Under the assumptions you have down that the FFS price of wood is $30-40/bdt and the Smurfit price is "$25-30/ton for chips that aren't dry". This is incorrect and the wording is confusing. The FFS prices are generally on a green ton basis and we should probably revise it to be $30-45 a ton. It is generally on a sliding scale based on moisture content. They pay more for drier wood. Smurfit pays on a "Bone Dry Unit" basis which is 2400 pounds. Paying on a green ton basis is of greater value to the producer/seller than the dry ton basis since the buyer is paying for water in the wood not just the wood. Call me if you want to discuss this. What is your purpose for including the Smurfit price? If you are going to compare the price to something it seems to me to make more sense to compare it to natural gas and put the price on a per million btu basis so that people can see what the comparison is to the current price of heat. I would use the price of the current UM contract for natural gas.

The price displayed for a traditional combustion system is completely ridiculous. There is no way it would cost $50 mill. To take a boiler system 20% of the size of the total capacity, then estimate the cost and then multiply by five is a significant mistake. There are huge economies of scale. You don't need to have 5 times the storage and conveyance system. You are not going to buy 5 boiler/combustion systems and the cost of a system 5 times the size is far less than 5 times the smaller boiler. I have talked to engineers who design and manage such systems and have asked for a ballpark estimate of the conversion of a system like MSU (which would be similar to UM) and the price was $7-8 mill. That was 3 years ago and there may be some more unique challenges with the UM system but I can't imagine it being more than $15mill and likely much less. I got a call from a manufacturer that looked at this report and just based on the btu usage he indicated the cost would likely be in the $7-10 mill range. This completely changes the payback of such a system. Also in our experience with FFS projects we don't size the biomass boiler for 100% of the heat load on the coldest day as this results in a much larger combustion/boiler system than will be used most of the time. The engineers size it for about 90-95% of the days and the combustion system ends up about 50% of the size, since those coldest days of -25 degrees are so uncommon. The fossil fuel is used to fill in the remaining days.

With appropriate capital cost estimates the economic payback and potential savings are very significantly different between methanation and direct burning. There are companies that would be very willing to bid on proposals to build, own and operate a campus biomass plant.

I think it is important to acknowledge that methanation is still a "Development" technology that isn't commercially proven and the only way to move it forward is through research grant funds so a beta test of it can be done for a portion of the campus. This is in contrast to the direct combustion/gasification of wood for energy using technologies that are commercially available, tested and proven viable.
5. The conversion estimate of 60% is likely low. It assumes relatively wet wood. With reasonable incentives on prices for fuel the efficiency can easily be 65%, and with drier than average fuels it can be 75%. Maybe you should consider display a range of values instead of only one.

6. If you want to give more examples of university campuses - I can get you some more, for example Northwestern Missouri State has been using woody biomass since 1982, if I remember correctly. They also mix in paper and cardboard waste to reduce materials going into the landfill.

7. I am surprised you don't show a kwh produced, my understanding is the campus has a generator and produces electricity from the steam it generates. I would expect the biomass system to produce electricity as well. The electricity would have an associated C offset.

8. It seems like adding a column to your table on page 24 that shows the reduction of C emissions and showing what the value of the Carbon in the offset market could be. You could show the value in the voluntary market and what it would be in the European market.

9. The presentation of the comparison of the on-campus and off campus options was a bit disconcerting. It only presents concerns associated with the on-campus and only presents benefits of the off-campus. It seems to me reasonable to show concerns and benefits to both systems to be even-handed. For example the off-campus system would have the same level of concern on "reliable sources of supply" as the on-campus or more since it is going to use more wood than the on-campus. No indication that many tons of wood are burned every fall within less than a 70 mile haul distance. No indication that the elimination of fall burning can improve air quality, that enhancing forest thinning viability can reduce the severity of wildfires and thus the amount of smoke produced in the summer time. There is no concern raised about the unproven nature of the off-campus technology or the economic trade-offs. Very often what goes unsaid is as important as what gets said. I think you either need to expand this section and give it a more thorough discussion or make it more general and just say each of these options has pros and cons that will have to be addressed in a more detailed feasibility study.

10. The report indicates, "Several concerns and potential solutions were raised about an on-campus wood-fired boiler during the planning process which must be addressed when determining the feasibility of this strategy. " It doesn't indicate that several solutions to these concerns were also raised. It presents the concerns as if they are valid and unresolved or unresolvable. I suggest wording similar to what I inserted in green be considered.
Comments from Ken Stolz, Associate Director for Administration Humanities Montana:

Energy Efficiency and Conservation:

This is where you have your biggest uses of energy/generators of carbon, so it should receive the most investment. I would accelerate your energy audits so that all buildings are audited by 2012. Make no assumptions - make it happen.

It is very possible that Federal money will be available SOON to conduct building envelope work and this needs to be a VERY high priority.

Make behavior modification much more proactive (carrots AND sticks)! Stop using the word if and use the word when. Faculty and Staff are employees and don't have to be enticed to do some things, they can be TOLD TO DO THEM (like recycling and turning off lights).

Shrubs planted up against buildings also provide insulation in the winter.

Much of the good work of making existing buildings more energy efficient will be undone by building more buildings. We need to STOP building small separate buildings. Not only do their footprints use up precious space for trees and open space, they are inherently inefficient (simple math - surface area to volume). We also need to stop building more classrooms until we utilize our current classrooms for the whole day. Yes students and faculty, that means late afternoon or evening classes and perhaps walking further across campus to take or teach a class.

Renewable Energy:

Wind is the low hanging fruit here. The entire STATE GOVERNMENT, including higher education, should negotiate with Northwest Energy and others providers as appropriate to buy a significant percentage of wind generated electricity.

Transportation:

Start reducing the number of parking places on campus. Simple, VERY effective, and reduces long term costs as well. Charging to park daily is GREAT, but develop a cost effective means of collecting so you don't have lines of cars waiting to pay.

Carbon Offsets:

Yes - but let's start by finalizing the Arboretum plan and planting trees and shrubs on campus and reducing the amount of water guzzling grass.

Interim Goals:

The percentage goals mean little or nothing without tying them to specific action items and costs. The information can be teased out of the report, but this needs to be made CRYSTAL CLEAR.

30% below 2007 levels by 2020 should be a minimum.
Comments:

The plan has a lot of good analysis and ideas. But the plan clearly lacks a list of RECOMMENDED alternatives. Is page 53 the recommended plan, or page 55 or ????

BE BOLD. Stick your necks out. Failure is not an option.

THANKS for listening.

Comments from Kelly Chadwick, SCC committee member:

Comments on Climate Action Plan Draft-12/14/2009

- Problem 1-increased growth in population and buildings, so the forecast is for increased carbon footprint-from page 6-UM total emissions and projection graph on page 10. We should be looking at what to do with our increased growth and very carefully at building projects.
- “This method utilizes the naturally cool temperature of water in the aquifer underlying Missoula to provide cooling via a heat exchange system. This system is installed in new buildings and cooling system retrofits whenever possible.” Can this system be used for bringing temperatures up to heat?
Geothermal is mentioned on page 22, but is not considered or discussed. Is it a viable option?
- In 2007, Governor Brian Schweitzer issued the 20 X 10 initiative directing state agencies to reduce their energy consumption by 20% by the year 2010. The University of Montana embraced this goal and set in place several policies and strategies to achieve it.
I don’t see this being strongly enforced. Has the University been able to reduce our energy consumption by 20%? Are we measuring this?

4.1.1—this looks like a reasonable plan, but I would push to see if we could begin the audits and implement upgrades as quickly as possible.
4.1.2—Behavior modification is very important and difficult—We need more education, incentives, and more enforcement.
4.1.3 4 Day work week—great ideal, though very difficult for some departments and parents.
Could we start with a voluntary 4-day work (individuals and departments) week which might not save utilities, but would save for transportation?

4.1.5 retro-commission HVAC systems looks like a high priority for low cost with quite a reduction in carbon and good payback.
Vending Machines and drinking fountains look like a low cost easy project.

4.1.8
There are many CFL give a ways and there should be an inexpensive way to do this. It should also be required. No inefficient lighting should be allowed.
All of the 4.1 seem like good approaches to reducing carbon.

4.2
This is an idea we should seriously look into and expand. UM should take advantage of the state’s wind resource by funding, partially or completely, installation of turbines off-site. The energy generated and put into the utility grid could offset some of the electricity UM consumes from nonrenewable sources. We should collaborate with other universities and campuses in Montana to cooperatively develop a large wind farm. This could help to promote and support the wind industry in the state. This would take time, but it is clean and a great investment for Montana and the University.

All clean alternative energy (such as solar and wind) should be considered. At the time, there should be grants, especially for public areas that educate.

4.3 - LEED EBOM should be implemented

Transportation Strategies-Staff, Faculty and Student Commuting

- Increase the hours the bus and park and ride run so hours are more flexible for commuters.
- Construct a bike hub on campus with covered bike parking—did this happen in the parking garage near the library? It seems like a lot of money for the gain.
- Encourage UM to become actively involved in promoting Amtrak construction through Missoula. A train could potentially decrease the number of cars students bring to campus every year which would help with congestion on campus and lower commuter emissions.

University Fleet

- Good idea replacing sedans with compact cars. We should be more aggressive on mileage requirements for the fleet. There are compacts that get more than 29 miles per gallon on the Hwy. I didn’t understand the fuel efficient car compared to the hybrid. I assume you are looking at the bottom line gallons per mile.
- Not all vehicles can downsize, but mileage should be considered.

Air Travel

- We should make teleconferencing more inviting. It was noted we could establish a high tech, state of the art teleconferencing center at U of Mt.

- Require carbon offset as part of all travel cost. It becomes part of the budget and the true cost.

Purchase high quality carbon offsets—off course we should minimize our footprint as much as possible and then purchase high quality offsets.

Behavior modification, HVAC, Wind, and energy efficient upgrades look like they make the most impact for the least cost. Wind energy should be increased. We should focus on these and continue to look for new ideas, grants, and new ways to fund all reasonable projects.

Required travel offsets should be immediately instated

We should strive for a minimum of 30% below 2007 emission levels by 2020 and work aggressively for neutrality corresponding to other colleges. You show that over 100 colleges have a carbon neutrality date set for 2050, and a few have an 80% neutrality date by 2050.

The plan is a very good update of what has happened and what is possible in the terms of audits and choices for reducing our carbon footprint.
This draft needs to become a plan rather than information. We need strong recommendations with concise goals.

Further comments from Kelly received later:

- Approximately two thirds of the University’s carbon footprint is created by buildings, therefore energy efficiency upgrades and retro-commissioning recommendations should be emphasized, specific and clear. There is obvious payback in cost and achieving our goal of carbon reduction.
- Expedite energy audits so that all buildings are audited by 2012.
- Immediate layperson audits should happen in every building, conducted by maintenance and custodial crews, Facilities Services, directors, staff, and faculty pointing out obvious problems such as dripping faucets, lights left on, temperatures that are too warm or cold, etc. Have an Energy Savers suggestion box available to employees and students for comments.
- Departmental self-audits and behavioral recommendations from directors might speed up behavioral changes. They can require computers and lights off at night, all heaters and air conditioning comply with energy star, and that temperature standards are followed. The 2007 20 x 10 initiative needs to be enforced. How are we measuring and enforcing this?
- Carbon cost should be approximated and considered in all new construction. This should be weighed carefully before adding a new building to our carbon footprint. The carbon cost should be analyzed and covered to neutral impact if a building goes in.
- Collaborate with other Montana universities and campuses and or the state to cooperatively develop a large wind farm.
- A designated staff person(s) should be designated to research and implement various funding mechanisms such as grants and bonds.
- We should redraft the recommendations to make them clear and strong with consistent formatting: recommendation, followed by a two sentences of definition and clarification, and a start date. These recommendations should be able to stand alone without having to read the entire plan.

Comments received from Phil Condon, Associate Professor, EVST:

**Information Needed:**

On page 6, the CAP states that “during plan development the GHG inventory was updated,” and from that update, 2007 emissions were increased nearly 10% to 46,500 MTeCO2. Perhaps information that specifies to what that increase is attributable is publicly available elsewhere, but as the new 2007 figure is proposed as baseline, upon which all interim reduction goals are based, and because the growth in emissions 2002-07 is extrapolated to 2050 as the business as usual scenario, I think it’s very important
for the CAP Draft to specify exactly what accounts for the increase in estimated emissions for 2007, beyond the GHG inventory figure.

Related to this updated 2007 emissions estimate, and to my concern below about the assumptions of continued growth in UM enrollment and building construction, page 10 of the CAP cites “a steadily increasing trend [in GHG emissions] that correlates to increasing student enrollment and construction of new buildings.” However, to my knowledge, such a correlation was only roughly established in the GHG inventory to enrollment increases; no figures on building construction increases during the study period were included. Further, given this CAP update of nearly 10% overall emissions for 2007, does the 2002-07 emissions rate of increase still correlate to enrollment increases? I think it is vital to publicly establish whatever can be determined about the ratios between emission increases and enrollment increases, and between emission increases and building construction (by square footage or some other quantifiable measure), in order to adequately inform and address the issue of continued UM growth.

The Air Travel (AT) section (pgs 44-45) establishes that UM AT accounts for at least 50% of transportation GHG emissions (roughly 1/3 of total UM emissions); thus, UM AT alone accounts for at least 1/6 of total UM emissions (about 8,000 MTeCO2/year). However, the CAP provides no specific breakdown information on AT by category, other than UM in general and UM Athletics. The other 50% of transportation emissions—auto use—is studied at length (pgs 31-44), but AT emissions, both their sources and possible solutions, are covered in only 1 ½ pages, before the discussion of offsets. I believe this major source of UM emissions should be publicly analyzed—perhaps in categories such as AT emissions of faculty, of staff, of administration; or perhaps in AT emissions by college, etc. While confronting AT GHG emissions may be difficult, without concrete information about who is flying where, and when, it is unlikely that reductions will occur. Apparently, from page 44, athletics AT accounts for about 1/5 of UM AT emissions, and on page 45, athletics is listed as one of 3 areas of UM AT, along with “study abroad and other university related AT.” How much of AT emissions are from study abroad, and how much are from “other” sources, and how do those other sources break down? Only by having such information can the UM community determine how much AT emission reduction might be reasonable to propose and in what specific areas, a determination that I believe should be made before moving to the purchase of offsets for UM Air Travel.

Assumptions Needing to be Addressed:

Throughout the CAP, notably on page 10 and on page 58, it appears to be assumed that UM will continue to grow, both in enrollment and in new construction. On page 10, the assumption of such growth (said to be correlated to the scale of growth in emissions 2002-07), is projected into the future throughout the study period (2010-50). On page 58, the CAP further notes that continued UM growth after 2020 would quickly erase emission reductions achieved through any of the proposed interim measures between 2010-20. Both these statements appear to assume steady growth in enrollment and new construction. I think it is vital that such an assumption be questioned and its implications analyzed and discussed publicly as part of the CAP.

If the overarching CAP goal is to reduce UM GHG emissions, and if continued UM growth results in growth in emissions, shouldn’t strategies of slowing and/or capping new enrollment and new construction be analyzed and discussed? In my personal opinion, some such strategy should in fact be recommended, at least until such time that other reduction strategies to reduce emissions (new technologies, new ideas, new will and incentives to behavior change) can be developed.
Further, if continued UM growth will quickly erase all overall GHG emission reductions resulting from the multiple strategies proposed for interim implementation in 2010-20, shouldn’t the question of reducing, stopping, or postponing UM growth in enrollment and construction be addressed? Is institutional growth that, despite 10 years of our best reduction strategies, immediately begins to cancel out cumulative emission reductions and, in fact, supercede them, sustainable growth? I think it’s vital that the first UM CAP address directly the question of what rate of growth is sustainable growth for UM, in both enrollment and new construction, in the light of UM’s current and projected GHG emissions.

Recommendations on Specific Proposals for Emission Reduction Projects (page 53):

Assuming the figures in the page 53 chart continue to be fairly accurate, I recommend as follows:

A—only the first 19 Projects (NPV \( > 0 \)) be considered for interim implementation. It appears to me there is plenty to study, and to implement, in this list of 19, without tackling any Projects with a negative NPV.

B—Of the remaining 7 measures (#20-26), the CAP recommends against 3 of them. I would further recommend against the other 4 Projects as follows:

- #24—see my discussion in “C” below re Project #14. Given the vast difference in NPV between Wind Turbine and Syngas, I recommend against considering a Syngas Project until all UM electricity usage is produced by off-site Wind Turbines.
- #22—see my discussion above about addressing and analyzing the effects of continued growth in UM new construction. Until such informed discussion can occur, I recommend against any new construction at UM, LEED or otherwise.
- #21—see my discussion above about UM AT emissions. Until UM AT emissions are better analyzed and understood, and more specific ideas for AT emission reductions are proposed and tested, I recommend against this costly Project.

#20—not cost effective at this time and relatively small emission reduction;

C—I recommend that Project #14, Wind Turbine, be greatly expanded in consideration. If the figures in the CAP on this project are accurate, 10 off-site Wind Turbines could generate all UM electricity, and could reduce UM GHG emissions by about 18,000 MTeCO2/year, or 20% overall, with a positive NPV.

D—I recommend prioritizing the first 19 Projects on page 53 for action and implementation, according to their NPV and the scale of their emission reduction potential. Thus, my priority list recommendation, by Project #, is as follows:

First, #14 Wind Turbine (expanded by an order of magnitude as in my “C” above);
Then, #9, #11, #13, #12 (including related #17), #15, #16;
Then, #6, #8, #19, #18, #6, #8, #2, #10, #’s 3-5 and 7 equally, and finally #1.
Section 2 (Plan Organization and Methodology), p. 4 – I suggest providing a short narrative of the public involvement plan and a short discussion of how it was carried out. Student involvement in the researching, writing and contributing ideas to the plan CAP should be acknowledged and highlighted.

Section 3 (Greenhouse Gas Profile), p. 8 – I encourage you to briefly acknowledge what is not counted in the GHG inventory and any assumptions that were made the may mean that actual emissions may be more or less (for example, Athletics not being included, using Pacific NW region rather than NorthWestern Energy grid intensity factor, omitting energy used by our street light district if that was the case, etc.). Basically, if 2008 emissions data is used in the CAP, it should be explained what if anything was done differently for 2008 than 2000-2007. This could be a footnote even, but seems like important technical information. It also provides information and a record for improving on our efforts in the future.

Section 4 (GHG Reduction Strategies) – The data sources and analytic techniques used to generate most of the information in this section (especially Section 4.1.1) are generally not explained or documented, requiring the reader to have to take them at face value. I think that the company that conducted the audits should be mentioned and some of the details of various staff’s research should be included if possible. More technical documentation in the appendices would be helpful. It could be made clearer how many buildings there are total on campus that are covered by this section. Is the approximate 35 buildings slated for upgrades the total (p. 13)?

P. 10 – Briefly discuss assumptions made in developing the figure showing projected GHG emissions under the no action (business as usual) scenario. Also the items listed in referring to the figure do not match those in the legend.

P. 11 – Could mention 65 mph speed limit for campus vehicles and reference President Dennison’s memo on energy conservation, which I recommend including as an appendix.

P. 13 (Section 4.1.1) – For discussion of lighting, what exactly are T-8 lamps, and can a picture of them be included? Also what about mentioning LED lighting for outdoor and perhaps indoor lighting instead of just for exit signs. The U.S. Department of Energy reports, “Overall the performance of LED luminaries is advancing in efficiency at a rate of approximately 35% annually with costs decreasing 20% annually” (sorry I don’t have this 2006 reference handy but I can try to get it). The potential for use of LEDs should be on the radar screen at least. I’m a bit concerned actually that so much initial effort (investment) is being put into light replacement if the equipment used may not be the best available and most efficient technology for long. Pay-back periods for LEDs are going to go down in the years to come, perhaps sooner than we think.

P 14 and 15 – There seem to be some inconsistencies about what is expected about the frequency and dates of future building audits (it says every two years in one place and every three years in another, and the table indicates 2012 and 2015 as planned dates for additional audits, but the text states 2012 and 2014). The table is missing a value for MMBTUs in the first row. If that is intentional a footnote could be added at the bottom of the table. Also could a totals row be added at the bottom too?

P. 16 – It would be good to clarify that last bullet point is relevant to residence halls and family housing and perhaps included earlier some discussion of the different types of UM buildings on and off campus.

P 17-18 (and Section 4.4.7) – The problem currently with the 4 day week is that there is not enough classroom space to have classes only 4 days a week. Without new classroom buildings or a drastic cut in student enrollment a 4-day week is simply not possible. David Devolve, the UM room scheduler, could be consulted in this regard. Because of increased enrollment and limited classroom space, the University recently changed the classroom meeting times to try to better utilize classroom space and has promoted a shift to more MWF classes. These realities could be acknowledged and discussed in relation
to a possible strategy of limiting admissions, raising admission standards, and managing growth in general along the lines suggested by Phil Condon.

P. 18 – Is the reference to 0.4% reductions a typo? That hardly seems like a reduction that warrant as much discussion as there is.

P 19 – What are some of the ways that “mechanical, electrical, and control systems” can be improved to function more efficiently together?

P. 23-24 – More background and details would be helpful regarding the biomas plant option. Syngas should be at least defined. What is that exactly – cellulosic ethanol – and how is it used? Is this an existing commercial technology? What is the technical feasibility of such an idea in the next 5 or 10 years, i.e., to meet the interim goals? It sounds like coal to –liquid-natural gas -- difficult if not impossible to find investors to sufficiently scale up what can be done in a lab in order to meet commercial energy consumption needs. I have to question the merits and wisdom of relying on such an unproven technology to meet relatively short term goals. Also, in the calculations, I don’t think the transportation of the wood is considered. That can be substantial over the lifetime of a biomass plant.

P. 24 – What is a BD ton?

Section 4 might refer to suggested strategies that the EPA and DOE have suggested for reducing energy use in commercial buildings. See:


**Section 4.4 (Transportation)** – Regarding the question on p. 38 about the ability of the urban core to accommodate additional housing, the Missoula Office of Planning and Grants (OPG) commissioned a study of how anticipated increases in housing demand could be met for the next 20 years I believe. OPG determined that areas already served by existing infrastructure could handle this growth (15,000 new units if I recall correctly). This was part of the Urban Fringe Development Area (UDFA) planning effort. As part of recent Missoula long-range transportation planning process, a survey was done of commuting behaviors and preferences in Missoula. Here are those sources which I recommend incorporating into this section since it includes empirical information about how biking and pedestrian infrastructure development is perceived to be necessary to encourage greater use of alternative transportation.


In the parking management plan, was an increase in parking rates or reduction in spaces considered? If so, can the conclusions in that regard be addressed (maybe it was and I missed it). A price signal is known to have the strongest influence on commuting behaviors. The planned survey might ask about how behavior might change as a result of higher parking rate. That information could be gathered in conjunction an econometric study by faculty or students such that good data could be used to inform policy change. This is an idea that could go into **Section 6** (on education and research).

I was surprised to hear that there is no information about where students live. Don’t students have their local mailing addresses on Cyberbear? These addresses, at least ones that exist, could be geocoded and analyses done of commuting distances. This is another type of project that could be included in **Section 6**.
Section 4.4.3 (Incentive to increase carpooling) – The City, along with Missoula In Motion and Missoula County, are researching the feasibility of implementing a formal car share service, such as ZipCar. Car sharing is a good way to encourage carpooling. Also from the draft Missoula Greenhouse Gas Inventory: “One particularly exciting incentive program has been proposed recently, which aims to increase awareness and participation in the Mountain Line City bus pass program. The program, called “City Employee Cash for Commuters”, would reward City employee who regularly drive alone to work by giving them $2 per day to ride the bus to and from work starting October 1, 2009.” Could a similar program we instituted for staff and faculty or students even?
It also might be mentioned that Missoula/Ravalli Transportation Management Association (MRTMA), oversees ride matching and vanpools for the area. More information about the MRTMA ride matching service can be accessed online at http://alternetrides.com/Home_Rides.asp and http://mrtma.org/rideshare_application.htm.
Generally, I think it would be helpful to briefly outline the service that are available or provide weblinks for that information.
P. 42 – Regarding replacement of mid-sized sedans with compact vehicles and SUVs with Mini-vans: without an analysis of the existing use of these vehicles (which is acknowledged under barriers), it seems premature to suggest total replacement for both sets of vehicles. Since only ½ of SUVs are suggested for replacement, it seems logical to suggest the same for the mid-sized sedans unless there is information that compact vehicles will adequately meet user needs.
P. 43 – I think it should be acknowledged that fleet vehicle use is not just for field trips. It is for administrative business, faculty research and other faculty travel, such as for conferences.
Section 4.5 (Offsets) – Very good, but why is there no discussion, or a separate chapter on Renewable Energy Credits (RECS). They are noticeable by their absence. I would like to see some explanation for their exclusion. There are a number of reputable RECs offered regionally by the Bonneville Environmental Foundation and Native Energy (see comments at end about CAP having principles of social responsibility).
Section 5 (Climate Action Goals) – The table on p. 53 is very hard to interpret and seems more useful to the analysis process rather than the presentation of elements of the plan and might be better to include as an appendix. It would be helpful to have it sorted or subdivided by estimated start date so one can readily see which projects are proposed to commence in the near-, middle- and long-terms. What about putting a total row at the bottom for relevant columns, or subtotals that correspond to various phases of plan implementation? Also, the minus signs are not needed in the Annual Reductions column and the number to the right of the decimal point (cents) in various columns could be cut.
P. 55 – The figure could be streamlined by just showing the big ticket projects and listing or displaying the others separately.
P. 56 – Why does solid waste constitute such a large wedge if it is such a small portion in the GHG inventory?
P. 57 – The figure is very hard to read. It seems more useful as an appendix. I recommend having a separate list (table) of projects that are expected to achieve the 2015 and 2020 goals and the percent reduction of each. I would rather see those numbers in a table either instead of or in addition to the figure. The reader can’t really easily enough tell which projects are being proposed to meet those goals. Again, this seems fundamental to any CAP and should be presented in a very straightforward manner in my view.
Section 6 (Education, Research and Outreach) – Seems like a good start. Please consider mentioning project whereby UM (EVST faculty and students) have partnered with the City of Missoula on conducting a municipal GHG inventory, and perhaps suggest further collaboration in education and outreach and developing technical capacity reducing climate action planning and implementation.
Appendices – The USDOE Energy Information Administration website has a good amount of information and resources that could be used in Appendix B.
P. 71 - Eagan citation doesn’t need first name.
P. 72 – MTDCE in the table should be defined.
Bibliography – It may be better to simply call this “Notes” since they are really endnotes. Also, a metric tonne is 2,200 pounds rounded off, but 2204.6 pounds not rounded.
Finally, I’d like to see some discussion about social responsibility, buying and hiring locally, and supporting local businesses and the local economies, and of course, some reference to how the plan might be related to national climate change legislation and the Copenhagen talks. I would be happy to draft paragraph of two on these things if you’d like in January.