faculty | -I particularly am in favor of the actions to reduce the use of personal commuting, promote better use of space (shared), and substantially change to plant forward food procurement.<br>-In addition to the changes to heating and cooling, I recommend we also adjust the target temperatures to use less energy (facilities are too cold in summer, and too hot in winter), to the extent this has an impact.<br><br>The plan should also:<br>-advocate for more public private partnerships.<br>-add more about environmental/climate justice.<br>-learn from peer universities.<br>-express a greater urgency to meet IPCC 2030 goals.<br>-re-evaluation of growth of new buildings.<br>-Scope 3 goals must be set within the next year<br>-CN measures specifically for Michigan Medicine must be added.<br><br>Thank you | LE, ED, EE, EF, DB, CH, CO, DO |
| 332 | Faculty | Strongly endorse these recommendations. If anything, the timelines for action should be more aggressive.<br>1) As mentioned very briefly in the draft report, implementation of a significant national carbon tax would make continuation of present practices and the report's BAU scenario less financially attractive. This is something that is almost inevitable and makes aggressive action significantly more attractive.<br>2) Collaboration with local and regional government on transportation infrastructure is critical and should start ASAP. Collaboration with the City of Ann Arbor on bicycle lanes, for example, would be very helpful.<br>3) The idea of inter-unit carbon tax is intriguing. This should be implemented in a way that does not dump an additional administrative burden on individual units, which frequently struggle with a variety of regulatory demands. It would be important to have a central monitor of CO2 outputs to facilitate decision making.<br>4) On the touchy topic of how the University can expand it's community impact. Divestment from fossil fuels would be an important step forward. This would also be a prudent financial move as oil companies have done poorly over the last few years, will continue to do poorly, and many will experience the catastrophic decline seen in the coal industry. | V, LF, A |
| 333 | Student | SDR requests the following of the PCCN:<br><br>We demand the recognition of the University's investments in fossil fuel companies such as Kayne Private Energy Income Fund II, L.P and PetroCap Partners III, L.P. as Scope 3 emissions under the PCCN's Draft Report.<br><br>We demand a commitment to understand the impacts of the University's own investments as contributors to the fossil fuel industry and thus upstream and downstream GHG emissions.<br><br>We demand the University divest from all fossil fuel companies to satisfy its charge of financial responsibility in regards to its greater mission of education, research, and service. | A |
| 334 | Faculty | The draft report fails to interweave environmental justice throughout the U-M action plan and needs more detail about the plan's impact on disadvantaged communities and on students and employees who are people of color. | EE |
| 335 | Faculty | I applaud the PCCN for its draft report and recommendations outlining a bold plan for carbon neutrality. I have also carefully reviewed the recent letter to the PCCN from Voices for Carbon Neutrality (VCN) that highlights areas where the plan can be made even stronger. I concur with these recommendations from VCN and wish to add my voice urging the PCCN to strengthen its proposal accordingly. | ED, EE, EF, DB, CH, CO, DO, EC, DP |

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|---|---|---|---|
| 336 | Student | There are many things I appreciate about the PCCN draft report and its plans to address related environmental and energy challenges in the Ann Arbor community. I have a few critiques and questions, though, as a student here on campus who recognizes U-M's role as a leader for other higher institutions of learning across the country.<br><br>Firstly, if we truly are the "leaders and best," we need to aim higher in our goals than what is doable with the tools we have now. By this I mean, 2040 is far too late of a date to set for achieving carbon neutrality. We boast many top experts in environmental and energy studies here on campus, why not utilize all of them in a more urgent pursuit of change? Then, the sooner we achieve our goals, the sooner we may move on to assist other universities (who may or my not have the same resources as us) in the same endeavors. I'd argue that perhaps 2030 or 2035 would be a more inspiring and energizing goal to set. We need to push the bar for what is possible in our approach, and setting a date of 2040 is much too late when we have all these resources and momentum of a movement at our fingertips.<br><br>Also, in order to push this plan into a more rapid transition, there also needs to be a better accountability structure. By this I mean to ask: who exactly is responsible for what aspects of the plan? When is it due to be completed? What happens if they fall behind? Despite the thoroughness of the PCCN draft report (which is certainly appreciated), essential details were left out when it comes to clear implementation and intermediate steps.<br><br>Next, I'd like to argue that there is a great need to consult environmental justice experts here at U-M, especially when it comes to the topic of establishing carbon offsets. There are many issues of social justice when it comes to purchasing land and forcing those living there to relocate. Discussion of related issues needs to be more strict and specific in the PCCN report, as we cannot be truly helping our community if we are negatively impacting community members' lives in the process.<br><br>I'd also like to comment on the issue of energy use here on campus. While the report mentioned multiple potential pathways for U-M to take in securing its energy, I would like to recommend a path that leads to the most rapid energy autonomy we can achieve. Not only would this minimize blackouts and localize our resources, but it would also send a message to DTE regarding the importance of improving their energy profile. A combination of solar panels, wind turbines (including some that rest in natural "wind tunnels across campus"!), and utilizing geothermal resources would vastly improve our carbon footprint and limit our reliance on DTE. Energy independence brings many benefits, and signals to the Ann Arbor community and beyond that we are serious about reducing our environmental impact.<br><br>Finally, and perhaps most urgently, I'd like to discuss the committee's plans in regards to commuting and housing. I think it is great that U-M is considering taking steps to raise the price of parking to encourage students and community members to utilize carpools or public transport. However, upon a second glance, it becomes clear that this may not be the best route to take. Faculty and students who commute to the Ann Arbor campus most likely do so because of inflated housing prices here in the city. Rather than charging them more for bringing their talents and minds to our community from afar, perhaps it would be a better investment to also expand public transport beyond the city of Ann Arbor. Regular, energy-efficient busses to/from nearby towns such as Ypsilanti, Dexter, or Canton would not only decrease that aspect of our carbon footprint, but increase the connections between the U-M community and our local region. Individuals choose to commute by car for the convenience and efficiency. Let's create a public transportation system that not only improves the commute, but also lowers our environmental impact in the process.<br><br>As I previously mentioned, housing prices in Ann Arbor are a key aspect of why people choose to commute. From both a social justice and an environmental standpoint, I'd argue that any new proposed housing for faculty and students on campus must be not only environmentally conscious, but affordable. The university has played an undeniable role in raising housing prices in Ann Arbor over the years. Therefore, in order to address this, any new housing must serve not only to discourage commuting altogether, but also to welcome those who may not be able to afford living in the dorms at their current cost. Introducing more rooms at the same cost they are now is not going to improve the situation: there must be more work done to enable staff and/or students to live and work in Ann Arbor affordably.<br><br>In summation, I am a concerned student who simultaneously acknowledges and appreciates the university's efforts to improve our carbon footprint and achieve carbon neutrality. My main critique, though, is that our plan must be more urgent in its undertaking. The longer we draw out the process, the more the planet feels the impact of our currently flawed protocols for obtaining energy, connecting the community, and housing students/staff. I want to see U-M lead the country boldly and proudly, utilizing the countless experts and resources we have at our disposal. Only then may we truly consider ourselves the 'leaders and best.'<br><br>Thank you very much for considering my perspectives. I hope the committee will endeavor to take them seriously into account, as I am certainly only one voice out of many who perceive these adjustments as not only doable, but necessary. | DB, EJ, EE, AQ, CA, BX |
| 337 | Student | There is no recommendation for how this work is to be done. The recommendations include expanding a number a number of analyses and reviewing ongoing construction (why it took 2 years to make this vague of a recommendation is frankly unconscionable, given all the guarantees of "Early wins"), with no recommendation for how to actually perform that work, such as through increased staffing and resources for AEC (are they the ones who will do these analyses? Then say so explicitly!).<br>[E.g. Around lines 1400]<br>Furthermore, the equity and justice considerations contain nothing about discussing building standards and construction with organized labor groups, who advocate for and protect worker well-being. Add language that union labor should be prioritized for all building construction. [Line 1405] | EJ, KA, GU |

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|---|---|---|---|
| 338 | Student | I am concerned that the “Equity and Justice considerations” for most of the recommendations display a serious lack of attention and/or understanding of what “Equity and Justice considerations” actually means — what equity and justice implications should be considered when deciding what course of action to take, so as to not inadvertently perpetuate or exacerbate existing inequities. Instead, it reads like these were applied retroactively, formulating recommendations, then finding a way in which the recommendation could be touted as reducing inequities, with little to no consideration of how the recommendation may actually exacerbate problems depending on how it is implemented.<br><br>Broadly, “Equity and Justice considerations” should not just be additional suggested PR snippets as they currently read, but actually highlight specific areas where good intentions may have negative consequences without concerted efforts to incorporate affected stakeholders.<br><br>For example:<br>- Collaboration with organized labor for hiring recommendations for all building renovations<br>- Recommendations for biosequestration projects could have been coupled with a call from Indigenous groups for land-grant universities to institute trainings for all land managers, and co-management programs that center traditional ecological knowledge<br>- Multiple recommendations throughout the report call for collaboration with DTE, a utility company with not only one of the dirtiest energy mixes in the country, but also one with one with some of the highest rates and lowest reliability (consistently shutting off energy in lower-income neighborhoods). U-M’s decisions will significantly impact the work of Environmental Justice groups working for energy democracy and resilience.<br>- The inclusion of carbon offsets completely disregards the environmental justice implications of those projects. Carbon offset projects are notorious for displacing communities, particularly Indigenous communities from their land, while allowing large, wealthy institutions to continue to extract and burn fossil fuels. Any use of carbon offsets must be done with rigorous and explicit EJ criteria included, not empty language. This requires including and compensating EJ experts when assessing carbon offsets.<br>- This report does very little to position U-M in the global context of climate justice. One particularly glaring issue is the development of a research program for carbon neutrality-related technologies with no plan for how those technologies will be shared. The current patent and profit-driven model of tech transfer reinforces imperialist dynamics between developed and developing countries and poses a barrier to truly addressing the humanitarian nature of this crisis by limiting access to the resources necessary for a green transition to a wealthy few. One can see these dynamics right now with the procurement and distribution of vaccine supplies.<br>- Scope 3 emissions are postponed for another set of recommendations to be formed in 2025 and implemented by 2040. While accounting for all of scope 3 is complex and may very reasonably take more time, if this report were truly formed with community input and was accountable to community need, one aspect of scope 3 that should have been addressed immediately is affordable, sustainable housing.<br>- On top of being astoundingly poorly developed, the scope 2 recommendations put forth (purchased electricity) considered none of the myriad aspects of EJ such as - where and how the energy is sourced, implications of continued partnership with DTE, energy democracy, and integration of U-M’s purchasing practices with the energy grids of surrounding communities such as through the process of municipalization (something U-M could serve as an active barrier to should it choose not to collaborate)<br>- Recommendations related to food were extremely limited and relied solely on an increase in plant-based menus when, if they had integrated an environmental justice lens, they could have included aspects such as labor practices and growing practices that do not result in exploitation and toxin accumulation in agricultural communities. This is a pretty glaring omission. | EE, GU, GV, GW, JT, GQ, CO, HJ |
| 339 | Student | It is scary how sparse the recommendations are for Purchased Electricity, especially given the need to essentially electrify heat and transportation. There are numerous studies looking at onsite electricity generation potential at UM, assessing PPA options, etc, yet in two years, none of these seem to have been used or studied.<br><br>After two years, how can the recommendations for this essentially consist of a short paragraph for each option (which could be compiled from Wikipedia in 10 minutes), and a suggestion to pay someone else to look into the options?<br>Why was this RFP not issued when the commission first formed? Or when UM faculty presented it as an obvious action over a year ago? Or when the Student Advisory Panel raised the issue six months into the PCCN's work in response to the Draft Interim Report?<br>I'm not given to conspiratorial thinking, but given all this, one can't help but wonder if it has to do with the fact that a senior DTE executive was on the Commission and the default and easiest (though likely least equitable and most expensive) option would be for UM to simply continue to purchase electricity from DTE at $60 million every year.<br><br>What is the timeline for when the contract with DTE will needs to be renewed? How long does a PPA take to set up? What are the EJ implications of choosing to purchase from an entity like DTE, which is the antagonist of numerous EJ grievances? Will any of these groups be included in the decision making process?<br><br>These all seem like important information to include... | KA, JU, IH |
| 340 | Student | It is really important to include EJ experts in the decision-making process for how UM decides to purchase electricity.<br>Appendix G states the only E&J considerations for how UM chooses to purchase electricity is that demonstrating an increased demand for renewables, which should help retire coal plants and thus reduce health risks to neighboring communities. There is no mention of the fact that Environmental Justice groups in Michigan have raised serious concerns about DTE’s conduct for a myriad of reasons. This includes its decisions for where to site its fossil fuel plants, its successful efforts to prevent communities from deploying their own renewable energy to increase resilience, maintaining some of the highest utility rates and 2nd lowest reliability in the country, and regularly cutting off service to 5000 - 25000 homes every month due to inability to pay (see e.g. https://www.metrotimes.com/detroit/dte-and-consumers-energy-are-broken-and-dangerous-is-it-time-for-publicly-owned-utilities/Content?oid=23102753 for a summary, and sources therein).<br><br>The $60 million UM currently spends on energy every year has enormous market weight. As part of the deliberation process for how to procure carbon-free electricity, UM should engage with Environmental Justice advocates around the state to learn how UM’s decision may impact frontline communities — that this was not done by the PCCN is a mistake that should not be repeated. Indeed, UM’s own alumni are highly involved in Michigan Environmental Justice issues surrounding DTE, (as just one example, the non-profit Michigan Environmental Justice Coalition).<br><br>The source of UM’s carbon-free electricity, as well as the process by which that source is selected, may have significant implications for (1) UM’s relationship with Environmental Justice groups around the state, (2) communities’ ability to invest in their own energy infrastructure through negotiated or legislative policy changes, (3) the health of communities from which the energy is sourced, and (4) efforts to form a municipal utility in the Ann Arbor area, in which UM’s participation could be an decisive factor.<br>[some version of the above paragraph should be at line 3170]<br><br>The recommendations should explicitly state that “EJ experts in the state should be involved in the decision-making process for energy procurement, and a study be commissioned for how UM’s electricity procurement choices can advance environmental justice and public benefit.” [Line 1025] | GW |

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| 341 | Alumni | I am a U-M alumnus (LSA '11) and public health professional. As the PCCN is aware, climate change is an increasingly important driver of social and environmental determinants of health. For this reason, I would like to highlight several areas of the draft report that should be strengthened to help U-M achieve carbon neutrality.<br><br>I noticed that the evaluation criteria for the draft recommendations (lines 480 - 545) lack any mention of the speed of implementation. Faster action is required to minimize the area under U-M's emissions curve and the climate and public health impact of its operations - an impact that thousands of its faculty, staff, students, and alumni work daily to mitigate. Perhaps because of the omission of speed as an evaluation criterion, critical timelines in the report do not align with those of peers or at the federal level. For example, the draft recommendations which would allow the Central Power Plant to burn fossil fuels (natural gas) until 2040, which lags behind President Biden's plan to remove fossil fuels from the energy sector by 2035. In addition, the 5-year timeline for establishing Scope 3 goals (lines 1485 - 1510) is not in line with the urgency of reaching carbon neutrality.<br><br>I would also like to comment on the PCCN's draft recommendations on building standards (lines 1325 - 1445). These rightfully include standards for new construction, the retrofitting of existing buildings, and energy conservation measures. However, other strategies for minimizing the climate impact of the built environment should be included.<br><br>The recommendations should include strategies for minimizing the need for new buildings such as modifications to course offerings so that year-round classes, telecommuting and virtual instruction are maximized. "Hotelling" or sharing of office spaces should also be considered.<br><br>The recommendations should include more stringent building standards, such as the Passive House envelope standard, for new buildings. The upfront costs of such measures would be quickly recuperated by energy savings. Implementation of such standards also results in increased thermal comfort of building occupants.<br><br>The recommendations should include maximization of on-site rooftop solar at all sites, including new construction.<br><br>I applaud the PCCN for its strong report and urge the PCCN to consider the comments above to strengthen it further. | DV, FX, HI, KN |
| 342 | Student | Add around Line 1050:<br>Facilitate engagement of U-M experts with Michigan policy-makers to inform science-based legislation that can accelerate statewide carbon neutrality. Policy-makers are often lobbied by entities with specific financial interests in policy choices, which can impede the flow of objective and science-based information. Given the urgency of addressing the climate crisis, U-M has an important role in ensuring lawmakers have accurate information, and assessing policies that would accelerate carbon neutrality statewide.<br><br>More information:<br>State law has seriously impeded the proliferation of renewable energy in the state. Research shows that this has largely been driven by the actions of the investor-owned utilities Consumers Energy and DTE, whose incentives are to restrict distributed generation in order to maintain market control. Just last year, researchers at Michigan Tech published a study stating that Michigan utilities "manipulate regulatory regimes via policy misinterpretation to deter or hinder the proliferation of DG [distributed energy generation] in favor of maintaining the existing interests in centralized, fossil fuel-based electrical energy production."<br>(study: https://digitalcommons.mtu.edu/cgi/viewcontent.cgi?article=1181&context=social-sciences-fp, accessible article on the study: https://energynews.us/2019/03/26/midwest/michigan-researchers-say-states-utilities-manipulate-system-to-their-advantage/)<br><br>Indeed, DTE has repeatedly made misleading or false statements to maintain market control, such as claiming that residential solar increases prices for homes without solar (this has been debunked numerous times, see e.g. reports from MSU researchers (http://ipu.msu.edu/wp-content/uploads/2017/09/IEI-Value-of-Solar.pdf) or the Brookings Inst (https://www.brookings.edu/research/rooftop-solar-net-metering-is-a-net-benefit/), or this UM research that specifically worked with DTE (https://deepblue.lib.umich.edu/bitstream/handle/2027.42/136637/306_DTEMP_4.24.17.pdf)).<br><br>As another example, in 2018, the Union of Concerned Scientists used DTE's own software to demonstrate that DTE was presenting a faulty analysis to regulators, stating "Taken together, the evidence suggests that the analysis was specifically designed to support DTE's desired conclusion that Michiganders "need" this $1 billion natural gas plant, despite real-world evidence to the contrary" (https://blog.ucsusa.org/sam-gomberg/dte-customers-could-save-340-million-with-clean-energy-compared-to-proposed-gas-plant).<br><br>While unethical, the reality is that this is what DTE is incentivized to do. If we truly want the state to achieve carbon neutrality, UM has an obligation to combat misinformation and use UM's position as the premier research institution to advocate for rigorous, science-based policy. | CN |
| 343 | Student | You guys might be saying the quiet part out loud when you write that the things U-M must avoid "at all costs" are "redundant efforts, organizational bloat, and emerging political tensions."<br>Pretty much confirming to the world what people have been afraid were the commission's main priories all along... | KA |
| 344 | Student | There really needs far more detail on staffing to implement these recommendations. It's simply not practical to think that one person is equipped to coordinate all this. Several of the IATs recommend specific staffing needs -- please explicitly include those in recommendations. An idea is only as good as the resources and staff devoted to implement it and all of the things in this report are, by definition, things that *have not yet been implemented, and thus clearly need more dedicated staff support*.<br><br>To the recommended new top-level position (~line 2520) add something like:<br>"The new executive position should include hired staff support dedicated to coordinating and organize efforts around the contained recommendations across the University and community."<br>Add to responsibilities:<br>"Aggregating and reporting on progress for each recommendation every six months"<br>"Establish target timelines for the implementation of these recommendations including working with relevant University units to develop interim targets and deadlines to ensure progress." | GC |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 345 | Student | On Page 84 (line 2780) the report says that "The unit tasked with leading U-M's carbon neutrality efforts work with U-M's existing external relationship managers, such as the Office of Government Relations, Business Engagement Center, and the Ginsberg Center, to help identify external stakeholders who should be engaged." This basically guarantees that any groups that are currently underrepresented stay that way, since it is using the existing external relationship managers. Specifically add mention of the importance of including community advocacy groups, students, labor unions, and environmental justice experts (e.g. at UM or in the state).<br><br>These groups are much more likely to know on-the-ground stakeholders than e.g. the "Business Engagement Center".<br>Given that there is broad agreement that this commission did NOT have an adequate process for identifying and engaging with stakeholders, it would be particularly useful for the commission to identify barriers that contributed to a suboptimal community-engagement process and how to avoid those.<br><br>Harnessing the energy of a passionate community will be vital, which means actually listening to them and actively engaging with them, not talking down to them or ignoring them. | HD |
| 346 | Staff | Page 80-81 starting at line 2639: The idea to add climate friendly retirement investment options for employees is a good step but it seems a bit disingenuous when the university's investment portfolio is not discussed. | A |
| 347 | Staff | These comments are about the table on page 76. What investment levels are suggested by $$ versus $. Why is "n/a" listed for GHG levels under every recommendation. Might it be better to say unable to estimate? If done well, these items could significantly impact campus GHG emissions. What is meant by High or Med Culture Shift? This discussion is very important but without additional development I don't think this section adds much to the report. | GP |
| 348 | Student | Almost all cost analyses in this report are based on purely on "simple payback", i.e. current financial costs and do not include the true cost of carbon. This does not make any sense -- the whole point is that carbon has a huge external cost that is not captured by the "simple payback" that the commission used for all its metrics.<br><br>The point of reducing emissions is not because it "makes good business sense" (Line 1090), it's because it's fueling planetary and ecological collapse... What's the simple payback for the new administration building? Infinite right? In fact, they probably didn't even compute one, because it's not a very relevant question to ask -- it's taken for granted that constructing a new building is a financial investment that will pay non-financial dividends.<br>It should be explicitly stated and made clear in the report, that any time a "simple payback" is computed using "traditional analysis", it's only for illustrative purposes, and that investments in reducing carbon are pay dividends much like investing in infrastructure -- it's not not primarily a financial instrument and decisions on payback should definitely not be made using such metrics, which exclude the true benefits and costs of carbon neutrality.<br><br>Examples:<br>- "Using traditional analysis, the nominal payback period would be 61 years" (Line 765, 3093)<br>- "More involved/complex ECM projects that require building renovation and construction have much higher capital costs, and subsequently longer payback periods. These results show that greenhouse gas reductions from certain types of ECM's make good business sense for U-M." (Line 1090, 3460)<br>- "the retrofit scenario resulting in the largest GHG reduction (77 percent) is projected to cost $114 million with a simple payback of 492 years." (Line 1435)<br>- | LG |
| 349 | Staff | Paragraph 770 states that the carbon intensity of the grid will govern the projected timeline for the retirement of the University electrical generation assets. I would recommend that the Commission review grid systems from around the world that have already embarked on reducing their levels of carbon intensity. This should assist the Commission to develop clear guidelines on what the carbon intensity values (eg; gCO2/kWh) would trigger the opportunity to retire the University's electrical generation assets.<br>In particular, I would recommend the Commission reviews the grid transition that has already occurred in the UK. The UK commenced this transition over 20 years ago due to the EU emissions directive, as they retired coal generation assets and commenced installing Combined Cycle Gas Turbines, large offshore wind and solar assets. The 2019 UK grid Carbon Intensity value was 220gCO2/kWh and the US grid carbon intensity in 2019 was 486gCO2/kWh. It's important to understand that it takes a considerable amount of time to reduce the carbon intensity of the grid in a controlled manner, whilst ensuring a high level of grid reliability and resiliency. I fully understand the requirements to eliminate the fossil fuel generation on the Central Campus by 2040, but it will be extremely difficult to quickly reduce the carbon intensity of the US grid in 19 years. Therefore based on the current DTE guidelines, I would recommend using the 2050 date to eliminate generation on the Central Campus. | OY |
| 350 | Faculty | One more specific comment: meaningful considerations of environmental and climate justice are not nearly as present in this plan as they should be. For instance, the use of carbon offsets can be highly problematic in terms of their effects on communities of color, especially in the Global South, and if these are intended to be used, there should be a clear understanding of both the risks and effects these plans have had in the past and how this will be prevented in U-M's plan. More broadly, this plan does not move fast enough, as it places us behind benchmarks set by regional and political leaders and leaders of other campuses. If Michigan to truly wants to be the "Leaders and Best" in this area, they should actually be *leading* and not lagging behind. | EE, JT |
| 351 | Alumni | Line 1888. The "University-sponsored travel at the University of Michigan" report in the appendices uses flawed methodology to estimate the GHG emissions impact of air travel. The subcommittee's estimates explicitly exclude a radiative forcing factor (to account for direct emissions into the troposphere) because this multiplier is uncertain. But including it would at least double the GHG impact of air travel, and should be done, despite the uncertainties. Also, the subcommittee accepts the EPA's estimates of flight emission estimates (0.21 kg CO2 per passenger mile) but not the significantly higher estimate reported by the IPCC (0.30 kg CO2 per passenger mile). Finally, the U-M report does not factor in upstream emissions generated by the extraction, transportation and refining of jet fuel. These represent more than 20% of the GHG emissions from direct combustion, and should be added to the final estimate. Thus the U-M's final estimate of the GHG impact of air travel is off by a factor of 2.8, by my estimate. In other words, the actual, real world impact is almost triple what the subcommittee is reporting. | LH |
| 352 | Alumni | Lines 1022-1027. An additional strategy for mitigating U-M's emissions from purchased electricity would be to partner with the city of Ann Arbor to establish a municipal electric utility, which would have the ability to purchase unlimited clean electricity for direct consumption, and to generate its own. There are 41 such municipal electric utilities in Michigan (including Lansing, Holland, Wyandotte, Traverse City and Chelsea) and such municipal utilities are authorized by the state constitution and by the city charter. This option should be actively explored. | LI |
| 353 | Staff | I think environmental/climate justice needs to be integrated more fully throughout the report. There should be greater consideration given to public-private partnerships, as can be learned from other universities' experiences in achieving carbon neutrality. Furthermore, in the area of partnerships, community collaborations should play a greater role. | EE, ED, EC |

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|---|---|---|---|
| 354 | Other | COMMENT #354 (1/3)<br>To: Stephen Forrest, Jennifer Haverkamp, and the other members of the President's Commission on Carbon Neutrality (PCCN):<br>We, as members of Voices for Carbon Neutrality (VCN), applaud the PCCN and the Internal Analysis Teams for the incredible amount of work scaffolding draft recommendations to move the University of Michigan (U-M) to carbon neutrality. The result of your work is a strong proposal. The purpose of this letter is to highlight areas where we think the plan can be improved.<br>General<br>As the flagship university for the state of Michigan and one of the leading universities in the world, U-M has a responsibility to achieve carbon neutrality in a timeframe consistent with the recommendations of the Intergovernmental Panel on Climate Change (IPCC) and to live up to our motto of Leaders and Best. Achieving carbon neutrality will not be easy. It will require bold leadership and strict accountability. Success can only be achieved if U-M leadership translates the vision of the PCCN and the entire U-M community into reality. We must not fear fluctuations, disturbances or imbalances, for these can become sources of creativity. We must work to build consensus by actions that positively impact our shared global community. We cannot overstate the importance of the work yet to be done. U-M must inspire every member of our community to be the change we want to see; it must serve as the convener and catalyst of living, learning laboratories and collaborative efforts. It is the responsibility of President Schlissel, the Board of Regents, and the entire U-M administration to live up expectations. History will judge us for what we accomplish, not for what we promise but fail to achieve. There is no time to waste.<br>Environmental and Climate Justice<br>The intentions of the PCCN with respect to equity are appropriately stated in the draft report's introductory comments, lines 196 - 200:<br>The Commission recognizes that the climate crisis poses the most harm to communities that are historically and unfairly disadvantaged and disenfranchised. Each proposed university action brings with it a different set of environmental justice considerations. Accordingly, environmental justice must be comprehensively interwoven throughout U-M's climate action plan, rather than added as a supplementary step.<br>However, the draft report fails to interweave environmental justice throughout the U-M action plan. It mentions diversity, equity and inclusion (DEI) frequently but inappropriately, considering that DEI, environmental and climate justice, and equity are related but distinct concepts. Only when discussing Scope 3 recommendations does the draft begin to discuss recommendations through the lens of equity.<br>The reason for omission of having equity at the core of the Commission's recommendations maybe because the PCCN's equity intention was not reflected in the Commission's "Principles for Goal-Setting Strategies" where equity was redefined in a different way (line 510), omitting mention of the plan's impact on disadvantaged communities and on students and employees who are people of color.<br>The underemphasis on climate justice, and any consideration of restorative justice, must be corrected in the final report. The equity and justice considerations in the appendices provide a good starting point for this change. Additionally, given there was not an internal analysis report for climate justice, the Commission should now take advantage of the extensive environmental justice expertise within the U-M faculty for a timely review, resulting in implementation of justice-oriented changes throughout the entire report, before the report is finalized. This is not only the right thing to do but failure to do so will be a major barrier to impelmentation since climate justice has been the primary framework and motivation for U-M students and many others who have participated in this process.<br>Speed and Urgency<br>The criteria used to evaluate the draft recommendations do not include a principle related to the speed of implementation (lines 480 - 545). IPCC and related United Nations reports make clear that urgent action is imperative. We urge the PCCN to add a principle of speed so that recommendations and future actions will always be judged against alternatives with the objective of maximizing the rate of carbon neutrality implementation and thus minimizing the area under U-M's emission curve.<br>The lack of such a principle resulted in draft recommendations which would allow the Central Power Plant to burn natural gas until 2040. Not only does this demonstrate a lack of urgency, but it is also out of line with the U.S. president-elect's plan to eliminate fossil fuels from the power sector by 2035. If U-M maintains the current timeline, we will be lagging, not leading.<br>Local and Regional Community Involvement<br>Carbon neutrality cannot be achieved by U-M and other entities in Michigan without greater energy competition, choice and freedom. We were greatly encouraged to read the draft recommendation (starting at line 1030) calling for "potential policy changes" and the pursuit of government funding to unlock tools such as community choice aggregation, microgrids, community solar, and more. However, the draft lacks emphasis on teaming and advocating with external partners to accelerate the implementation of these options and to leverage them to ensure that the impacts are widely and quickly scalable, replicable, just, and equitable.<br>Specifically, U-M should act as a regional convener (with the cities of Ann Arbor, Flint and Dearborn, and other entities) to coordinate and drive strong climate policy advocacy at the local, state, and federal levels. U-M needs to use its influence to broaden the discussion to the role of investor-owned utilities (IOUs) and regulatory frameworks. More must be expected from key partners such as DTE Energy.<br>Finally, the scale of policy change needed at all levels to combat climate change will require substantial popular support which can only emerge from a society that embraces climate action as a sustained priority. This can be accomplished only through broad equity- and justice-centered consultation, collaboration, and partnering with everyone from frontline and vulnerable communities, Native communities, labor unions, civic groups, academia, government and business to citizens of all parties, geographical areas, and ideological persuasions.<br>Special needs of Michigan Medicine | DB, EE, GY, DV, HA, HD, HF, HG, HH, BT, HI, CH, CN, DU, KN, CO |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 354 | Other | COMMENT #354 CONTINUED (2/3)<br>Michigan Medicine (MM) deserves greater consideration in the final report because its share of U-M's total GHG emissions is so significant. It is important to note that in the US, the Kaiser Permanente hospital system just became carbon neutral, and the Boston Medical Center is working towards that status; they can serve as exemplars and partners.<br>MM will soon have a new $920M adult inpatient hospital that would benefit from further envelope upgrades to reduce its carbon footprint; a comparable hospital is being built in Frankfurt Germany that will be the world's first "Passive House" hospital.<br>MM would profit from having its own Chief Sustainability Officer and its own goals and timelines for energy conservation. These approaches would be facilitated by MM having its own revolving energy fund and retaining most of its proposed carbon tax. MM also has satellite facilities, such as West Ann Arbor and Brighton Health Centers, located outside the six areas listed in the report; these will need planning and retrofitting, probably including geoexchange systems and photovoltaics.<br>Improvement of the culture at MM in relation to carbon neutrality may be a special challenge (as with certain other U-M units). Involvement of faculty, residents, students, and staff in planning and implementation would be of benefit, and recognition of the adverse effect of our fossil fuel consumption on human health may facilitate such culture change.<br>Finally, the importance of constant and reliable power to hospitals is a special challenge that deserves mention in the report.<br>The Built Environment<br>The PCCN's draft recommendations appropriately address standards for new construction, the retrofitting of existing buildings, and energy conservation measures (lines 1325 - 1445). However, U-M's built environment requires reexamination based on several paradigm shifts.<br>First, the assumption of continued growth needs reevaluation, both on an overall basis and building-by-building. Modifying the academic calendar so that the full suite of classes is offered year-round, telecommuting and virtual instruction, and moving from dedicated to shared spaces (for example for offices, often referred to as "hoteling") all offer significant space reduction opportunities.<br>Second, the preservation and reduction of embodied energy must be included in decision-making; existing buildings like the Fleming Administration Building should be reimagined, repurposed and renovated; new construction should use low embodied-energy concrete, steel, mass timber and products; and construction and demolition waste should be recycled instead of going to landfill.<br>Third, tougher building standards, e.g., meeting Passive House envelope standards for most if not all new building categories and those in planning or early construction (e.g., the new MM hospital), performance targets which are pegged to ASHRAE 90.1 energy standards as they are tightened over time, not the 2013 edition, and adherence to the ZEROCode should all be considered. While low-embodied energy construction and tougher standards could be costly upfront, costs would likely be recouped over time and future deep-retrofitting costs avoided; moreover, buildings will be more comfortable.<br>Fourth, forming cross-functional operations teams tasked with conceiving and implementing energy conservation and other measures (ECMs) for each major building, including for Flint and Dearborn, will accelerate and improve their quality.<br>Finally, on-site rooftop solar, including on new parking carports, should be maximized across all campuses. A single RFP would maximize the return on investment, accelerate the benefits and be a highly-visible symbolic quick win. | DB, EE, GY, DV, HA, HD, HF, HG, HH, BT, HI, CH, CN, DU, KN, CO |

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|---|---|---|---|
| 354 | Other | COMMENT #354 CONTINUED (3/3)<br>Scope 3 Goals<br>The 5-year timeline for establishing Scope 3 goals (lines 1485 - 1510) fails to reflect the need for speed and the need to address the urgency of reaching carbon neutrality. Progress in reducing carbon emissions due to commuting, waste management, upstream fuel and electricity sourcing, and travel can and should be achieved rapidly; goal setting here is needlessly constrained by the requirement that they be “measured and tracked” before they can be addressed. Accounting methods applied post hoc should be sufficient to measure and track impacts of policies and practices that are being implemented.<br><br>Definitions and strategies for achieving Scope 3 goals exist in publications of the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD): The Greenhouse Gas Protocol for the US Public Sector and the GHG Corporate Value Chain (Scope 3) Accounting and Reporting Standard. The PCCN report neither lists nor weighs options for inclusion of a comprehensive list of Scope 3 goals as described in these documents. A glaring omission is that of holding fossil fuel-based equities in the U-M endowment and other investments. We believe these should be addressed within the framework of Scope 3 emissions. For example, PCCN draft Figure 7 (Scope 3 baseline GHG emissions FY18) does not include fossil fuel equity shares as an emissions category even though this category is included in the WRI/WBSD framing documents. Moreover, a growing number of our peer universities, including the University of California system, have transferred investments out of fossil fuels or have committed to doing so.<br><br>U-M, with its commitment to carbon neutrality and social justice, is obligated to recognize the gross inconsistency of continued investment in fossil fuels. We recommend the PCCN’s final report include:<br>a statement on how holding of fossil fuel equity shares supports an increasingly obsolete industrial sector responsible for inflicting harm on our world and its people- especially on economically disadvantaged populations, particularly communities of color;<br>a statement whether such investments are at risk of becoming under-performing assets as world energy markets shift; and<br>recommend the development of a framework for ethical investing and an associated timeline for transfer of investments out of the fossil fuel sector.<br><br>Financing<br>While President Schlissel’s charge to the commission (lines 280 - 290) did not explicitly include or exclude financing the plan’s implementation, VCN feels that the PCCN’s final report must include high level input on the topic in contrast to the statement under Financial Analysis (lines 2870 - 2873). Absent this, the commission cannot claim to have outlined “a timeline, pathway and approaches for achieving” carbon neutrality that is “financially responsible in the context of U-M’s mission of education, research and service” as per the charge.<br>VCN suggests the PCCN consider the following:<br>U-M leadership and the Regents must formulate a strategy for immediate, mid-, and long-term capital for the proposed changes. An action plan that is not accompanied by a financial plan which fully resources it from the onset has little chance of meeting targets.<br>Given the high projected cost of the plan, U-M should get a second opinion or supplement the recommendations of the Integral Group by consulting other experts.<br>The university should be prepared to hire highly qualified independent contractors where they can add value.<br>Applying best practices and lessons learned by other entities, not just from academia but also government and business.<br>U-M has a host of financing options that could include any of the following:<br>floating public bonds;<br>the creation of a CN endowment fund and explicit CN donation requests of major donors to support future generations and U-M’s brand, including strategies on how to appropriately recognize donations; and<br>public-private partnerships (which could, for example, transfer ownership of U-M energy assets in exchange for a multi-billion dollar upfront payment), as used by other academic institutions as related in the VCN webinar University Approaches to Carbon Neutrality: A Conversation with Leaders from MIT, OSU and Iowa - YouTube.<br><br>Implementation<br>U-M will soon approach the pivot to the high-risk implementation of the PCCN recommendations across the large and complex U-M system together with regional partners essential to achieving impact at scale. The societal responsibilities of U-M require President Schlissel to authorize and lead the robust changes recommended in the report.<br>The report speaks of a new executive position reporting to the President that is primarily advisory and consultative in nature with limited authority or direct oversight (lines 2480 - 2550). This will not get the job done. Internally, this executive must lead climate neutrality activities with the full support of the President and have the authority to work big levers of policy and university-level goals and metrics and their deployment including due dates and review structures to drive system level impact, unit level responsibility and accountability, and broad individual action across the three U-M campuses. Externally, this executive, together with the President, must partner with local and regional stakeholders and bring the gravitas of the university to bear on critical external enablers (see Community section above). This individual must bring a systems view that recognizes that the climate crisis, the crisis of inequity (racial, economic, environmental), public health, and societal economic prosperity are highly interdependent. We are at an inflection point in history, and U-M must lead with solution sets and metrics that balance the urgent needs of people, planet and prosperity.<br>This new executive must have the broad change-leadership experience and deep expertise to hit the ground running. This calls for a new hire, external or internal, to move U-M rapidly beyond its relative inaction of the past. This person, in conjunction with President Schlissel and the Regents, must drive decisions about:<br>how U-M funds this $3 - 5B plan;<br>the role of U-M-led public-private partnerships to deliver the necessary capital and energy expertise;<br>what Advisory Councils of U-M and industry experts are needed;<br>what partnership forums will convene local and regional stakeholders; and<br>how high-impact donors can be brought to the table.<br>We are at an inflection point in history, and U-M must lead with the solution sets that balance the urgent needs of people, planet and prosperity. To that end, we recommend that you highlight key implementation recommendations in the executive summary and at the beginning of the report.<br><br>In closing, climate neutrality cannot not be viewed as part of a zero-sum game, one where it and other mission-critical priorities like DEI or filling COVID-related budget shortfalls are viewed to be in conflict. That type of thinking has led to delays for years. Difficult times demand out-of-the-box thinking, paradigm shifts, and creative solutions that aggressively pursue carbon neutrality while elevating equity and justice. This will preserve - indeed enhance - U-M’s brand and reputation.<br><br>We would be happy to meet with the PCCN co-chairs or entire committee to discuss any of our recommendations or to review other aspects of the proposal. Thank you. | DB, EE, GY, DV, HA, HD, HF, HG, HH, BT, HI, CH, CN, DU, KN, CO |

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| 355 | Staff | LINE 563<br>The Hoover steam boiler plant is not on the list of combustion sources for the Ann Arbor campus. It seems significant enough to include. It generates a lot of steam, distributes it to multiple buildings on South Campus, and is a very visible user of natural gas. | LJ |
| 356 | Staff | LINE 675<br>"...high temperature building heating systems" should be better defined as "high temperature hot water and steam building heating systems." | LK |
| 357 | Staff | LINE 700, Figure 3<br>This diagram is fine for showing how a residential geoexchange system works. It does a poor job of explaining how a geoexchange system, partnered with heat-recovery chillers, will heat and cool a complex campus like ours. Consider replacing with a better graphic that tells the whole story. | LL |
| 358 | Staff | LINE 715<br>Similar to a previous comment...<br>Consider changing "high temperature building systems" to "high temperature hot water and steam building systems." | LK |
| 359 | Staff | LINE 717<br>"All campus buildings are currently heated by steam..."<br>This is a false statement. Many buildings are fed with steam, but others have natural gas boilers that produce their own steam or heating hot water to heat the building. | LM |
| 360 | Staff | Sections 390 and 560 identify Heat and Power Infrastructure Scope 1 Emissions to include natural gas. Section 585 makes a Preliminary Draft Recommendation to Commit to the goal of carbon neutrality (inclusive of offsets) for Scope 1 emissions across all three campuses by 2025. The Strategy recommendations summary and subsequent discussion beginning in section 635 does not acknowledge the financial investment or present a strategy for offsetting the scope 1 natural gas emissions inclusive of offsets by 2025. | LN |
| 361 | Student | Here are my thoughts on the plan:<br><br>Consideration of public-private partnerships to fund the Carbon Neutrality Plan<br><br>Environmental and climate justice must be interwoven throughout the report and needs to go beyond a land acknowledgement statement at the introduction of the Plan. The next plan, which will be written by 2025 to address Scope 3 emissions, must center climate justice throughout the writing process. An EJ expert needs to be working on this, and there needs to be deep community engagement with community and student advocacy groups. EJ could have informed many of the recommendations in the report, just as centering traditional ecological knowledge when it comes to biosequestration projects and land management, the implications of carbon offsets, and positioning U-M in the global context of climate justice.<br><br>The recommendations related to food could have had a more expanded lens on EJ and could have included aspects such a labor and growing practices that do not result in toxin accumulation in agricultural communities.<br><br>The plan lacks a strong sense of urgency to meet these goals, and needs to strive for the IPCC 2030 goals. The entire world needs to reach Carbon Neutrality by 2050. Wealthy nations and institutions need to reach it much sooner.<br><br>There is a heavy reliance on carbon offsets to achieve “carbon neutrality,” but the actual effects are very hard to track and can bring a host of EJ issues. In order for this to be effective, EJ must be integrated in to the criteria for selected offset projects. Criteria must me clear and enforceable.<br><br>Need for rapid implementation of new building standards must be added<br><br>Scope 3 goals must be set within the next year with initial metrics to track progress<br><br>Carbon Neutrality measures for Michigan Medicine must be added, particularly regarding the new hospital and promoting Carbon Neutrality leadership and culture.<br><br>Additionally, I support all of the points that the student group, Climate Action Movement, and the faculty group, Voices for Carbon Neutrality, have outlined previously. | ED, EE, GV, JT, HJ, DB, EB, CO, DO |
| 362 | Anonymous | Anonymous | LO |
| 363 | Anonymous | Anonymous | LP |
| 364 | Staff | Section 595 makes a Preliminary Draft Recommendation to prioritize direct emissions reductions for Scope 1 by setting a goal of eliminating them across all three campuses by 2040, and exceeding science based targets 4 via direct emissions reductions (i.e., without offsets) along the way. It may not be in the University's best interest to eliminate onsite generation entirely by completely decommissioning the Central Power Plant (CPP). Onsite generation contributes to the overall reliability of the University of Michigan electrical system. Onsite generation allows the University to maintain operations during electrical outages and ride through the frequent bumps on the electrical system. In order to maximize electrical system reliability, offsets to account for continued onsite generation should not be excluded. | HH |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 365 | Staff | I read the draft report submitted by the PCCN Commission with great interest. Undoubtedly, you all had a difficult task and as you have noted in the report, there is no silver bullet that will allow us to move toward carbon neutrality. I would like to make a few comments:<br>1. The Geo-Exchange Heating and Cooling System calls for 20,000 boreholes that are drilled to a depth of 600 feet. Did the consultant or the commission investigate whether or not there is available land areas around the University to install these boreholes? It would seem that this would take a great deal of land in order to install this system. As the commission noted, a phased approached will be required for these installations and to gain actual knowledge of how well this system will function.<br><br>2. In section 725, page 27; it states that the Heat Recovery Chiller System is 300% efficient. Is this a misprint as the absolute maximum efficiency that a heating/cooling system can achieve is 100%?<br><br>3. The report states an initial cost estimate of $3.37 billion not including the cost of electricity purchases. As the auto industry moves toward electric vehicles, the demand and the cost of purchased electricity will continue to increase. The need of additional electrical transmission lines to move purchased electricity from generating source to demand locations will also increase the cost of electricity. Any additional uses of electricity will also add to these costs. Did the consultant or the commission have an opportunity to obtain any estimates as to what these cost might be?<br><br>4. Carbon or Energy Credits – I have heard that these credits are only good for a three (3) year period. I cannot state this as fact, but it was stated at an International District Energy Association Seminar and it should be verified. If this were the case, would the purchase of these credits really benefit the University? Would the dollars spent on these credits be better spent on a different initiative or on carbon recovery research?<br><br>5. On the table on page 90, it mentions that Carbon Capture still has a long way to go to become effective. As a Research University, would this be an area that would make sense for the University of Michigan and perhaps other resources could investigate with greater emphasis? | LP, II, IO, LR, JV, LS |
| 366 | Staff | Line 685.....<br><br>The report indicates that "GHX systems consist of either “open-loop” wells using groundwater in a nonconsumptive manner as a heat source or sink, or a “closed-loop” system typically<br>constructed of a buried closed-loop high-density polyethylene (HDPE) piping network<br>within an array of boreholes drilled hundreds of feet deep". The cost for an "open-loop" type system should be substantially cheaper than the "closed-loop" systems and should be investigate further as a potential option. There are challenges with "open-loop" systems, such out making sure no contamination of the ground water but it is worth investigating. | LT |
| 367 | Staff | Line 1391.....<br><br>NREL/NBI has done alot of work on cost containment strategies and has reported that NZE buildings can be built with a zero to marginal increase cost to comparitive standard efficiency buildings. These strategies should be investigated. One potential strategy that I have read in the past is the contracting NC projects as a design-build rather than a design-bid-build to incorporate an integrated design team and allow for a performance and cost based metric as the basis of the contract. https://www.nrel.gov/docs/fy14osti/62752.pdf | LU |
| 368 | Staff | Line 2114....<br><br>The recommendations should also include accounting for the GHG emissions for water production as well as wastewater treatment. Water production via groundwater pumping and treatment or surface water treatment can have a significant GHG emissions associated with it. | LV |
| 369 | Staff | Line 2179....<br><br>This should also include GHG for water production and treatment in addition to wastewater treatment. | LV |
| 370 | Anonymous | Anonymous | KA |
| 371 | Anonymous | Anonymous | DW, KA |
| 372 | Student | I support the Energy Club at Ross PCCN Review Committee’s feedback in response to the PCCN’s draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |

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|---|---|---|---|
| 373 | Other | Thank you for the opportunity to respond to the Draft Report of the President's Commission on Carbon Neutrality (PCCN). The plan you have developed is impressive and represents an enormous amount of careful research and creative thinking. We thank you for your important work! We hope that President Schlissel will take your recommendations very seriously and act on them quickly.<br><br>We are a subgroup of the Interfaith Council for Peace and Justice, a Washtenaw County-based organization. For a number of years, we have focused on how food and food waste affect the climate crisis, expanding recently to look at issues of consumption and waste in general. We have a specific interest in Scope 3 emissions but are also concerned about the overview of how to cut GHG's to a safer level.<br><br>We want to share some broad concerns that we think are important to emphasize as well as making a few specific suggestions. In general, we will state our concerns but not add a long supportive discussion. We are sure you have received well-considered back-up thinking from many individuals and groups on these points, and we want to reinforce them without subjecting you to yet more reading.<br><br>1. WE NEED TO LOOK WITH A NEW LENS—WE CANNOT KEEP LIVING AS WE ARE AND JUST FIND WAYS TO CUT OUR CARBON EMISSIONS. There is a tendency for all of us to act as if we can go on pretty much as we are now but find technological and perhaps a few behavioral ways to cut our carbon emissions. On the contrary, we need to move away from the growth model we have been using and assess what is actually needed through a new lens. This is one significant part of what "equity" means—look at the whole, look beyond our own bubble and make choices based on that understanding. It is also what is needed if we really want to succeed.<br><br>2. THE UNIVERSITY NEEDS TO MOVE FASTER THAN IT IS USED TO MOVING TO MAKE THE CHANGES NEEDED TO CUT GHG'S. The changes in the climate and their impact will not wait for us.<br><br>3. THERE MUST BE MECHANISMS FOR IMPLEMENTING THE CHANGES, BOTH PEOPLE HIRED AND ACCOUNTABILITY SYSTEMS PUT IN PLACE. The thought of this excellent work becoming another well-crafted report sitting on a shelf is appalling and frightening.<br><br>4. SHORT-TERM AND MEDIUM-TERM GOALS NEED TO BE SET, NOT JUST LONG-TERM GOALS. Some actions will take years to fully implement. However, there are cuts we can make immediately. We need to do so and consistently add to them as we move ahead. We also need to keep track of how we are doing at regular intervals and not only focus on a goal that is years away.<br><br>5. IT IS IMPORTANT TO WORK ON SCOPE 3 GOALS NOW EVEN IF SPECIFIC MEASURES AND TARGETS ARE NOT YET AVAILABLE. Scope three emissions are a highly significant part of UM's emissions. We know what they are and have enough knowledge of how to shrink them that we should work on them immediately. For example, quoting a concerned staff member, "No matter how much we try to beef up our recycling and compost programs, if we keep generating waste at the rate we currently do, it will continue to be an uphill battle." As an example of the "lens" issue in our first point, we need to stop using or massively cut the use of disposables (kitchenware, binders, etc.)—even compostable ones, not just do a better job of disposing of waste.<br><br>6. THE UNIVERSITY SHOULD BUILD ON AND EXPAND WORK THAT IS ALREADY GOING ON THROUGH THE CAMPUS OFFICE OF SUSTAINABILITY AND SHOULD COORDINATE FUTURE PLANS WITH THE GOOD WORK THAT IS ALREADY TAKING PLACE IN MANY PARTS OF THE UNIVERSITY. Staff who are already working on these issues often know what is needed and what the barriers are. Set things up to take advantage of their understanding.<br><br>7. THE UNIVERSITY NEEDS TO WORK WITH THE CITY OF ANN ARBOR AND THE LARGER COMMUNITY. This is a monumental undertaking, and we will be successful only if the major players—and many minor players--work together.<br><br>Thank you once again for all the hard work and commitment you have put into this report! We are committed to working with you and the various concerned municipalities and organizations in our area in doing our part to reduce GHG's and move to carbon neutrality. | CH, Db, EJ, LW, LX, LY, EC |
| 374 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |
| 375 | Alumni | This is a very admirable goal and I applaud you for taking steps to reduce the University's carbon footprint and reduce emissions. However, I didn't see any mention of existing buildings that already have carbon embodied in them and what the plan for these buildings will be going forward. All existing buildings already have embedded carbon and this should be considered when demolition or renovation is contemplated. Large scale tear downs do not, in my opinion, live up to the carbon neutrality pledge. In fact, tear downs represent the opposite! the University should be a leader in the recycling of its older buildings and in finding new uses for them since the materials will go to a landfill and all that embodied carbon will be thrown out as well.<br><br>We need to be good steward of the earth and follow the mantra of the recycling movement: reduce, reuse, recycle. This was true in the 1970s and is even truer today.<br><br>thank you for your consideration. | KY |

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| 376 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |
| 377 | Staff | LINE 785: The 20 year timeline suggested for the "gradual phase out of the CPP as new systems are built out" in Table 2 is too short and unrealistic, especially in light of the recent $80 million natural gas fueled turbine project that is still under construction at the CPP. A plan that is not based on some semblance of reality is nothing more than fantasy and diminishes the seriousness of the effort to address Climate Change.<br>LINE 815: "...at the time U-M retires its central plant, additional peak demand may potentially need to be met by the transmission and/or distribution utilities" - this statement illustrates the lack of attention to the necessity of having on-campus electrical generation to safeguard the campus medical and research endeavors that would collapse in the event of a large-scale regional or national electrical grid failure as took place in 2003 across the northeast U.S and Canada. When S.E. Michigan went dark, the CPP was able to isolate itself from the failed electrical grid, and maintain power (and steam) to the hospital and animal vivarium, undoubtedly saving lives and life saving research efforts. The campus electrical grid must maintain this self-sufficiency, resiliency, and redundancy, so that any regional power outages do not disrupt the university's mission - this plan fails to address this important imperative.<br><br>LINE 1120: "A significant benefit of the REF is that it provides a long-term and stable mechanism for consistently funding ECM work, which is not affected by changes in short-term policy and budget priorities" is an "opinion" statement as it suggests that the existing method of funding ECM work via annual budget allocations is neither long-term, stable, or consistent, though the U-M has been allocating over $1 million per year for ECMs since at least 1987. An REF is nothing more than an accounting mechanism, and like all administrative functions, it can be created or eliminated by the University Administration at will. An REF will require financial and human resources to support an administrative bureaucracy that does little to actually reduce GHG emissions. The plan also woefully neglects to consider an "ECM Fund" of annual budget allocations that is used to provide ECM grants to buildings. Such an ECM grant program, similar as exists under presently with the U-M Energy Management Office, could be improved by increasing the annual ECM Fund allocations; expanding the eligibility of buildings to those other than just the General Fund; and providing incentives to a building's academic and administrative departments to receive the financial savings of the ECM's implemented and used by building occupants rather than sending those utility cost-savings back to the general fund. | LB, HH, LP |
| 378 | Faculty | This is an impressive and ambitious report. Kudos to the Commission.<br><br>Line 765: It would be good to express the project cost in terms of $ per ton of CO2 avoided.<br><br>Line 820: The report shows that U-M buildings are less efficient than benchmarks and concludes that there *must* be scope for increased efficiency. However, there is no systematic analysis of whether the 15% (or 30%) reductions in thermal demand can be achieved on Central Campus. Even if they can be achieved, there is no discussion of the economics of such measures.<br><br>Line 1550: For travel, it may be that international regulations will require airlines to collect and report detailed emissions data. Already, calculators are available to perform such calculations (https://www.icao.int/environmental-protection/Carbonoffset/Pages/default.aspx). It may be possible to require University travel agents (or even preferred airlines) to make emissions information available on invoices. Finally, in accounting for the damage from air travel, note that the current science suggests that the effect on climate is much larger than that from CO2 emissions alone. (https://doi.org/10.1016/j.atmosenv.2020.117834)<br><br>Line 1890: While the decision to promote video conferencing as an alternative to travel is a good one, units should note that travel, and the ability to build a professional network, are crucial for junior faculty.<br><br>Line 2970: Given that the project is likely to unfold over 20-30 years, it seems over-confident to produce a point estimate of the costs. The only acknowledgement of uncertainty seems to be the 30% contingency built into the heating/cooling cost estimates. However, the economic analysis should produce a range of estimates based on (1) improvements in technical performance and cost over the next few decades (e.g., through learning), (2) changes in the prices of commodities such as natural gas and electricity. The current analysis uses EIA estimates, but these are notoriously poor and methods exist to characterize the uncertainty (https://doi.org/10.1073/pnas.1619938114), (3) The possibility that some of the measures the PCCN is proposing (e.g., zero emissions electricity; substantially electrified heating) may become mandatory, changing the nature of the "BAU" case. | LZ, MA, EP, MB, MC |
| 379 | Staff | LINE 1101<br>"ECM's" is not the proper spelling of the plural form of ECM. There should be no apostrophe: ECMs. | L |
| 380 | Staff | LINE 1112<br>Another benefit of having separate GF & Aux REFs is related to the low-hanging fruit. There is a lot of low-hanging fruit (ECMs with quick financial paybacks and attractive $/ton of carbon) in Aux buildings. Because we've been doing ECM work in general funds for 30+ years, it makes sense to keep separate REFs. | MD |
| 381 | Staff | LINE 1144<br>DTE provides energy engineers, not energy managers. | L |
| 382 | Staff | LINE 1181<br>The report specifies the hiring of REMs. I recommend this language change to allow for more flexibility. Language such as "additional energy management staff" would be better and it allows future decision-makers the change to decide what roles are most beneficial (i.e. engineers, DDC techs, controls specialists, renewable energy experts, etc.). | ME |

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|---|---|---|---|
| 383 | Staff | LINE 1232<br>Throughout this section, the term "energy conservation measure" is used extensively. It would be helpful to define the term. OCS develops and executes ECMs. AEC uses ECM to describe potential enhancements to projects that will result in energy savings (i.e. installing triple pane windows as opposed to double pane windows). The SmithGroup study of A&A describes all potential building improvements as ECMs (i.e. add PV solar panels to the roof). Without more specificity, this recommendation could be interpreted to include all of this work. It would be best to specify that it is earmarked for the ECMs that are currently managed by OCS. | MF |
| 384 | Staff | LINE 1257<br>Following the investment guideline of lowest $/MTCO2 will create unintended consequences because building carbon footprints are not equal across campus. For instance, outlying electricity buildings (i.e. WoTo) have a much higher carbon intensity (because they are connected directly to DTE's grid). Therefore elec reduction projects (i.e. LED upgrades) are currently more favorable there than on Central Campus or North Campus. Thermal projects such as insulation have a much bigger GHG impact in CCP-fed buildings compared to natural gas-fed buildings (this appears in cost savings as well; insulation projects on Central Campus payback in less than 8 years, on North Campus they don't). Inequities will exist as long as this metric is followed. Financial (annual dollar savings) and raw energy (annual BTU savings) metrics should be considered alongside of the proposed $/MTCO2. Besides, the BTU metric is much more constant & universal than the other two. | GN |
| 385 | Staff | LINE 1308<br>If it is taking 5 years to ramp up the implementation of the carbon price AND EM capacity, the 10 year 25% building energy reduction goal should be reconsidered. The implementation team will not be running at peak operation for quite some time. The 10-year target should be reviewed. | MG |
| 386 | Other | PG. 58, regarding housing, it's good the report appears to acknowledge here how lack of adequate housing for its students, staff and faculty forces many to commute in, which increases transportation and vehicle emissions. This section needs to be much stronger and broader.<br><br>The University needs to acknowledge its role in the affordable housing crisis in Ann Arbor and the region, and take aggressive steps to provide housing for its staff and faculty. I disagree with the sentences that assert student housing should be built in the core because "students live in smaller spaces..." I believe there are thousands of University staff and faculty that would live in small apartments. The University needs to provide good, affordable housing for its staff and faculty, first and foremost, so they can live close(r) to their university jobs. This would vastly decrease commuting from outlying areas, such as Ypsilanti and Brighton, and help put those housing markets back into balance. The University should not ignore this issue any more. Corridors such as Washtenaw Avenue are ripe with opportunity to building housing right on efficient transit.<br>The region is very fortunate to have the University, but there is a major housing issue, caused in great part, by the University employment and economic draw. It's time for the University to do more for its employees, and the climate, by addressing housing.<br><br>The focus on removing parking incentives is positive, and part of good Demand Management strategies, but is meager by itself and will have little effect. Providing housing for its lower paid staff, faculty and students (in that order) will have a far greater impact. Thanks for the opportunity to provide input. | BX |
| 387 | Staff | LINE 1331<br>Establishing a carbon per SF metric can also be misleading because of the ever-shifting conditions that it is based on. The standards would need to be revised each and every year (if not more often) as the DTE grid improves, as our on-campus infrastructure improves, and as more renewable sources are connected to our university district. Focusing on the energy use index (EUI, BTU/SF) is more consistent and provides an absolute target of net-zero. Many national benchmarking efforts follow this measurement. | MH |
| 388 | Staff | LINE 1480<br>I wish the report would mention "scope transfers" somewhere. I'll offer an example: laundry services. In this case, Scope 1 & 2 emissions from the on-site laundry facility (on North Campus, consuming DTE elec & natural gas) were shifted to Scope 3 emissions. What was VERY measurable is now not at all. How do we account for these shifts? Should we require that these shifts are accounted for when these decisions are being considered? Could they play into whether or not a change is made? Reverse shifts are possible, too. For example, during my work with Integral, we discussed moving the MACC data center (on South State Street, in leased space) back onto campus and integrating it with the geo-exchange system where there are additional advantages (we can use the heat rejection from the data center to help balance the cooling-dominant Athletics Campus). | MI |
| 389 | Staff | LINE 2480<br>The key to making things happen is to place the leadership of this movement directly below the president. The leadership of an evolution towards carbon neutrality cannot be successful if buried within the organization (like OCS is within F&O and B&F).<br><br>LINE 2545: "The individual in this role will have limited authority or direct oversight over executing much of the critical work that is needed." Those responsible for the direct oversight of execution should also be close to the president to help facilitate change. | MJ |
| 390 | Staff | LINE 3084:<br>"The chart below"<br>There is no chart below. | L |
| 391 | Staff | LINE 3364<br>The OCS building energy page currently reports emission density for existing campus buildings:<br>https://ocs.umich.edu/resources/sustainability-data/building-energy-data/<br>Click on the GHG tab at the top, select the second radio button to convert the chart to Kg/SF. Use this tool to see how our existing buildings are performing compared to the proposed standards. | R |

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|---|---|---|---|
| 392 | Faculty | I'm pleased to see this work coming along but I would like to see a broader focus on connecting the University campuses with the communities around them -- this is more than connecting to the local buses or bikeways. It would mean sitting at the table together to define problems and develop solutions. This might be most pressing in Ann Arbor where the University's footprint is so large. Ann Arbor and the surrounding communities have little room to make dramatic changes without the U. I say this as a resident of Ypsilanti, where housing prices are skyrocketing (both sale and rent) as people are pushed out of AA. Traffic congestion (when not in a pandemic) then builds, further fueling the problems this initiative seeks to mitigate. With unattractive options (who wants to sit on a bus in gridlock on Washtenaw) or unsafe options (Packard and Ellsworth too busy to bike on anymore), people return to their cars. Providing for EVs won't solve this issue. Bigger and better mass transit systems and affordable housing are the key answers. The cities cannot do this on their own and the U should not do this on its own. I would hope for a broader vision of cooperation.<br><br>For Dearborn (where I work), I'm hoping for other options. We've been promised a train for the last decade. Now discussions have moved to rapid buses. While I am less of a fan, I could live with this, but I am not going to battle my way into AA to get on a bus to go to work. We will need more nodes than just the three campuses, which points me back to bigger planning issues and coordination. I would love to see the U. become a driving force in regional transit planning.<br><br>Thank you! | JI |
| 393 | Student | Support for Energy Club at Ross PCCN Review Committee's Letter<br>I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become national leaders and the best in achieving carbon neutrality. | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |
| 394 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |
| 395 | Student | We have to make these recommendations a priority. The Board of Regents cannot see this as an obstacle to their goals, but rather a mandate from the UM community. Additionally, these changes have to take on a cultural focus. UM administration has to be enthusiastic about these recommended changes or else the rest of the UM community may take on a cynical outlook. I beg you to take this seriously, carbon neutrality is a hugely important issue for so many members of the UM community. | KA |
| 396 | Student | The current report fails to adequately address environmental justice concerns in its energy procurement recommendations. The current plans are overly reliant on DTE and Consumers Energy, who have a history of opposing distributed energy generation in favor of maintaining existing fossil fuel-centered energy production. The Commission needs to recommend the inclusion of environmental justice experts in energy procurement assessments. | GW |
| 397 | Faculty | I wish to thank the PCCN for writing a very strong report. Now it is up to U-M leadership, supported by the rest of us, to make this happen!<br><br>My main comments were sent separately with Voices for Carbon Neutrality. Most important: 1) Hire a new person to be the executive in charge of making change happen. 2) In the report, pay more attention to climate justice. 3) Devote a bit more space to the special circumstances of Michigan Medicine, a huge part of U-M. | EE, DO |

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| 398 | Student | The next plan, which will be written by 2025 to address scope 3 emissions, must center climate justice throughout the writing process. Moreover, as UM expands its research programs to produce climate-related technology and models, it must serve as a benevolent patenter, and not contribute to the green tech imperialism of the global south<br><br>If UM is going to use carbon offsets, explicit environmental justice considerations must be central criteria in choosing where to buy offsets (“compliant with social and environmental safeguards” is vague and unenforceable — these safeguards must be made explicit)<br><br>The final set of recommendations must include a carbon budget to ensure that UM does not keep burning fossil fuels indiscriminately prior to achieving neutrality<br><br>The recommendations must include an accountability structure with actual guidelines and explicit reporting requirements. It is especially important that an itemized report be produced no less frequently than once per six months, which details progress and lack of progress on each recommendation.<br><br>Explicitly recommend inclusion of EJ experts in assessing energy procurement decisions and study of the environmental injustice that is supported by procuring UM’s energy from DTE.<br><br>UM needs to commit to building affordable, sustainable housing on land that the University already owns<br><br>Collaborate with the cities of Ann Arbor and Ypsi to promote affordable housing policy, including co-funding necessary development projects (to account for the lack of property taxes paid)<br><br>Perform an immediate analysis on the carbon intensity of development projects for new housing. Using these numbers, institute a required ratio of new housing units per capita increase of the incoming undergraduate class and limit other development projects in accordance with this required housing need and a carbon budget that aligns with the goals of the IPCC.<br><br>The commission should adopt the recommendations that the Energy Consumption Policies analysis team made for U-M to address off-campus housing emissions | EE, GQ, JT, BV, EN, GW, BX, IB, HC, MK |
| 399 | Faculty | Very happy with the Preliminary Draft Strategy Recommendations to "embrace and incentivize flexible telecommuting options for employees", " Invest in affordable and accessible alternatives to the personal vehicle commute, including rideshare, cycling,<br>and free bus access on the Flint and Dearborn campuses" and "Pursue plant-forward food procurement and consumer diets across all three U-M campuses."<br><br>With the plan to eliminate annual and monthly parking permits - telecommuting when possible must be an option for employees as well as having easy, safe options to for people to utilize other than personal vehicle commuting. In regarding to cycling infrastructure, dedicated bike paths (or wide walking paths like the B2B trail) and protected bikes lanes would be amazing. For protected bike lines, highly recommend having one on each side of the road versus both on one side .<br><br>I also agree with linking parking rates to an employee’s salary to promote just implications for commuters based on their ability to pay. | V |
| 400 | Student | I support the Energy Club at Ross PCCN Review Committee’s feedback in response to the PCCN’s draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |

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| 401 | Student | COMMENT #401 (1/2)<br>The following language provides recommendations on how to address the specific gaps identified by the Energy Club at Ross PCCN Committee in their comment submitted on January 12th, 2021.<br>1. Improve implementation, accountability, and transparency measures<br>Current Language: The university must institutionalize its commitment to carbon neutrality by providing the necessary leadership and organizational support to achieve its goals. This includes implementing mechanisms to integrate responsibility and accountability at the unit level throughout the university, and creating a position that assists, advises and reports directly to the President to facilitate carbon neutrality progress across the entire university. (Starting on line 2480).<br>Proposed New Language: The university must institutionalize its commitment to carbon neutrality by providing the necessary leadership and organizational support to achieve its goals. This includes implementing mechanisms to integrate responsibility and accountability at the unit level throughout the university, creating a position that assists, advises and reports directly to the President to facilitate carbon neutrality progress across the entire university, and creating a supporting organization such as a project management office, department, or other formal team to assist the new role in carrying out its responsibilities. (Starting on line 2480).<br>Note: The language above should also be updated in the table following line 2475.<br>Current Language: Leading efforts to periodically and transparently report on U-M's progress and shortcomings across all plan dimensions throughout the university. (Starting on line 3534).<br>Proposed New Language: Leading efforts to transparently report on U-M's progress and shortcomings across all plan dimensions to stakeholders throughout the university, as well as external stakeholders, on a semiannual (or more frequent) basis. (Starting on line 3534).<br>Current Language: The individual in this role will have limited authority or direct oversight over executing much of the critical work that is needed. Complete responsibility for the goals and associated critical work cannot be assigned to one individual because that would set this person up for failure and not recognize or appreciate the organizational requirements to achieve such goals. Clear guidance will need to be developed and communicated regarding how this role interfaces with, collaborates with, and influences units (on the Ann Arbor, Flint and Dearborn campuses) to 2550 ensure expectations are aligned throughout the university. (Starting on line 2545).<br>Proposed New Language: Complete responsibility for the goals and associated critical work cannot be assigned to one individual because that would set this person up for failure and not recognize or appreciate the organizational requirements to achieve such goals. Thus, it is critical to create an organization such as a project management office, department, or other formal team to assist the new role. This organization would assist in developing project timelines in collaboration with unit leadership, managing the project plans to ensure timely completion at appropriate quality levels, and ensuring transparency and accountability throughout the process. Transparency and accountability towards underrepresented groups is of critical importance. Furthermore, a communication and engagement plan that provides all stakeholders with an ability to monitor the progress of the carbon neutrality projects and have their voices heard is also of critical importance. Clear guidance will need to be developed and communicated regarding how this role interfaces with, collaborates with, and influences units (on the Ann Arbor, Flint and Dearborn campuses) to 2550 ensure expectations are aligned throughout the university. (Starting on line 2545).<br><br>2. Implement carbon pricing before 2025<br>Current Language: Then the carbon price should be incrementally increased until it reaches a $50/ton carbon price by Year 5 in line with the social cost of carbon, (Line 1308-1309)<br>Proposed New Language: Then the carbon price should be incrementally increased to $50/ton, in line with the social cost of carbon, by the earlier of (a) concurrently with Scope 2 neutrality or (b) Year 3. In addition, the 2.5 percent annual escalation should begin in the fiscal year immediately following the first (real) revenue collection.<br><br>3. Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid<br>Scope 2 carbon neutrality by 2023:<br>Current Language: Commit to carbon neutrality for Scope 2 emissions across all three campuses… by 2025 or earlier. (Line 556-560)<br>Proposed New Language: Commit to carbon neutrality for Scope 2 emissions across all three campuses… by 2023 or earlier.<br>Note: This updated timeline should also be carried through the rest of the PCCN report.<br>Clear VPPA criteria:<br>Current Language: While U-M could enter into a VPPA linked to an out-of-state project, the Commission recognizes that there are reasons why in-state projects may be preferred. (Line 984-986)<br>Proposed New Language: While U-M could enter into a VPPA linked to an out-of-state project, the Commission recognizes that there are reasons why in-state projects may be preferred. For that reason and to encourage additional renewable power generation in the state of Michigan, U-M will work to enter into agreements for projects in Michigan wherever achievable. Additionally, U-M will implement strict screening criteria for any VPPA projects to ensure that they are additive in nature and not already in utility plans.<br>EJ expert involved in procurement decisions:<br>Current Language: U-M should actively explore all current and potential strategies to determine which strategy, or combination of strategies, will best serve its goal of sourcing 100 percent renewable electricity in a manner that optimizes university priorities, in alignment with principles outlined by the Commission. (Line 1022-1025)<br>Proposed New Language: U-M should actively explore all current and potential strategies to determine which strategy, or combination of strategies, will best serve its goal of sourcing 100 percent renewable electricity in a manner that optimizes university priorities, in alignment with principles outlined by the Commission. Specifically to meet the principles related to equity and justice, U-M should ensure that a compensated environmental justice (EJ) expert is part of all renewable electricity procurement decisions.<br>Concerted lobbying efforts at the state level:<br>Current Language: The Commission recommends that U-M engage with potential partners and conduct due diligence with regard to renewable electricity options in the State of Michigan to determine whether, and how, it wants to advocate for additional options through potential policy changes at the state level. (Line 1045-1048)<br>Proposed New Language: The Commission recommends that U-M leverage its political capital in conjunction with potential partners and conduct due diligence with regard to renewable electricity options in the State of Michigan to determine how it wants to advocate for additional options through potential policy changes at the state level. This includes encouraging the adoption of regulatory policies through the state government and Public Service Commission to improve the viability of utility-scale renewable projects in the state.<br>Additional efforts in on-site renewable generation:<br>Proposed New Language: Whether owned by a developer or the university, U-M should strive to install additional on-site renewable generation across all three campuses. The Commision recommends that U-M immediately set specific targets for installation of distributed energy resources (DERs) across its campus, through various mechanisms such as a requirement for renewable resource installations in conjunction with construction of new buildings or incentivizing such projects through supplemental REF funding. (Additional paragraph before Line 1022) | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |

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| 401 | Student | COMMENT #401 CONTINUED (2/2)<br>4. Set Scope 3 emissions targets by 2022<br>Current Language: Establish, by 2025, carbon neutrality goal dates for Scope 3 emissions categories that are set no later than 2040. (Line 232-233)<br>Proposed New Language: Establish, by 2022, carbon neutrality goal dates for Scope 3 emissions categories that are set no later than 2040. (Line 232-233)<br>Note: This updated timeline should be reflected throughout the rest of the PCCN report.<br><br>5. Procure carbon offsets by 2022 and set maximum offset targets<br>Current Language:<br>Commit to the goal of carbon neutrality (inclusive of offsets) for Scope 1 emissions across all three campuses by 2025. (Line 585-586)<br>As a minimum threshold of consideration, all carbon offset investments made by U-M should be ... and compliant with social and environmental safeguards. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Clearly define and prioritize desired co-benefits criteria associated with carbon offsetting, and prioritize offset investment opportunities accordingly. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Identify opportunities for biosequestration projects on U-M lands that have significant carbon sequestration potential, and meaningful achievements across prioritized co-benefit categories. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Establish a standing expert committee to review the offset guidance recommended by the Commission (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Proposed New Language:<br>Commit to the goal of carbon neutrality ... by 2022. Total offsets purchased prior to achieving direct neutrality should not exceed [3,750 kt CO2 , (approximate total offsets shown in Fig. 2) ] nor should they exceed the corresponding amount shown in Fig. 2 in any single year.<br>As a minimum threshold … compliant with environmental safeguards, and include explicit review of environmental justice implications by a compensated expert.<br>Clearly define and prioritize desired co-benefits ... and prioritize offset investment opportunities accordingly. Co-benefit criteria should explicitly include benefits to marginalized and/or local populations.<br>Identify opportunities for ... across prioritized co-benefit categories. Identify and develop innovative offset mechanisms with co-benefits (e.g. funding weatherization or efficiency audits for local low-income housing or student rentals).<br>Establish a standing expert committee to review the offset guidance recommended by the Commission including a compensated environmental justice expert empowered to veto any proposed offsets.<br>Note: This updated timeline should be reflected throughout the rest of the PCCN report<br><br>6. Revolving Energy Fund (REF)<br>Current Language:<br>The Commission recommends that U-M provide the U-M Ann Arbor campus with 1135 at least $25 million in seed funding for the REF (Lines 1134-1135)<br>The Commission recommends $2.5 million in seed funding for each of the Dearborn and Flint campus REFs. (Line 1160)<br>The Commission recommends that U-M increase the size of the current energy management team to adequately meet the additional implementation and accounting demands. (Lines 1141-1143)<br>The Commission recommends hiring at least one energy management staff member to assist with identifying and executing energy efficiency projects on each of these two campuses. (Line 1161-1163)<br>Proposed New Language:<br>The Commission recommends that U-M provide the U-M Ann Arbor campus with 1135 at least $60 million in seed funding for the REF.<br>The Commission recommends $7.5 million in seed funding for each of the Dearborn and Flint campus REFs.<br>The Commission recommends … demands as determined by the current energy management team and, at a minimum, tripling energy managers.<br>The Commission recommends hiring at least two energy management staff members to assist with identifying and executing energy efficiency projects on each of these two campuses.<br>Rationale:<br>According to Appendix J of the Energy Consumption Policies (ECP) report, this additional funding is projected to provide much greater GHG reductions as well as saving the University $27M in utility costs. These projects with the associated benefits are a rare win-win opportunity in carbon neutrality.<br>Providing additional resources to the Flint and Dearborn campus’ is essential given (1) the need to install enabling measurement and verification capacity (2) the historic disinvestment in these campus’, particularly around sustainability/efficiency, which likely correlates with abundant efficiency opportunities.<br>Historically energy management efforts have received little to no support (i.e. the current Ann Arbor $2M annual budget is insufficient to install LEDs throughout general fund buildings, Flint and Dearborn have no energy management staff). To effectively change this chronic deprioritization, current energy management staff should have greater input on appropriate staffing/funding levels. The ECP report Appendix D.9 recommends quadrupling the energy management staff based on detailed discussions with the current energy management team, which is the basis for the 3x lower bound.<br><br>7. Implement ESG metrics for endowment investment decisions<br>Proposed New Language: In parallel to Scope 3 emission goal setting, the Commission recommends that U-M establish a plan to incorporate ESG metrics into its endowment investment decisions by 2022. As other large universities across the country have already included ESG metrics in their endowment investment decisions, the U-M endowment should be invested wisely and thoughtfully to align with the university’s broader mission. (should be added as a separate Commission recommendation/goal within the report)<br>Note: We believe that additional language and analysis will likely be needed to enable this change but have included some initial language to incorporate a commitment into the report. This is a crucial conversation to be had and is wholly interrelated with the push for carbon neutrality, so a call to adapt endowment investment practices should not be left out of the report. | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |

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| 402 | Student | COMMENT #402 (1/2)<br>The following language provides recommendations on how to address the specific gaps identified by the Energy Club at Ross PCCN Committee in their comment submitted on January 12th, 2021.<br><br>1. Improve implementation, accountability, and transparency measures<br>Current Language: The university must institutionalize its commitment to carbon neutrality by providing the necessary leadership and organizational support to achieve its goals. This includes implementing mechanisms to integrate responsibility and accountability at the unit level throughout the university, and creating a position that assists, advises and reports directly to the President to facilitate carbon neutrality progress across the entire university. (Starting on line 2480).<br>Proposed New Language: The university must institutionalize its commitment to carbon neutrality by providing the necessary leadership and organizational support to achieve its goals. This includes implementing mechanisms to integrate responsibility and accountability at the unit level throughout the university, creating a position that assists, advises and reports directly to the President to facilitate carbon neutrality progress across the entire university, and creating a supporting organization such as a project management office, department, or other formal team to assist the new role in carrying out its responsibilities. (Starting on line 2480).<br>Note: The language above should also be updated in the table following line 2475.<br>Current Language: Leading efforts to periodically and transparently report on U-M's progress and shortcomings across all plan dimensions throughout the university. (Starting on line 3534)<br>Proposed New Language: Leading efforts to transparently report on U-M's progress and shortcomings across all plan dimensions to stakeholders throughout the university, as well as external stakeholders, on a semiannual (or more frequent) basis. (Starting on line 3534).<br>Current Language: The individual in this role will have limited authority or direct oversight over executing much of the critical work that is needed. Complete responsibility for the goals and associated critical work cannot be assigned to one individual because that would set this person up for failure and not recognize or appreciate the organizational requirements to achieve such goals. Clear guidance will need to be developed and communicated regarding how this role interfaces with, collaborates with, and influences units (on the Ann Arbor, Flint and Dearborn campuses) to 2550 ensure expectations are aligned throughout the university. (Starting on line 2545).<br>Proposed New Language: Complete responsibility for the goals and associated critical work cannot be assigned to one individual because that would set this person up for failure and not recognize or appreciate the organizational requirements to achieve such goals. Thus, it is critical to create an organization such as a project management office, department, or other formal team to assist the new role. This organization would assist in developing project timelines in collaboration with unit leadership, managing the project plans to ensure timely completion at appropriate quality levels, and ensuring transparency and accountability throughout the process. Transparency and accountability towards underrepresented groups is of critical importance. Furthermore, a communication and engagement plan that provides all stakeholders with an ability to monitor the progress of the carbon neutrality projects and have their voices heard is also of critical importance. Clear guidance will need to be developed and communicated regarding how this role interfaces with, collaborates with, and influences units (on the Ann Arbor, Flint and Dearborn campuses) to 2550 ensure expectations are aligned throughout the university. (Starting on line 2545).<br><br>2. 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(Line 556-560)<br>Proposed New Language: Commit to carbon neutrality for Scope 2 emissions across all three campuses… by 2023 or earlier.<br>Note: This updated timeline should also be carried through the rest of the PCCN report.<br>Clear VPPA criteria:<br>Current Language: While U-M could enter into a VPPA linked to an out-of-state project, the Commission recognizes that there are reasons why in-state projects may be preferred. (Line 984-986)<br>Proposed New Language: While U-M could enter into a VPPA linked to an out-of-state project, the Commission recognizes that there are reasons why in-state projects may be preferred. For that reason and to encourage additional renewable power generation in the state of Michigan, U-M will work to enter into agreements for projects in Michigan wherever achievable. Additionally, U-M will implement strict screening criteria for any VPPA projects to ensure that they are additive in nature and not already in utility plans.<br>EJ expert involved in procurement decisions:<br>Current Language: U-M should actively explore all current and potential strategies to determine which strategy, or combination of strategies, will best serve its goal of sourcing 100 percent renewable electricity in a manner that optimizes university priorities, in alignment with principles outlined by the Commission. (Line 1022-1025)<br>Proposed New Language: U-M should actively explore all current and potential strategies to determine which strategy, or combination of strategies, will best serve its goal of sourcing 100 percent renewable electricity in a manner that optimizes university priorities, in alignment with principles outlined by the Commission. 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| 402 | Student | COMMENT #402 CONTINUED (2/2)<br>4. Set Scope 3 emissions targets by 2022<br>Current Language: Establish, by 2025, carbon neutrality goal dates for Scope 3 emissions categories that are set no later than 2040. (Line 232-233)<br>Proposed New Language: Establish, by 2022, carbon neutrality goal dates for Scope 3 emissions categories that are set no later than 2040. (Line 232-233)<br>Note: This updated timeline should be reflected throughout the rest of the PCCN report.<br><br>5. Procure carbon offsets by 2022 and set maximum offset targets<br>Current Language:<br>Commit to the goal of carbon neutrality (inclusive of offsets) for Scope 1 emissions across all three campuses by 2025. (Line 585-586)<br>As a minimum threshold of consideration, all carbon offset investments made by U-M should be ... and compliant with social and environmental safeguards. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Clearly define and prioritize desired co-benefits criteria associated with carbon offsetting, and prioritize offset investment opportunities accordingly. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Identify opportunities for biosequestration projects on U-M lands that have significant carbon sequestration potential, and meaningful achievements across prioritized co-benefit categories. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Establish a standing expert committee to review the offset guidance recommended by the Commission (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Proposed New Language:<br>Commit to the goal of carbon neutrality ... by 2022. Total offsets purchased prior to achieving direct neutrality should not exceed [3,750 kt CO2 , (approximate total offsets shown in Fig. 2) ] nor should they exceed the corresponding amount shown in Fig. 2 in any single year.<br>As a minimum threshold … compliant with environmental safeguards, and include explicit review of environmental justice implications by a compensated expert.<br>Clearly define and prioritize desired co-benefits ... and prioritize offset investment opportunities accordingly. Co-benefit criteria should explicitly include benefits to marginalized and/or local populations.<br>Identify opportunities for ... across prioritized co-benefit categories. Identify and develop innovative offset mechanisms with co-benefits (e.g. funding weatherization or efficiency audits for local low-income housing or student rentals).<br>Establish a standing expert committee to review the offset guidance recommended by the Commission including a compensated environmental justice expert empowered to veto any proposed offsets.<br>Note: This updated timeline should be reflected throughout the rest of the PCCN report<br><br>6. Revolving Energy Fund (REF)<br>Current Language:<br>The Commission recommends that U-M provide the U-M Ann Arbor campus with 1135 at least $25 million in seed funding for the REF (Lines 1134-1135)<br>The Commission recommends $2.5 million in seed funding for each of the Dearborn and Flint campus REFs. (Line 1160)<br>The Commission recommends that U-M increase the size of the current energy management team to adequately meet the additional implementation and accounting demands. (Lines 1141-1143)<br>The Commission recommends hiring at least one energy management staff member to assist with identifying and executing energy efficiency projects on each of these two campuses. (Line 1161-1163)<br>Proposed New Language:<br>The Commission recommends that U-M provide the U-M Ann Arbor campus with 1135 at least $60 million in seed funding for the REF.<br>The Commission recommends $7.5 million in seed funding for each of the Dearborn and Flint campus REFs.<br>The Commission recommends … demands as determined by the current energy management team and, at a minimum, tripling energy managers.<br>The Commission recommends hiring at least two energy management staff members to assist with identifying and executing energy efficiency projects on each of these two campuses.<br>Rationale:<br>According to Appendix J of the Energy Consumption Policies (ECP) report, this additional funding is projected to provide much greater GHG reductions as well as saving the University $27M in utility costs. These projects with the associated benefits are a rare win-win opportunity in carbon neutrality.<br>Providing additional resources to the Flint and Dearborn campus’ is essential given (1) the need to install enabling measurement and verification capacity (2) the historic disinvestment in these campus’, particularly around sustainability/efficiency, which likely correlates with abundant efficiency opportunities.<br>Historically energy management efforts have received little to no support (i.e. the current Ann Arbor $2M annual budget is insufficient to install LEDs throughout general fund buildings, Flint and Dearborn have no energy management staff). To effectively change this chronic deprioritization, current energy management staff should have greater input on appropriate staffing/funding levels. The ECP report Appendix D.9 recommends quadrupling the energy management staff based on detailed discussions with the current energy management team, which is the basis for the 3x lower bound.<br><br>7. Implement ESG metrics for endowment investment decisions<br>Proposed New Language: In parallel to Scope 3 emission goal setting, the Commission recommends that U-M establish a plan to incorporate ESG metrics into its endowment investment decisions by 2022. As other large universities across the country have already included ESG metrics in their endowment investment decisions, the U-M endowment should be invested wisely and thoughtfully to align with the university’s broader mission. (should be added as a separate Commission recommendation/goal within the report)<br>Note: We believe that additional language and analysis will likely be needed to enable this change but have included some initial language to incorporate a commitment into the report. This is a crucial conversation to be had and is wholly interrelated with the push for carbon neutrality, so a call to adapt endowment investment practices should not be left out of the report. | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 403 | Alumni | 585-589: "Inclusive of offsets" - this phrase irritates me. Does the university plan to use tree planting to get out of scaling back the investments it has made and continues to make in fossil-fuel based ways of powering and heating the campuses? If not here, I'd like a commitment later to reduce scope 1 emissions by some level without offsets on this shorter time frame, even if offsets are used to make up the difference. I'm confused why scope 1 - which the University should have more control over - is by 2025, while scope 2 - which the University has less control over - are by 2025 OR EARLIER. 2025 is a good timeline.<br>597-598: I'm glad you specify here that there will be some elimination of Scope 1 emissions by direct reductions. However, the sentence structure you use here muddies the point. More granular goals/targets (e.g. by 2030 and 2035) would be useful.<br>630: What types of offsets are being considered? Will they be maintained long-term (e.g. 100 yr time frame)?<br>664-667: This sounds excellent. Please do all you can to accelerate this - this is truly an opportunity to be an example.<br>726: "300% efficient" sounds fake and is not thermodynamically possible. The coefficient of performance (COP) is not the same as efficiency. Can you please fact check this and provide a detailed explanation in an appendix?<br>634: Why do Scope 1 emissions increase between 2020 and 2025?<br>755: Where would the solar PV panels referenced in Table 1 be located? Please attempt to install rooftop solar on existing buildings where possible and require it on new construction.<br>785: Re: Table 2 - I am massively disappointed that parking for football games is noted here are a limiting factor for this carbon neutrality roll out plan. Think big - why not enable electric busses (or trollies! or Lyft!) that limit the cars required in the area on football game days?<br>901-902: The opportunity to accelerate the implementation of local charging infrastructure is exciting, assuming the investment goes beyond U-of-M vehicle-only stations. I'd be curious about a pilot concept for what charging without a one-car-per-charge station (like one could see in a house with a dedicated garage) would look like. This would also advance the industry-wide vehicle charging conversation.<br>912: Can you please explain why hybrid buses/shuttles are being considered?<br>945: The CPP expansion is not something to brag about here. Please put this in the context that U of M is investing in infrastructure that will require burning fossil fuels in the near future. Local utilities are already decommissioning coal power plants, so U of M is burning its own natural gas instead of buying it from others.<br>988-1020: This option is intriguing. I prefer having U of M powered by MI-based renewables or Ann Arbor/U of M based renewables - this feels more like we're actually using the renewable electricity than if we were just buying it from somewhere for them to pump it into the grid. Anything U of M is involved in installing should work to be integrated into the surroundings to make a pleasing environment for those who study/work/play in Ann Arbor. Please consider rooftop solar on U of M owned buildings.<br>1030-1035: This sounds like something U of M should be doing already - I was sorry to see this required a "medium" culture change. This is important, so thank you for considering it.<br>1050-1059: This sounds great. Please consider involving existing student orgs like BLUElab: Woven Wind, an established wind turbine design, build, and education team.<br>1063: While not glamourous, demand-side management is important. Thank you for considering this deeply.<br>1112-1113: "Doing so would foster greater buy-in at the unit level and prevent unintended consequences such as academic units subsidizing athletics." YES.<br>1142: Thank you for considering increasing staffing for support.<br>1172: Thank you for collecting your data and creating a baseline for future work. I'm sorry to hear that these satellite campuses have not been tracking their impact on the environment.<br>1186-1190: Thank you for continuing to collect data to understand project effectiveness.<br>1260: I agree, REF and ECP are synergistic.<br>1337: Maybe U of M should also reframe its growth mindset and moderate new building development. Embracing old buildings and investing in buildings that will stand the test of time - from economic, sustainability, and beauty perspectives.<br>1345-1346: This should be implemented as rapidly as possible. This is an excellent idea. Also include incentives/requirements for rooftop solar.<br>1359: This sounds like a great opportunity for Michigan to be a leader.<br>1441-1443: You need to better describe the difference between the regional and distributed options - it is unclear. | CQ, GL, LR, OZ, UN, UO, UP, UQ, QL, UR , EB. CH, EX, US, MY |
| 404 | Student | Support for Energy Club at Ross PCCN Review Committee's Letter<br>I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |

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| 405 | Faculty | Thanks for the opportunity to comment.<br><br>I must first commend the team – they have assembled a useful and far-reaching draft report. I have not been able to read all the appendices. I offer a number of comments and recommendations on the main text.<br><br>1. Learn from and emulate peers. One recommendation should be to learn from other entities more systematically, both academic and non-academic, about opportunities to have a green / carbon neutral / healthy campus. MIT, UNC, and others seem a bit further ahead, but this report has many great recommendations that should be implemented. I found the videos organized by “Voices for Carbon Neutrality” to be highly informative. Several approaches might be used to ensure that best practices are followed, and to provide corrective feedback.<br><br>2. Better balance energy demand/supply. I agree with the need to address largest carbon sources, and addressing steam, chilled water and electricity supply using a phased approach makes sense, however, the demand side is somewhat emphasized. There is some low hanging fruit (see comments below about ECMs and building standards), but the built environment lasts 30-100 years so choices are particularly significant.<br><br>3. Make explicit recommendations for attaining CN including aspirational targets as well as fallback targets. This may give more negotiating room and help to increase and justify larger commitment of resources.<br><br>4. Separate research and implementation goals from the same funding source. I think that the recommendation is to increase the internal UM budget for energy research to $10 M. In a budget-constrained environment, my advice is to separate the academic and operation missions. Good energy ideas will find external grants. Moreover, faculty should not provide operational level assistance as research. To achieve synergies, I would suggest a cost-match where UM funds can be used for leveraging, but not for 100% of the funding.<br><br>5. Strengthen section on building standards. UM should commit to near net-zero or net zero buildings and building renovations for every facility. Currently, few if any buildings exploit natural lighting, passive heating/cooling, use sufficient insulation, etc.<br><br>6. Use a life-cycle approach for building-related evaluations, e.g., larger ECMs, renovations and new construction. This encompasses impacts associated with materials, construction, operation, renovation, demolition.<br><br>7. More thought is needed for energy management and leadership. I am very uncomfortable about placing implementation and/or oversight of the plan within Architecture Engineering and Construction (AEC). It may be premature to deal with project management and leadership at this time, but statements in the report to the effect that “AEC is confident that it possesses the project management capability in-house for a project of this magnitude” (790) represents a leap of faith and is unsupported by the history of energy management and sustainability at UM. AEC does not have the principal mission of sustainability, nor provided the leadership. Moreover, they may not be the most effective voice to develop strategies, advocate for larger budgets, faster time frames, engage effectively with the larger community, etc. A steering committee including AEC, Facilities, Operations, Utilities, Housing, Transportation, etc., under a VP in parallel with a consulting engineer to provide independent oversight might make more sense.<br><br>8. An explicit recommendation should advocate for intercampus transit and to DTW Airport and Detroit. Paragraph 880 should have a reference to the transportation component later. This comment suggests both strengthening this recommendation and have cross-references among the recommendations.<br><br>9. Energy conservation measures (ECMs) should be enhanced. While there is low hanging fruit, and a lot of work has been done at the 500+ building on campus, there is a long way to go. I am very familiar with the ECMs having spent 10+ years on a committee reviewing hundreds of ECMs (I am still notified). ECM Budgets have been very constrained and most projects very simple. 8-year payback policy is inadequate. While the technical quality of ECMs is very high, detailed energy audits and opportunity assessments are piecemeal, dealing with smaller projects. The process could be improved using routine and detailed building energy audits, perhaps auditing a building every 10 years, with the results guiding more complex ECMs and other actions.<br><br>10. Reconsider the REF system and arrangement. A stable, multiyear, and consistent funding mechanism is essential across all units. One REF could work, but I would strongly discourager splitting this into separate REFs for different units, e.g., Michigan Medicine, Athletics, and Student Life, for multiple reasons, e.g., the capacity and sources of each unit varies, it is not optimal from a systems perspective (getting biggest bang), none has sustainability as a primary the mission, and unit priorities clearly differ. I do not have an original and optimal suggestion for financing and accounting, but this seems problematic. It is also very fundamental to making headway.<br><br>11. Improve design and efficiency of buildings. The report (1405) shows other standards), but recommendations do not go far enough, e.g., to construct near or net -zero buildings. As noted earlier, building evaluations should utilize life cycle approach in both design, costing, maintenance, and operation systems.<br><br>12. Emphasize the importance of building commissioning and verification for new construction and renovations – demonstrate that energy targets are real, measurable, permanent, verified, enforced, etc.<br><br>13. Consider removing recommendations for changes in daily fees for parking and subsidy elimination (1590 - 1615) outside of the CN recommendation and time frame. This is completely logical and needed (though 30 years late), but it should not be tied to the time frame for the rest of the CN report since there are many other benefits associated with traffic reduction. (Had this been done perhaps even the $92 M widening of 9 miles of I23 might not have been needed! ) This technically simple idea will be profoundly upsetting to commuters. At the same time, this single recommendation should be expected to cause significant backlash. I do not think enough sufficient attention has been provided to messaging and incentives.<br><br>14. Non-motorized transport options need more attention (1710). The report discusses only cycling, but other non-motorized options should be considered, as well as scooters. Campus buses should have bike racks. Nonmotorized transport can reduce congestion, provide a healthier transit alternative. AA should become bike friendly with fewer accidents. | EF, LW, ML, DN, MM, MN, MO, IQ, MP, MQ, MR |
| 406 | Student | The University ought to expand on sustainability training and education possibly through an orientation module for incoming first-year students, daily educational cues in first-year dorms, RA initiatives to teach students on campus about sustainable practices in the dorms, or even a half-semester course all about sustainability in the University.<br><br>Individual departments can incorporate sustainability lessons into their courses, but one centralized, directed message will be more effective.<br><br>Furthermore, the University should guarantee support for student organizations who will be creating digital campaigns to promote sustainable practices. This can come in the form of space on University platforms and websites to convey our message. | AF, GJ, JQ |

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| 407 | Faculty | Commission members,<br>Thank you for the enormous effort that you have exerted to bring forward the commission's draft recommendations. I wish to make the following comments.<br>1. I support the comments submitted by the group Voices for Carbon Neutrality, in so far as they encourage:<br>a) greater integration of the principles of distributive justice within the body of the report<br>b) incorporating a high priority on the speed at which decarbonization occurs. The sooner a measure is instituted the greater its effect on the overall target<br>c) increased emphasis on the University's responsibility to lead rather than just participate in the policy change discussions that are crucial to rectifying our fossil fuel based state power systems.<br>d) insistence that the new Michigan Medicine patient tower be built to best-in-class<br>green standards, both as a matter of avoiding future costly upgrades, and as a signal to the community that the University is ready to commit to the changes needed for carbon neutrality<br>e) an accelerated timeline for scope 3 goals. Most of the university community can do little to assist the University with its scope 1 and 2 goals, beyond advocating for and supporting the work the commission is doing, and holding the institution to account following. However, we are much more in a position, within our individual units, to advocate for change in scope 3 emission policy. Generally these are High culture shift, low cost items. Asking for and receiving shared sacrifice is part of what binds us together in a community goal.<br>f) the inclusion of a financing plan for these options. This should include modelling of the impact of an externally imposed carbon tax on the cost savings associate with this plan. The national policy debate on carbon pricing would benefit from examples of how carbon pricing will impact large institutions such as the University.<br>g) the development of a leadership infrastructure to committee to, and execute the University's plan for Carbon Neutrality.<br>2. In addition, I have the following few specific comments.<br>a) Figure 5 needs more explanation for the X-axis. I think this represents a typical 24 hr period averaged over each month, but this is not specifically stated.<br>b) line 2245 and elsewhere - the central power plant expansion "will reduce U-M's GHG emissions..." needs further explanation. How is this the case?<br>c) line 1000 and elsewhere - Does the commission have a PV capable acreage estimate that can be included in the draft? If present and I missed it, could references to it be added when discussing behind the meter PV solutions. Although I would be only too delighted to see more DTE based commercial solar installations, it is still better, from the standpoint of distributive justice, if the university use its parking lots and rooftops for solar installations, rather than occupying a field that could be reforested or used for biological carbon sequestration.<br><br>Very best wishes to you all, | EE, DB |
| 408 | Student | The individuals responsible for the commission are highly qualified, but the University should take input from all departments, notably the Nuclear Engineering department and Economics. I know that NERS would have been glad to draft a report on energy alternatives for the University had they been invited to the commission. Plus, economists could have given their input on the cost-efficiency of the proposed plan over the decades-long timeline.<br><br>UMich should have drawn more attention to the PCCN report because this concerns the short-an- long-term life of every student, faculty, and employee on campus. A simplified report of the draft, in the form of a video or slideshow, would have helped others understand the University's options much more clearly than a 135-page professional paper. | HL |
| 409 | Student | The University should set interim goals for carbon neutrality such as 2-year plans to track progress more accurately instead of one, final, 2040 deadline. It is easy to set a long-term goal and then procrastinate until you realize that you won't have enough time -- trust me, I've been there. Plus, achieving the short-term goals will bring more positive attention to the University for getting closer to carbon neutrality.<br><br>The University should also come up with scope 3 emission recommendations ASAP. The commission had two years to work around the difficulties that come with calculating scope 3 emissions, therefore it should not take another 4 years to get recommendations. | CO, LW |
| 410 | SPAM | SPAM | NA |

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|---|---|---|---|
| 411 | Other | The Recommendations for Scope 3 and for Building Standards run the risk of missing a substantial opportunity for the University to contribute to solving climate change: reducing embodied carbon emissions in purchased building materials. Neither the Building Standards report nor Purchased Goods section of the Scope 3 Recommendations address this vital topic other than a single hypothetical mention of the substantial carbon footprint of purchased paint and coatings (in Purchased Goods Appendix N).<br><br>Asking vendors for carbon footprint data where it is missing is appropriate and urgent. Companies must be made immediately aware that being ignorant of their supply chains' impact on the climate is no longer acceptable to their customers. But where this data is increasingly available, as in the case of building products, it needs to be immediately used as a core purchasing criteria, along with traditional attributes of performance, cost, etc.<br><br>As the estimates in Appendix N indicate, the embodied carbon emissions in Purchased Goods is potentially greater than the University's Scope 1 and 2 emissions combined, a finding shared by a group of West Coast public institutions in a recent study https://westcoastclimateforum.com/cfpt. The State of California has already set per-unit embodied carbon limits in four categories of building materials purchased by the State (AB 262, The Buy Clean California Act). The free, open-source Embodied Carbon in Construction Calculator (EC3) Tool, developed at the University of Washington (buildingtransparency.org) and now backed by Bill Gates and others, makes available credible comparisons of embodied carbon data from 10 categories of US building products (many of which may soon be included in an expanded Buy Clean CA Act). New categories of products are being added to both EC3 and there is legislative support to expand Buy Clean California in 2021 as well.<br><br>Where product data is available and credible, as in the certified Environmental Product Declarations (EPDs) collected from manufacturers in EC3, it must be put to use immediately. Architectural case studies have already found no-cost embodied reductions of over 40% based on comparing products' EPD data and selecting lower embodied carbon products on renovation projects. This is truly one of the low-hanging fruit in solving climate change and needs to be part of the University's admirable leadership strategy.<br><br>Large innovations in materials science, including those being researched by University faculty will help in the future, but given the urgency of climate change, it should be University policy to pick the lowest carbon cost-competitive products that are available today and send a clear message to the broader vendor community. In the building products category, we are ready for this and you should not delay setting embodied carbon targets in this area of Purchased goods simply because other categories are not as far along.<br><br>Where LCA data is available, this will be easy to measure, but lack of data need not stop the University from making directionally correct Purchasing decisions based on proxy attributes that indicate reduced embodied carbon. An example of guidance on attribute-based decision making can be found in Architecture 2030's Carbon Smart Materials Palette (www.materialspalette.org).<br><br>Done correctly, a focus on embodied carbon in Purchasing could influence other industries to invest in emissions reductions in order to win your business. These reductions could quickly exceed any direct reductions undertaken on-campus. And they could potentially occur at no additional cost to the University beyond the price of procuring goods and services that were needed in any case. | BT ,JD |
| 412 | Alumni | I am excited about the overall scope of the UM plan. Congratulations.<br>I wonder whether possible partners in Michigan- other hospitals in Michigan Hospital Association are "on board" with state-wide planning. Hospitals use a lot of energy and as such are good targets for change.<br>I hope for close communication with medical associations to bring change.<br>Thanks. | MS |
| 413 | Alumni | Lines 1940-1944. Absent from this paragraph and from the cited Organization and Culture section is any reference to the power of example. To reduce air travel, all U-M deans should make a public pledge either to reduce their flying or not to fly at all. U-M earth and climate scientists should make similar public pledges. And forget offsets, which at this late stage of the climate crisis are ineffective at best. Climate scientists like the University of Manchester's Kevin Anderson and UCLA's Peter Kalmus no longer fly, and we need U-M faculty to follow suit. See the many pledges (mine included) at http://noflyclimatesci.org | MT |
| 414 | Staff | General Comment - first Thank You for doing this report<br>Recently (and potentially ongoing) a number of UM employees are working from home. By ignoring their increased footprint (electricity etc..) in the household and only including the reduced footprint on University property are any improved results on the Campus unintentionally misleading? | FY |

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| 415 | Student | COMMENT #415 (1/2)<br>The following language provides recommendations on how to address the specific gaps identified by the Energy Club at Ross PCCN Committee in their comment submitted on January 12th, 2021.<br><br>1. Improve implementation, accountability, and transparency measures<br>Current Language: The university must institutionalize its commitment to carbon neutrality by providing the necessary leadership and organizational support to achieve its goals. This includes implementing mechanisms to integrate responsibility and accountability at the unit level throughout the university, and creating a position that assists, advises and reports directly to the President to facilitate carbon neutrality progress across the entire university. (Starting on line 2480).<br>Proposed New Language: The university must institutionalize its commitment to carbon neutrality by providing the necessary leadership and organizational support to achieve its goals. This includes implementing mechanisms to integrate responsibility and accountability at the unit level throughout the university, creating a position that assists, advises and reports directly to the President to facilitate carbon neutrality progress across the entire university, and creating a supporting organization such as a project management office, department, or other formal team to assist the new role in carrying out its responsibilities. (Starting on line 2480).<br>Note: The language above should also be updated in the table following line 2475.<br>Current Language: Leading efforts to periodically and transparently report on U-M's progress and shortcomings across all plan dimensions throughout the university. (Starting on line 3534).<br>Proposed New Language: Leading efforts to transparently report on U-M's progress and shortcomings across all plan dimensions to stakeholders throughout the university, as well as external stakeholders, on a semiannual (or more frequent) basis. (Starting on line 3534).<br>Current Language: The individual in this role will have limited authority or direct oversight over executing much of the critical work that is needed. Complete responsibility for the goals and associated critical work cannot be assigned to one individual because that would set this person up for failure and not recognize or appreciate the organizational requirements to achieve such goals. Clear guidance will need to be developed and communicated regarding how this role interfaces with, collaborates with, and influences units (on the Ann Arbor, Flint and Dearborn campuses) to 2550 ensure expectations are aligned throughout the university. (Starting on line 2545).<br>Proposed New Language: Complete responsibility for the goals and associated critical work cannot be assigned to one individual because that would set this person up for failure and not recognize or appreciate the organizational requirements to achieve such goals. Thus, it is critical to create an organization such as a project management office, department, or other formal team to assist the new role. This organization would assist in developing project timelines in collaboration with unit leadership, managing the project plans to ensure timely completion at appropriate quality levels, and ensuring transparency and accountability throughout the process. Transparency and accountability towards underrepresented groups is of critical importance. Furthermore, a communication and engagement plan that provides all stakeholders with an ability to monitor the progress of the carbon neutrality projects and have their voices heard is also of critical importance. Clear guidance will need to be developed and communicated regarding how this role interfaces with, collaborates with, and influences units (on the Ann Arbor, Flint and Dearborn campuses) to 2550 ensure expectations are aligned throughout the university. (Starting on line 2545).<br><br>2. Implement carbon pricing before 2025<br>Current Language: Then the carbon price should be incrementally increased until it reaches a $50/ton carbon price by Year 5 in line with the social cost of carbon, (Line 1308-1309)<br>Proposed New Language: Then the carbon price should be incrementally increased to $50/ton, in line with the social cost of carbon, by the earlier of (a) concurrently with Scope 2 neutrality or (b) Year 3. In addition, the 2.5 percent annual escalation should begin in the fiscal year immediately following the first (real) revenue collection.<br><br>3. Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid<br>Scope 2 carbon neutrality by 2023:<br>Current Language: Commit to carbon neutrality for Scope 2 emissions across all three campuses… by 2025 or earlier. (Line 556-560)<br>Proposed New Language: Commit to carbon neutrality for Scope 2 emissions across all three campuses… by 2023 or earlier.<br>Note: This updated timeline should also be carried through the rest of the PCCN report.<br>Clear VPPA criteria:<br>Current Language: While U-M could enter into a VPPA linked to an out-of-state project, the Commission recognizes that there are reasons why in-state projects may be preferred. (Line 984-986)<br>Proposed New Language: While U-M could enter into a VPPA linked to an out-of-state project, the Commission recognizes that there are reasons why in-state projects may be preferred. For that reason and to encourage additional renewable power generation in the state of Michigan, U-M will work to enter into agreements for projects in Michigan wherever achievable. Additionally, U-M will implement strict screening criteria for any VPPA projects to ensure that they are additive in nature and not already in utility plans.<br>EJ expert involved in procurement decisions:<br>Current Language: U-M should actively explore all current and potential strategies to determine which strategy, or combination of strategies, will best serve its goal of sourcing 100 percent renewable electricity in a manner that optimizes university priorities, in alignment with principles outlined by the Commission. (Line 1022-1025)<br>Proposed New Language: U-M should actively explore all current and potential strategies to determine which strategy, or combination of strategies, will best serve its goal of sourcing 100 percent renewable electricity in a manner that optimizes university priorities, in alignment with principles outlined by the Commission. Specifically to meet the principles related to equity and justice, U-M should ensure that a compensated environmental justice (EJ) expert is part of all renewable electricity procurement decisions.<br>Concerted lobbying efforts at the state level:<br>Current Language: The Commission recommends that U-M engage with potential partners and conduct due diligence with regard to renewable electricity options in the State of Michigan to determine whether, and how, it wants to advocate for additional options through potential policy changes at the state level. (Line 1045-1048)<br>Proposed New Language: The Commission recommends that U-M leverage its political capital in conjunction with potential partners and conduct due diligence with regard to renewable electricity options in the State of Michigan to determine how it wants to advocate for additional options through potential policy changes at the state level. This includes encouraging the adoption of regulatory policies through the state government and Public Service Commission to improve the viability of utility-scale renewable projects in the state.<br>Additional efforts in on-site renewable generation:<br>Proposed New Language: Whether owned by a developer or the university, U-M should strive to install additional on-site renewable generation across all three campuses. The Commision recommends that U-M immediately set specific targets for installation of distributed energy resources (DERs) across its campus, through various mechanisms such as a requirement for renewable resource installations in conjunction with construction of new buildings or incentivizing such projects through supplemental REF funding. (Additional paragraph before Line 1022) | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |

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| 415 | Student | COMMENT #415 CONTINUED (2/2)<br>4. Set Scope 3 emissions targets by 2022<br>Current Language: Establish, by 2025, carbon neutrality goal dates for Scope 3 emissions categories that are set no later than 2040. (Line 232-233)<br>Proposed New Language: Establish, by 2022, carbon neutrality goal dates for Scope 3 emissions categories that are set no later than 2040. (Line 232-233)<br>Note:This updated timeline should be reflected throughout the rest of the PCCN report.<br><br>5. Procure carbon offsets by 2022 and set maximum offset targets<br>Current Language:<br>Commit to the goal of carbon neutrality (inclusive of offsets) for Scope 1 emissions across all three campuses by 2025. (Line 585-586)<br>As a minimum threshold of consideration, all carbon offset investments made by U-M should be ... and compliant with social and environmental safeguards. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Clearly define and prioritize desired co-benefits criteria associated with carbon offsetting, and prioritize offset investment opportunities accordingly. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Identify opportunities for biosequestration projects on U-M lands that have significant carbon sequestration potential, and meaningful achievements across prioritized co-benefit categories. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Establish a standing expert committee to review the offset guidance recommended by the Commission (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Proposed New Language:<br>Commit to the goal of carbon neutrality ... by 2022. Total offsets purchased prior to achieving direct neutrality should not exceed [3,750 kt CO2 , (approximate total offsets shown in Fig. 2) ] nor should they exceed the corresponding amount shown in Fig. 2 in any single year.<br>As a minimum threshold … compliant with environmental safeguards, and include explicit review of environmental justice implications by a compensated expert.<br>Clearly define and prioritize desired co-benefits ... and prioritize offset investment opportunities accordingly. Co-benefit criteria should explicitly include benefits to marginalized and/or local populations.<br>Identify opportunities for ... across prioritized co-benefit categories. Identify and develop innovative offset mechanisms with co-benefits (e.g. funding weatherization or efficiency audits for local low-income housing or student rentals).<br>Establish a standing expert committee to review the offset guidance recommended by the Commission including a compensated environmental justice expert empowered to veto any proposed offsets.<br>Note: This updated timeline should be reflected throughout the rest of the PCCN report<br><br>6. Revolving Energy Fund (REF)<br>Current Language:<br>The Commission recommends that U-M provide the U-M Ann Arbor campus with 1135 at least $25 million in seed funding for the REF (Lines 1134-1135)<br>The Commission recommends $2.5 million in seed funding for each of the Dearborn and Flint campus REFs. (Line 1160)<br>The Commission recommends that U-M increase the size of the current energy management team to adequately meet the additional implementation and accounting demands. (Lines 1141-1143)<br>The Commission recommends hiring at least one energy management staff member to assist with identifying and executing energy efficiency projects on each of these two campuses. (Line 1161-1163)<br>Proposed New Language:<br>The Commission recommends that U-M provide the U-M Ann Arbor campus with 1135 at least $60 million in seed funding for the REF.<br>The Commission recommends $7.5 million in seed funding for each of the Dearborn and Flint campus REFs.<br>The Commission recommends … demands as determined by the current energy management team and, at a minimum, tripling energy managers.<br>The Commission recommends hiring at least two energy management staff members to assist with identifying and executing energy efficiency projects on each of these two campuses.<br>Rationale:<br>According to Appendix J of the Energy Consumption Policies (ECP) report, this additional funding is projected to provide much greater GHG reductions as well as saving the University $27M in utility costs. These projects with the associated benefits are a rare win-win opportunity in carbon neutrality.<br>Providing additional resources to the Flint and Dearborn campus’ is essential given (1) the need to install enabling measurement and verification capacity (2) the historic disinvestment in these campus’, particularly around sustainability/efficiency, which likely correlates with abundant efficiency opportunities.<br>Historically energy management efforts have received little to no support (i.e. the current Ann Arbor $2M annual budget is insufficient to install LEDs throughout general fund buildings, Flint and Dearborn have no energy management staff). To effectively change this chronic deprioritization, current energy management staff should have greater input on appropriate staffing/funding levels. The ECP report Appendix D.9 recommends quadrupling the energy management staff based on detailed discussions with the current energy management team, which is the basis for the 3x lower bound.<br><br>7. Implement ESG metrics for endowment investment decisions<br>Proposed New Language: In parallel to Scope 3 emission goal setting, the Commission recommends that U-M establish a plan to incorporate ESG metrics into its endowment investment decisions by 2022. As other large universities across the country have already included ESG metrics in their endowment investment decisions, the U-M endowment should be invested wisely and thoughtfully to align with the university’s broader mission. (should be added as a separate Commission recommendation/goal within the report)<br>Note: We believe that additional language and analysis will likely be needed to enable this change but have included some initial language to incorporate a commitment into the report. This is a crucial conversation to be had and is wholly interrelated with the push for carbon neutrality, so a call to adapt endowment investment practices should not be left out of the report. | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |
| 416 | Alumni | Having trained at Michigan Medicine and stayed as an Assistant Professor for a short tenure, and now serving as Founder and Executive Director of Michigan Clinicians for Climate Action and State Coordinator for Citizens' Climate Lobby, I applaud the goals of this report to achieve net neutrality by Scope 1 and 2 emissions on all campuses by 2025.<br><br>Support for a federal price on emissions would expedite the University's efforts, especially when consider Scope 3 emissions. The Columbia Center on Global Energy Policy has an excellent review here: https://www.energypolicy.columbia.edu/research/article/near-term-net-zero-alternative-social-cost-carbon-setting-carbon-prices<br><br>My son will graduate from University of Michigan later this year, just as I spent 5 pivotal years training after receiving my MD elsewhere. We are proud to see U-Michigan taking this strong leadership role. With appreciation. | J |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 417 | Staff | Line 630;<br>Figure 2 should use different line types to be inclusive to those who are color blind. | MU |
| 418 | Staff | Line 675;<br>How will process steam used for autoclaves and sterilizers be converted? Would they be converted to utilize local electric steam generation with additional local purified water system(RO system)? | MV |
| 419 | Student | Line 950 states that "the electricity generation costs from new renewables is increasingly less expensive than the generation costs associated with building new fossil fuel plants." I realize that the Central Power Plant upgrade is not new construction, but I think that a far more detailed study needs to be presented showing why spending money on this upgrade is the correct way to move forward instead of switching to a renewable energy source immediately. Furthermore, line 2240 shows how the upgraded CPP GHG emissions compare to previous emissions, but does not also consider an alternative scenario of accelerating the timeline of the CPP decommissioning (line 785 states a 20 year period starting in 5 years) to start in year 0, and beginning the switch now to a renewable energy source.<br><br>My recommendation is to include at least a third option when reviewing CPP emissions: consider all money spent on the upgrade to date as a Sunk Cost, stop work on the upgrade, and shift focus to a renewable energy strategy now instead. The current analysis makes it seem like the CPP upgrade is the best option because it only compares back to prior GHG emissions or to Coal-Fire power generation (Appendix P). There are others options available to UM, and if the recommendation is truly to spend money on a GHG technology instead of a renewable one, the community needs to see more justification and proof that all other options were at least considered. | MW |
| 420 | Staff | line 735;<br>Land area constraints are not reviewed or explained. How much land is required at each campus location to accommodate a GHX system? If additional land area is required to achieve the system installation, its estimated size should be included in this document. | LQ |
| 421 | Staff | Line 820;<br>Figure 5 should use different line types to be inclusive to those who are color blind. | MU |
| 422 | Staff | Line 850: Are we certain that U-M Waste Management Services fleet were included in cost estimates here? It's also worth noting that while the use of electric waste vehicles is on the rise, the market has stalled a bit in recent months. It may be worth trying to partner with the City of Ann Arbor or another group to purchase these vehicles, if/when it becomes a priority. | MX, MY |
| 423 | Staff | Line 1581: It's pertinent to also think of the parking/vehicle-access needs of caregivers when considering changes to parking policy. While ridesharing and busing are wonderful alternatives, the ability to leave work/school ASAP when there is an emergency with a dependent is crucial. If U-M wants employees and commuting students to feel supported by the institution, this needs to be considered. | MZ |
| 424 | Staff | Line 1626: The parking subsidy should just be tacked onto employees' salaries (plus some additional funds to cover taxes). This will make the change more agreeable to staff. | NA |
| 425 | Staff | Line 1660: How about also partnering with car manufacturers to offer U-M staff, students and faculty a discount on these types of vehicles? | K |
| 426 | Staff | Line 1695: There is a cultural shift that needs to happen within U-M to further support the rideshare program. Managers may look down upon employees who must leave right at X o' clock because of their rideshare. Management support of this program will allow employees to feel more comfortable leaving work on time so that they can participate in ridesharing. | NB |
| 427 | Staff | line 175;<br>On the Ann Arbor campus, UMHS accounts for just over 50% of UofM's total greenhouse gas emissions and waste generation. Yet, the draft report seldom mentions MM even though we will be a large stakeholder in trying to achieve carbon neutrality. | DO |
| 428 | Staff | The report should better define (at the beginning of the report) what they mean by the three campuses (Ann Arbor, Dearborn & Flint). I think the term "campuses" tends to make readers think this is only for the UofM university and not UMHS. Also, by "Ann Arbor campus" they probably mean the surrounding areas of Ann Arbor (not just the city limits) but again I see no clarification/definition on this term unless I skimmed over it. | NC |
| 429 | Staff | Line 345;<br>Does scope 1 emissions exclude gas-fired kitchen equipment & emergency generators? Does scope 1 emissions also exclude UM leased buildings? | ND |
| 430 | Staff | line 715;<br>Hospital buildings also require low-pressure steam for humidification and medium-pressure steam for sterilization. There's no mention of how the steam demands of our hospital facilities would be met with the geo-exchange conversion. | MV |
| 431 | Staff | Line 750;<br>The report recognizes cost may vary greatly based on a wide variety of factors. Will the committee be conducting a more detailed cost evaluation prior to finalizing this report? A more detailed evaluation may influence our future plans. | LC |
| 432 | Staff | line 770;<br>Is the hospital currently included in the Ann Arbor campus region?<br>- Given that the hospital campus is so unique in its requirements, regulatory compliance, utility intensity, it's budgeting/ funding model, and energy management structure from campus, should the hospital campus be addressed separately from the remainder of the academic central campus? | DO |

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|---|---|---|---|
| 433 | Staff | -I support the Climate Action Movement at U-M's changes as detailed in the following document: (https://docs.google.com/document/d/1ZM53hdIMj9kN2PGxu8iO0UonUiSqfqifWjJhSns4hL4/edit#heading=h.pycpdpikyfu7)<br><br>-I support establishment of a carbon budget for the University for the timeframe within which the University is trying to reach true neutrality.<br><br>-My understanding regarding electric vehicles is that there is still no proven, practical method of recycling lithium batteries after they've outlived their usefulness, which makes me greatly concerned that fully electrifying the existing fleet as the draft recommends will simply produce different environmental externalities than carbon emissions that are similarly harmful in the long run and go against the claimed goal of centering climate justice in our carbon neutrality efforts. There are already extreme pressures on University vehicle parking on campus, and reducing the number of cars/trucks has the potential to relieve that issue somewhat. I'd encourage the commission to look into alternatives such as cargo bicycles, ride-sharing, and inter-departmental cooperative management of University vehicles to reduce the number of those vehicles that are necessary to purchase in the first place.<br><br>-The recommendations should include an option for reaching full neutrality without the use of offsets by 2030, the date widely identified as when it will be necessary to reach carbon neutrality to avoid more catastrophic warming. While the option may not be selected, there will not be a better opportunity than the commission's final product to lay out what it would require for the University to act as urgently as the best scientific data suggests the entire world should to eliminate emissions.<br><br>-I support the bicycling and multi-modal transportation improvements recommended in the draft.<br><br>-The recommendations around parking seem to me to overestimate the potential for reducing emissions via essentially making it more expensive and inconvenient to drive a car to work.<br><br>-I would've liked to see more emphasis on net-zero building construction in the report, or at least some information about why that approach has not been considered. | BW, GQ, GT, GU, GV, GW, JT, HJ, BU, JS, BV, EH, EM, EN, HQ, HR, HS, HT, HU, HV, HC, BX, IB, MK, U, LU, BO |
| 434 | Staff | I hinted at this previously, but I just got an email today - likely all staff did about the Harold R Johnson Diversity Service Award. This award recognizes faculty for their work contributing to the development of a culturally and ethnically diverse campus community. We need something like this for sustainability. Also, there should be not only an award for faculty, but awards for staff and students as well. This raises awareness, incentivizes this work, and recognizes those to often go unrewarded for their service. | KM |
| 435 | Staff | line 840;<br>"How does the shift of CPP to geo-exchange impact the hospital's ability to receive emergency power from CPP?<br>-UMHS relies on this feature as part of our ability to maintain operations." | HH |
| 436 | Staff | line 845;<br>Are we talking about going to full electric vehicles by 2025 versus hybrids? | NE |
| 437 | Staff | Line 1010;<br>Will energy storage be considered for emergency backup power? Most critical campus facilities have onsite backup generators that are fueled by natural gas or diesel. How will this scope 1 emission and emergency power be addressed? Is there any discussion regarding their replacement and what that might be? | NF |
| 438 | Staff | line 1010;<br>How are batteries considered carbon neutral? The resources that go into constructing a battery, whether VLAD or Lead Acid, are harsh to the environment. What is the waste stream for the end of life batteries? | NG |
| 439 | Staff | line 1100;<br>Would the hospital follow the recommendations for funding ECMs thru a revolving energy fund or would it be something it would need to starts itself? | NH |
| 440 | Alumni | As a Michigan alum who was on campus for much of the PCCN's existence, I am very excited to see actual recommendations taking form. However, I think there are a number of key issues that need to be addressed. First of all, the target date of 2040 is far too late for an institution of University of Michigan's wealth and stature. With an endowment of over $12 billion and world-class expertise at its disposal, U of M must be a leader in reaching carbon neutrality, not a follower. Another closely related issue is that this report lacks the necessary mechanisms to hold the university accountable. Specific recommendations for accountability and transparency were made in a memo by the Student Advisory Panel and Climate Action Movement, and need to be incorporated into the report. Previous recommendations have been ignored by the university administration, and transparency and regular reporting is key for the community to participate in this process. Finally, a major issue embedded throughout this report is the failure to meaningfully address environmental justice concerns. This is evident in the over-reliance and lack of stipulations for carbon offset use, it is evident in the continued reliance on DTE and failure to examine DTE's opposition to just energy access, and it is evident in the failure to include community groups, advocacy organizations, and organized labor as key constituencies to engage. I hope to see these shortcomings addressed in the final report, and look forward to working together towards the challenging but crucial goal of carbon neutrality. | EJ, EK, EL, EM, EN, HQ, HR, HS, HT, HU, HV, BX, GW, GT |
| 441 | Alumni | Lines 570-575: I do not see the inclusion of fugitive emissions in the Scope 1 emissions profile. Was an analysis completed to determine that fugitive emissions represented an inconsequential about of ghg emissions that it does not merit inclusion? If so, I think you should acknowledge that it was evaluated and determined to not merit inclusion.<br><br>Thank you for this great work and for the opportunity to provide comments, | NI |
| 442 | Staff | Line 1115;<br>One issue with having multiple REF's across different campuses/divisions. Smaller campus/divisions could get left behind even though they maybe a campus that is a big energy user. The big units with lots of funds always have more money to pull from their REF's. Also, some campuses/divisions just don't create a lot of revenue so they will always be hesitant to fund ECM's unless there is a structure that forces them to invest. | MO |
| 443 | Student | Although the report includes target dates for indicating progress, there is no mention of a carbon budget within the report. A carbon budget is an important way to ensure that the University does not continue to burn carbon indiscriminately while making progress on our goals, especially considering that carbon offsets are the current mode for reaching carbon neutrality by 2025. Even though there will certainly have to be a transition period, we must make sure that our carbon usage is decreasing throughout the process. A neutrality date suggests that we will stop adding carbon at that time but nothing about what carbon we emit before that date. Whether before or after the date, that carbon will have the same effect on climate change. A budget would hold our institution accountable to reducing our carbon before that date and then becoming neutral by the date. It would also be easier to be more transparent about the university's progress to its students, staff, faculty and the wider community. The university should work with scientists to create a carbon budget that will accompany our target dates to keep us accountable for the total carbon we emit as well as ensure that our progress remains steady throughout the transition. | BV |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 444 | Staff | Thank you to each of the Commission members for their hard work. Though I am staff in Michigan Medicine's Department of Community Health Services, I am submitting these comments with my personal perspectives.<br><br>I do wish to draw your attention to the 2019 Community Health Needs Assessment, which Michigan Medicine published in partnership with St. Joe's Chelsea and St. Joe's Ann Arbor. This document, located at http: //www.med.umich.edu/pdf/2019-CHNA.pdf, identified Climate Change as a critical Social Determinant of Health that the institution must commit to addressing. In 2016, the American Public Health Association declared climate change to be the greatest public health threat. It is great to see that the PCCN offering bold strategies.<br><br>In addition to being a staff person at Michigan Medicine, I am an alum of the School for Environment and Sustainability (SEAS)where I studied Environmental Justice (EJ). The Commission is notably lacking one of the many EJ experts from SEAS. This ought to be rectified immediately.<br><br>Carbon offsets are one such example of a recommendation made by the PCCN that ignores Environmental Justice issues. Offsets allow powerful institutions such as ours to continue poor practices, while offloading the impact onto communities with less resources. This is not an acceptable strategy. If offsets are to be used, the choice of offsets must be carefully considered by EJ experts.<br><br>While I understand that divestment is considered out of scope for this plan (though I don't understand why it is considered out of scope), there is simply no defensible argument that investment in fossil fuels can continue as UM moves toward carbon neutrality. At minimum, the Report must acknowledge that the University should divest. I urge all members of the Commission to use your authority and relationships with President Schlissel and the Regents to advocate for divestment.<br><br>Changes in procurement toward environmentally responsible purchasing also offer an opportunity to increase procurement from diverse business owners and local companies. If we are not able to meet our purchasing needs locally, this offers an opportunity for us to support the creation of new, local, and employee-owned businesses.<br><br>My final comment centers around accountability. The draft report does not outline an accountability structure to ensure that the goals and objectives listed therein are actually accomplished. I'd encourage the following:<br>- Decision making must be transparent<br>- Progress reports must be shared with the community on a regular basis (ie every 6 months) | R, JT, A, NJ |
| 445 | Staff | Hello! Regarding section 1710, I would like to strongly encourage support for an on-campus bicycle service facility. UM is far too large to not have a facility devoted to this. Ann Arbor's local bicycle co-op, Common Cycle (with whom I am affiliated), would make a great partner in this effort as well as any other efforts related to supporting cycling for those around campus. | HO |
| 446 | Student | I appreciate that one of the recommendations set forth to the university is to build more housing on-campus. However, there was no mention of affordability in the report. The dormitories are some of the most expensive places to live in Ann Arbor. I was happy to move out after my freshman year so that I no longer had to pay the exorbitant price. Furthermore, building more extremely expensive dense student housing does not address the larger housing crisis that is directly linked to the university. The housing crisis is a crisis right now and it is directly linked to the climate crisis. As more people are pushed out of Ann Arbor, the more people have to commute everyday to work and school which increases emissions. The university must build more housing close to campus and the city that is affordable, sustainable and accessible to stakeholders in our community beyond students. Without this crucial step, our ability to curb Scope 3 emissions will be greatly lessened. | BX |
| 447 | Student | I think it is great that the University wants to work with Ann Arbor to expand public transportation infrastructure! Increasing buses and bus routes is an essential way to reduce commuter emissions and promote a more sustainable city. However, I believed that there are equity issues inherent with the recommendation that parking passes be sold on a daily basis rather than monthly or annually. While I understand the sentiment that increasing the cost of commuting disincentivizes personal car use and incentivizes bus use, I feel as though this policy fails to take into account the fact that those who commute to Ann Arbor are most often those that cannot afford to live here. This fee is a regressive fee that disproportionately affects those with less income in our community. Though I agree that we must disincentivize commuting, we should do so by building more affordable housing in the city. If people can afford to live here then they will and they will not commute as much. If such a fee is ultimately included, it must absolutely be accompanied with a plan to build affordable housing and robust expansion of bus routes. | C |
| 448 | Staff | Line 1585. I'd like to see more attention paid to equity concerns & parking costs. Lower wage jobs tend to be "front line" jobs, requiring employees to be there. Lower income employees also tend to live farther away. Because the region doesn't have good public transit options now, and there is so much inequity (and arguably redlining) in car insurance rates, employees with lower wages jobs are already paying more to drive to work. Would it be possible to include in the recommendation that parking rates could be linked to an employees salary as well as other external costs of transportation? | NL |
| 449 | Student | I am pleased that the report explicitly states that the University will play a role in advancing and supporting climate legislation in Michigan government. As a large and wealthy institution, we have political sway and we should use it to support policies beyond the university that will be able to mitigate the climate crisis. I do wish the report had contained more specificity about what types of policies we might support and who will be tasked with this important job. | NM |
| 450 | Staff | I have major equity concerns with some of the recommendations put forth by the committee. Many people who work at U-M cannot afford to live in Ann Arbor, or must commute from a farther distance because their spouses work elsewhere (ex. Detroit) or they need to live with extended family members to help provide care. These issues disproportionately affect people from lower socio-economic statuses, as well as people of color. If U-M is to limit parking options or increase parking costs, they MUST consider people in these groups. Will integration of the Ann Arbor Campus Connector into existing public transportation systems help those who live in less affluent areas outside of Ann Arbor? Or will it focus primarily on areas inhabited by the wealthy?<br><br>For commuting options from farther away, will U-M ensure that shuttles function throughout the day? While those who work 9-5 and do not have family responsibilities may be able to take advantage of a shuttle with limited numbers of rides per day, people with children must be able to leave immediately in the case of an emergency. One potential way to deal with this issue would be to provide university funding for Uber or taxi rides if someone takes the bus to campus and then must leave in the case of an emergency. I had this option in graduate school at Harvard Medical School, contingent on using cycling as my primary method of commuting. | C, MZ |
| 451 | Student | I would like to a suggest a specific method for providing affordable housing to meet student/city needs as well as reduce gentrification that leads to greater commuting emissions and impedes our Scope 3 reduction goals. The administration should find a team to analyze the carbon intensity of development projects for new housing. Then following the data, the administration should introduce a required ratio of new housing units per capita increase of the incoming undergraduate class. Additionally, the university should restrict development projects according to this required housing need as well as a carbon budget that aligns with the goals of the IPCC. | HC |
| 452 | Alumni | Has the team evaluated thermal storage solutions as part of their analysis such as ice storage or molten salt storage to be used for heating, cooling, and hot water with the goal of some solutions to shift consumption off peak? | NN |

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|---|---|---|---|
| 453 | Staff | 2475 - I think it would be helpful to define "culture shift." Some of these recommendations seem, to me, more about policy & behavior than culture (eg signage about daily decisions in line 2679). While others are more about a shift in shared language and values (eg including carbon neutrality in core curriculum in line 2657). Behavior change is more about reducing barriers/increasing benefits of actions through policy changes, while shifts in values are more complex. Would it be possible to make a distinction between these concepts in the recommendations summary by (for example) adding a column about behavior shift next to the culture shift column? | NO |
| 454 | Staff | Add to key topics for inclusion: environmental justice, and/or intersection of DEI and sustainability (line 2638). | NP |
| 455 | Student | Although the report states that our transition should be just, there is no environmental justice consideration regarding where we will procure our energy from. We have many environmental justice experts at our university and they should be consulted to assess energy procurement decisions on the basis of environmental justice and the environmental justice implications of procuring energy from DTE should be heavily examined, especially before our contract with DTE expires. DTE has a long history of environmental justice violations and we cannot expect to rely on them alone to ensure that our transition away from carbon and our energy procurement systems are just. | GW |
| 456 | Staff | The University should consult all relevant stakeholders via outreach, but should particularly focus on engaging stakeholders who will be the most impactful to meeting U-M's carbon neutrality goals [add this clause to emphasize commitment to environmental justice]: AND communities who will be most impacted by the implementation of these plans. (Line 2795) | NQ |
| 457 | Student | The report lacks investigation regarding the generation of energy on campus/within the university. It also does not contain evidence from any studies regarding reduction of our carbon load from purchased sources. It does suggest further research, but it is extremely vague for being the result of two years worth of work and has even less study regarding these issues than the previous GHG Reduction Report. Electric energy is not automatically clean and considering that that remains our main strategy towards carbon neutrality, it is concerning that there has been so little study or investigation towards generating our own autonomous electricity on campus. | KA, NR |
| 458 | Staff | Line 1140;<br>Does the increase in staffing only apply to General Fund buildings?<br>Are the current DTE engineers provided limited to only General Fund buildings?<br>Will OCS be expanded to cover each of three campuses, including the auxiliaries?<br>How will the REM/DTE engineers be split across campus (i.e. x# of FTE per y# of square footage or FTE/ GHG)? | EY |
| 459 | Staff | line 1040;<br>UMHS campus alone could support 2-3 (maybe more) DTE on-site energy engineers. | NS |
| 460 | Staff | (2075 - Implement an accounting system for GHG emissions associated with purchased goods.) How will this impact our ability to purchase from small, local & minority-owned vendors who may not have the capacity to make these calculations on their own? | NT |
| 461 | Student | In the report, purchasing renewable energy from DTE is listed as a possible way to procure clean energy. However, the repost should specify that any energy that we obtain from DTE must be additive. Promising to purchase renewable energy to bring down carbon emissions does the community no good if we use our wealth to buy up all of the available renewable energy from DTE and do not pressure them to produce more as a whole that is available to the wider community. | N |

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| 462 | Staff | COMMENT #462 (1/2)<br>The Office of Campus Sustainability appreciates the work of the PCCN and the Internal Analysis Teams to craft recommendations to achieve carbon neutrality. We offer this feedback to help refine the draft recommendations and are excited about what the future holds.<br><br>Scope 1 Emissions<br>Heat and Power Infrastructure: We support the proposed plan of moving to an all-electric campus with a geo-exchange infrastructure. By leveraging these technologies, we can nearly eliminate natural gas from our fuel source while maintaining necessary flexibility and resiliency. (651)<br><br>Scope 2 Emissions<br>Purchased electricity:<br>We share the concerns of how a transformation to an all-electric campus will challenge the existing capacity of our electrical infrastructure. We want to emphasize that work in reducing demand loads at the building level through energy conservation efforts will improve this condition and could offset costs in the campus infrastructure project. (836)<br>Following the recommendation to source 100% renewable electricity is a great idea and should be pursued. However, we ask that careful consideration be paid to how future energy projects will be ranked and prioritized in that future state. For instance, projects that save electricity would lose all of the carbon savings associated with them. Projects in buildings connected to Scope 1 electricity would not be impacted as much as those who receive purchased electricity. Thermal projects would be mostly unaffected. If project evaluation and prioritization include financial outcomes, we would be able to navigate this large shift in carbon emissions. (921)<br><br>Scope 1 and 2 Emissions<br>Demand management (revolving energy fund, carbon pricing, building standards, deep building retrofits):<br>We appreciate the recognition that the university is currently underinvesting in energy management efforts. A lot of good work remains across campus. General fund buildings have been focused on for decades; opportunities still exist but some are more challenging and require more investment. In auxiliary units, particularly Athletics and Housing, we believe there are numerous opportunities for quick wins. There are currently many shovel-ready energy conservation measures for general fund buildings. F&O has implemented programmatic projects that can be easily applied to other sectors of the university (including U-M Dearborn and Flint), resulting in meaningful emissions reductions. (1063)<br>Adoption of REFs, a carbon price, or a combination of the two will require additional resources in the form of staffing and capital investments. Additional staffing would be needed to implement and manage these programs across campus. If these programs are to be successful, our existing measurement and verification efforts and metering capabilities would need to greatly improve (e.g. all NCRC buildings would require additional metering). The costs for these additional resources mean fewer resources are available for project development and implementation. We recommend that the commission strongly weigh the costs and benefits of these programs against the current, grant-based method of funding energy projects. (1063)<br>We recommend that the energy project funding, regardless of what mechanism is employed (REF, carbon price, or the current grant-based model), be designated exclusively for ECMs, re-commissioning projects, and strategic energy investments, and not be used on staff funding, capital projects, infrastructure projects, or renewable energy projects. (1082)<br>The proposed $25M seed money for the Ann Arbor REF is woefully inadequate; this would generate roughly $100M over a decade and would be insufficient to attain a 25% reduction in campus buildings. Based on our estimates, this level of investment would yield a reduction of 10-12% in the best-case scenario. We recommend a target investment of $250M - $400M over 15-20 years for a 25% building reduction. We have concerns about how these funds would be sourced. If the burden is applied to the schools/colleges/units through a carbon price, the financial impact on some will be overwhelmingly negative. Some have raised strong concerns about how the schools/colleges/units would pay for the carbon price without cutting mission-supporting programs. (1134)<br>Additional staff will be necessary to manage a carbon price system, a REF, a combination of the two, or an enhanced version of the existing grant-based model. Diversity in disciplines will be necessary to support the efforts that focus on new technologies. (1182)<br>To successfully achieve a carbon-neutral campus, operational standards must be reviewed and revised. Additional staffing needs to be identified in key areas (e.g. increase headcount and skillset of Facilities & Operations Maintenance teams for advanced building systems, etc.). Careful attention should also be paid to training employees throughout the university to understand how their decisions and actions impact the overall campus carbon neutrality goal.<br><br>Scope 3 Emissions<br>We appreciate the thoughtful consideration of including Scope 3 in these recommendations. We are eager for details to follow that identify which ones will be tracked and potentially incorporated into the carbon pricing system indicated in line 1290.<br>Commuting:<br>We support the recommendation for daily parking passes and linking rates to salary, provided that pricing be carefully set to benefit lower-paid staff members to a greater degree. Many staff commute long distances, make lower wages, and/or may not have alternatives to driving, so fair, flexible options must be available. (1580)<br>Leadership support is essential to the success of alternative commuting options. Programs such as rideshare require employees to leave promptly at their designated time, and others such as busing may require some flexibility. For all non-car commuters, the emergency ride home program must be commonly known and readily accessible. (1695)<br>As the commission explores opportunities to install more EV charging stations, we recommend coordination with the City of Ann Arbor to leverage better pricing with vendors/equipment as they implement their EV readiness ordinance. As EVs are more expensive than most cars, offering EV-only spaces may benefit higher-paid faculty/staff more than lower-paid staff members. Thus, we feel it's critical to invest in a variety of programs so that as many as possible can benefit. One step might include an evaluation of the vanpool rideshare program to identify potential adjustments to encourage program use. (1640-95)<br>We feel there is an opportunity to more strongly support cycling, such as developing a cycling plan or providing a bike stipend for people who forgo a parking pass. The latter could save the university money on parking expansion and maintenance. (1700-1710)<br>We are excited to see the Campus Connector recommendation. This high-profile transit corridor would visibly show U-M's support for carbon neutrality and be good PR by minimizing negative externalities such as traffic, parking and pollution on Ann Arbor. For even greater gains and tying in a commitment to environmental justice, we recommend the university become an active partner in existing regional transportation initiatives, which are tightly connected to issues of income and housing inequality in our county and affect many of our essential workers. (1750)<br>Consider recommending an analysis and space utilization practices to ensure telecommuting translates to carbon reductions. Maintaining little-used space on campus for staff who mostly telecommute would generate needless emissions. (1780)<br>Housing: Housing for staff and faculty could perpetuate inequities, so carefully consider whether it would be a worthwhile use of money and space, who would qualify, and whether student housing might be a higher priority. There are opportunities for the university to partner with surrounding communities to support existing efforts to address housing inequities (particularly housing on existing or proposed transit lines) that may have a greater impact than focusing only on housing within campus boundaries. (1800) | GN, NU, NV, ME, NX, NL, NB, BP, MY, DF, OA, OB, OC, OD, OE, D, CR |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 462 | Staff | COMMENT #462 CONTINUED (2/2)<br>Food and Purchased Goods:<br>While food and general purchasing may be rated low in the ability to confidently estimate emissions and affect change, both influence waste generation and disposal. Without strong leadership in shifting toward sustainable purchasing, attaining the existing 2025 waste reduction goal is unlikely. At a minimum, we should develop a tracking system for the carbon associated with purchasing and waste disposal, and both should be addressed at the campus-wide and unit level. (1455)<br>The recommendations indicate that the existing food goal and tracking do not focus on low-carbon items. We recommend explicitly stating that this goal and the accompanying guideline need to be updated. This is a critical first step to successful implementation and tracking. Michigan Medicine, responsible for roughly a third of the campus food spend, should be specifically identified as a major partner to be actively engaged, as should major on-campus food vendors such as Aramark and Sodexo. (1980-90)<br>Solid Waste:<br>In the Solid Waste and Wastewater section, only food waste is addressed in a preliminary recommendation. Later, the report refers to accounting for all solid waste emissions. We recommend specifying whether or not "solid waste" as a category will be tracked and reduced. It is unclear which solid waste emissions data would be tracked and whether U-M would aim to reduce any source other than food waste. If emissions associated with waste handling and processing will be tracked, it must also include those resulting from processing recyclables in order to accurately compare those associated with landfilling, recycling and composting. (2160-2180)<br>If U-M Waste Management Services (WMS) has not verified that $100k would cover two additional WMS drivers, we recommend checking. It strikes us as a low estimate. (2145)<br>The report calls for increasing recycling and compost bins on all three campuses (2150). While there is an opportunity to increase the number of compost bins on the Ann Arbor campus, more recycling bins are unlikely to have any added benefit for landfill reduction. On this campus, the primary focus should be on proper sorting and use of existing recycling bins and reducing waste at its source through purchasing behavior, and supporting Michigan Medicine in the reduction of medical waste from clinical operations. For Dearborn and Flint campuses, a bin standardization initiative similar to the one completed on the Ann Arbor campus could be valuable. Adding compost at Dearborn and Flint would be dependent upon the supporting infrastructure, including a viable composting facility as well as a hauler that can collect and deliver the compostables.<br>While there is a lot of encouragement to increase recycling and composting, it's imperative to pair this with targeted, ongoing work to minimize contamination. Expansion of these programs is relatively easy; preventing contamination is not. Dedicated education and outreach staff must be identified to address this at all 3 campuses.<br>Water: We believe emissions associated with city water consumption, sewer, and stormwater should all be tracked as soon as possible and incorporated into our energy project evaluations.<br>Leased Buildings: We commend the recommendation to develop and implement an accounting system for scope 1 and 2 emissions associated with all leased space and integrate it with U-M's existing accounting system. While scope 3 emissions may prove to be even more challenging to track in off-campus/leased buildings, we recommend at minimum prioritizing leased spaces that provide recycling (including custodial service) as this is frequently requested by staff in leased spaces and not having it dampens engagement. (2260)<br><br>Organization and Culture:<br>We support the recommendation to leverage, invest in, and elevate existing organizational structures and resources throughout the university to avoid redundancy. OCS should be a key partner in the implementation of operational items, including coordination with existing and future campus sustainability goals and other existing sustainability initiatives. (2495-2520)<br>Unit-level accountability is a critical ingredient for success. We therefore support the call for every unit leader to develop, pursue, and be evaluated on critical carbon neutrality-related tasks that they have the authority to prioritize, control, and execute, similar to the structure established for the DEI commitment, accountability and reporting. (2505)<br>Ongoing education and engagement goes beyond the identified orientation and/or curriculum categories. "Widespread and frequent educational cues" should involve existing partners (e.g. OCS, Planet Blue Ambassadors, Student Life) to help ensure integration with other sustainability awareness efforts. A clear definition of roles and scope is critical to avoid a disjointed campaign and make engagement efforts as effective as possible. (2611-2688) | GN, NU, NV, ME, NX, NL, NB, BP, MY, DF, OA, OB, OC, OD, OE, D, CR |
| 463 | Staff | line 1145;<br>The report should include the ECP analysis report Appendix D in the PCCN appendix of this report reader's reference. | L |
| 464 | Alumni | Did the group perform an evaluation of the various scope 3 categories for their relative size as a basis for determining which should be included in the plan and recommendations? A few notable categories that are missing include:<br><br>Waste - this is something that the university directly produces, can be impacted by programs to reduce waste, education, diversion, and purchasing choices made by university.<br><br>Investments - The university has a sizable endowment. The choices it makes about the ways this money is invested is directly controlled by the university itself. Is the university's money invested in high carbon or low carbon ways?<br><br>While scope 3 emissions are someone else's scope 1 and 2 emissions, the university is a huge consumer of resources and contracts with a lot of vendors. It could play an important role in helping those vendors with their own ghg emissions through technical support to vendors who need assistance tackling their own carbon footprints, enacting climate friendly purchasing and contracting policies that require demonstrated action to bring down the emissions of those vendors it purchases from, participating in and inviting its vendors to participate in disclosure forums such as CDP.<br><br>Thank you, | OF, D, A |
| 465 | Staff | MM's healthcare standards/codes will hinder what we are able to enforce related to proposed stringent emissions building construction standards. | OG |
| 466 | Student | In the report, it states that we want to ensure a just transition that can be useful to other communities. However, relying on DTE to procure clean energy for us without generating any on-site does not accomplish this goal. DTE just built a new natural gas plant in 2018 and their energy profile remains one of the dirtiest in the country with 59% coal generated energy. If we do not create any energy on-site and rely on DTE to procure all of our energy, this indicates that we are comfortable with their slow transition, which harms wider communities that are not able to purchase as much renewable energy. We must do research and create energy on-site not only to achieve our own carbon neutrality goals but also to put pressure on DTE to transition faster and make renewable energy a larger part of their profile faster. As a large public research institution, we are uniquely suited to pressure DTE, a virtual monopoly, to create energy that is better for everyone involved. | AQ |
| 467 | Staff | line 1375;<br>While AEC is the primary entity for design standards at UM, MM FPD maintains design standards unique to hospital buildings. Given the hospitals' carbon footprint, it might be good that this is recognized & understood in this document, specifically page 43 & 44, so leadership clearly understands how this change can be facilitated | OH |

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|---|---|---|---|
| 468 | Staff | line 1475;<br>Why did the PCCN decide to NOT include Purchasing/Procurement of goods in their Scope 3 emissions totals. As the report eluted to, this is the largest category of Scope 3 emissions. In healthcare alone, more than 70% of their greenhouse gas emissions are derived from the supply chain. | OI |
| 469 | Staff | line 1525;<br>Figure 9 should use different line types to be inclusive to those who are color blind. | MU |
| 470 | Student | As a student, the most glaring issue that I see in the report is the lack of accountability structures. It is one thing to say you're going to prepare to do something; it is quite another to make concrete plans guiding how you will actually achieve a large goal. Many of the recommendations suggested in this report lack guidance regarding implementation. In order to complete any project, specific timelines must be created, the responsible parties for delivery determined, how barriers to implementation will be removed or mitigated. Right now, the lack of accountability in this report is the largest barrier to creating change and if this is not addressed than this report is in danger of being shelved and unused. We cannot allow inaction from the university to continue through the lack of accountability. | EJ |
| 471 | Alumni | Does the boundary and baseline include Michigan Medicine's satellite locations round Ann Arbor and around the state? https://www.uofmhealth.org/our-locations<br><br>Thanks, | HF |
| 472 | Staff | Line 1545;<br>Regarding two of the scope 3 emissions recommendations:<br>• Commuting: Embrace and incentivize flexible telecommuting options for employees.<br>• University Travel: Promote video conferencing as an alternative to in-person meetings and travel.<br><br>The report notes these two recommendations as “High” culture shift. Is this still considered High due to the experience we gained during the COVID 19 pandemic? I think it is a great recommendation but people are probably more comfortable with the change in culture now. | OJ |
| 473 | Staff | line 1545, page 51;<br>UMHS has healthcare food standards and patients have specific dietary needs depending on their recovery/nutritional treatment plan. Therefore, simply stating things like reducing all meat from menus does not account for the hospital patient care. Patient care always comes first. | OK |
| 474 | Staff | Line 2115<br>UofM having control of its own MRF and markets would be a game-changer. Even better, get the City of Ann Arbor to go in and now we have the whole geographical area all on the same page. Plus, having more volume creates more opportunities. | OL |
| 475 | Staff | Line 2115;<br>Did the report investigate Pollution Elimination Technologies such as: https://www.qcillc.com/ . I’m not promoting any specific company, just questioning whether any of these emergent technologies were looked at as means of waste reduction/prevention. | ON |
| 476 | Staff | line 2135-4;<br>While I agree with this, unfortunately UMHS has been on a steep trend towards transitioning many products from reusable to single use devices (SUD’s). I’m seeing this happening within the operating room suite and other patient care areas. Safety and Infection Prevention (as well as most clinical staff) love the recent transition to SUD’s. And with Covid-19 and the risks of transmission, the transition to SUD’s is growing exponentially. The sustainability argument always falls on deaf ears when going up against the powerhouses of Patient Care, Safety and Infection Prevention departments. Not to mention, SUD’s are generally less expensive and no one is using life-cycle cost analysis when comparing reusables versus SUD’s. | OM |
| 477 | Staff | Line 2140-5;<br>At UMHS, it’s not our 3rd party food vendors that are the problem, it’s our own departments. Because of the way UMHS is structured financially, every individual department is watching out for their own budgets. If a department has a choice to save some money by purchasing Styrofoam cups so they can use that savings elsewhere (i.e. patient care items), they will. There needs to be more of “you shall” instead of “we hope you consider”. | OO |
| 478 | Staff | line 2140-6;<br>The report focuses on campus Waste Management Services (WMS) needing another truck. UMHS does not use WMS for our waste hauling (or compost services) for most of our UMHS buildings. Ideally, WMS would grow to serve all of the Ann Arbor campus which includes MM. Or, campus & hospital would use the same vendor. Having campus and hospital separate for waste/recycling services causes big problems when we are all trying to achieve the same goals. There needs to be more commonality. | OP |
| 479 | Staff | line 2150-9;<br>This needs to be updated. Not only is UMHS composting prep-waste from our patient and vendor kitchens/cafeterias, we are also collecting post-consumer compost originating from our patient kitchens (i.e. food scrapes coming down from the patient rooms). | OQ |

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|---|---|---|---|
| 480 | Student | COMMENT #480 (1/2)<br>The following language provides recommendations on how to address the specific gaps identified by the Energy Club at Ross PCCN Committee in their comment submitted on January 12th, 2021.<br><br>1. Improve implementation, accountability, and transparency measures<br>Current Language: The university must institutionalize its commitment to carbon neutrality by providing the necessary leadership and organizational support to achieve its goals. This includes implementing mechanisms to integrate responsibility and accountability at the unit level throughout the university, and creating a position that assists, advises and reports directly to the President to facilitate carbon neutrality progress across the entire university. (Starting on line 2480).<br>Proposed New Language: The university must institutionalize its commitment to carbon neutrality by providing the necessary leadership and organizational support to achieve its goals. This includes implementing mechanisms to integrate responsibility and accountability at the unit level throughout the university, creating a position that assists, advises and reports directly to the President to facilitate carbon neutrality progress across the entire university, and creating a supporting organization such as a project management office, department, or other formal team to assist the new role in carrying out its responsibilities. (Starting on line 2480).<br>Note: The language above should also be updated in the table following line 2475.<br>Current Language: Leading efforts to periodically and transparently report on U-M's progress and shortcomings across all plan dimensions throughout the university. (Starting on line 3534).<br>Proposed New Language: Leading efforts to transparently report on U-M's progress and shortcomings across all plan dimensions to stakeholders throughout the university, as well as external stakeholders, on a semiannual (or more frequent) basis. (Starting on line 3534).<br>Current Language: The individual in this role will have limited authority or direct oversight over executing much of the critical work that is needed. Complete responsibility for the goals and associated critical work cannot be assigned to one individual because that would set this person up for failure and not recognize or appreciate the organizational requirements to achieve such goals. Clear guidance will need to be developed and communicated regarding how this role interfaces with, collaborates with, and influences units (on the Ann Arbor, Flint and Dearborn campuses) to 2550 ensure expectations are aligned throughout the university. (Starting on line 2545).<br>Proposed New Language: Complete responsibility for the goals and associated critical work cannot be assigned to one individual because that would set this person up for failure and not recognize or appreciate the organizational requirements to achieve such goals. Thus, it is critical to create an organization such as a project management office, department, or other formal team to assist the new role. This organization would assist in developing project timelines in collaboration with unit leadership, managing the project plans to ensure timely completion at appropriate quality levels, and ensuring transparency and accountability throughout the process. Transparency and accountability towards underrepresented groups is of critical importance. Furthermore, a communication and engagement plan that provides all stakeholders with an ability to monitor the progress of the carbon neutrality projects and have their voices heard is also of critical importance. Clear guidance will need to be developed and communicated regarding how this role interfaces with, collaborates with, and influences units (on the Ann Arbor, Flint and Dearborn campuses) to 2550 ensure expectations are aligned throughout the university. (Starting on line 2545).<br><br>2. Implement carbon pricing before 2025<br>Current Language: Then the carbon price should be incrementally increased until it reaches a $50/ton carbon price by Year 5 in line with the social cost of carbon, (Line 1308-1309)<br>Proposed New Language: Then the carbon price should be incrementally increased to $50/ton, in line with the social cost of carbon, by the earlier of (a) concurrently with Scope 2 neutrality or (b) Year 3. In addition, the 2.5 percent annual escalation should begin in the fiscal year immediately following the first (real) revenue collection.<br><br>3. Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid<br>Scope 2 carbon neutrality by 2023:<br>Current Language: Commit to carbon neutrality for Scope 2 emissions across all three campuses… by 2025 or earlier. (Line 556-560)<br>Proposed New Language: Commit to carbon neutrality for Scope 2 emissions across all three campuses… by 2023 or earlier.<br>Note: This updated timeline should also be carried through the rest of the PCCN report.<br>Clear VPPA criteria:<br>Current Language: While U-M could enter into a VPPA linked to an out-of-state project, the Commission recognizes that there are reasons why in-state projects may be preferred. (Line 984-986)<br>Proposed New Language: While U-M could enter into a VPPA linked to an out-of-state project, the Commission recognizes that there are reasons why in-state projects may be preferred. For that reason and to encourage additional renewable power generation in the state of Michigan, U-M will work to enter into agreements for projects in Michigan wherever achievable. Additionally, U-M will implement strict screening criteria for any VPPA projects to ensure that they are additive in nature and not already in utility plans.<br>EJ expert involved in procurement decisions:<br>Current Language: U-M should actively explore all current and potential strategies to determine which strategy, or combination of strategies, will best serve its goal of sourcing 100 percent renewable electricity in a manner that optimizes university priorities, in alignment with principles outlined by the Commission. (Line 1022-1025)<br>Proposed New Language: U-M should actively explore all current and potential strategies to determine which strategy, or combination of strategies, will best serve its goal of sourcing 100 percent renewable electricity in a manner that optimizes university priorities, in alignment with principles outlined by the Commission. Specifically to meet the principles related to equity and justice, U-M should ensure that a compensated environmental justice (EJ) expert is part of all renewable electricity procurement decisions.<br>Concerted lobbying efforts at the state level:<br>Current Language: The Commission recommends that U-M engage with potential partners and conduct due diligence with regard to renewable electricity options in the State of Michigan to determine whether, and how, it wants to advocate for additional options through potential policy changes at the state level. (Line 1045-1048)<br>Proposed New Language: The Commission recommends that U-M leverage its political capital in conjunction with potential partners and conduct due diligence with regard to renewable electricity options in the State of Michigan to determine how it wants to advocate for additional options through potential policy changes at the state level. This includes encouraging the adoption of regulatory policies through the state government and Public Service Commission to improve the viability of utility-scale renewable projects in the state.<br>Additional efforts in on-site renewable generation:<br>Proposed New Language: Whether owned by a developer or the university, U-M should strive to install additional on-site renewable generation across all three campuses. The Commision recommends that U-M immediately set specific targets for installation of distributed energy resources (DERs) across its campus, through various mechanisms such as a requirement for renewable resource installations in conjunction with construction of new buildings or incentivizing such projects through supplemental REF funding. (Additional paragraph before Line 1022) | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |

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| 480 | Student | COMMENT #480 CONTINUED (2/2)<br>4. Set Scope 3 emissions targets by 2022<br>Current Language: Establish, by 2025, carbon neutrality goal dates for Scope 3 emissions categories that are set no later than 2040. (Line 232-233)<br>Proposed New Language: Establish, by 2022, carbon neutrality goal dates for Scope 3 emissions categories that are set no later than 2040. (Line 232-233)<br>Note: This updated timeline should be reflected throughout the rest of the PCCN report.<br><br>5. Procure carbon offsets by 2022 and set maximum offset targets<br>Current Language:<br>a) Commit to the goal of carbon neutrality (inclusive of offsets) for Scope 1 emissions across all three campuses by 2025. (Line 585-586)<br>b) As a minimum threshold of consideration, all carbon offset investments made by U-M should be ... and compliant with social and environmental safeguards. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>c) Clearly define and prioritize desired co-benefits criteria associated with carbon offsetting, and prioritize offset investment opportunities accordingly. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>d) Identify opportunities for biosequestration projects on U-M lands that have significant carbon sequestration potential, and meaningful achievements across prioritized co-benefit categories. (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>e) Establish a standing expert committee to review the offset guidance recommended by the Commission (Line 2305 Table “Preliminary Draft Carbon Offsetting Recommendations”)<br>Proposed New Language:<br>a) Commit to the goal of carbon neutrality ... by 2022. Total offsets purchased prior to achieving direct neutrality should not exceed [3,750 kt CO2 , (approximate total offsets shown in Fig. 2) ] nor should they exceed the corresponding amount shown in Fig. 2 in any single year.<br>b) As a minimum threshold … compliant with environmental safeguards, and include explicit review of environmental justice implications by a compensated expert.<br>c) Clearly define and prioritize desired co-benefits ... and prioritize offset investment opportunities accordingly. Co-benefit criteria should explicitly include benefits to marginalized and/or local populations.<br>d) Identify opportunities for ... across prioritized co-benefit categories. Identify and develop innovative offset mechanisms with co-benefits (e.g. funding weatherization or efficiency audits for local low-income housing or student rentals).<br>e) Establish a standing expert committee to review the offset guidance recommended by the Commission including a compensated environmental justice expert empowered to veto any proposed offsets.<br>Note: This updated timeline should be reflected throughout the rest of the PCCN report<br><br>6. Revolving Energy Fund (REF)<br>Current Language:<br>a) The Commission recommends that U-M provide the U-M Ann Arbor campus with 1135 at least $25 million in seed funding for the REF (Lines 1134-1135)<br>b) The Commission recommends $2.5 million in seed funding for each of the Dearborn and Flint campus REFs. (Line 1160)<br>c) The Commission recommends that U-M increase the size of the current energy management team to adequately meet the additional implementation and accounting demands. (Lines 1141-1143)<br>d) The Commission recommends hiring at least one energy management staff member to assist with identifying and executing energy efficiency projects on each of these two campuses. (Line 1161-1163)<br>Proposed New Language:<br>a) The Commission recommends that U-M provide the U-M Ann Arbor campus with 1135 at least $60 million in seed funding for the REF.<br>b) The Commission recommends $7.5 million in seed funding for each of the Dearborn and Flint campus REFs.<br>c) The Commission recommends … demands as determined by the current energy management team and, at a minimum, tripling energy managers.<br>d) The Commission recommends hiring at least two energy management staff members to assist with identifying and executing energy efficiency projects on each of these two campuses.<br>Rationale:<br>a) According to Appendix J of the Energy Consumption Policies (ECP) report, this additional funding is projected to provide much greater GHG reductions as well as saving the University $27M in utility costs. These projects with the associated benefits are a rare win-win opportunity in carbon neutrality.<br>b) Providing additional resources to the Flint and Dearborn campus’ is essential given (1) the need to install enabling measurement and verification capacity (2) the historic disinvestment in these campus’, particularly around sustainability/efficiency, which likely correlates with abundant efficiency opportunities.<br>c) Historically energy management efforts have received little to no support (i.e. the current Ann Arbor $2M annual budget is insufficient to even install LEDs throughout general fund buildings, Flint and Dearborn have no energy management staff). To effectively change this chronic de-prioritization, current energy management/facilities staff should have greater input on appropriate staffing/funding levels. The ECP report Appendix D.9 recommends quadrupling the energy management staff based on detailed discussions with the current energy management team, which is the basis for the 3x lower bound.<br><br>7. Implement ESG metrics for endowment investment decisions<br>Proposed New Language: In parallel to Scope 3 emission goal setting, the Commission recommends that U-M establish a plan to incorporate ESG metrics into its endowment investment decisions by 2022. As other large universities across the country have already included ESG metrics in their endowment investment decisions, the U-M endowment should be invested wisely and thoughtfully to align with the university’s broader mission. (should be added as a separate Commission recommendation/goal within the report)<br>Note: We believe that additional language and analysis will likely be needed to enable this change but have included some initial language to incorporate a commitment into the report. This is a crucial conversation to be had and is wholly interrelated with the push for carbon neutrality, so a call to adapt endowment investment practices should not be left out of the report. | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 481 | Faculty | While the PPCN plan is to be commended and is clearly the result of many folks who undertook complex analysis, some areas need further strengthening.<br><br>Voices for Carbon Neutrality has done a great job combing and making recommendations for improving PPCN. I strongly support ALL the recommendations of Voices for Carbon Neutrality. Here I will highlight four of them that seem most worth emphasizing. They are pasted here - or readers can refer to the VCN document in its entirety:<br><br>CLIMATE JUSTICE:<br>The intentions of the PCCN with respect to equity are appropriately stated in the draft report's introductory comments, lines 196 - 200:<br><br>The Commission recognizes that the climate crisis poses the most harm to communities that are historically and unfairly disadvantaged and disenfranchised. Each proposed university action brings with it a different set of environmental justice considerations. Accordingly, environmental justice must be comprehensively interwoven throughout U-M's climate action plan, rather than added as a supplementary step.<br><br>However, the draft report fails to interweave environmental justice throughout the U-M action plan.....<br><br>SPECIAL NEEDS OF MICHIGAN MEDICINE<br>Michigan Medicine (MM) deserves greater consideration in the final report because its share of U-M's total GHG emissions is so significant. It is important to note that in the US, the Kaiser Permanente hospital system just became carbon neutral, and the Boston Medical Center is working towards that status; they can serve as exemplars and partners....<br><br>ADDRESS UM'S INVESTMENT IN FOSSIL FUEL-BASED EQUITIES<br>A glaring omission is that of holding fossil fuel-based equities in the U-M endowment and other investments. We believe these should be addressed within the framework of Scope 3 emissions.<br><br>NEW EXECUTIVE POSITION..<br>The report speaks of a new executive position reporting to the President that is primarily advisory and consultative in nature with limited authority or direct oversight (lines 2480 - 2550). This will not get the job done. Internally, this executive must lead climate neutrality activities with the full support of the President and have the authority to work big levers of policy and university-level goals and metrics and their deployment including due dates and review structures to drive system level impact, unit level responsibility and accountability, and broad individual action across the three U-M campuses. Externally, this executive, together with the President, must partner with local and regional stakeholders and bring the gravitas of the university to bear on critical external enablers (see Community section above). This individual must bring a systems view that recognizes that the climate crisis, the crisis of inequity (racial, economic, environmental), public health, and societal economic prosperity are highly interdependent. We are at an inflection point in history, and U-M must lead with solution sets and metrics that balance the urgent needs of people, planet and prosperity.<br><br>Thank you.<br>Brent Williams, MD, MPH<br>Professor of Internal Medicine<br>Director, UMMS Global Health and Disparities Path of Excellence | EE, DO, A, DP, IC, EC, ED, EF, DB, CH, CO, |
| 482 | Alumni | You should also include a recommendation that U of M build partnership to advocate for stronger building standard and energy codes statewide for buildings and energy-consuming devices like heaters, air conditioning, appliances, motors, etc. | OR |
| 483 | Faculty | I am writing as the Faculty Lead on the IAT for University Travel. The commission did a good job of summarizing our recommendations and translating them into action items (Line 1830-1945). My concern is that by lumping University Travel in with all Scope 3 areas, some of which will take a long time to carry out, the University Travel recommendation implementation is being unnecessarily delayed. Of all Scope 3 emissions, University Travel is arguably the easiest to quantitate and is also highly visible within and outside the University. It should be possible to have all of the recommendations for this area, including an Air Travel Mitigation Fee (ATMF) in place and operating by 2025 and not to wait until 2040. While the ATMF is a form of an offset, and much University Travel needs to take place, the ATMF will allow the U-M to promote the position that there is an environmental cost to travel and that U-M considers that everyone should consider this part of the cost of their air travel. It will go down, especially for short and medium range travel as high speed ground transportation and electric powered (or other renewable fuels) are developed over the coming decades.<br><br>I recommend that the PCCN disaggregate Scope 3 emissions so that University Travel can go in a group of early or "Select" Scope 3 emissions that can be dealt with immediately. An implementation team of faculty and staff could be set up to improve quantitation of travel and its carbon footprint using Concur, start to implement the recommendations aimed at reducing air travel, and define how the ATMF would work. This work could be done over 18 months and be substantially complete by the end of 2022. The ATMF could then be phased in over a 3 year period possibly starting with a year where travelers are just informed of what their ATMF would be with the full fee starting by the end of 2025. The task force would also develop recommendations for how the ATMF would be paid. It will be easiest to start with travel by U-M Administration and Staff where it will just be added to the cost. It would be especially symbolic if the Executive Officers start as soon as possible. Travel by faculty that is grant related and educational travel by students might have to be paid centrally or by Departments.<br><br>My personal recommendation is that the ATMF not be lumped in to an overall Revolving Energy Fund but kept separate and used for either Biosequestration or small scale solar PV projects that can be identified as being funded by the ATMF to reduce carbon emissions. This identification may help promote; its extension as a concept to outside entities. | OS, OT |
| 484 | Staff | I was hoping for more specificity on how we would obtain RECs for all three campuses, rather than just have one recommendation be "Issue a Request for Proposals". I had imagined that this report would have that information in here, have considered it, and make recommendations based on those proposals. | OU |
| 485 | Anonymous | Anonymous | L |
| 486 | Faculty | I think the idea to set up separate REFs for different parts of campus is a good one. It's easy to see large projects from larger units eating up the REF quickly, and leaving smaller but more attractive projects behind. | MD |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 487 | Faculty | I am not an expert on this draft, but I attended two sessions and looked over it...<br><br>I am excited that work-from-home will be encouraged. A culture of non-discrimination against people who work from home has to be created and fostered actively. Some people really do think of this as being lazy or absent or uninvolved. Non-commute will cut down on the carbon utilization on campus and the number of cars polluting the air (and literally ruining non motorized transport in town, which you claim to desire).<br><br>I am concerned that the perverse effect will just be to move emissions from campus to people's homes where, theoretically, people will use a lot MORE natural resources, e.g., to heat a whole home rather than contributing one office to a larger building. They also are unlikely to be doing this with geothermal. So, you look great but really the net emissions may go up. Maybe UM can offer incentives to help people who work regularly from home to update their HVAC systems or add solar panels.<br><br>If you need to redesign building to have more flex space because people don't need dedicated offices, you should know that research shows that people are going AWAY from the popular open floor plan offices because of the lack of privacy and stress from noise and other people. People would prefer reservable quiet cubicles like at the library with some open space more than just open space for anyone...Maybe people can have lockers to keep things in that they only need in the building if so. You need more bike lockers too.<br><br>Non-motorized transportation is a nightmare in A2 because of the traffic and culture against bikes. It is very dangerous and stressful. UM needs to participate more actively in coordinating with the city to encourage routes and paths that are not for cars and to advocate for these with the city. E.g., UM BLOCKED the non motorized path that would have gone near/through the band practice field, which could have been accommodated with some creative thinking and a commitment to keeping bikes off the streets. E.g., near there, the huge brick building across from the band practice field totally blocks the view of the sidewalk and bikes from cars turning onto Hoover. Biking on South State street is very hard because of a strong wind pattern near the new athletics campus. The athletics campus with the golf course could easily provide people with an off-road path that crosses through these large swaths in South A2, blocking people from cutting through. The use of a gigantic golf course, all year long, for what appears to only be a few people any given time (plus game day parking), is a colossal waste of resources. Even if people were warned they could be hit by a ball, the area would at least be used a lot more and people could cross from popular areas like W Stadium/Main/Packard without going on the street. Multiple people have been hit by cars by the stadium. Generally, UM pays zero attention, interest, money to this problem and just keeps making more/bigger buildings and hiring more people, increasing the cars a huge percentage in the past few years. None of the UM employees stop at crosswalks in town because they are so determined to get to/from work on their long commute. HELP actively, not just listening to wealthy people who do not want to be inconvenienced in their cars or on their golf course. Otherwise, no one will ever start using non motorized transport and the entire town suffers along with the environment. You could offer incentives to people who bike to work (not just no parking costs, but something additional that really excites people--like free access to a bike locker and a gym membership and credit at the campus cafes).<br><br>The dominant social paradigm in the US and with wealthier families, including those at UM, involves thinking that things like heat, meat, air conditioning etc are basic rights that should be immediate and maximally comfortable. Parents called to complain about a meatless Monday so they had to change it. They complain if engineers try to reduce the AC/heat. You need to actively advertise when people are APPLYING to UM that this is what they are signing up for. That UM is committed to reducing our footprint, with things like alternative HVAC (geothermal does NOT produce the same sense of warmth or cool that people like), vegetarian food, no single-use plastic on campus including water bottles, etc. If they know in advance, they cannot complain as much and feel like something was taken from them, rather than added to society by them. This cultural shift and marketing is VERY important.<br><br>Thanks for trying to improve things.<br><br>I was very impressed and excited about the idea of widespread geothermal.<br><br>Best,<br>Stephanie D. Preston<br>Professor of Psychology<br>(also an advocate for non-motorized transport in the city and public schools through A2SafeTransport, city commission) | FY, FX, V, OV |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 488 | Staff | Carbon Responsible vs. Carbon Neutral<br>- As a public institution we have a commitment to supporting the public good. The pursuit of Carbon Neutrality would certainly align with that mission, but without the technology and clear pathway to achieving that goal, pursuing a Carbon Responsible endpoint is far more prudent. Committing to Carbon neutrality without a pathway would equate to writing a blank check.<br>- When faced with a similar situation, Mary Sue Coleman avoided a Carbon Neutrality commitment opting to take an approach of pressing the university to adopt stretch goals that challenged us (meet a 25% reduction). -- Ultimately we were on pace to fall short of those, and have had to make a large investment - 50% of electricity will come from a Power Purchase Agreement to buy green energy just to meet her commitment.<br><br>The University has to come first - balance of resource allocation<br>- To continue educating the next generation of world leaders, our institution has a commitment to fiscally responsible resource allocation. While the PCCN was charged with proposing a fiscally responsible plan, the cash outlays of over $3.5B required for infrastructure improvements, raise significant doubts. $150M/year over 20 years… Capital funding to support this will have to come from somewhere. How can we ensure it does not impact the Universities ability to support individual initiatives/ research/ or programming at the School and College level.<br>- If funding to the Schools and Colleges is not impacted the costs would have to be born with tuition increases or fundraising. Both come at a cost… Political pressures make increasing tuition increasingly difficult, and higher tuition would lead to less diversity across the institution by unfairly disadvantaging students of lesser means. In order to ensure access to as broad and diverse a range of students, we need to ensure that resources are available to support their ability to be here. And tapping donor support for this size campaign, will limit the ability for fundraising to support other critical needs.<br><br>New buildings have to be flexible, to meet ever changing demands<br>- The financial commitment to Carbon Neutrality has to align with the reimagination of our campus. The needs of the physical infrastructure in a post pandemic campus will likely be significantly different than before. Ensuring new buildings are Net Zero is certainly an aspirational goal, but it cannot come at the expense of creating facilities that are technologically advanced enough to support the new and emerging research and are easily reconfigurable to meet the changing operational needs.<br>- The PCCN report should not be adopted in isolation and must account for the competing priorities across the university. Facilities master planning efforts should be initiated with the Schools and Colleges to ensure the future use of facilities is accounted for as major capital expenditures are planned.<br><br>Other comments around the various areas<br>- Commitment to Research: As an institution of higher education and research, the largest benefit we can provide to the public sector is not our becoming a Carbon Neutral institution, rather it is educating a generation of leaders and researching advances in science and technology that support a Carbon Neutral future accessible to all. A $150M/yr investment into our academic and research enterprise may actually provide a larger long-term benefit to the global efforts to achieve Carbon Neutrality.<br>- Carbon Tax: A Carbon Tax could fiscally align incentives by rewarding buy-in/ active participation through cost avoidance. The caveat - to ensure this doesn't bring undue burden to schools and colleges there needs to be a base allocation increase from central to avoid unintended financial burden at the unit level, and ensure all of the School and Colleges are equally penalized by the tax.<br>- Revolving Energy Fund (REF): While, an REF would provide a sustainable pool of money to support the ongoing investment required as we pursue carbon neutrality. If this fund is implemented with 70% of the Carbon Tax as the replenishment method, schools and colleges will need a strong voice in it's implementation and ongoing management. This cannot simply be a reimagined FO managed fund that has little/no engagement with Schools and Colleges. Under this model, even straightforward projects (like LED replacements) have languished for years.<br>- Project Work: The enhanced energy requirements from the PCCN for all of the projects currently in the queue will greatly increase costs. Fiscal impacts will result in fewer projects being able to be completed and potentially will impact the School and College ability to meet the overall needs.<br>- Increased Staffing: The PCCN is clear that efforts to advance our carbon neutrality will require substantial staff to implement, manage, monitor and verify carbon savings. Caveat - This staffing needs to be positioned such that it represents the entire university and should be situated outside of FO or the Schools and Colleges. Special emphasis should be placed on positioning resources to drive efforts forward in a timely manner.<br>- Key Staffing: There is no discussion within the PCCN of increasing maintenance expenditures on highly qualified staff or training existing staff to keep the new more complex buildings running optimally. The PCCN proposes Schools and Colleges are taxed on consumption yet they have little influence over the ongoing maintenance and operation of the equipment installed. Recent decisions around the ability to control HVAC systems running outside of building hours is a prime example.<br>- Capital Renovation Investments: The $3.5B+ level of investments to install 20,000 boreholes for Geo-Exchange and upgrade infrastructure might not be sustainable. Instead a substantial campaign to support facility upgrades should be outlined to support not only carbon neutrality work, but also will help reboot and reimagine our facilities given the post pandemic shift in what needs we have of our physical infrastructure.<br>- HVAC Conversions: If the $3.5B+ Geo-Exchange project proposed moves forward, the building and room level infrastructure in each building on central campus will need to be converted from Steam to hot water. A detailed plan must include additional resources allocated to the schools and colleges to minimize disruption through a thoughtful planned effort.<br>- Invest in Camps: Carbon Neutrality for the three main campuses is the focus of the PCCN report. However, much can be learned from early wins, like the conversion of the Biostation and Camp Davis to Carbon Neutrality first. These sites present a more straight-forward path to carbon neutrality because of the lower relative utility demand, and the availability of space to implement green technologies (solar arrays, geothermal wells, wind turbines, etc)<br>- Success: What happens if we are not on track to accomplish the PCCN projections set forth? The ability to pay a utility premium and buy credits feels like an insufficient pathway and I feel that the University community will likely not accept that outcome.<br>Aging Infrastructure: Energy conservation and Carbon Neutral efforts cannot solely fund system upgrades for equipment that is far past life expectancy. Part of the cultural shifts indicated in the PCCN must include the mindset that maintenance only repairs items instead of actively managing capital replacement cycles for systematic replacements of old inefficient technology. Models like the IMF/PPI funds must be expanded to keep pace with needs Ex. the replacement of the entire lorch HVAC system is a known need, and is "on a list" yet nowhere near being funded.<br>- Biosequestration Accounting: The PCCN outlines the impact of BioSequestration as a means of Carbon Offsetting. How will the accounting be handled to ensure alignment with School and College operations. Are LSA carbon taxes inclusive of the sequestration credits? Another way to ask, would LSA be taxed on a research decision to log 1,000 acres of land to study deforestation. Are the benefits and penalties of land management aligned?<br>- Scope 3 - Remote Work: As individuals potentially enter into remote work arrangements reducing the carbon footprint from commuting and on-site utility consumption. How will the increased electric and utility consumption at the household be accounted for? On some level we are trading U emissions for increased demand at the employee residence and passing on costs to them.<br>- Total Environmental impact: Are there negative environmental impacts associated with the production and installation of green energy options like solar? Hazardous byproducts, impacts from mining the minerals for production, loss of land for solar array fields, etc? How are those being accounted for to ensure minimizing the secondary impacts to the environment? | OW, I, OX, PA, PB, PC, MJ, PD, PE, PF, PG, PH, PI, PJ, PK, PL |
| 489 | Student | Line 2140: "Develop compostable material standards and require that all third party food service providers (e.g., Sodexo, Aramark, caterers) comply with U-M composting and zero Waste standards;":<br>This should also include any on-campus restaurants, such as Panda Express, Ahmos, Panera, etc. | PM |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 490 | Student | Page 51: “Water: Explore improved water efficiency and site design standards for all new construction to reduce both upstream and downstream emissions from water treatment.”<br>The university could capture urine from urinals and use it for fertilizer.<br><br>Line 2128: To add additional suggestions for what can be done to reduce emissions from food:<br>- Don’t allow university funds to be used for animal meat<br><br>Additional suggestions:<br>- Plastic bag recycling should be added to all dorms. Hundreds of Amazon bubble wrap mailers are delivered to the dorms and could be recycled if a soft-plastic recycling program existed.<br>- A program with TerraCycle could be started to provide students a way to recycle items not accepted in typical recycling streams (pens, healthcare products, etc.)<br>- Don’t allow free single-use items to be handed out. This includes things like foam footballs, keychains, etc. at events like FestiFall or the career fair. The majority of these items are handed out by corporate sponsors and just end up in the garbage.<br>- Recycle single-use gloves through a program with TerraCycle.<br>- Replace traditional wipes with a bio-based alternative.<br>- Replace paper towels with hand dryers in the bathrooms. Alternatively, add compost bins to the bathrooms for the used paper towels.<br>- Allow wild grass to grow and stop replacing the lawns with shipped in grass.<br>- Require a mandatory course of environmental sustainability and proper recycling.<br>- Don’t allow university funds to be spent on printed materials. All material can be dispersed digitally or through scanning a QR code.<br>- Create a free service to answer questions about sustainability (ex. How to dispose of certain items).<br>- All university-funded stickers should have bio-based backings.<br>- Don’t allow the facility and operation vehicles to idle.<br>- Create an easier system that can be used to report sustainability issues: leaking water faucet, improver ventilation, etc.<br>- Provide free bike repair services.<br>- Turn off lights in closed buildings (ex. The Duderstadt Center lights remain on even when it is closed).<br>- Improve thermostat controls. Many buildings (Chrysler Center Auditorium, Ford Robotics Building, etc.) have thermostats that don’t allow you to adjust the temperature and are consistently too warm. | EP, PN |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 491 | Other | PCCN Committee:<br><br>Our greatest concern with the draft PCCN Report is that the lack of a sense of urgency to address the effects of climate change. We are facing a climate emergency. The plan should be adjusted to address the need to take immediate action to reduce greenhouse gas emissions (GHG). University of Michigan must move swiftly, boldly, and with an eye to greatest effect, in order to prove itself as a leader in the local, regional, national, and global arenas. The cost of implementation is significant. The cost of delay and half-hearted implementation is greater.<br><br>We will submit a separate document with line references to the PCCN draft report. This message is a summary of observations and concerns.<br><br>We fear that the plans outlined will result in another five years of study and deliberation, followed by test programs, after which we will have reached 2030 and will be fast approaching 2050, which will be too late for action. We know that the greatest amount of carbon emissions is related to campus buildings. Start immediately with implementing energy efficiency based on high standards that reflect requirements for safety learned from the Covid-19 pandemic.<br><br>Strongest Components of the draft:<br><br>-Identifying the GHG emissions associated with pipeline transmission of fossil fuel, specifically the fuel used for the Central Power Plant (CPP).<br><br>-Implementation of geo-exchange (geothermal), has the greatest long-term sustainability. Re-direct funds from the CPP to implementing geo-exchange now.<br><br>-Identification of the value of remote learning and meetings. A major portion of the cultural change that supports less travel has been enforced by the Covid-19 pandemic. Students, faculty, and staff have adjusted as required for safety. The reduction of GHG emissions related to travel of many types is likely nearly accomplished in the context of Covid-19. An audit of expense and reduced GHGs related to the extended period of social distancing should<br>be completed. Areas of greatest gain should be identified, supported, and improved.<br><br>-Inclusion of Scope 3 emissions is commendable. Thank you.<br><br>-Addressing emissions on all UM campuses is required and applauded. Attention to the Flint and Dearborn campuses is an important component of equity and environmental justice.<br><br>-Acknowledgement of the value of re-use and consolidation of campus buildings (Line 1800): “When new construction projects are unavoidable, the Commission recommends that U-M focus future campus construction in central locations, and prioritize renovating and rebuilding over converting green space.”<br><br>Areas to Improve:<br><br>-The land acknowledgement statement is a wonderful way to ground the report, yet the reference appears as a single statement. Respect for indigenous knowledge and traditions is missing in the remainder of the document. Please seek consultation from the tribal communities who can guide implementation in a way that will be truly sustainable. Make the land acknowledgement statement real and avoid its token use.<br><br>-The Central Power Plant (CPP) is a sunk cost. Acceptance of continuing with the Ann Arbor campus installation of a gas-fired CPP is an ongoing error. The intent to proceed with the CPP was announced at the outset of the PCCN, without addressing the ongoing and future GHG emissions. The project should be terminated and the associated financial and environmental expenses should be accepted.<br>-The emphasis on speed of implementation relies on purchase of offsets to implement renewable energy production somewhere in the world and ignores the effect of the implementation on area remote from UM campuses, such as:<br>purchasing renewable energy from a point distant from UM campuses means that UM campuses have no incentive to reduce use of electricity produced from fossil fuels that pollutes local regional communities;<br>potential loss of green, open space due to remote placement of solar panels; and<br>assuring that a community located remotely from UM campuses will benefit and avoid a negative environmental outcome related to an installation funded by UM.<br><br>-The document is silent on a priority to use brownfield installations for renewable energy projects that avoid expanding areas of impermeable surfaces.<br><br>-Rapid increase in electrification on-campuses is a great idea if the source of the electricity is renewable. If the source of the electricity that feeds on-campus power needs is from existing coal and gas-fired plants, then the University will be exporting its GHGs to regional neighbors who already experience environmental injustice.<br><br>-Equity and justice are mentioned, but the report lacks integrated urgency to address these important issues with all elements of the report.<br><br>-Changes in use of buildings related to the Covid-19 pandemic must be elevated, recognizing increased use of remote learning and meeting, and requirements for safety with respect to social distancing. It may be that UM can reduce its carbon footprint by reducing the building footprint in the multiple campuses.<br><br>-EV charging without use of solar or other renewable energy as the source will simply export the GHG emissions to the source of energy production: DTE fossil fuel plants and surrounding communities, as process to be avoided.<br><br>Submitted separately is a document with line-numbered references to the draft PCCN report. | DB, EB, MW, NW, AP, BL, PP, EE, OJ, E, |

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|---|---|---|---|
| 492 | Staff | COMMENT #492 (1/2)<br>U-M PCCN Draft Report and Recommendations (Dec 2020) Comments<br>Overall:<br>I support the general direction of the PCCN recommendations, especially those related to my areas of expertise, and am excited to see implementation move forward in a timely fashion.<br>A couple key general comments recommendations for implementation that go beyond what I gleaned from the report and recommendations:<br>• Develop Carbon Neutrality Transformation Plans (CNTP) for each building. CNTP should be a living document, starting simply, and evolving to more detailed and concrete concepts as design professionals and stakeholders flesh out details specific to the opportunities and constraints of each buildings. Define what a building envelope interior insulation upgrade would look like, such that improvements can be made on an 'as-renovated' basis. Define what upgrades can be done with non-disruptive renovation, what upgrades will require minor disruption to occupants, and finally, what upgrades should be deferred until a building-wide renovation. Building-wide renewals that displace building users for an extended period of time are rare – perhaps every 30-50 years for most U-M buildings. CNTP should be aware of and integrate with all building renewals. CNTP should touch on overlapping issues like safety, occupant comfort, maintainability, LCCA, construction impact.<br>• Use the CNTP to inform all construction activity done in each building, including maintenance repairs, minor renovations, and infrastructure renewal projects and potentially building renewals. To optimize the value of our construction dollars, we must seek synergistic opportunities to address multiple issues with 'elegant' solutions. The CNTP will lay the foundation for what energy conservation opportunities (insulation, conversion from pneumatic to DDC control, replacement of coils and/or piping to be suitable for conversion to 140F maximum MTHHW) can and should be included in renovation work.<br>• Avoid piece-meal individual building energy conservation projects – i.e., always looking for incremental 'low hanging fruit'. I refer to this as nibbling at the corners of energy conservation. Rather, we need to look more holistically at how we might approach building upgrades; assessing the whole, rather than trying to assess each individual component. Also in an effort to optimize cost/ benefit, accept a broad range of well established upgrades as non-negotiable (eg., conversion of pneumatic controls to DDC controls tied to BAS, adding building level meter of all systems, conversion of lights to LED, and upgrades necessary to align with MTHHW – to name a few)<br>• Define aggressive but cost effective metrics for building upgrades, perhaps:<br>o 30% minimum aggregate energy reduction target in existing buildings across each campus.<br>o 20% minimum energy reduction for each building (no maximum reduction necessary).<br>o Perhaps some design guidelines like: R-25 minimum, R-50 walls where practical, or allowable infiltration leakage.<br>o Specific, aggressive EUI target and CO2 reduction for various building types.<br>o Cost constraints, perhaps: Minimum and maximum upgrade cost of $10 and $50/ SF respectively, excluding central utilities/ district heat/ cool.<br>o LCCA or ROI financial constraint, in aggregate for a given building, perhaps 5% ROI minimum, considering LCC (maintenance, capital renewal, energy costs, carbon pricing etc.).<br>• For new buildings, set carbon neutral expectations with donors, deans and administrator for all projects that are not yet under construction. No new building should need an energy upgrade to align with our carbon neutral vision.<br>• Build what you need, not more. Define new use efficiency metrics, like occupied man-hours per SF. Assess utilization of existing and new buildings. COVID-19 has certainly colored what we feel we need in terms of office space for getting our work done. In the post COVID era, I think the lingering effects on space planning will be significant,<br>• Thinking about Geo-exchange, and Integral report that suggests we'd use 20% propylene glycol solution…I recommend designing to avoid use of glycol. We'd still need chemical treatment for corrosion control, but would prefer to not compromise the efficiency loss with glycol, and to introduce food for microbiological growth in miles of piping. I looked at this for the small system we installed at the Golf Team building and in the end we used glycol. I'd rather try to design for a slightly warmer field and have some alternate source of heat in case of emergency, rather than pull the field near or below freezing. Perhaps we could overcharge the field in late summer with solar thermal. I've not done the analysis but would like to see whether design without glycol is rational.<br>• Enhanced Geothermal System<br>This is a stretch comment that I never thought I'd offer, had it not been for an article I read recently. Would it be possible to drill to a well to a depth of maybe 3 miles and tap heat from deep in the earth's crust? Normally we think of geothermal heat being primarily in western states. While the achievable temperatures in SE Michigan may not be suitable for running a power plant, they may be adequate for more efficiently extracting heat. If the planets aligned, I'd install such a well at CPP, pull steam from the grounds, and potentially use existing steam distribution, or still move toward MTHHW distribution and replace NCCP boilers and turbines with steam to MTHHW converters. Compare: One very big, very deep 3 mile well vs. 9000 wells x 600 ft/well = 1000 miles of smaller, shallower wells with many miles of new distribution piping.<br>Comments based on draft report line numbers.<br>• L480 – Principles – seems like a few could be added from general list:<br>o Leverage synergy of coupling carbon neutral construction activity with required, ongoing infrastructure renewal and user-driven renovations.<br>o Build what's needed – avoid over building. For example, avoid temptation to install atria (defined as 3 stories or more high open space) in every building. Atria add operating, construction and maintenance cost, and carbon footprint with very limited additional value compared to carefully designed 2-story (not classified as an atrium) open spaces. | PQ, PR, PS, NW, PT, PU, PV, PW, PX, PZ |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 492 | Staff | COMMENT #492 CONTINUED (2/2)<br>• L 645 – Preliminary Draft Strategy Recommendations (table):<br>o Agree with general move toward electric heating/ cooling, with geo-exchange heat pumps being the core approach. I believe we have significant opportunities for installing non-geo-exchange coupled heat recovery chillers that could be remotely located and tied directly into the district CHW and MTHHW loops. I believe we need to retain some non-geo-exchange capacity for managing load balance on the geo-field. This could come in the form of some traditional chilled water system (chiller/ cooling tower) for a cooling dominant geo-field. For heating dominant geo-field, inclusion of some air to MTHHW heat pumps or HHW boilers or even select use of direct fired natural gas heat (for lab make-up air, perhaps raising outdoor air only from design condition of negative 10F to positive 10F) could help balance loads, while having a limited deleterious impact on carbon neutrality. Geo-fields are clearly expensive. To optimize value of geo fields, they should be heavily, actively used. I believe the optimum solution may limit the size of the field to 50-75% of the total peak load, allowing less expensive systems to meet a significant portion of the peak loads.<br>o I support use of RECs, with the goal of minimizing RECs in the long term. As Leaders and Best, we should be defining the path forward toward carbon neutrality, not buying CN with a piece of paper.<br>o Engage cities and others? – sounds good, though a bit vague.<br>o Best in class CO2 targets? Sounds ok – I still think EUI needs to be part of the base metric.<br>o Convert U-M fleet to electric? Generally agree. We may need to retain a few exceptions. I think fuel cell electric vehicles may be the future, rather than plug-in electric vehicles, especially for the bus fleet.<br>o Revolving energy fund – Yes, I agree, this will be valuable. We shouldn't focus just on the little stuff though, we should be willing to use this for, maybe $10-50/ SF for an integrated semi-deep dive load reduction, that also prepares buildings for heating with MTHHW. This could also be used to funding rooftop solar. The Smith Group A&A study demonstrated a very aggressive path forward that might be appropriate for total building renewal. I still feel that we should be able to reduce loads by 30% in aggregate with my target of $10-50/SF. This is a big range, but appropriately so given wide variety of building types. I think the $25M allotment for AA campus is a good starting point. However, I think we should be prepared to spend considerably more, perhaps 10 consecutive years at $25M of new investment. Many of these projects will take 2 years to design and execute. If aggregate simple payback is even just 10 years (I suspect it may be 20 years for some buildings, in aggregate) we'd see $2.5M returned in savings in year 3. I've not done the math to see what revenue the carbon pricing will generate, to see if it will keep up with a $25M per year spend on AA campus. If necessary, we should be willing to float a large bond. Bonds are at historic lows. Even with just 5% gross ROI (~15 year simple payback), we'd still come out ahead if we funded with bonds.<br>o Carbon pricing? If it helps us justify funding for the REF, I support. In theory, it might not be necessary to force the changes we're looking for. We could just increase utility cost internally, and directate energy reduction strategies from theDesig Guideleine perspective. That said, within the greater community, carbon pricing could be a valuable tool for forcing good behavior.<br>• L710 – Geo-exchange field size to meet all H/C needs for central campus may not fit within the available footprint, especially given high energy density and difficulty in making significant envelope improvements in many heritage buildings on central campus. Some solar thermal assist, air source heat pumps, thermal storage and potentially very limited electric resistance heat may be required in some areas. Burning some natural gas may be necessary for some time to help cover the low end outdoor air condition – through use of condensing HHW boilers and even potentially limited use of direct fired make-up air units.<br>• M715 – All buildings are not heated by steam, though vast majority on Central Campus are heated by CPP Steam. North campus is a mix of standard heating hot water (HHW, w/ supply temperature of 180F +/-), MTHW and steam. Several buildings designed and constructed in the past 5 years have been designed with a maximum HHWS of 140F.<br>• L__ - Should define what we mean by Medium temp HHW (MTHHW). Is that roughly 140F HHWS, 100F HHWR? I see it defined in the Integral report as 165F maximum. I recommend we continue to shoot for 140F maximum at terminal loads, and maybe generation and distribution topping out at 145-150F. Driving terminal loads to a large delta T is essential for minimize pipe sizes and pumping energy. While 40F drop heating coils might be burdensome, we might be able to achieve that with new buildings that also include radiant slab floors.<br>• L__ - Consider using the steam tunnels for MTHHW distribution. Might LPS steam pipe be converted to use with MTHHW. Steam pipe is in overall good condition, though often with asbestos insulation. LPS is likely larger than MTHHW, but could be used for MTHHWS or R. We would still need a second MTHW pipe. Would it make more sense to demo large LPS steam, and replace with smaller HHWS/R? Do we expect to leave LPS in place through the duration, or retire LPS as buildings are converted? Routing a new pair of large direct buried, insulated MTHHW lines will be challenging throughout much of campus, especially central.<br>• L__ - Do we envision a single system on Central campus? Multiple heat pumps tied into a common HHW distribution system? Integral Report implies it is a single, large plant, with a single (or mostly contiguous) large well field near the hospital, on/ near Fuller. CC Chiller plants are decentralized, regional plants serving 2-12 buildings. It might make sense to keep some of the chiller plant locations, and convert to heat recovery only (no geo exchange) or geo exchange heat pumps (if some nearby geo field is available). System could use central tunnel system for new MTHHW distribution tied to decentralized heat sources and using existing regional CHW distribution. Other campuses have their issues, but CC is clearly the most complex for conversion. Existing chiller plants in EUCP, Chemistry, MSRB2, Ross, Palmer, and South Quad already have robust power availability, are near tunnel, and are tied to significant CHW distribution. Other absorption to centrifugal chiller conversions are planned in several chiller plants that might also be suitable for HRCHs. Decentralizing HRCHs may increase maintenance and capital renewal cost. However, a looped, interconnected, but decentralized system has several advantages: Can be more readily phased in, significantly more resilient to any single outage, significantly reduces size of pipes routed through an already congested utility corridors. Conceivably, new Fuller plant distribution might need to tie to new MTHHW distribution within the tunnel system in just a handful of locations – potentially at hospital, med school and BSRB. We already have 2 large LPS lines from CPP to BSRB that might be candidates for conversion to MTHHW.<br>• L725 – heat recovery chillers are not 300% efficient, even with COP of 3, unless you ignore efficiency losses is generating electricity to begin with. In my mind, it's an apples and oranges comparison when comparing natural gas combustion (and thermal) efficiency to coefficient of performance for refrigeration cycles.<br>• L755 – Seems odd that electrical infrastructure is not included. Where possible, I advocate for use of electrical capacity already in place for centrifugal chillers, by locating some heat recovery chillers (ground coupled or direct connected to CHW and MTHHW) - largely in place: substation capacity, CHW distribution, proximity to tunnels, mechanical room space. We have several absorption to centrifugal chiller conversions expected to take place in the next ~5 years. We should take a close look at starting to implement some of this 'chiller-plant-to-geo-exchange heat-recovery-chiller-plant' in conjunction with those projects. Another thought or two on increased peak electrical demand: 1). Currently, most substations peak on about the hottest day of the year, making keeping the substation cool more challenging. With this shift, peak poad will now be on the cold day of the year. Keeping substations cool and comfortable will be easier. Furthermore, we may actually be able to recovery some of the waste substation heat that was previously not worth chasing. 2). Onsite PV tied to grid/ buildings near where peak electrical demand will be located could help reduce local issues with new peak demand. Keeping electrical demand within existing capability should be additional motivation to do everything possible to reduce loads in buildings.<br>• L775 – Considering cash flow, and available contractor pool will also be important. Condition of existing equipment is mentioned. In particular, every planned boiler or chiller project should be an opportunity to carefully consider long-term plan to implement portions of the plan. Although focusing on just north campus might seem like a good idea, to flush out concepts on this 'relatively easy' campus, we need to start building upgrades everywhere, like steam heating coil to 140F HHWS coils on an as-renovated basis.<br>• L820 – What role might on-site PV and on-site energy storage (thermal or electric) play in helping limit peak electrical demand, and therefore level of required electrical distribution upgrades. Elsewhere, building standards committee suggested 'adding mass' for reducing energy associated with spaces with wide swinging loads. We've considered adding 2M gallons of water thermal storage to NCCP in an effort to eliminate need for installaing chiller CH-7 in a couple years. Customized phase change materials have come a long way in recent years and may be a useful tool for widely varying spaces like classrooms. A few hundred thousand gallons of phase change at 140-145F could allow peak shave and potentially reduce number of required HRCHs.<br>• L845 – transportation – Generally support.<br>• L1080 - I support revolving energy fund, with the understanding it should approach energy reduction comprehensively at each building, not piece meal. Fund could also be used to supplement capital project funding, for going above and beyond what a renovation might be able to support on its own. Funding required will be significant. $1b in project cost over 20 years would be $50M annually. Initial $50M per year would be required, but taper as saving begin to build. I've discussed elsewhere too. | PQ, PR, PS, NW, PT, PU, PV, PW, PX, PZ |

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| 493 | Other | 40 Land Acknowledgement: Thank you for leading with and including the statement. It could be stronger. What amount of land in acres? What geographic range? What was promised besides education? What has been provided since 1817? What is the gap? No tokenism.<br>170 Scope 2 emissions are DTE? Yes, see Definitions (350) What about use of centrally generated electricity from coal and nuclear sources? Is this energy included?<br>195 Great to acknowledge and include environmental justice as a core element. It is particularly important with respect to Scope 3 emissions and the effect on regional communities.<br>210 Agree that UM has a big responsibility to mitigate (and reduce/eliminate) its own emissions.<br>300 Eliminate or offset by investments in carbon credits or sequestration…what will be the proportion of effort devoted to elimination of emissions? Greatest benefit to the region will be elimination of Scope 3 emissions related to generation of electricity.<br>305 It appears that an assumption is to offset first. What if ongoing activities result in emissions that affect immediate and regional neighbors? Is UM accepting the responsibility of supporting ongoing emissions in areas where energy is generated?<br>315 Financially responsible means no undue burden on students or diverse communities, but what about the burden of emissions and their effect on these same individuals? Recommendation: assign the value of unintended consequences of illness associated with emissions, as if they are expenses, because they are, and adjust the PCCN to reduce the unintended consequences.<br>330 Regional community involvement: UM actions should also benefit those of the surrounding communities and avoid adding or continuing a burden of emissions and their negative effects in the event of in increase in electrification. UM should not harm its neighbors.<br>335 Scalability should also prioritize emission reductions that will benefit other communities, in particular the local and regional neighbors.<br>410 Please name the stakeholders that will be engaged in review of the report.<br>450 Phase 3 feedback: please provide info on stakeholders who reviewed the plan<br>465 What communications were directed to the communities in which the UM campuses are located?<br>470 Link for upcoming engagement events is not populated.<br>480 Principles for Goal-setting and Strategies: Missing is consideration of effect on local ecosystems. Installation of renewable energy should not damage ecosystems that provide green infrastructure and habitat. Reference note regarding line 1025.<br>515 Regional community involvement; yes, surrounding communities must be included/engaged in the actions and decisions.<br>540 Financially responsible: will minimizing capital cost and operational cost override all decisions? Who decides? Will financial decisions be made in the context of community cost/benefit regardless of the location where the program or acton is based? Ex: assess the effect of solar panels placed in open spaces locations distant from Michigan vs brownfields.<br>555 Sounds like the Commission has some disagreement on methods. Offsets will be used for Scope 1, but what about Scope 2? 15 additional years for Scope 2. What can make that time frame shorter?<br>575 Scope 2 Emissions Profile: what types of fuels are used for purchased electricity? What contributes to the reduction in use of fuels 2017 - 20?<br>580 2018 Emissions baseline: Buildings are the big target ~90%. Immediately focus on improving the energy efficiency of all buildings.<br>600 Preliminary Draft recommendation: How can we focus on the elimination of emissions with direct implementation of renewable energy prioritized over offsets? Will “along the way” approaches result in delay and extending use of fossil fuels locally? Accepting 2040 as a goal for carbon neutrality is late and driven by DTE power production that is based on fossil fuel. UM should take the lead.<br>645 Preliminary Recommendations: Is there any reason to not start immediately on the first strategy, to convert buildings to fossil fuel-free status?<br>650 Scope 1 Emissions Reduction Strategies, for readability, consider indicating the baseline % use or demand for each of the Preliminary Draft Recommendations, to provide readers with the proportion of energy to be required.<br>710 Please provide a time frame for the “eventual campus-wide conversion from steam distribution to medium temperature hot water distribution…”<br>720 Excellent reference to re-use of existing chilled water networks in UM buildings. Given the number and depth of geo-exchange boreholes, what research is available about the use of fewer, extremely deep-drilled heat exchange systems? Consider: https://www.geothermal-energy.org/pdf/IGAstandard/WGC/2015/28045.pdf<br>820 Electrical Demand Estimate shows peaking and seasonal differences. What are the sources of energy for the demand? Will they be renewable? Demand also did not address storage. If local generation, there is less loss to transmission of electricity.<br>875 Flint campus does not have a bus or shuttle service, but should it? Assess the transportation needs of the campus and plan for electric vehicles.<br>900 EV charging should emphasize local solar installations for chargers, to reduce power lost in transmission. Otherwise, it is likely that emissions will continue in areas of environmental injustice. Many of these installations could be shared in the community.<br>945 The power purchase program defers decarbonization at the local level. Purchased renewable energy from DTE will result in ongoing fossil fuel use through 2040/2050 via Consumers/DTE. UM Scope 2 emissions will be ongoing through that time, and even though offset, our local environmental justice communities would be negatively affected by the emissions from UM campus emissions to regional neighbors. GHG reduction cited is on the global level, not local.<br>950 Cost for fossil fuels is likely to increase; costs for concomitant expenses for unintended consequences associated with fossil fuels should also be included: health problems, polluted water and soil, all of which support the urgency to shift to use of renewable power with urgent action.<br>985 In-state renewable energy projects are much preferred over out of state projects.<br>1005 UM owned on-site renewable energy options makes sense. The UM as a state constitutionally independent body should not be constrained by DTE requirements. UM should capitalize on the research and innovation possible from its talented faculty and students.<br>1000 The Northwood Housing area between Huron Parkway and Green Road is heavily wooded, if that is the location referenced? Please do not remove existing mature trees.<br>1010 Yes, support the use of battery/energy storage.<br>1015 UM and community partners makes sense. Include agreements for sharing electricity based on use of rooftops and parking areas.<br>1025 Continue to explore options, but preference should be with local and in-state installation, minimizing onsite removal of trees minimizing use of green infrastructure.<br>1070 Reduce peak demand, and off-peak, by implementing Dark Skies use of lighting in buildings overnight, and light-sensitive switches that adjust internal lighting use according to available natural light. Can the geo-exchange boreholes provide energy storage?<br>1090 Maximize implementation of Energy Conservation Measures (ECMs) that represent low hanging fruit. If this draft document identifies them, then there must be much that can be gained by expanding efforts in this simple realm. Install light- and motion-sensitive switches to reduce use of lighting when appropriate.<br>1100 Possible naive question: Is a payback required? In our climate emergency, what is the philosophy, and how is payback determined for any action? How much choice is there? What threshold will be required to implement change, and where should a cost/benefit tipping point be determined? What other factors must be considered to support moving to a clean, renewable, fossil fuel free future?<br>1105 Get started. What is the anticipated gain? What else can be initiated that is in the low hanging fruit category?<br>1115 Yes, support departments that may have less funding. The goal is education and energy efficiency, and renewable energy with reduction in GHGs as soon as possible. Make each department be part of the team.<br>1130 If Scope 1 & 2 emissions can be reduced by 25% in 10 years, it is likely that the time frame could be collapsed. Get started.<br>1140 “Currently, DTE provides three on- site energy managers to help U-M Ann Arbor identify and develop new energy efficiency opportunities. An increase with the level of activity might require bringing on additional DTE resources and staff.” Who pays the salaries of the DTE staff? What are the benefits that result in moving the UM to a renewable energy future regardless of DTE goals?<br>1150 Explain “optimally implementing REFs in auxiliary units. How are these units different?<br>1155 UM Flint & Dearborn: Yes, support financially, and explain the financial involvement of the DTE/Consumer’s Energy staff that may be hired. How will the additional staff be assessed in terms of helping to reduce energy use. Please address the potential conflict of interest in continuing the use of fossil fuels that are used by their energy system (DTE/Consumer’s) employer.<br>1185 Great to see the orientation to metrics. Make the metrics easily visible to staff and the community.<br>1275 Concerned about the Carbon Pricing/Tax; paired with Revolving Energy Fund, it may be effective, but will each unit be up to speed on how a tax is used to make decisions? Much more discussion required | AP, QA, QB, QC, QG, DB, QH, QI, PV, QK, E, AQ, QL, AO, EQ, QM, QN, QO, QP, QQ, QS, QT, QU, QV, QW, EE, NK, QX, QY, JT, QZ, DF, NW, D, DD, RA, FR, RB, RC, RD, RE, OJ, RF, RG, RH, JW, JR, RI, RJ, RK, RL |

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| 493 | Other | COMMENT #493 CONTINUED (2/2)<br>1405 Will new standards include installed solar, energy efficiency, no gas infrastructure, and geothermal?<br>1405 Onoing construction projects should convert as soon as possible to the fossil fuel free standards and provide a plan to convert remaining gaps, so that the overall goal is achieved in a short period of time.<br>1410 Transferability should include surrounding communities, particularly if UM identifies effective and efficient methods of moving to carbon neutrality.<br>1435 Retrofit with payback of 492 years is 1% of the UM $11B endowment. Did that include calculation an alternative with the carbon emissions related to tear-down/rebuild of the Art & Architecture building? Please explain the payback period. Explain the alternative in the context of a climate emergency.<br>1465 Carbon Neutrality Goal Summary for Scope 3: the entire document for Scopes 1-3 should establish the aggressive goals to move to neutrality as soon as possible, and to consider the dates into 2040 to be LATE.<br>1515 Urgency emphasized is good, and global climate justice, but offsets must minimize negative consequences for populations that are already affected by climate injustice.<br>1545 p. 50, Scope 3 Strategy recommendations: Ann Arbor Connector: include assessment of the effect that the project will have on the community, whether there will be additional local gains or not, medium drop in emissions and high cost. What is the estimate of the reduction in emissions? Consider integrating with the community transit system, working cooperatively, and the recent context of increased use of video conferencing that could significantly reduce the need for transportation via a high cost method.<br>1545 p. 50, The telecommuting recommendations appear outdated, given the broad swing to use of video conferencing, meeting, classes, that has been established in the time of the Covid-19 pandemic. We may have leaped to a huge gain during this time. The Commission should study the reduction in carbon that has taken place during the pandemic, specific to use of video conferencing. The cultural shift that may have represented resistance to video connections may have dropped significantly.<br>1545 p. 51, Consider whether carbon pricing is worth the effort for the potential resistance to its use.<br>1545 p. 51, Solid waste addresses composting only. What about other solid waste? E-waste, paper, glass, fabric. There is no mention of recycling or reducing use of materials in the first place. Education may be a strong lever for change.<br>1545 p. 51Leased buildings designed to be flexible: The flexibility concept should be applied to many on-campus buildings, too. Perhaps it would result in less need for new construction.<br>1545 p. 51, Leased Buildings: Allowing payment of electric and gas utility bills means that these energy uses will be continued. That is a disappointing assumption.<br>1545 p. 51, Leased Buildings: Set a high priority on leasing buildings with high energy efficiency. Additionally, set criteria for leasing that supports priority for University-owned buildings with high energy efficiency.<br>1550 Accounting recommendations: Good ideas to standardize and report routinely.<br>1590 Eliminating the University contribution to parking will benefit departments that currently bear the cost of employees' choices regarding parking. The current contribution is invisible to employees who will not notice its elimination. Consider a financial incentive for using low GHG emission alternatives such as walking, biking, carpooling.<br>1640 Solar or other local-site-based EV charging is the only way to eliminate vehicle based emissions. Charging stations that are powered by fossil fuel/nuclear sourced electricity will continue to contribute transportation-based carbon emissions, essentially exporting campus-based travel emissions to regional locations that are seriously affected by environmental justice.<br>1650 Mobility Electrification Report: http://sustainability.umich.edu/media/files/pccn/MobilityElectrificationAnalysis_FinalReport_2020.pdf appears to rely on fossil fuel sourced electricity. No mention of solar or other renewable energy source. The result is emissions in locations distant from UM campuses, but emissions, nonetheless an export of emissions from UM campuses to localities surrounding fossil fuel powered electricity plants.<br>1655 Home charging for EVs references existing utility providers, which means fossil fuel support. UM should encourage home solar charging and battery storage. Commuting emissions will exit from the power station towers rather than from tailpipes, as long as the power is generated with fossil or nuclear fuels<br>1665 Agree that data should be collected on EV charger use, but the lack of renewable energy generated charging is disappointing.<br>1685 Concerns about charging during peak hours would be addressed by using solar charging stations.<br>1725 Agree with expansion of free access to transit services in Flint and Dearborn.<br>1750 Energy source for Campus Connector is not stated. Assumption is grid-based fossil fuel energy source. How is this reducing carbon emissions? By what amount?<br>1760 The Connector assessment should include whether it will displace existing city buildings or result in removal or trees, both of which have a carbon emission expense. The Ann Arbor Amtrak station serves the community well where it is located on Depot Street, and additional excessive parking as in the huge parking structure considered, is not needed for commuters. University of Michigan does not own the Fuller Park property that is currently leased for parking. Adding a parking structure in the location will not serve the community well. Commuters will arrive without a car, and will depart on the train. A large parking structure makes no sense in terms of serving commuters who use rail transportation.<br>1785 Agree with telecommuting, and re-assessing transportation requirements after covid-19 threats are lifted. What different assumptions must be considered as a result of the pandemic? Will building inventory and use change over time? Establish a culture of flexibility in use of space.<br>1800 Best statement in the entire document so far, and the entire section is good: "When new construction projects are unavoidable, the Commission recommends that U-M focus future campus construction in central locations, and prioritize renovating and rebuilding over converting green space."<br>1820 This statement is a concern. Ideally, the University would limit new construction to buildings that are net zero or fully self-sustaining. That's the challenge. "It should be noted that any decisions to build additional university housing would increase U-M's Scope 1 and Scope 2 emissions until a carbon neutral energy infrastructure is in place." The worry relates to urgency. If energy and emissions for campus buildings can be offset, will the urgency incentivize reducing/eliminating emissions? Electricity produced in Scope 2 locations that are out of sight, reduce the urgency of recognizing the emission problem. Out of sight out of mind, unless there is feedback that directs the energy user to reduce or use another energy source.<br>1820 Building standards analysis is excellent, http://sustainability.umich.edu/media/files/pccn/BuildingStandardsAnalysis_FinalReport_2020.pdf The inclusion of Dark Skies is impressive, indicating sensitivity to the broad range of carbon neutrality management tasks. Source of energy is not stated.<br>1835 1835-1870 Recommend re-assessment of the statements on University travel, in the context of post-covid-19. See Section 1890-1910. Much of requirements for face to face connections has been demonstrated to be effectively managed by video conference. Suggestion: set criteria for travel that include necessity for in-person connections, examination of materials, or other elements that cannot be substituted by video connection. Use lessons learned from the pandemic about how and which activities can be performed effectively without long distance travel.<br>1890 The context of the Covid-19 pandemic has established video conferencing as a norm. The entire section on remote conferencing should be revised to acknowledge the shift in cultural acceptance of remote connections. The result is savings in money and in carbon emissions.<br>1900 Livestreaming and recording is a great idea. Storage of video data is not carbon-free, though, and plans must be made to account for the energy required for electronic storage of all data. Consider a shift from travel to video conferencing, and requirement support travel by a need for direct contact with people and resources in order to support a research or educational goal.<br>1940 Given experience with videoconferencing related to Covid-19, it is likely that the anticipated resistance to videoconferencing will be much reduced.<br>2230 Scope 3 emissions related to "Upstream emissions are reduced by reducing use of petroleum-based liquid fuels, natural gas, and electricity generated from these fossil sources, either by reducing demand or switching to renewable sources."<br>2235 Acknowledgement of methane leakage. Please address the issue of methane leakage by rapid shift to renewable energy, and eliminate fossil fuel use.<br>2240 Appendix P with reference to leakage calculations.<br>2245 Reference "Renewable Natural Gas" is undefined. What is the renewable component? Is the term one from DTE?<br>2305 Please include indigenous representatives in the review of all offset programs, as well as representatives who live in the locations proposed for installation of any renewable energy offsets.<br>2310 Agree that "offsets should not be counted as progress towards science-based targets, instead only in addition to meeting these targets through direct mitigation efforts."<br>2395 Please elevate the discussion and weight given to the co-benefits described for offsets, with attention to the locally-oriented benefits, in the philosophy of, at a minimum, "Do No Harm" to surrounding communities, and ideally, make the surrounding areas better.<br>2405 Agree with the priorities on co-benefits and priorities. This section should be elevated in the discussion and implementation process. Measurable actions should be identified for each of the co-benefits so that the UM and community identify strongly with the connections to surroundings. | AP, QA, QB, QC, QG, DB, QH, QI, PV, QK, E, AQ, QL, AO, EQ, QM, QN, QO, QP, QQ, QS, QT, QU, QV, QW, EE, NK, QX, QY, JT, QZ, DF, NW, D, DD, RA, FR, RB, RC, RD, RE, OJ, RF, RG, RH, JW, JR, RI, RJ, RK, RL |

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| 494 | Other | Re-submitted as confirmation email was not received for initial submission.<br><br>PCCN Committee<br><br>Our greatest concern with the draft PCCN Report is that the lack of a sense of urgency to address the effects of climate change. We are facing a climate emergency. The plan should be adjusted to address the need to take immediate action to reduce greenhouse gas emissions (GHG). University of Michigan must move swiftly, boldly, and with an eye to greatest effect, in order to prove itself as a leader in the local, regional, national, and global arenas. The cost of implementation is significant. The cost of delay and half-hearted implementation is greater.<br><br>We submitted a separate document that comments with line references to the draft PCCN report.<br><br>We fear that the plans outlined will result in another five years of study and deliberation, followed by test programs, after which we will have reached 2030 and will be fast approaching 2050, which will be too late for action. We know that the greatest amount of carbon emissions is related to campus buildings. Start immediately with implementing energy efficiency based on high standards that reflect requirements for safety learned from the Covid-19 pandemic.<br><br>Strongest Components of the draft:<br><br>-Identifying the GHG emissions associated with pipeline transmission of fossil fuel, specifically the fuel used for the Central Power Plant (CPP).<br><br>-Implementation of geo-exchange (geothermal), has the greatest long-term sustainability. Re-direct funds from the CPP to implementing geo-exchange now.<br><br>-Identification of the value of remote learning and meetings. A major portion of the cultural change that supports less travel has been enforced by the Covid-19 pandemic. Students, faculty, and staff have adjusted as required for safety. The reduction of GHG emissions related to travel of many types is likely nearly accomplished in the context of Covid-19. An audit of expense and reduced GHGs related to the extended period of social distancing should<br>be completed. Areas of greatest gain should be identified, supported, and improved.<br><br>-Inclusion of Scope 3 emissions is commendable. Thank you.<br><br>-Addressing emissions on all UM campuses is required and applauded. Attention to the Flint and Dearborn campuses is an important component of equity and environmental justice.<br><br>-Acknowledgement of the value of re-use and consolidation of campus buildings (Line 1800): “When new construction projects are unavoidable, the Commission recommends that U-M focus future campus construction in central locations, and prioritize renovating and rebuilding over converting green space.”<br><br>Areas to Improve:<br><br>-The land acknowledgement statement is a wonderful way to ground the report, yet the reference appears as a single statement. Respect for indigenous knowledge and traditions is missing in the remainder of the document. Please seek consultation from the tribal communities who can guide implementation in a way that will be truly sustainable. Make the land acknowledgement statement real and avoid its token use.<br><br>-The Central Power Plant (CPP) is a sunk cost. Acceptance of continuing with the Ann Arbor campus installation of a gas-fired CPP is an ongoing error. The intent to proceed with the CPP was announced at the outset of the PCCN, without addressing the ongoing and future GHG emissions. The project should be terminated and the associated financial and environmental expenses should be accepted.<br>-The emphasis on speed of implementation relies on purchase of offsets to implement renewable energy production somewhere in the world and ignores the effect of the implementation on area remote from UM campuses, such as:<br>purchasing renewable energy from a point distant from UM campuses means that UM campuses have no incentive to reduce use of electricity produced from fossil fuels that pollutes local regional communities;<br>potential loss of green, open space due to remote placement of solar panels; and<br>assuring that a community located remotely from UM campuses will benefit and avoid a negative environmental outcome related to an installation funded by UM.<br><br>-The document is silent on a priority to use brownfield installations for renewable energy projects that avoid expanding areas of impermeable surfaces.<br><br>-Rapid increase in electrification on-campuses is a great idea if the source of the electricity is renewable. If the source of the electricity that feeds on-campus power needs is from existing coal and gas-fired plants, then the University will be exporting its GHGs to regional neighbors who already experience environmental injustice.<br><br>-Equity and justice are mentioned, but the report lacks integrated urgency to address these important issues with all elements of the report.<br><br>-Changes in use of buildings related to the Covid-19 pandemic must be elevated, recognizing increased use of remote learning and meeting, and requirements for safety with respect to social distancing. It may be that UM can reduce its carbon footprint by reducing the building footprint in the multiple campuses.<br><br>-EV charging without use of solar or other renewable energy as the source will simply export the GHG emissions to the source of energy production: DTE fossil fuel plants and surrounding communities, as process to be avoided.<br><br>Submitted separately is a document with line-numbered references to the draft PCCN report. | DB, EB, MW, NW, AP, BL, PP, EE, OJ, E, |
| 495 | Anonymous | Anonymous | RM, KF |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 496 | Faculty | As a member of the Michigan Medicine Community, my attention is called to the large scale carbon burden contributed by MM and the opportunities this presents for constructive interventions. These might include:<br>1. Strict regulations applied to the building and running of the $920M Hospital.<br>2. Adoption of new technologies and innovative building codes, such as those being implemented in "Passive House Hospitals", which will help in achieving a goal of carbon neutrality and bolster the University's position as a leader and role model for other institutions.<br>3. Establishment of a MM Chief Sustainability Officer to oversee energy saving operations and serve as a leader for the much needed culture change that will bring to the forefront the connection between human health and climate change and, most saliently, the adverse effects of fossil fuel consumption.<br>It is my wish that the PCCN reflect these needs and opportunities more thoroughly and strongly. | HE, RN |
| 497 | Alumni | We on the commuting team want to commend the hard work of the PCCN. Our commuting team understands that there were numerous policies and strategies as well as factors and resource constraints that influenced the number and scope of the adopted recommendations. This was a delicate balancing act of managing resources, maintaining school operations, and optimizing the comprehensive package to reach carbon neutrality.<br><br>As they exist, the draft recommendations are an improvement upon the current baseline conditions of the university. We support the recommendation to include scope 3 emissions as the initiative moves forward (1485). Strategies like parking (1570-1635), telecommuting (1780-1795), housing, multimodal transportation initiatives (1690-1745), and ride-sharing have all been adopted and will play important roles in reducing the University's commuting emissions. We are particularly happy with the choice to pursue innovations with equitable parking and acknowledge that it may be challenging to institute a set of policies that depends on changing human behavior. We are encouraged by the desired accountability for the carbon offsets that will make the university offset carbon neutral by 2024 as they move towards carbon neutrality that doesn't require offsets with 2040 in mind.<br><br>However, we believe that it is possible to improve on the commission's recommendations. Furthermore, we believe that particular policies should be kept alive, even if they cannot be adopted or immediately implemented under current conditions.<br><br>With that in mind:<br><br>We believe that Washtenaw would be an excellent corridor in which to pursue bus rapid transit. Washtenaw is a well-traveled street, with a variety of housing options that extends all the way to Ypsilanti. Such actions would put large amounts of housing within the footprint of high quality and accessible transportation route. Bus rapid transit requires significantly less disruption, construction time, and monetary resources than light rail. Additionally, shared funding and partnerships between Ann Arbor, Ypsilanti, Washtenaw County, SEMCOG, and other regional stakeholders could reduce the cost burden on any one player. The variety of stakeholders may also increase the availability of federal funding and grants that may come available with the new administration. Keeping this recommendation alive would enable future action by the university and local stakeholders when conditions become favorable. This means, with plans prepared, such an "on deck" or "in reserve structure" may allow for rapid implementation when the conditions do become favorable. (1750-1779)<br><br>We believe that housing for faculty and staff is an important strategy to keep alive (1800-1825). Beyond being one of the most potentially impactful strategies, we believe this is important for other reasons. First, transportation infrastructure is most impactful when people are living close enough to use it, which is not currently an option provided by the housing market. Second, it seems unfair to restrict parking without increasing the viability of alternate ways to reach campus. Third, the distance traveled by faculty and staff far outweighs the distance traveled by students in their commute, resulting in far higher emissions per commute on average. Therefore, focusing on student commutes will not be as effective as focusing on faculty and staff communities. It should also be noted that the proposed mechanisms to increase the availability of housing surrounding the campus, (increasing on-campus student housing to increase the availability in supply of off-campus housing to non-students), does not guarantee University faculty and staff will inhabit these homes. A similar strategy of purchasing off-campus housing, and leasing it to faculty and staff, was internally considered by the commuting team but not included in our report due to the associated risks with gentrification around the Ann Arbor Campus. Finally, we fully acknowledge that starting a faculty and staff housing program is a daunting and overwhelming task. We believe that keeping the program on the books will also allow it to occur when conditions are more favorable. We strongly encourage continued surveys and research into the existing faculty and staff's market preferences, perhaps through a survey. This could potentially lead to a pilot program on a site similar to that of the University Commons site, but geared towards active faculty and staff. (1800-1825) | DF, JI, RO, CB |
| 498 | OPT OUT | OPT OUT | BT |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 499 | Other | COMMENT #499 (1/2)<br>Dear PCCN Team,<br><br>The Ann Arbor Climate Partnership applauds the monumental amount of effort and care found in the December 2020 Draft PCCN Report, along with the work of the IAT's and all of the related discussions that made this final report possible. We appreciate the solid foundation that you have created for U-M to move towards carbon neutrality. A real plan is finally on the way!<br>We write you on behalf of the Ann Arbor Climate Partnership, a coalition of 18 community and environmental organizations working to solve the climate crisis, through efforts in our community and throughout the world. We believe that every community must take immediate actions to rapidly phase out fossil fuels, and to protect their most vulnerable people from the ravages of climate change. We focus our efforts on promoting carbon neutrality in the Ann Arbor area. Given the University's footprint in this community, that mission will never be realized until the UM adopts and implements a truly visionary carbon plan.<br>And given the University's prestige, cultural influence, and economic impact, a truly visionary carbon neutrality plan has the potential to leverage significant climate progress within other institutions and other communities.<br>In addition to net carbon emissions reductions by the institution, we believe that some of the bottom line indicators for U-M's action on carbon neutrality should be:<br>-What are U-M's social, environmental and economic values and guiding principles for carbon neutrality, and who gets to define those?<br>-Is U-M engaging as part of a regional community-based ecosystem or focusing primarily on its own interests?<br>-How many people will U-M hire to carry out the work of carbon neutrality?<br>-Beyond staff, how much money will U-M spend to fix the problem?<br>-How many faculty, students and staff will U-M train to carry out carbon neutrality?<br>-How many offsets does U-M plan on buying - and, what are they and where are they?<br>As you prepare the final carbon neutrality report, we urge you to consider the following changes to the draft report's framework, commitment, and scope:<br>Embrace A New Model Inclusive of Social Justice and Equity: Regenerative, Resilient Sustainability<br>Fossil-based energy systems are fundamentally extractive socially and environmentally, concentrating benefits into the hands of the few, and distributing the cost across the many. As we reinvent systems of living, "sustainability" is a word that might imply projects by the privileged to stabilize existing production systems and consumption patterns in cleaner and healthier ways. This version of sustainability, although laudable, is not what we hope to see in our community. It does not deeply tackle the question of what it takes for a system and its peoples to be regenerative and resilient. And this is what a true carbon neutrality plan should do. The working tools to make this happen are values, guiding principles, and metrics tracking for social justice and equality, as well as for the environment and economics.<br>Sustainability paradigms have evolved over time, and regenerative sustainability includes and transcends humanity's prior sustainability goals of improving human well being and the viability of ecological systems. This new model embraces the concept that all of us and everything on the planet is connected, and that it is possible and necessary for humans to live in alignment with the principles of wholeness, change, and relationship. Nature does this. This brings together all of the wisdom that humanity has accumulated to accomplish this, from indigenous knowledge to every aspect of modern science. It brings all of those people and worldviews into one ecosystem to work within a complex system in various states of transition and ongoing change.<br>Given where U-M started on the issue of carbon neutrality as a key sustainability goal, PCCN did a great job of bringing together the three campuses and involving local leaders. But to truly lead, we would ask U-M to use its tremendous convening power to more deeply bring together the community, region and the state, including voices that have previously been silenced or ignored to work on values and guiding principles that will encourage regenerative sustainability-- not just in the name of U-M's own interests, but for the sake of all.<br>We suggest a re-framing of the highest level thinking for every team via a set of values and guiding principles for the purpose of transitioning all proposed solutions towards carbon neutrality in a fair, regenerative, and resilient way – and to do this with everyone at the table. We all want to see the map for how to achieve carbon neutrality. But the more difficult aspect of carbon neutrality is that we must first come together as an entire connected ecosystem and agree on values and guiding principles that we will apply to the decisions that are made. To accomplish this, U-M will need to add people not currently represented in the conversation racially, socio-economically, organizationally, and geographically.<br>Some considerations around this conversation could include the following:<br>-whether technologies and approaches under consideration reflect the values of the local community and the region;<br>-how decisions affect health, local pollution, social and economic status, education, jobs and capital access especially for disadvantaged communities;<br>-whether there is any effort to clean up legacy emissions over time to compensate for the burden placed on disadvantaged communities here in the U.S., or on developing countries globally;<br>-if there are fair systems for thinking about not only risk but reward and who benefits at the project scale;<br>-who gets to decide on making decisions and putting policies in place and who gets to scale them, where the voices of the Flint and Dearborn communities are well represented;<br>-and making sure that all of U-M's services -- especially UM's transportation, housing and food systems -- and policies work well for disadvantaged communities. | RP, HD, RQ, RR, GC, X, EP, CO, A |

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| 499 | Other | COMMENT #499 CONTINUED (2/2)<br>The points in the report about culture, equity and justice are great but do not go far enough. If U-M wishes to lead, a lens is needed that is wider than technology ethics, culture, and DEI. It is important that U-M work internally and deeply on its own social and environmental values and guiding principles and apply them internally before asking the outside world to change.<br><br>Invest Real Resources and Institutional Authority in Carbon Neutrality Efforts<br>The PCCN proposes that one new person, plus contracted services, be utilized to implement a plan that was originally over 1,000 pages (IAT reports) and is now 135 pages, covering 13 focus areas as described in line 390. We would instead propose that U-M hire at least 15 people -- the leader as proposed by PCCN, one for each focus area as described in the report, and one in central development who will lead fundraising for U-M in sustainability -- as well as others, as appropriate, in Architecture, Engineering, and Construction, the Office of Campus Sustainability and as unit-level sustainability directors, e.g. for Michigan Medical. The leader would report to the University President, area leads would report to this new position and also be matrixed to schools, colleges, and units for implementation of carbon neutrality goals. The carbon neutrality team would be responsible for working with schools, colleges and units and the broader ecosystem to translate goals outlined in the report into detailed actions - with appropriate budgets to carry out the work.<br>In recognition of the difficulty of completely reworking the entire backbone of University operations to make this transition, for some focus areas it might make sense to pilot carbon neutrality changes with a small number of schools, colleges and units on the Ann Arbor campus plus Flint and Dearborn for the first two years. Once the team determines how to actually make carbon neutrality changes work, then implementation could spread to other schools, colleges, and units.<br>The Flint and Dearborn campuses are not quite as well-resourced as Ann Arbor – what additional staff or financial support can be given to implement carbon neutrality? For example, where the Ann Arbor campus can afford to buy energy efficiency with an eight year payback, Flint and Dearborn are held to 1- to 3-year paybacks because they do not have the working capital that Ann Arbor does. Have they been asked what they need for financial support, and are there plans to raise those funds?<br>We would also like to propose that funding carbon neutrality changes on campus as well as research be the centerpiece of U-M's next campaign, and that someone in central development be hired to focus that, as well as train central development colleagues on the sustainability field to maximize revenue from gifts. In the future, carbon neutrality will not be a department, it will be a norm, and significant hand-curated training will be needed to pull this off.<br><br>Reduce Offsets for Scope 1 & 2 to Zero Much Sooner, Address Scope 3 Emissions Much Faster, and Subject the University's Financial Investments to Carbon Scrutiny<br>If "human influenced global climate change is the defining scientific and social problem of our age," then the amount of offsets required by the PCCN draft plan are an indicator that the plan is not resilient enough. A regenerative system will have zero offsets much sooner, especially given that scope 3 emissions are not currently accounted for, much less addressed. We propose a 1-year timeline for establishing scope 3 emissions goals.<br>And finally, we would like to highlight one specific set of Scope 3 emissions for carbon scrutiny -- the investment of UM's endowment and other financial holdings in the fossil fuel industry. Applying a carbon neutrality lens to the University's financial investments will a) address a major source of indirect carbon emissions, and b) create a significant multiplier effect through its impact on capital markets, politics, and culture.<br>Furthermore, a fast-growing number of UM's peer universities have already transferred investments out of fossil fuels, or have made a commitment to do so.<br>In the final report, we urge you to recommend a timeline for the transfer of investments out of the fossil fuel sector, along with a framework for ethical investing, and a statement asserting the risk of fossil fuel investments becoming under-performing assets over the coming years.<br><br>Reconsider the Imperative of Growth (Physical Growth, that is)<br>The University of Michigan's Ann Arbor campuses have grown enormously over the past 25 years. That expansion has offset the University's fine work to make its buildings and facilities more energy efficient. While there are undoubtedly great social benefits from the expansion of the University's services, mission, and physical footprint, there needs to be public debate and serious consideration about the value of continued growth.<br>The PCCN could consider a limit or cap on adding any new square footage on campus. The greenest building is the one that never goes up. Covid has taught us that we can learn and work differently, at least some of the time. Every new building will require more carbon materials in its construction and more energy of some kind for its operation. Additionally, there is the impact that growth has on the surrounding community. More growth puts a strain of traffic, infrastructure, housing costs, etc.. Although the University offers an economic boon for the surrounding community, its growth also brings unintended impacts on housing affordability, racial equity, and economic justice.<br>In tandem with the discussion of the University's physical growth, serious consideration also needs to be paid to how the University can help advance solutions to addressing the severe shortage and unaffordability of housing in the Ann Arbor area. The University's growth over the recent decades has dramatically enlarged its workforce, and with it, the Scope 3 emissions of those employees' commutes. Transit and vehicle technology can address some of those impacts, but without a reimagining of land use patterns and housing development near the campuses, the carbon burden will continue to be unbearable.<br><br>Thank you in advance for considering these suggestions. We hope that you strengthen what is currently a very fine set of recommendations into a "regenerative and resilient" carbon neutrality plan. We look forward to working together with you on its implementation. | RP, HD, RQ, RR, GC, X, EP, CO, A |

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| 500 | Staff | As a student member of the Biosequestration Internal Analysis Team, I was pleased to see that many of our recommendations were present in the PCCN draft. There are, however, a few areas that need to be strengthened and gaps that need to be addressed.<br><br>Biosequestration is the easiest, cheapest, and most effective method we currently have to capture and store carbon emissions from the atmosphere. As such, it should be a central and integral component of the University's carbon neutrality goals and not viewed merely as a way to 'offset' carbon emissions.<br><br>With all of its diverse natural landholdings, U-M is in a unique position to become a regional, national, and global leader in biosequestration research. These natural areas that have been largely neglected need to be protected, preserved, restored, and managed in perpetuity. There is huge potential to not only maintain but improve carbon sequestration in both vegetation and soil by investing in these properties and by creating research and educational opportunities related to ecosystem restoration, forest management, forest soil carbon, wetland restoration, and regenerative agriculture, etc. It is important that U-M natural landholdings should not be valued merely as 'carbon offsets,' but appreciated for their many ecosystem and community services and benefits. It is, therefore, essential for the University and the 'standing expert committee' to partner with local community members for each of the different landholdings, including tribal leadership, to incorporate the best place-based ideas, perspectives, and knowledge needed for successful management practices that also meet co-benefit criteria. Additionally, a number of staff positions need to be created and some re-purposed to ensure that goals set by the PCCN are being met.<br><br>Purchasing and Protecting Undeveloped Wetlands: The University should work closely with local and regional partners to purchase two undeveloped wetland parcels adjacent to St. Pierre Wetland. These two properties are the last intact wetland prairie ecosystems in Hamburg Township that remain unprotected. If allowed to be sold and developed, the entire wetland ecosystem would be negatively impacted, including that of St. Pierre, one of the University's largest carbon sinks. By helping to protect these wetland ecosystems from future development and degradation, the University would be ensuring that they maintain their ability to sequester and store carbon and perform other essential ecosystem services that benefit the entire Huron River Watershed.<br><br>Green Infrastructure: The inclusion of green infrastructure should be a requirement for all future campus construction, including student housing, parking, etc. All U-M expansion planning and construction should also include the valuation of ecosystem services provided by natural lands, green spaces, and trees, and take adequate measures to protect and preserve them. By incorporating green infrastructure and other biosequestration projects in 'living-learning labs' and future construction, the University will also provide a visible sign that it is embracing the culture required to go carbon neutral.<br><br>Equity and Justice: The 'standing expert committee' that will be established to review the offset recommendations by the Commission and develop clear guidance on co-benefit criteria must be inclusive and represent a diversity of voices, perspectives, knowledge, and leadership. Also, as stated previously, it is essential for the University and the 'standing expert committee' to work closely with local community members for each of the different landholdings, including tribal leadership, to incorporate the best place-based ideas, perspectives, and knowledge needed for successful management practices that also meet co-benefit criteria.<br><br>Land Acknowledgements: Thank you for including a land acknowledgement statement at the beginning of the report, however, the PCCN should strongly recommend the need for a University-wide land acknowledgment statement. Each U-M entity with land holdings should also have their own statement that acknowledges the specific tribal history of the land that they now occupy. Land acknowledgements should be created in direct partnership with tribal leadership and U-M experts, and should be made visible and accessible, especially at events and ceremonies.<br><br>The PCCN should also recommend the creation of a research center on the main Ann Arbor campus where faculty, students, and others can learn about Indigienous and Native knowledge and history including that associated with U-M land. All signage and materials involving biosequestration projects on U-M lands should also acknowledge the specific tribal history of the associated land.<br><br>Thank you for your time, | RS, RT, BA, GV, RU, AV, RW, RX |
| 501 | Staff | We need to restructure F&O so that CHW/ Geo HPs and Boilers all fall under the same group to plan/ maintain. AEC can take a strong role, but master planning/ capital planning needs to unified. We need to be able to look at chillers, boilers, and geo HRCHs as a unified system. | RY |
| 502 | Student | While it is mentioned that "measures need to be taken" (line 3373) to overcome the concerns surrounding equity and justice, I believe that it is necessary to specifically list and describe what these measures actually entail. This section seems too broad and does not truly encompass the severity that a lack of equity and justice could have on this project. | RZ |
| 503 | Student | I did not see any mention of the psychological and emotional effects that bringing about these drastic changes in lifestyles could cause. I think that a discussion of mental health and changing behaviors to solve climate change go hand in hand with one another, but this is not reflected in the draft. | SA |

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|---|---|---|---|
| 504 | Alumni | Comments on December 17, 2020<br>"Draft Report and Recommendations" of U-M<br>President's Commission on Carbon Neutrality (PCCN)<br><br>The Washtenaw Bicycling and Walking Coalition (WBWC) represents the interests of bicyclists and walkers throughout Washtenaw County. We have the following comments on the draft PCCN report regarding:<br>• Items in the current report<br>• Recommended additions<br><br>Items in the current report<br>WBWC supports the following recommendations that are currently in the draft report:<br><br>Cycling<br>We support the cycling recommendations on page 56, lines 1710 to 1715, to:<br>• Pursue a multi-modal transportation system with accessible and safe cycling paths.<br>• Create a workable Central-to-North Campus bike route.<br>• Establish an on-campus bike-service facility. (The existing Common Cycle<br>organization in Ann Arbor may provide a model and be able to offer assistance in establishing an on-campus facility.)<br><br>Housing<br>We support the recommendation regarding housing in central locations (page 58, lines 1797 to 1825), which would make it easier for more people to reach their destinations by walking, cycling, or using transit.<br><br>Recommended additions<br>WBWC recommends adding the following items to the draft report:<br><br>Treeline Trail<br>We support adding the recommendations of PCCN's Commuting Team (page 8 of its report) for the U-M to provide an easement across its property in the athletic campus area for the proposed Treeline Trail. This trail would connect to the Diag via the existing William Street cycle track.<br><br>Cycling network<br>We recommend that the PCCN report say that the U-M cycling facilities should form a complete network that connects seamlessly with the citywide bicycle system. This interconnected system of existing and planned facilities will encourage bicycle travel. | J, V |

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| 505 | Student | COMMENT #505 (1/2)<br>Rackham Student Government (RSG) represents over 9,000 graduate students at the University of Michigan and has appraised the initial Internal Analysis Teams' (IAT) reports for the President's Commission on Carbon Neutrality (PCCN) on behalf of our constituents. The final recommendations PCCN will provide to President Schlissel will impact various members of the Ann Arbor community, including Rackham Graduate Students. Therefore, RSG is providing the following perspectives and recommendations for PCCN to consider including based off of these initial IAT reports:<br><br>Commuting, Building Standards, and Energy Consumption<br>Commuting, current building infrastructure, and energy consumption are major sources of UM's current carbon footprint. We suggest emphasizing and prioritizing the creation of affordable, sustainable housing closer to the Ann Arbor, Dearborn, and Flint campuses in the final PCCN report.<br>1. Compared to undergraduate students who generally live on or close to campus with easier access to the Michigan campus bus system, there are more graduate students at UM who commute to campus from further distances. Therefore, RSG recommends that PCCN differentiate between commuters and non-commuters based on the distances they live from campus, and allocate preferential parking passes to the commuting students to disincentivize undergraduate and non-commuter students from purchasing parking passes that could otherwise be used by commuters.<br>2. If UM were to create affordable housing options closer to all three of the UM campuses, this would inherently reduce the amount of long-distance commuters, and therefore, mitigate two major carbon emission points concurrently.<br>3. We acknowledge that the initial addition of new buildings would be a source of increased emissions, however, we support this initial "source" in order to progress to the benefits sustainable housing close to campus would provide. Importantly, PCCN should specifically state that the university should not exclude the carbon emissions from the construction of new sustainable housing because transparency is important when documenting how UM is achieving carbon neutrality. UM must be held accountable to the public with accurate carbon tracking, even if it is to ultimately create more sustainable housing.<br>4. RSG would like PCCN to include more recommendations regarding immediate solutions to carbon emissions from buildings, such as renovating current buildings or installing solar panels. 98.5% of energy use comes from buildings, but there are not currently enough incentives or funding to adequately take on energy conservation measures. We encourage PCCN to include recommendations for incentives for individual buildings to pursue their own renovations towards more sustainable standards.<br>5. We understand the cost of new sustainable housing is significant, and RSG would support a policy to help subsidize this goal by allocating a portion of graduate student fees towards sustainable housing. However, we would like PCCN to urge President Schlissel to consider investing the largest amount of resources and money into sustainable building and housing creation as it is one of the highest emitting carbon sources.<br>6. Affordable, sustainable housing is not only a carbon neutrality solution, but a social justice issue as affordable housing could provide more equitable access to UM for students of lower socioeconomic status. If UM would like to maintain our status as "leaders and the best," PCCN should emphasize to President Schlissel that UM must make sustainable changes with social justice in mind.<br>7. Because other universities have successfully implemented revolving energy funds (REFs) (i.e. Harvard created a $12 million REF in 2002, which produces roughly $4 million/year in energy savings), we suggest prioritizing the creation of a UM REF as proposed in the IAT recommendations to President Schlissel as it has been historically successful at other institutions.<br><br>We are recommending the IAT Building Standards report's initial recommendations be prioritized in the final recommendations to President Schlissel. This is a long-term commitment that will ultimately have lasting impacts on UM's carbon footprint even if there are few immediate visible results.<br>Mobility Electrification<br>1. RSG fully supports the transition to an eBlueBus fleet as proposed by the IAT report on mobility electrification. If implemented gradually (4 buses a year as proposed), this schedule should not harmfully impact graduate students or the community. It would be a net positive for UM to undertake this transition, as the included subsidies would continue to ensure our status as a "leader and the best" in the sustainability community.<br>2. As mentioned in the commuting section, a significant amount of graduate students commute from far distances and therefore parking availability is essential for students to maintain their school and work schedules. Therefore, while RSG fully supports the implementation of EV charging stations, it is important to acknowledge graduate students who already struggle with parking availability. The location of charging stations, lowered parking pass rates, and parking pass availability for commuting graduate students and faculty should be considered when implementing these spaces.<br>3. To ensure the transition to EVs is equitable, RSG is recommending PCCN suggests implementing a program for loaning EVs to faculty, staff, and students. If UM will be acquiring 48 new eBuses, the PCCN can also recommend UM acquire a fleet of EVs to be loaned out at lower rates that faculty, students, and staff might not otherwise be able to afford. This system would incentivize a sustainable transportation method for people of different financial backgrounds, giving them the opportunity to participate in the EV transition movement.<br>4. Many students do not utilize on campus parking. Therefore, we recommend including a section in the final report on coordinating with the city of Ann Arbor to implement EV charging stations throughout the city so more are available at any given time.<br>5. RSG is very supportive of an EV educational campaign as this would be a useful and low-cost program for graduate students and faculty to learn more about this sustainable method of transportation. RSG is willing to help PCCN or future committees in implementing such a program to Rackham graduate students and beyond. | SB, SC, EB, BX, SE, K, SF, JQ, A, EE, JT, GG, GH, HD, NW, OJ, SG, EJ |

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| 505 | Student | COMMENT #505 CONTINUED (2/2)<br>Campus Culture and Communications<br>1. RSG would like the PCCN to stress that an M-LIST higher office for sustainability transitions is created after the initial recommendations are submitted to President Schlissel. UM is in need of a more cohesive, unified plan to reach defined sustainable goals that are transparent to the public. If UM would like to be one of the “leaders and the best” with sustainability, greater intersectionality is necessary to achieve a net carbon footprint.<br>2. Sustainability education should be more inclusive and serve more students than solely the natural sciences. Currently there is a disparity among UM schools in trying to educate our community on the importance of sustainability. RSG is advocating for a mandatory course requirement regarding sustainability principles for all incoming undergraduates, graduate students, and research staff. Ideally, this course would create campus unity around the topic of sustainability and integrate DEI topics into a broader orientation course. Other universities have successfully integrated multicultural campus courses, which we think PCCN should advocate for to President Schlissel.<br>3. RSG strongly advocates for UM to divest from fossil fuels. This is a challenging topic because UM relies heavily on fossil fuels as a source of income. We encourage PCCN to nonetheless make this recommendation as UM cannot be fully carbon neutral and still be invested in fossil fuels. PCCN could potentially suggest changing where retirement funds are invested away from fossil fuels. It is essential to continue fighting for fossil fuel divestment if UM wants to be a leader in sustainability.<br><br>External Collaboration<br>1. We would like to state again that PCCN should ensure social and environmental justice is part of every plan within the final recommendations. This has to be made a priority and not excluded though it may be difficult to acknowledge in some circumstances. For example, if offsets are going to be put in place to balance certain carbon emissions that cannot be removed from the carbon budget, marginalized communities should not take any brunt of offset efforts.<br>2. When considering the organizational capacity and hiring state and local officials, RSG supports the recommendation to hire with an emphasis on social and environmental justice. We would like to further highlight that there should be sufficient planning in this process so that hiring a lead person with comprehensive sustainability experience is a top priority. RSG recommends PCCN collaborate with representatives from the Environmental Justice department at SEAS, for example Dr. Bilal Butt, during the hiring process. Additionally, RSG recommends PCCN form a student advisory committee, assembled using an application-based system, for the hiring process.<br>3. RSG would like PCCN to have greater inclusivity with their external collaboration efforts. The reports have initially included community members with sustainability experience, and we would like the final recommendations to also expand to those who aren’t currently engaged in sustainability conversations. In order to engage a broader audience, we would like UM to extend their efforts to involve underrepresented communities. Greater input from community members of diverse backgrounds is needed to better understand community needs. Thus far, these voices have not been an integral part of the conversation.<br><br>University Travel<br>1. The provided reports on university employee travel illustrate that the main carbon “sink” comes from Provost travel. We would like PCCN to stress travel should be avoided when possible, especially with regard to the Provost. The pandemic has demonstrated many jobs and undertakings can be done virtually, and we would like PCCN to support this adaptation post-pandemic as much as possible. If the data is available, we suggest including any 2020 data to see how emissions have lowered over this last year to provide to President Schlissel.<br>2. RSG supports a carbon emission tax after a certain amount of travel by any group on campus. We would also like UM to limit travel grants when appropriate. When students, faculty, or staff apply for travel grants, we would like the school to calculate and notify the carbon cost of the requested travel. In parallel, we suggest more educational efforts to inform students, faculty, and staff about sustainable travel opportunities. This will help people understand the environmental impact of their travel and encourage them to find sustainable alternatives.<br>3. In certain cases, RSG believes that offsets can be used, especially when travel is necessary. We would like to reiterate that offsets should not negatively impact already marginalized communities.<br><br>Biosequestration<br>1. RSG supports UM DEI’s current land acknowledgement and encourages PCCN to recommend having voices of tribal leadership in the eventual unified carbon neutrality office so there are inclusive voices making decisions.<br>2. We further support the establishment of a university-wide land acknowledgement to be included in communication from UM administration as well as the public display of land history on UM owned land. Additionally, we believe the creation of a research center on campus devoted to Indigienous and Native knowledge would greatly benefit the UM community. As these actions are already overdue with respect to history, we encourage their prioritization.<br>3. As wetlands offer the greatest opportunity to contribute to carbon neutrality, we support the recommendation for the conversion of conventional agriculture on UM owned land to wetlands or sustainable agriculture for research. Further we support the recommendation for an increase in canopy cover across all 3 campuses, which will positively impact the Flint campus the most.<br><br>Accountability is incredibly important when pursuing sustainability goals. We are calling upon PCCN to encourage President Schlissel to commit a fair and sufficient amount of money towards sustainability efforts at the UM each year. Further, we would like a commitment from UM to apply for any sustainability grants that will subsidize monetary expenditures in pursuit of the recommendations needed to achieve carbon neutrality. RSG is invested in the outcomes of the PCCN final recommendations and we are passionate about continuing to advocate for them once submitted to President Schlissel. We hope to continue our dialogue and offer assistance in the future for the pursuit of carbon neutrality at UM.<br>Sincerely,<br>Rackham Student Government | SB, SC, EB, BX, SE, K, SF, JQ, A, EE, JT, GG, GH, HD, NW, OJ, SG, EJ |

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| 506 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>1. Improve implementation, accountability, and transparency measures;<br>2. Implement carbon pricing before 2025;<br>3. Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>4. Set Scope 3 emissions targets by 2022;<br>5. Procure carbon offsets by 2022 and set maximum offset targets;<br>6. Increase the size of the Revolving Energy Fund (REF); and,<br>7. Implement ESG metrics for endowment investment decisions.<br><br>I also fully support the Climate Action Movement's feedback on the report (https://docs.google.com/document/d/1ZM53hdIMj9kN2PGxu8iO0UonUiSqfqifWjJhSns4hL4/edit#), suggesting<br><br>1. A stronger commitment to environmental justice<br>2. A more aggressive 2030 date for carbon neutrality<br>3. Less reliance on carbon offsetting<br>4. Lack of a carbon budget<br>5. Lack of an accountability structure<br>6. Reliance on DTE energy<br>7. Lack of plans for sustainable housing<br><br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>Sincerely, | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, / BW, GQ, GT, GU, GV, GW, JT, HJ, BU, JS, BV, EH, EM, EN, HQ, HS, HT, HU, HV, HC, BX, IB, MK, U |
| 507 | Staff | Regarding Organization and Culture Recommendations (Page 76)<br><br>Please consider promoting "Green Teams" at all organization levels to encourage sharing of sustainability information.<br>Green teams are employees and students who voluntarily come together to educate, inspire and empower each other around sustainability.<br>Creative ideas and solutions may result from collaboration. University occupants will feel more engaged when progress is made and they see the results of their ideas flourish into a sustainable campus.<br><br>Regarding Figure 3 (Page 26)<br><br>Please consider providing more graphics throughout the report like figure 3-Geo-Exchange System. This may provide clarity for readers who are not familiar with the geo-exchange technology. This diagram nicely illustrates the geo-exchange process.<br><br>I am proud to be associated with an organization which has an ambitious commitment to carbon neutrality.<br><br>Thank you for your valuable time coordinating this effort, | RV, LL |
| 508 | Student | Hi! I'm very glad to read through such a detailed document focused on reducing the carbon footprint of this school. I believe that a considerable difference cannot be made without focusing on purchasing power from 100% zero carbon sources, due to the fact that significant change is needed urgently to reach lower carbon emission goals. For this reason, I would like to recommend and push for nuclear power being a larger consideration in this plan. I understand that this would be a very large change for the university, but I think it is a needed one (I have even written a report about how feasible it would be to have a microreactor on campus - although I don't expect this sort of progress so quickly. Please reach out for more information on this). I urge you to look further into this option, as the whole world will need to start transitioning to nuclear power soon to be able to have any impact against climate change. Thank you for taking this report and community opinions seriously! | B |
| 509 | Student | I support the Energy Club at Ross PCCN Review Committee's feedback in response to the PCCN's draft report. Specifically, I strongly encourage the University to implement the following seven recommendations in the final report:<br>Improve implementation, accountability, and transparency measures;<br>Implement carbon pricing before 2025;<br>Eliminate Scope 2 emissions through Virtual Power Purchase Agreements by 2023 while increasing action to decarbonize the Michigan grid;<br>Set Scope 3 emissions targets by 2022;<br>Procure carbon offsets by 2022 and set maximum offset targets;<br>Increase the size of the Revolving Energy Fund (REF); and,<br>Implement ESG metrics for endowment investment decisions.<br>This is a crucial time in history to address greenhouse gas emissions, and the University has an opportunity to take a leadership role on this issue. Improving the draft report by integrating these recommendations, while continuing to address environmental justice issues, will put the University on a path to become the Leaders and Best in achieving carbon neutrality.<br><br>I also hope that implementation of the report recommendations is taken seriously, and that the university adopts these policies. | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM |

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| 510 | Staff | Pasted below is a recap of an hours long conversation between folks of SENC (staff and some faculty that focus on engaging the campus in sustainability initiatives for some of all of their jobs, this group meets quarterly and is focused on activating the campus community to take action)<br><br>Scope 1 & 2:<br><br>Positives about PCCN Report:<br>Very much considered a positive that the PCCN Report focused on addressing building-level energy, including extending many energy projects/programs beyond general fund buildings, as well as increasing the allocated budget.<br>Taking a strong stance on developing campus-wide Infrastructure (geothermal) by phase/district (would be largest system in the world).<br><br>Missing:<br>More on resiliency - ex. Our central power plant enables flexibility and resiliency that offers a safeguard against things like blackouts that could negatively impact the hospital critical functions. Perhaps natural gas systems stay available to use as an emergency back-up.<br><br>Scope 3:(waste, food, procurement, commuting, etc.)<br><br>The SENC commends the PCCN for it's inclusion of Scope 3 emissions in the report, and particularly applauds the call for further compost expansion, taking strong leadership in shifting our procurement practices, and reforming the existing parking policy. We feel that taking strong action to reduce emissions associated with university travel, and engaging and holding vendors to a high sustainability standard are also critical steps to both reduce scope 3 emissions and make notable cultural change on campus.<br>Scope 1 & 2 should be prioritized for immediate or near-term implementation. However, as Scope 3 emissions and actions are inextricably linked to many Scope 1 & 2, we feel there should be a clearly communicated expectation right out of the gate for beginning the work to develop accounting methods, as well as take simple actions to minimize the emissions.<br>With the understanding that many of the Scope 3 metrics and targets are yet to be set, SENC would like to call attention to a few points for consideration:<br>There will need to be clearer definitions of expectations, particularly who will be responsible for implementation.<br>Clarify which waste streams will be tracked (food? All municipal waste? C&D?)<br>How to account for Scope 3 items associated with leased buildings?<br>Further define how to address housing and commuting, including further exploration of opportunities to partner with the City of Ann Arbor on these and housing equity issues.<br><br>Organization & Culture: (org structure, collaboration, academic/research, justice, etc.)<br><br>THE SENC commends the PCCN on the support of student engagement and culture work, including furthering efforts to establish campus as a living lab, and mirroring the DEI framework to establish unit-level sustainability engagement and empowerment. We believe there is opportunity to further link culture to other recommendations, as the cultural changes stemming from both strong leadership support and grassroots efforts will drive the behavior change to make many of the other (particularly the Scope 3) recommendations work. We also feel the people-power behind some of these changes is understated. Deeper support of existing key players such as Student Life, the PBA program, and OCS, as well as the engagement of others on campus, will likely be necessary to institute significant cultural change on campus.<br><br>Additionally, SENC folks identified that culture sets the tone for possibility. That a strong culture, especially with something as radical as this proposal will take significantly more people to achieve than outlined. There was encouragement for a centralization of coordination to support different units as they identify key staffing opportunities. The hope is that there will be an expansion of existing work, not a start over, as many staff feel under-resourced already in their roles. There was continued talk of taking advantage of the unique role of Student Life in housing all first year students, operating Dining, Rec Sports, off-campus housing support, Fraternity Sorority Life, advise Student Life, operate Planet Blue Student Leaders and many other engagement opportunities. And, there was conversation around the connections between DEI and Sustainability to support climate change work. Some Universities go so far as to nest sustainability within DEI, if not at least have strong formal partnerships. However, anything along these lines was largely absent from the report and represented a missed opportunity.<br><br>Lastly, a distinction should be made between behavior change and culture change. There are a number of existing efforts and programs on campus which help to influence behavior and these should continue to receive support. However, the long term success of these efforts are largely dependent upon the culture set by leadership. Culture speaks to a shift in values that must be established by leadership through overarching policies or guidelines. Examples might be the adoption of travel or procurement policies/guidelines. The University notoriously has a hesitancy to set policies or guidelines, yet this strong top-down demonstration of leadership priorities is necessary to shift culture and support behavior change programs and initiatives. Another example would be that every unit have their own climate action plan that supports a centralized plan. The point of such a recommendation is less about the implementation of such plans and more about the type of culture that such an endeavor would establish. | EP, SJ, SK, OC, SL, SM, SN, KE, NO, JN |

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| 511 | Staff | COMMENT #511 (1/2)<br>The following comments have been collected through conversations with Student Life staff and leadership to reflect concerns informed by the unique position that Student Life plays at the University. The comments, questions, and suggestions are informed by a unit that operates a significant portion of the campus building footprint and offers programming that affects all students at the University of Michigan. While this is not an official statement from Student Life it should be viewed as being strongly informed by our perspective.<br>Overall, feedback from staff was positive and appreciative of the bold and ambitious plan. There are, of course, questions about implementation and we would offer that some more guidance in the culture section may be necessary to drive change in the timeline proposed by the report.<br>755 While appropriately ambitious, a major delay could ensue depending on who is financing the conversion at building level. Costs of building conversion are questionable as is feasibility of units are left to pay for building level conversion on their own. While the commission may not need to address administration of recommendation, an acknowledgement of time delay if auxiliary units are to pay for upgrade themselves should be noted. Additionally, large regional building down-time may not be possible for Housing, given the current occupancy of residence halls. Secondary question: Could other building improvements be made during building heating switchover while buildings are offline, such as building envelope, insulation, lighting and other EE improvements?<br>850 Students and some faculty/staff that are focused on EJ issues suggest that e-waste concerns should be accounted for in both sourcing and disposal/end-of-life for increased e-waste use by the University. Particularly large batteries for bus transit. There are similar questions around other e-waste (solar PV, etc.) though vehicle battery poses most immediate example.<br>1050 This section may benefit from a mention of either Student Life or Housing as a prime opportunity for such functional displays of climate friendly infrastructure and 'living-learning-lab' examples. The culture shift by having these in the spaces that students live, eat, and recreate cannot be understated.<br>1075 and 1140 Serious question marks around how Auxiliary units tap into the REF and carbon taxing models that promotes equity and expedited action. Current model where general fund is resourced for energy management but auxiliaries are on their own leaves me nervous about how this will play out. Secondly, Student Life staff believe $25 million is too small of a seed fund to quickly take advantage of all of the low-hanging fruit projects. Due to the current energy management model, many auxiliary units do not have an energy manager and may have more opportunities for quick EE wins that will necessitate a larger starting fund.<br>1420 Some recognition of the impact of highly visible and lived in spaces on deep building retrofits might be good. About half of residence halls have been more recently retrofit, meaning they may fall lower on the priority list in the future for carbon priority but should raise due to visibility factor. We want to change culture, we need to start with the buildings the students live in. Similarly, the Couzens study may not be very reflective of the remaining 50% of residence halls that havE not been retrofit in the last 20 years and may have a much higher cost for retrofit (while also a larger opportunity for energy reduction).<br>1570 The parking recommendation does not account for equity issues related to lower wage workers that need to live further away from the Ann Arbor core. Increases in public transportation will only help for those where public transit is a viable option. Could parking be proportional to salary, similar to healthcare?<br>1710 Student run, U funded, bike co-op could help culture change. See MSU bike store as additional model. This section would benefit from mention of bike lockers throughout campus and at transpo hubs to encourage public transit and carpooling.<br>1780 For jobs that telecommuting is not an option, especially while students are on campus, could alternative models be explored, such as 4-10 hr days or seasonal flexibility?<br>1780 Similarly, what level of emissions and energy burden are pushed to employees homes, rather than campus? Accounting for this impact should be mentioned. | SO, SP, BO, SN, LO, CR, SQ, C, NL, HO, BZ, SR, PJ, SS, ST, DP, GC, SV, IQ, SW, SX, SY, SZ, TA, TB, TC, TD |
| 511 | Staff | COMMENT #511 CONTINUED (2/2)<br>1810 Additional Housing could serve both students and faculty/staff through multi-generational housing opportunities where top floors are apartments that are sold and rented at an appropriate rate to faculty/staff. This also helps finance the project.<br>1810 As an alternative idea, the U could increase on campus housing enough to mandate that students live on campus both first and second year, a direction of some peer institutions. The multiple benefits include: more students living in energy efficient buildings, less housing demand in surrounding community that should reduce price pressure and pressure on students to sign a lease one year out from occupancy.<br>1990 Concerns around student buy-in. There will need to be an unprecedented marketing campaign to support sustainability culture shift, particularly around something so personal as food. MDining has pushed towards the limit of acceptable with students with removing red meat on Monday currently. More will be near impossible without sig. cross-campus marketing support.<br>2150 A lot of work has been done, low-hanging fruit achieved. Need more sig. centralized support to move culture and behavior bar. Pushing for bins in high visibility areas like the Diag or Grove would be helpful.<br>2290 I think the carbon offsets, as outlined, are fairly straightforward and understandable. They seem necessary and effective in the situations explained, however, a visual representation or a counterpoint to address folks critiques may be needed. This continually comes up with community engagement and some talking points would be helpful for staff trying to engage with others.<br>2480 Student Life needs to be a leader in this campus-wide coordination effort. SL has both an outsized campus footprint and level of interaction with our most important stakeholder, students. Student live, eat, recreate, in our buildings and use our programming daily across campus from first year students to doctoral candidates.<br>2480 This position needs to be well-resourced with funds to use as both carrot and stick, as well as staff to help coordinate the effort. The ambition of this timeline for undertaking these shifts cannot be overstated. Without sig coordination the efforts will quickly fall behind or be prioritized by individual units, not necessarily the collective goal. Is one position realistic? This is the management and administration of over $4 or $5 billion, it is likely going to take more than one person. Lastly, accountability for the work should last longer than a person in their role. Accountability that includes a stakeholder board, with significant student input (and from larger units of campus) would seem critical.<br>2675 The importance of this recommendation feels understated. Culture will not shift without much more communication and stating that sustainability is a priority.<br>2695 This section, again, feels like one that should mention Student Life as a potential strategic partner in the campus-as-lab model, due to existing programming, willingness to engage, and having most of the physical infrastructure for doing this work<br>1065 Demand Side Management Strategies: (1) This list should include an active building Retrocommissioning (RCx) program which has been proven to reduce energy consumption of existing infrastructure, while the building waits for the new infrastructure required by a geo exchange system; and (2) strategies to affect individuals, especially student's behaviors such as localized metering per room, floor, or building so that their energy consumption is transparent and easily compared between peer groups.<br>543 Financially Responsible should use the term, "maximize return on investment."<br>650 and 1150 Concur that the REF should be bracketed so that various areas of the University have a fairer method for competing for Funds. However, all "heat and power infrastructure" costs should be centrally prioritized and funded.<br>1420 There are concerns around simple payback model of building deep retrofit. If schools, units, auxiliaries are left to their own to finance, the timeline will not be met.<br>1895 There is a financial impact to encouraging more remote and off-campus meetings. For example, Impact on the Unions: cost for technology upgrades to meeting spaces; lost revenue from lack of in person conferences<br>2005 We sell a lot of meat in our leased food operations - we hear students want a choice; in time that may change but we have to have a sales volume to meet revenue goals; do we limit options to force culture change (and potentially have less sales) until the culture shift happens? Are we, instead, just pushing emissions and revenue to nearby businesses?<br>785 Table 2 - North Campus Academic core - does this not include Pierpont, NCRB or Housing? Ross Athletic - references sensitivity for football parking which seems dismissive of other much greater concerns for impact on ability to house students, feed them, classrooms, labs, etc.<br>790 AEC typically has an up charge of 40% for the projects they manage - is that included in the cost estimates?<br>2045 This should be phased. We need third party vendors to operate in our Unions (they fund their build outs, provide revenue to run the Unions, etc). We need the industry to be able to catch up to UM expectations as these vendors are critical to serving students and our financial needs. There are expenses to holding vendors accountable - where will those funds come from? | SO, SP, BO, SN, LO, CR, SQ, C, NL, HO, BZ, SR, PJ, SS, ST, DP, GC, SV, IQ, SW, SX, SY, SZ, TA, TB, TC, TD |

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| 512 | Staff | I have one comment that I would like to include that did not fit in the collected comments from other groups that I was gathering.<br>This proposal is bold, ambitious, and much needed. I think the timeline is appropriate and once I explain carbon offsets as outlined by the report, people agree with those goals and use of credits (even students). This is, and will be, a radical shift for campus in a timeline unprecedented in the U's history.<br>To support such a radical operations shift, there is likely a need for a radical administrative shift in how this work is coordinated and funded. I understand it is likely outside the scope of the commission to get into the specifics of that shift but introducing the possible need may be helpful in guiding the decision making processes that are about to unfold across the President's office and to those that will be tasked with completing the work.<br>I'm specifically thinking of how 'auxiliaries' pay for this and the need for more staff that are centralized.<br>If each auxiliary is responsible for financing, it will slow down the timeline. And, our current sustainability work is heavily hampered by a lack of resourced central coordination. The current coordination around sustainability largely happens by individuals based on relationships and informal networks, neither of which are sustainable over time.<br>I wish I had a more specific recommendation here for you to work with. | TE |
| 513 | Student | When the whole world has a carbon neutrality data for 2050, it is important that the University with the resources can and should do much more. This includes having more immediate deadlines and accountability. If the University has such far deadlines, then it acts as a bad example for the rest of the world. I understand the difficulty due to limited awareness of the public, but that's where more emphasis too should be present. People should have individualized experiences where most of the community understands the importance and urgency of the issue. This should be in addition to the generic, broad level awareness campaigns.<br><br>Also the recommendations, even though simple to understand, don't let me understand the impact they will have on me personally. It would be nice to have recommendations and how each of them will fact the different groups of people (dining workers, custodians, professors, students in central campus residencies, stadium employees, president's job, AAATA bus drivers, conference participants, etc.). This should be updated as different community members bring up new experiences of how they are affected by the recommendations.<br><br>It would also be nice to see how much relative effort these recommendations actually are... Would the entire world taking the same effort meet the Paris 1.5 goal? Or much better? Or it can't be compared as such?<br><br>The University itself being carbon neutral or carbon zero doesn't matter. So an integral part along with more EJ focus should be what the University can do to reduce global emissions and increase adaptation. I personally would be fine if this effort leads to more emissions reduction and the university does not achieve it own internal emission reductions.<br><br>Also how would these recommendations affect or be affected by future changes like automation, increasing global efforts, shifting crop patterns, increased dependence on internet services, etc. Would they hurt the chances of accomplished these goals or aid them? How? Since I think it is wrong to think of this issue just by itself since it for sure will be affected by these seemingly non-related issues. | TF, TG, TH, TI |
| 514 | Alumni | January 26, 2021<br><br>Dear PCCN:<br><br>I applaud the monumental amount of effort and care that went into developing the U-M carbon neutrality plan and the December 2020 Draft PCCN Report.<br><br>I especially commend the U-M's plan for the recommendations that take on areas that will have highly significant direct carbon dioxide impact and should generally be reasonably easy to accomplish without a huge culture shift required:<br>• Converting to an electrified system, centered primarily on geo-exchange;<br>• Converting U-M's vehicle fleet to electric-power;<br>• Establishing criteria for purchased electricity; and<br>• Establishment of best-in-class carbon dioxide emissions targets across new construction and major renovations.<br><br>I hope that when necessary financial investment was estimated for areas that are expected to require significant culture shift in order to be implemented, and sustained over time, that resources for adequate personnel skilled in personal and organizational behavior and culture change were factored into the plan.<br><br>I would like to see specific recommendations for the U-M around addressing climate justice for (particularly local and regional) groups that are systemically oppressed and/or otherwise vulnerable with regard to how the U-M achieves its planned direct carbon neutrality impact, e.g., relative to purchased electricity and the agriculture involved in the plant-forward food that is procured. I would like to see the U-M also particularly sensitive to how local communities surrounding the Ann Arbor, Flint, and Dearborn campuses will be impacted by any of the U-M's strategies in this carbon neutrality effort.<br><br>In addition, specific recommendations expressing U-M commitment to work in partnership with local cities and counties (i.e., Ann Arbor and Washtenaw County, Flint and Genesee County, and Dearborn and Wayne County) to achieve carbon neutrality in these specific areas would be welcome. Achieving carbon neutrality at the level necessary to address the climate crisis effectively is not a "by-oneself" effort. It's an "all hands on deck" challenge.<br><br>Lastly, I urge you to specifically develop action recommendations and measures around carbon neutrality specifically for Michigan Medicine, at all locations.<br><br>Again, thank you for your work on this most critical issue of our time, which intersects with so many other important issues. I look forward to seeing the work in progress.<br><br>Sincerely, | EE, QE, DT |

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| 515 | Other | COMMENT #515 (1/2)<br>I was pleasantly surprised to be personally mentioned on page 15 of the Heat & Power Infrastructure Analysis as the semi-retired Plant Engineer responsible for the creation of the regional chiller plants. I am now fully retired and hiding out in nearby Ann Arbor Hills, about a pitching wedge from Stephen Forrest's house as it turns out. As someone very familiar with almost all of the heating and cooling infrastructure on the Ann Arbor Campus, including CPP and NCRC, I was looking forward to seeing the results of this particular analysis. Overall, I think it achieved a very important goal, which was to illuminate to students, staff and the public the enormous magnitude of cost and time required to actually get to carbon neutrality. And this in turn illustrates how difficult it may be for UM to afford becoming carbon neutral without significant governmental financial assistance and/or incentives.<br><br>As pointed out in the HPI Analysis, one of the earliest and significant efforts should be the installation of a North Campus GRX/HRCH plant and MTHW piping network that would connect with the existing NC CHW system. Given my experience overseeing the creation of NC Chiller Plant, the installation of the CHW piping network and all the building connections over 15 years, I know what a challenge this will be. Thankfully Kevin Donovan handled the initial monetary and political challenges of creating the NCCP and I just had to make sure it all worked as planned. Hopefully the NC Central Heating system will have the force of a presidential mandate to overcome the monetary, political and physical disruption involved. But there is no doubt that the conversion of the existing buildings will require a huge amount of coordination and some creative engineering to make it all happen in a timely and minimally disruptive manner. Everyone wants to curb global warming, but the top researchers in their fields will need to be shown that every effort was considered to keep the disruptions to a minimum.<br>One comment I have about Integral's proposed NC system concerns the environmental incongruity of clearing the wooded area east of Huron Parkway to install the geothermal wellfield. I have biked past there many times and it is quite hilly, which will make installing the wellfield and interconnected piping very difficult. I think a much better option is to install geothermal wells in the large parking lots on North Campus. The pandemic has revealed the need for parking is greatly reduced due to remote learning and remote administrative activities, and they will be further reduced by implementation of the measures outlined in the Commuting Analysis. The first wellfield will be connected to the NCCP and thus parking lot is NC 51 is the best wellfield candidate since NC53 will likely become a new building site in the future. In order to accommodate the installation of wells and interconnected underground piping, replacing the asphalt with gravel should be considered. This would also help accommodate installation of solar panels, electric car charging stations and the interconnected underground electrical conduits. (Speaking of electric cars, one of the benefits I've yet to see mentioned is that they don't drip oil and gas as they age.)<br>But perhaps the earliest and most significant efforts that UM needs to embark on to achieve carbon neutrality is to upgrade utility metering. Accurate and reliable metering is essential not just for modeling and designing the MTHW and GRX/HRCH systems, but for their continued operation and evaluation. In fact the Building Standards Analysis, Energy Consumption Analysis, and Carbon Accounting Analysis all point to the need for improved metering. There will be even more pressure on this function of Utilities when implementing the Revolving Energy Fund and Carbon Pricing. I know first hand how difficult it is to not just get the correct metering installed and maintained, but to process the data it provides and ensure that it is accurate. It also takes technical expertise and experience to recognize when anomalies occur, determine the cause and how to correct them.<br>Case in point, the high CEDI of 86 kbtu/sqft/yr for NCCP in Table 2.13 appears suspect since there are relatively few labs or vivariums that require 100% outside air AHUs when compared to NCRC or MSRB 2. Just a quick cross calculation using the Equivalent Full Load Hours method yields a much lower result. The peak load of NCCP is approximately 5500 tons and assuming a typical EFLH of 1200 hours, the result is 5500 tons x 12 kbtu/ton x 1200 hours/year / 2M sqft = 40 kbtu/sqft/yr. There are no appendices to the Integral analysis, so I don't know exactly how the CEDI of 86 kbtu/sqft/yr was calculated. However I suspect that the discrepancy is related to the accuracy of existing heating and cooling metering data. | EP, J, EZ, TK, TL, ED |

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| Comment Number | U-M Affiliation | Comment | Item Code |
|---|---|---|---|
| 515 | Other | COMMENT #515 CONTINUED (2/2)<br>The only way to cross check heating and cooling metering data accuracy is to analyze the corresponding DDC trend data, which unfortunately may or may not exist. This is because no one is responsible for making sure all of the critical DDC points are indeed being properly trended, nor is there anyone responsible for “harvesting” the data on an annual basis before the trend data is overwritten after 365 days. This is just another one of those mundane functions at UM that everyone assumes is getting accomplished somehow but only find out for sure whether or not the data is actually there until they need it. Some may think DDC trending is the function of the DDC shop or the O&M engineers, but my opinion is that the Energy engineers would be better to take on this function because their duties are more directly reliant on this data.<br>An essential purpose of accurate metering will be to determine the amount of simultaneous heating and cooling that is actually occurring. My opinion is that the amount of heating load during the cooling season is not near as much as the Integral analysis suggests and therefore there will be more reliance on geothermal heat pump chillers than heat recovery chillers. If there is indeed a lot of summer heating load due to reheating in spaces that are overcooled for dehumidification, then it would make much more economical sense to implement better strategies to reduce overcooling. But I suspect that a large portion of the summer heating load is simply burning NG to maintain oversized boilers at their minimum operating level and to make up for the heating loss endemic to higher temperature steam/condensate systems. So improving utility metering and DDC trending is an essential first step.<br>Based on my 19 years of UM operations experience, the real challenge of this utility transformation effort will be to coordinate the building conversions and connections to the central plants with the building managers and Operations personnel. The building managers need to be assured that Operations has it all under control and will receive continued support concerning proper operation and maintenance of these systems so that they can assure their building users and department heads. And Operations needs to know that they have continuous engineering support over the many years of multiple projects required to transition to MTHW and GRX/HRCH plants. This will be especially true in the transition from steam to MTHW on central campus where it will also require a lot of creative engineering and extensive knowledge of the existing infrastructure to be able to repurpose steam tunnels instead of trying to install an entirely new system of underground MTHW pipes in parallel. But it will save money and be much less disruptive on a very compact campus.<br><br>I also want to offer my opinion as arguably the only person who has ever simultaneously lived in the separate worlds of CPP Utilities, NCRC Utilities, Plant Operations (now Facilities Maintenance) and AEC. (Needless to say, I spent a lot of my time telling the left hand what the right hand was doing.) My opinion concerns the personnel effort required for the transformation of the AA campuses to MTHW and GRX/HRCH plants. There is mention on page 29 of the PCCN Draft Report & Recommendations about the confidence of AEC to provide the project management for such a massive project. And that is probably true concerning the design, construction and commissioning of a central plant, its wellfield and its distribution piping. But AECs focus is completing projects within 2-3 years and not on a decades long effort. It is certainly a benefit to have this Heating and Power Infrastructure Analysis as an initial guide. But even having issued Chilled Water Master Plan every 8-9 years, I still needed to proactively reach out to building project managers to explain why and how their project could adhere to the master plan of creating regional chiller plants. (This was especially true when it came to adding air conditioning to 7 existing dorms and 2 new ones.) Only people in Utilities can provide this kind of focus because you can’t rely on multiple people individually referring to a master plan to determine how best their particular building project can conform to the plan. One could argue that Utilities should have done much better in developing a Utilities Master Plan. But I think that Utilities was working hard just to keep up with making sure the proper utility distribution infrastructure was put in place to serve a rapidly expanding university.<br>Another strong argument for Utilities leading this transformation is the need to modify the existing electrical distribution infrastructure for the integration of the new GRX/HRCH plants as well as for the integration of solar photovoltaic. The Integral Group analysis says practically nothing about what that would entail other than to state that the costs could be considerable. Utilities needs a much higher profile to achieve this major transformation and not relegated to being just a basic O&M department within F&O.<br>Finally, I want to make a possibly controversial suggestion. Currently there is little to no mechanical engineering support in Utilities and all of the mechanical engineers in AEC with any utility systems expertise have either retired or will soon. Add to this the departure of Jim Adams the director of Utilities (who was a mechanical engineer), one could argue that this may be an opportune time for UM to seek proposals from outside utility service firms to design, own and operate the new energy infrastructure. This may not be favorable with the existing Utilities staff, but my opinion is that it could provide then with a more stable management environment and vision than what they have had for the last decade. Also, while I am loath to make comparisons with OSU, they did this a few years ago and were able to leverage their outside utility service firm to provide $1.1B in up front funding for new infrastructure and energy conservation measures. The University of Maryland and Minnesota also outsourced their central power and heating plants and would be a good resource for avoiding pitfalls of such a move. The key to success obviously is developing a detailed contract with proper and sustainable incentives for both parties and therefore I would definitely recommend interviewing the other universities about the failures and successes of their experience. However, there will still need to be experienced UM utility engineers to help not just develop the service contract, but to administer the contract and oversee the utilities transition. So even if Utilities are outsourced, the sooner that UM hires more Utility engineering experience and get them up to speed on the existing infrastructure, the better.<br>All of these comments are made with the desire to see UM succeed and maintain its status as one of the elite universities in this country. My parents met here and both felt blessed to have been students here having grown up in Michigan farming communities. And I feel blessed to have been able to provide just a little bit toward making this a great university. Go Blue! | EP, J, EZ, TK, TL, ED |
| 516 | Staff | Line 645<br>Annually, building material & construction is responsible for 11% of the global greenhouse gas emissions. It is anticipated that embodied carbon will be 72% of the carbon emissions associated with global new construction between now and 2030. (Source AIA 2030) The draft report primarily focuses on buildings' operational carbon is almost silent on embodied carbon from building material & construction. It would be helpful if the PCCN Building Standards Analysis team provided some recommendations or targets on this issue. | BT |

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| 517 | Student | Thank you for the robust draft report. I would like to voice my agreement with the comments submitted by the Climate Action Movement (CAM), Voices for Carbon Neutrality (VCN), and the Ross Energy Club. In particular, I would like to emphasize that equity, environmental justice, and climate justice should be fundamental values woven throughout the report. Consideration of these values is deeply lacking in several of the recommendations (see CAM's comments). Additionally, the omission of any discussion of the University's investments in fossil fuels is glaring. Divestment from fossil fuels should be part of the carbon neutral strategy, and at the very least addressed in the report for why/why not divestment is occurring. Finally, the timeline for carbon neutrality is not aggressive enough, especially considering that carbon offsets are included in the strategy (which could get the University to carbon neutral by next year in theory). The IPCC and UN warn that we are running out of time, and the next decade will be crucial. UofM is a wealthy and historically white university, and therefore should take on the responsibility to be a leader in this space by moving up the timeline to 2030 at the latest. Thank you for your consideration of my comments and I appreciate your continued efforts on pushing UM towards carbon neutrality. | A, CM, CN, CO, CP, CQ, CR, CU, EJ, EK, EL, EM, ED, EE, EF, DB, CH, CO, DO, EC, DP, U, BW, BX, BV, BU, EN, EH, GQ, QT, GV, GU, HJ, HQ, HR, HS, HT, HU, HV, HC, IB, JT, MK |
| 518 | Student | 1. Land acknowledgment just seems to be useless without concrete action over including American Indian community in the decision making process.<br>2. University should create a community portal/website describing universities progress towards PCCN recommendation each year as well as the reason for commission to propose any major recommendation. | GH, CZ |
| 519 | Staff | Line 2755 - There is a sentence that says "four-fold" but there are five items below. This should be reviewed and clarified. | L |
| 520 | Alumni | COMMENT #520 (1/2)<br>Dear PCCN,<br>The Ann Arbor 2030 District sincerely appreciates the PCCN and the Internal Analysis Teams for the well thought out process and incredible work effort put forth in developing the draft recommendations for the University of Michigan (U-M) to achieve carbon neutrality. It is a strong proposal. As a non-profit organization dedicated to assisting our commercial and institutional buildings meet the A2 Zero carbon neutrality plan we would like to offer the following comments for consideration.<br>As one of the leading universities in the world, U-M has a responsibility to achieve carbon neutrality in a timeframe consistent with the recommendations of the Intergovernmental Panel on Climate Change (IPCC) and to live up to the motto of Leaders and Best. Achieving carbon neutrality requires a rapid culture change. Locally, U-M is in the position to inspire every member of our community and regionally lead a market transformation.<br>Speed and Urgency<br>As a follow up to the Paris Agreement, the 2018 IPCC Special Report: Global Warming of 1.5˚C (IPCC SR15) modeled the difference in environmental impacts of a 1.5˚C temperature limit and a 2˚C limit. According to the report, just a half a degree of warming difference can avoid many of the devastating and intensifying impacts of climate change.<br>Within the 2018 Special Report is the global carbon budget for a 67% probability of limiting global warming to 1.5˚C – 420 GtCO2 beginning January 1, 2018. As of the beginning of 2020, the CO2 emission budget remaining is 340 GtCO2; approximately 40 GtCO2 are emitted annually and we have already used up 80 GtCO2. The remaining carbon budget of 340 GtCO2 equates to CO2 emissions reductions of 65% by 2030, and zero emissions by 2040.<br>The criteria used to evaluate the draft recommendations needs a directing the speed of implementation (lines 480 - 545). IPCC and related United Nations reports make clear that urgent action is imperative. We urge the PCCN to add a principle of speed so that recommendations and future actions will always be judged against alternatives with the objective of maximizing the rate of carbon neutrality implementation and thus minimizing the area under U-M's emission curve.<br>Specifically, the 5-year timeline for establishing Scope 3 goals (lines 1485 - 1510) fails to meet the urgency of reaching carbon neutrality and new construction needs to be designed to meet Zero Code standards immediately as improved standards are agreed upon.<br><br>Local and Regional Community Involvement<br>The current draft lacks emphasis on teaming and advocating with external partners to accelerate implementation and to leverage U-M knowledge to ensure that the impacts are widely and quickly scalable, replicable, just, and equitable. Key collaborations:<br><br>Policy advocacy: U-M can act as a regional convener (with the cities of Ann Arbor, Flint and Dearborn, and other entities) to coordinate and drive strong climate policy advocacy at the local, state, and federal levels. | DB, DV, LU, CO, HA, EC, OR, TM, TN, TO |

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|---|---|---|---|
| 520 | Alumni | COMMENT #520 CONTINUED (2/2)<br>Building standards evolution: U-M can act as a regional convener to identify best practices and drive rapid market adoption of low embodied materials, building envelope performance, implementation of heat pump technologies, district geo-exchange and wastewater recovery systems, and application of renewables in new construction and major renovations.<br><br>It is disappointing that the Art & Architecture building study is not among the documents available and the residence hall study incomplete at this time. However, the summary reveals paybacks that are not economically viable, yet we know the technology and materials to retrofit our buildings are available to significantly reduce emissions. Solutions put forth need to be both economically viable and achieve at least 65% reductions from a CBECS 2003 baseline to meet IPCC reduction goals.<br><br>It is important to emphasize that modeling is a tool and actual performance is the key measure that needs ongoing monitoring. In addition, high performing buildings require continuous occupant engagement, commissioning and maintenance. Each building team are champions, skilled in engaging staff and students.<br><br>Specific comments regarding the Building Standards Analysis Final Report:<br>Appendix E Page 46<br>The following statement should be corrected:<br>Currently, the State of Michigan does not have formal graywater regulations and treats graywater as septic.<br>Non-potable water systems are regulated in Appendix A of the 2015 Michigan Plumbing Code.<br>Key findings<br>Groundwater heat pump systems (open-loop systems) should not be considered as an option. An open loop that directly impacts groundwater has more environmental risk than economic benefit especially at the scale proposed in the Heat & Power study.<br>PrioriTy #1 Recommendation<br>We agree that for internal measures building CO2e emission goals should be established and actual performance tracked over time. However, site and source EUIs should remain fundamental performance metrics to compare similar building types across the region and within our community.<br>Priority #3 Recommendation<br>We support this effort as water and energy reduction go hand in hand. The energy consumption of water treatment in Ann Arbor accounts for approximately 50% of the city's total energy use.<br>Priority #4 Recommendation<br>This recommendation has the potential to transform our community and should be elevated as such.<br><br>Thank you to the amazing people who worked diligently on the outreach, research, models, analysis and publication materials. The plan will be a living document evolving as we rapidly implement change in our community, region and well beyond.<br><br>The invitation to join the A2 2030District is ongoing. | DB, DV, LU, CO, HA, EC, OR, TM, TN, TO |
| 521 | Alumni | (Note: these comments go for both REF and Carbon Price recommendations) I felt that the draft report breezed over many of the specifics surrounding the REF staffing, which ultimately could lead to unwarranted dismissal of the fund on the basis of equity and resource availability. Especially when tied to a carbon price, the biggest concern from business units is regarding resources -- most units are already understaffed, under-budgeted, and simply swamped in every day tasks. They are concerned with equity of opportunity. It does no good to have a giant pot of money in which only units with high financial capability can afford to develop projects for award. I do not expect the entire proposed staffing structure to be explained in great detail, in the main body nor appendix, but I do feel it is pertinent to elaborate on the role of the Regional Energy Manager (REM) and the dedication of those staff to business units. Per our Analysis Team draft, each business unit would have a dedicated portion of an REM in identifying ECMs for their assigned buildings/business units. I acknowledge that the Commission may choose another staffing methodology than the one we recommended. However, equity in access to development resources needs to be stressed more. I do also acknowledge the Commission identified the 3 DTE engineers and suggested increasing their staffing (lines 1143-1145, more on that below).<br><br>While the wording makes it unclear if the Commission is suggesting the following, I think the Commission should consider the implications of adding more DTE engineers instead of REMs. This may be a bit controversial, but I think it is important to keep in mind that U-M is a customer of DTE. Perhaps not every ECM or energy improvement is mutually beneficial. While it would certainly be advantageous to have more utility folk on board, I don't think they should be counted on as forming the basis of our resources for business units.<br><br>Finally, lines 1118-1119 simply state "Managing the mechanics of the REF program would require additional staff effort, which could be significant depending on the process involved to solicit, review, and select projects." By failing to elaborate, this frames additional staffing as a strong deterrent to instituting an REF without any insight into what these roles may be and how they drive equity across U-M. Similar to above, I don't think it is necessary to list every position or step in the process. However, I do think it is important to drive home that these staff members are meant to help maintain a fair selection process that is transparent and easy for business units to go through. If the process is understaffed or run poorly, it will disincentivize units from wanting to pursue funding.<br><br>I also think this line is a missed opportunity for emphasizing the possibility of student involvement. One of the goals of the PCCN and this report is community engagement. The implications of student staffing in the REF/carbon pricing scenario could be astounding. Roles could be established to help manage the application process, financial tracking, or savings verification. There could also be positions established to help the REMs (or whoever is identifying ECMs). This would create much value in giving U-M graduates a leg up in the energy industry. The company I work for now as an alum would hire anyone involved in this process in an instant. Those are invaluable, real-world skills that few Universities across the nation would be training their students in.<br><br>Overall though, the Commission captured the core of the REF/Carbon Price recommendation. Excited to see what moves forward. | TP, JO, TQ, EX |

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|---|---|---|---|
| 522 | Alumni | 1475-1479: I believe that there is value in understanding the impact of the University's purchased goods so that it can be fully accounted for in the carbon neutrality assessment. If necessary, the maximum estimate should be used for offsets. I'm disappointed that these are not included in your baseline in Figure 7.<br>1490: I think there should be bounds/goals for adding other categories to the Scope 3 emissions.<br>1495: Thank you for considering scope 3 emissions. Some time is likely needed to document the current state to understand what can and should be done.<br>1530: I'm disappointed that University Travel barely changes - I'm interested to see what you suggest for it later. Again, I think good sourcing needs to be tracked, included, and accounted for. While the University may not be able to take direct action, they can work to select suppliers who follow sustainable practices and minimize their carbon footprint OR work with existing suppliers to decrease their carbon footprint. I look forward to reading the Purchased Goods section.<br>1564-1569: Thank you for thinking about commuting holistically.<br>1578-1584: I would not like this change as a user but I think that it would be effective. The logistics may be tricky.<br>1585-1587: YES. This sounds great and is a good way to equalize students/non-faculty and faculty.<br>1590-1594: I can't believe that U of M is subsidizing people's parking. Why not just change the pricing structure and set it at a lower rate?<br>1595-1604: I thought the existing gold/blue/yellow/orange price structure already aimed to incentivize parking farther from the center - how does this suggestion differ?<br>1606-1619: This sounds like a great step to take.<br>1636-1637: How will this work with the distributed parking model? L1 or L2 charging (which ought to be the most typical charging method for EVs) takes HOURS, so I've seen workplaces that limit each vehicle to a set amount of charging time and require vehicles to only park near the chargers for that amount of time. This is inconvenient but workable if you work/study close to where you park your car. However, if you stay on campus for long periods of time (e.g. arrive at campus for an 8 am lecture and stay on campus through an evening group meeting that ends at 8 pm) and park in a lot on the periphery (like you suggest more people should do), taking an extra bus ride out to the lot where you parked your car so that you can move it away from a charging station in the middle of the day sounds horrible. This should not be the plan - what is your alternative?<br>1715: The idea of a Central-to-North campus bike route sounds convenient, but it's basically a giant hill (not good for biking). Could bike racks be added to the front of BlueBuses as an option for the up-hill trip?<br>1724-1735: Bus and biking options for Dearborn and Flint sound good. Are there showers available for bikers at the Ann Arbor campus?<br>1746-1747: I'm not familiar with the Ann Arbor campus connector concept - a more detailed high-level description should be included. Is this a light rail proposal? If buses, how is this different than the existing system?<br>1786-1787: COVID has proven that telecommuting is possible for more roles than previously thought and has been accepted as a (temporary) norm - I agree that this foundation should be leveraged moving forward for CO2 emissions reductions.<br>1804: YES. Please preserve green space and buildings with history! I am always sad when I learn that U of M is putting up a new "modern" building without any character or staying power in place of an established building or an open space I appreciated.<br>1810-1814: Are you thinking about on-campus housing for the Ann Arbor campus or other campuses? My understanding is that while housing is expensive in Ann Arbor, the majority of students already live very close to campus.<br>1831-1833: This appears to not include trips paid for by funds from grants/fellowships/etc., which I expect is a large percentage of trips taken by faculty/students. Unless I misunderstood, I think this is a missed opportunity.<br>1844-1847: I think after COVID, we will be more aware of the flexibility and capability of remote meetings. Thank you for incentivizing ground-based travel. Please focus on trains/buses/carpooling.<br>1962-1964: This sounds like a great place to start.<br>2000-2001: This shift should be supported by nutritionist advice to ensure that diets are still varied and contain the request vitamins/minerals/macros for health.<br>2032-2033: Thank you for being conscious of religious-based and other dietary restrictions. I hope you're also considering allergies (e.g. eggs, milk, nuts).<br>2039-2044: This sounds great.<br>2099-2101: This sounds similar to what I tried to describe above - I'm glad it's already included. I still think U of M could provide help/guidance to suppliers/vendors on how they can improve their sustainability.<br>2150-2152: This sounds great. When I was a student, I wished there was a convenient way for me to compost fruit peels and food scraps outside of dining halls.<br>2241-2245: What baseline is this compared to?<br>2353-2355: This is a helpful definition with the additional details on each included requirement.<br>2400-2409: The stated co-benefits seem like excellent things to consider.<br>2416-2436: This is excellent! Thank you for considering sequestration with such care.<br>2445-1453: This sounds like an excellent idea so that recommendations stay relevant. | FI, TR, TS, TT, TU, BZ, TV, OJ, TW, TX, AI, TY |
| 523 | Alumni | 2515-2516: Yes, this is important. If we think about parking for athletic events when considering the long-term sustainability of this institution and humanity, we should think about sustainability when we're making major decisions.<br>2571-2573: This seems like a good direction for the future of research to go! Collaboration and cross-discipline sharing fosters creativity.<br>2611-2612: This is a powerful idea. Nice! The detailed suggestions described are also good.<br>2720-2721: I love the idea of replacing turfgrass with environmentally friendly alternatives! It'd be helpful if most are still sturdy enough to walk over or lay on.<br>2724-2725: Would you consider making the sustainable and affordable net-zero residential building a living-learning community (like WISE RP)? | J, TZ, UA |
| 524 | Alumni | I did not dedicate the time to reading the Appendices you included or the additional reports you referenced, but thank you for including them and making them available. | J |

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| 525 | Student | I am a former member of the commuting team and I want to commend the hard work of the PCCN. I understand that there were numerous policies and strategies as well as factors and resource constraints that influenced the number and scope of the adopted recommendations. This was a delicate balancing act of managing resources, maintaining school operations, and optimizing the comprehensive package to reach carbon neutrality.<br><br>As they exist, the draft recommendations are an improvement upon the current baseline conditions of the university. I support the recommendation to include scope 3 emissions as the initiative moves forward (1485). Strategies like parking (1570-1635), telecommuting (1780-1795), housing, multimodal transportation initiatives (1690-1745), and ride-sharing have all been adopted and will play important roles in reducing the University's commuting emissions. I am particularly happy with the choice to pursue innovations with equitable parking and acknowledge that it may be challenging to institute a set of policies that depends on changing human behavior.<br><br>However, I believe that it is possible to improve on the commission's recommendations. Furthermore, I believe that particular policies should be kept alive, even if they cannot be adopted or immediately implemented under current conditions.<br><br>With that in mind:<br><br>I believe that Washtenaw would be an excellent corridor in which to pursue bus rapid transit. Washtenaw is a well-traveled street, with a variety of housing options that extends all the way to Ypsilanti. Such actions would put large amounts of housing within the footprint of high quality and accessible transportation route. Bus rapid transit requires significantly less disruption, construction time, and monetary resources than light rail. Additionally, shared funding and partnerships between Ann Arbor, Ypsilanti, Washtenaw County, SEMCOG, and other regional stakeholders could reduce the cost burden on any one player. The variety of stakeholders may also increase the availability of federal funding and grants that may become available with the new administration. Keeping this recommendation alive would enable future action by the university and local stakeholders when conditions become favorable. This means, with plans prepared, such an "on deck" or "in reserve structure" may allow for rapid implementation when the conditions do become favorable. (1750-1779)<br><br>I believe that housing for faculty and staff is an important strategy to keep alive (1800-1825). Beyond being one of the most potentially impactful strategies, I believe this is important for other reasons. First, transportation infrastructure is most impactful when people are living close enough to use it, which is not currently an option provided by the housing market. Second, it seems unfair to restrict parking without increasing the viability of alternate ways to reach campus. Third, the distance traveled by faculty and staff far outweighs the distance traveled by students in their commute, resulting in far higher emissions per commute on average. Therefore, focusing on student commutes will not be as effective as focusing on faculty and staff communities. It should also be noted that the proposed mechanisms to increase the availability of housing surrounding the campus, (increasing on-campus student housing to increase the availability in supply of off-campus housing to non-students), does not guarantee University faculty and staff will inhabit these homes. A similar strategy of purchasing off-campus housing, and leasing it to faculty and staff, was internally considered by the commuting team but not included in our report due to the associated risks with gentrification around the Ann Arbor Campus. Finally, I fully acknowledge that starting a faculty and staff housing program is a daunting and overwhelming task. I believe that keeping the program on the books will allow it to occur when conditions are more favorable. I strongly encourage continued surveys and research into the existing faculty and staff's market preferences. This could potentially lead to a pilot program on a site similar to that of the University Commons site, but geared towards active faculty and staff. (1800-1825)<br><br>Carbon Offsets:<br>While the carbon offset option is a good short-term solution, to become carbon neutral the University must not stop at offsets. At the moment the report does not contain any accountability measures that will ensure the University keeps moving towards carbon neutrality without the aid of carbon offsets. I hope that in future iterations, what these accountability measures are will be made clear. | DF, JI, RO, CB, CX, CB |
| 526 | Alumni | I am a bit confused as to why we are proposing a geo-exchange system with a 61-year payback. I do understand the push for electrification and the push for a technological solution to prevent emissions outside of offsets; however, with the harsh winter climates and sheer geographic size of U-M's campus, I am not sure this is the best technology to recommend. For the $2-3.5B it is going to cost to implement (table 1, depending on extent) and the extensive payback (resulting in a substantially negative NPV... billions), we could be investing in carbon capture. $/ton of CO2 abated is falling with time. I would encourage someone to run the analysis to find if the $/ton values of the two technologies are comparable, also taking into account the time and duration of construction. Even if we didn't think about carbon capture for another 10 years, quicker construction periods and thus, quicker ability to abate could significantly shift the economics. This approach would buy us the time to think more critically about how to electrify in a means less economically destructive to the University. It would allow U-M to be even more adaptable when heating/cooling technology improves. Furthermore, the fact that we don't have T&D upgrades nailed down is nothing to shrug off. As noted in the report, these could be substantial. The additional capital U-M would have to spend to develop the project to a point where these unknowns could be answered and a business decision made would be significant as well. This money could go towards a slew of other University investments, even outside of energy (student scholarships, new student program tracks, etc.). | UB |
| 527 | Other | Given that the recommendations vary in accuracy, detail, and quantifiable attributes, how does is the PCCN Team and University going to make selections for implementation? The selected metrics (carbon neutrality, sustainable, equity & justice, ….) overlap and have varying influences on the primary goal of carbon neutrality. Will recommendations with highest neutrality be biased/selected regardless of other factors? Actions such as replacing the Central Power Plant and steam heating with geothermal will be very expensive and disruptive, but do carbon savings warrant investment and is this deemed "financially responsible"? Metrics criteria for recommendations and timeline must be accurate and process for selecting recommendations must be vetted in advance and rational. A community charrette should be used in the process. | EP |
| 528 | Staff | Unfortunately I haven't had as much time to read the entire report as I had wished. From what I have read (and heard from an overview session) I am very impressed at the scope of the report. Having a multi-pronged approach to reducing carbon on all fronts combined with educating users (faculty, staff, students, and the public) should prove very effective. Please count me in to help in any way possible. | J |
| 529 | Other | The Report doesn't speak to adaptation to changes caused by climate change, and how such may be affected by Carbon Neutrality. The "borders" of the University are not defined and yet recommendations are university-centric. Many recommendations need to be defined by, understood, and embraced by the greater communities around each campus (and State as a whole) to have any hope of being effective. | UC, EC |
| 530 | Other | Financial responsibility needs to be distilled into a metric that is understood and drives change, addressing the projected elevated costs of doing nothing and life cycle costs (including benefits) of implementing recommendation(s). | UV |

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| Comment Number | U-M Affiliation | Comment | Item Code |
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| 531 | Student | While I appreciate the inclusion of equity and justice considerations throughout the report, they lack strength and specificity. For example, the recommendations [Line 2780] include language acknowledging the need to include stakeholders and underrepresented constituents, but weak to no language on how to actually do this. UM's history with community engagement, including the PCCN process itself, warrants the suggestion for more specific recommendations on who will be engaged, when, how, and how they will be compensated. There should be an explicit mention of community and student advocacy organizations and organized labor constituents that will help UM engage and identify stakeholders. Similarly, the recommendations should explicitly require meaningful engagement with environmental justice stakeholders and outcomes in decision-making processes. These considerations, along with the PCCN process itself, seem to lack an important element of environmental justice: procedural justice or meaningfully involving groups in decision-making processes. Environmental justice is not just about doing things that will help marginalized people and organizations, but also including said people in organizations and people in decision-making processes from the very beginning. This seems to have been lost throughout the PCCN process itself. I fear that "community engagement" will simply become a check-box as the carbon neutrality recommendations are being carried out. To prevent this, there should be a specific accountability structure as to how community partners, particularly those most affected by climate justice, will be meaningfully and seriously engaged and held as experts.<br><br>Further, despite the University being a world leader on environmental justice research and the state of Michigan being the epicenter of the country's most prominent environmental justice advocacy, little to no expertise from these constituencies is reflected in the decision-making processes that originally crafted these recommendations. Just as the PCCN engaged A2Zero partners, as well as UM staff, faculty, and students, the PCCN needs to seek counsel specifically from local and regional environmental justice experts, for example, SEAS faculty such as Dr. Paul Mohai, Dr. Tony Reames, Dr. Kyle Powys Whyte, and Dr. Barbara Israel; University of Michigan alumni in the environmental justice field, such as Michelle Martinez and Bridget Vial, Executive Director and Energy Democracy Organizer, respectively, at the Michigan Environmental Justice Coalition; and other state and regional experts such as those named on the Governor's Environment Justice Advisory Council.<br><br>While we cannot go back in time and add EJ experts to the PCCN at this point, one future action should be to explicitly center climate justice throughout the writing process of scope 3 emissions and to engage local stakeholders in housing, food, labor, transportation, and environmental justice in the creation process so that there expertise is centered. They should explicitly not just be brought in as an afterthought to comment on recommendations that have already been written without their input.<br><br>The mission statement of the Carbon Neutrality Plan cannot simply state that the goal is to create a sustainable and just world, but should also seriously reflect and center justice, in how the recommendations are crafted, how they are carried out, and in their impact. | EE, BW, HS, HT, KR, GG, GH, UD |
| 532 | Student | Although equity and justice considerations are weaved throughout the report, there are areas where it is clear that environmental justice experts were not consulted based on the glaring environmental justice issues embedded in the recommendations themselves. One area where this takes place, is the recommendations around carbon offsets.<br><br>My concerns around carbon offsets are as follows:<br><br>(1) The timeline & UN recommendations: The United Nations has said we need to cut emissions globally by 50% by 2030, and the UN Environment Programme has said that we should use carbon offsets as a *temporary measure* until 2030. If we are relying on carbon offsets until 2040, we are going against the United Nations own recommendations. If the University of Michigan can't transition before 2030, who can!? If we rely on offsets this long and continue to burn fossil fuels ourselves, we are doing this at the expense of the rest of the world, particularly those most marginalized. (one source: https://www.unenvironment.org/news-and-stories/story/carbon-offsets-are-not-our-get-out-jail-free-card#:~:text=Annual%20emissions%20have%20to%20reduce,to%20call%20everyone%20to%20action.)<br>(2) The timeline & environmental justice: We know that communities most impacted by climate change - predominantly low income communities and communities of color - will face burdens from climate change much sooner than others and will face the consequences of us relying on dirty energy sources for longer. By relying on carbon offsets and continuing to pollute ourselves, we are disregarding that environmental justice communities globally are those who will face the repercussions of our University not moving to complete carbon neutrality sooner. Similarly, through our reliance on DTE's fossil-fuel heavy energy, we are impacting environmental justice communities locally, as they face the brunt of the burden of DTE's polluting sources. Additional environmental justice issues around offsets can be found here: https://climatejusticealliance.org/6196-2/.<br>(3) Environmental justice as a criteria for offsets. The criteria listed for offset selection does not include environmental justice considerations. If we "must" rely on carbon offsets to a degree, this should be added to the list of criteria for offset selection. | JT, UE, BL |

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|---|---|---|---|
| 533 | Student | I was incredibly disappointed to see that after the significant amount of time given to the PCCN, the recommendations have little to no investigation into offsite electricity generation or reducing the carbon load of purchased electricity. The report simply recommends generic possibilities for further study and disappointingly, even contains less information than the 2015 Greenhouse Gas Reduction Report. I don't see why there wasn't further research conducted in the time given to the PCCN or why existing research was not incorporated into the recommendations.<br><br>Further, the recommendations do not address the environmental justice implications of energy procurement. I have remained disappointed that DTE, with a clear conflict of interest, has had a seat at the table while representatives from environmental justice communities have been excluded, and I think that is most clear in this part of the report. DTE has consistently been a predatory utility, manipulating regulatory policy (https://digitalcommons.mtu.edu/cgi/viewcontent.cgi?article=1181&context=social-sciences-fp) , falsifying numbers to lock Michigan into dirty fuel for decades (https://blog.ucsusa.org/sam-gomberg/dte-customers-could-save-340-million-with-clean-energy-compared-to-proposed-gas-plant), and continually making it harder for Michiganders to procure and install renewable energy, instead relying on their own interests in natural gas (https://energynews.us/2018/01/25/midwest/michigan-utilitys-gas-plant-pipeline-plans-pose-conflict-of-interest-critics-say/).<br><br>Why is there so much reliance on partnership with DTE, when DTE has the 3rd dirtiest fuel mix in the country? https://insideclimatenews.org/news/15102019/utilities-zero-emissions-plans-urgency-coal-gas-duke-dte-xcel/. If we must work with DTE, there must be a guarantee that any renewable energy generation capacity that UM purchases from DTE is additive, meaning that UM is not claiming all of DTE's renewable energy and then claiming neutrality while the rest of the state still relies heavily on fossil fuels.<br><br>To remedy these issues:<br><br>(1) There should be explicit recommendations to include EJ experts in assessing energy procurement decisions and a study of the environmental justice issues supported by UM procuring energy from DTE.<br>(2) The report should acknowledge co-benefits and prioritize (1) purchasing/producing electricity elsewhere and (2) working to empower communities through legislative lobbying for democratic energy policy that could benefit UM and communities across Michigan.<br>(3) There should be a recommendation to fund a study and implementation of how U-M can further a just and sustainable transition through legislative engagement, education, and advocacy.<br><br>A promising solution that is currently legal in the state of Michigan, is to municipalize the City of Ann Arbor's energy. The University was in favor of the city creating a municipal utility, of which UM would be a customer, in the 1990s, and they should return to this idea in light of carbon neutrality goals. Major universities, like Michigan State University and Iowa State University, are in towns with municipal utilities, which allow them greater benefits than that which can be offered by an investor-owned utility. The city currently has an organization, Ann Arbor For Public Power, that consists of a coalition of local environmental organizations who are campaigning for a municipal utility. This option could move UM to carbon neutrality while reaping the full benefits for the University and surrounding communities, particularly for the central power plant, instead of sending money to an investor-owned utility that does not operate in our best interests. | CN, GW, UF, LI |
| 534 | Faculty | Leadership recommendations can be strengthened to better enable the realization and institutionalization of a just transition to carbon neutrality.<br>While I am encouraged to see language suggesting a position reporting to the President be created to assist and advise the transition to carbon neutrality, one position alone is not adequate. The rest of the draft report contains bold recommendations, many of which will only be attainable through significant investment in personnel.<br>The Campus Culture & Communication report recommended creation of a high level office to lead a just transition to carbon neutrality directed by two complementary positions - a Vice Provost to oversee research & curricular efforts and a Vice President to oversee operational efforts.<br>Yet specific titles are not as crucial as emphasizing the need to invest in and empower the necessary persons (plural) to lead the bold efforts contained in the other recommendations, to support the transition on all 3 campuses and Michigan Medicine, and to ensure commitments to environmental justice & community collaboration go beyond words into meaningful and sustained action. | GC, UG |
| 535 | Alumni | Our generation will be remembered for taking the necessary, significant action to reduce the impact of the climate crisis or for not taking this action. We commend the University for taking an ambitious approach to taking action.<br><br>Line 1714 calls for establishing a bike-service facility. We suggest that this could be started immediately after a widespread Covid-19 vaccine roll out and stepping down of precautionary restrictions, with assistance of student staff from the present Adventure Leadership Rental Center and community volunteers from organizations such as Common Cycle, the Ann Arbor bicycle co-op. To start, the facility could be housed in as little as 700-1,000 square feet.<br><br>We recommend some type of measurement of the uptake of bicycling over motorized vehicle travel. This could take the form of a periodic monitoring of bike traffic at particular locations.<br><br>Increasing the use non-motorized vehicles and reducing the use of motorized vehicles on and near campus will require drivers and riders to learn more about non-motorized transportation. In addition to servicing bikes, a campus bike center could help University departments and outside suppliers learn about alternatives to using conventional vehicles for on-campus deliveries or service calls. This might be facilitated by offering services at the bike center such as demonstrating and lending cargo bikes and cargo trailers to departments looking to reduce their need for conventional vehicles.<br><br>In addition to bike service, a bike center could also serve as a training facility for students looking to increase their bike maintenance skills and people looking to expand their biking comfort zone, e.g., looking to ride not only in fair weather but also in cold or rainy weather. | UH, UI, UJ |

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| 536 | Student | Reviewing the PCCN draft report made me feel an even stronger bond with being a part of the Leaders and the Best. This initiative is crucial and vital to the University faculty, staff, students, alumni, the surrounding communities. The University of Michigan has an opportunity to be a leader in its journey towards carbon neutrality and pave a path for others, just as it always has since 1817.<br>In my opinion, becoming net-zero in carbon emissions by 2050 is not the Michigan way. In exploring other alternatives listed below, this could bring being net-zero targets into focus by 2030 at the latest. I would ask the committee to strongly evaluate the hesitations or challenges driving the 2050 date and ask themselves have they utilized the depth and breadth of the alumni network to explore alternative ways to address the same problem faster.<br>As part of the EMBA26 cohort, I had the opportunity to join a clean energy start-up in an advisory role. The primary focus of CleanTek Capital is to help Public Schools and Universities reach net-zero carbon emissions through a similar holistic approach that the commission has done an excellent job outlining in the PCCN report. There is a fundamental difference between CleanTek's strategy and the UofM drafted PCCN report.<br>Location and Financing.<br>Location: Clean energy production is a symbolic reminder of the collective power of human ingenuity when we seek a common goal to preserve and protect our environment. It does not have to be hidden in off-campus solar farms or tucked onto the rooftop out of sight. The detailed plans had limited exploration of a distributed grid community. It lacked details regarding the placement of innovative solar generation of parking structures, walkway canopies, and overall beautification of the campus.<br>Financing. The University is not alone in this endeavor. I would ask the committee if they have sought any private funding and management of clean power generation on campus to alleviate the University's upfront financial burden and expedite the implementation. Once complete, there are unique financing opportunities for the University to capitalize on the investment creating a win, win, win scenario for all parties involved. There are additional details to disclose, but we are working with a University in the U.S. that will go net-zero by 2022 by applying this disruptive financing funding model to their carbon neutrality initiative. | UK, BU, KN, ED |
| 537 | Student | Food section: 1966-<br>I would like to see the meat and/or animal products come only from sustainable sources - which would be easier in a plant forward meal plan since the quantity of meat would be reduced. Maybe this would include providing support/incentive for local meat providing farms to produce sustainable meat over conventional meat. Informing students that this change has been made would positively impact the community by bringing more environmental awareness to the student body plus theoretically, students would enjoy the quality of the meat more.<br>In regards to food as well, upcycled foods/products should be implemented - whether this be coordinated through the Upcycled Food Association or individual companies that are making consumer packaged goods and ingredients items.<br>Incorporate upcycled food methods in the kitchen and partner with upcycled businesses to sell their snacks and utilizes their ingredients in the kitchen (like their flours)... maybe start an upcycled kitchen on campus to utilize the food that would've gone to waste UM kitchens while creating more food to use and benefit the community …. or partner with another university or local organization to create an upcycled kitchen | AS, UL |