

Human Behavior and Energy Consumption

SPEA E501 and X511- Spring 2019

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Email: sattari@indiana.edu & Web: www.szattari.com**Teaching Assistant:** Bronson BastEmail: bbast@indiana.edu**Class: 2:30 – 3:45 am Tuesdays and Thursdays at SPEA 163**

Why don't we conserve energy and use energy efficient technologies to decrease our energy use? We face a multitude of barriers related to informational and motivational deficits that prevent us from conserving energy. This course is aimed at understanding *which* behaviors to change and *how* to change behaviors. Students taking this course will (1) understand the nature of energy, (2) understand and analyze which behaviors to change, (3) understand how to change behavior, and (4) create solutions based on the tools provided in class to facilitate a decrease in energy use.

By its very nature, this is an interdisciplinary course. During the semester, we will be covering parts of behavioral science (focusing on judgment and decision making), energy use, and experimental design. Each of these fields plays a vital role in how and why humans consume energy and how to detect change (experimental design). We have a lot of ground to cover and we will be toggling between these fields constantly. There will be substantial reading. Be patient and buckle your seat belts.

This class is project-focused and designed around active learning. You will be placed into groups of 3 students and will need to transform a behavior of your choosing. The course goal is that:

Students will apply psychological/behavioral methods to individual energy consumption behaviors to facilitate a decrease in energy consumption per capita, and in doing so, become change agents themselves.

There are two textbooks for this class (*any edition is fine*, pick the needed chapters):

1. Hastie, R. & Dawes, R. M. (2001) *Rational choice in an uncertain world: The psychology of judgment and decision making*. Sage publications.
2. Cialdini, R. (2001) *Influence: Science and practice*. Allyn and Bacon.

There will also be additional readings from other sources. Rather than explain each of reading in class, I will assume that you have read the papers/chapters thoroughly and come to class with good questions and comments such as: "this was new in this paper", "this was wrong with this paper", "this paper assumes xyz", "this is how we can use ideas from this paper in our project" etc. As a result, the class will be focused on pushing the boundary of understanding in this topic area as quickly and effectively as possible.

Academic integrity

You know the drill. No form of academic dishonesty will be tolerated. This course requires individual integrity and professionalism from all students. Should there be any suspicions of academic dishonesty, you will be notified immediately and asked to explain your actions. If academic dishonesty is proven, you will receive a grade of zero for the work; repeat offense is grounds for failure in the course.

Special needs

I am happy to accommodate any special academic needs. Let me know by the first week of classes if you have any special needs.

Plagiarism

In college courses, we are continually engaged with other people's ideas: we read them in texts, hear them in lecture, discuss them in class, and incorporate them into our own writing. As a result, it is very important that we give credit where it is due. So what exactly is plagiarism? Plagiarism is using others' ideas and words without clearly acknowledging the source of that information.

All of the following are considered plagiarism:

- turning in someone else's work as your own
- copying words or ideas from someone else without giving credit
- failing to put a quotation in quotation marks
- giving incorrect information about the source of a quotation
- changing words but copying the sentence structure of a source without giving credit
- copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not

Most cases of plagiarism can be avoided by citing sources. Simply acknowledging that certain material has been borrowed and providing your audience with the information necessary to find that source, is usually enough to prevent plagiarism. Plagiarism is considered academic dishonesty and work that is found to be plagiarized will receive a grade of zero; repeat offense is grounds for failure in the course. Visit www.plagiarism.org for more details.

Participation

Class participation is an important part of the course. In fact, it is vital. As a result, participation will be graded. Note that point allocation is based on my *subjective* assessment of the value of your comments. Ask good questions and be part of the discussion. If you do not participate freely, I will cold call on you to facilitate discussion (modified Socratic method). Occasionally, I will also give you take home assignments that will be due the following class. These will be graded and points added to your participation grades. These assignments will make sure the material being covered in class is getting through, and that you can effectively apply concepts. Participation does not mean dominating every conversation. Effective participation means making space for people who do not feel comfortable participating in a class discussion to participate.

Course requirements:

(1) Attend class religiously. The norm should be 100% attendance. Although you will not be graded on attendance.

(2) Do the readings compulsively and carefully. Some readings will take time to digest and you will benefit from discussion with other students prior to class. Work with other students and bring your questions to class.

(3) There will be 4 homework assignments, each constituting 8% of your grade. Answer the questions in thoughtful, carefully reasoned, well-crafted responses. **You will need to submit your homework electronically by uploading your document to Canvas (unless specified) under assignments and you will need to bring a printed hard copy to class. If you do not submit both electronic and hard copy, your homework will not be graded.** Assignments will range from qualitative to quantitative. Calculations should be clear with all assumptions and uncertainties explained. Your answers should be typed, not hand-written (unless you are doing a calculation), and in 12 point font, with 1.5 spacing. **Homework that is one class period late will be docked 25%, two class periods late will be docked 50%, three class periods late will not be accepted.**

(4) Group Project: The project packet will be provided to you separately, outlining requirements. You can either self-organize (find people who are different from you and who have different skills from you) or I will place you into groups of 3 people, and you will need to work cooperatively with each other for the entire semester. You will need to accomplish the following tasks:

1. Identify a behavior to change (one that will actually save energy)
2. Measure pre-intervention energy consumption
3. Implement the intervention
4. Measure post-intervention energy consumption
5. Describe success/failure, explore methods to scale-up, explain what you would have done differently
6. Summarize your project in a short paper
7. Create an educational YouTube video to summarize each task in your project

It is completely fine to not foster behavior change. If you fail, fail hard – i.e., try your best to do everything possible to create change. The goal of this project is to learn how to apply the tools that you learn in class, not to change the system in one semester.

Pull your own weight in the project. Each member will be evaluated by every other member in the group to encourage cooperation and avoid free-riding. Make sure that early on in the semester you equally divide the work among the group members. This is

a challenging project, and I hope you will rise to the challenge. **Late submissions of group work will be penalized following similar rules as homework assignments.**

(5) Exams: There are two exams in this course. I will post study guides for most of the classes in the resources folders. There is no final exam in this course.

Grading for course:

Participation	10%	Updated after Exam 1 & 2
HW 1. Calculate your own energy consumption	8%	Due Jan 22 (Hard copy only)
HW 2. Design an experiment to decrease energy consumption and detect the change	8%	Due Jan 31 Bring two hard copies to class.
HW 3. Critique someone else's experiment	8%	Due Feb 7 Bring two hard copies to class.
HW 4. Change your own energy consumption behavior	8%	Due Feb 19
Group project	30%	<ol style="list-style-type: none"> 1. Topics due: Jan 29 (5 pts) 2. In class presentation: Feb 21 (10pts) 3. Pre-intervention energy memo: Mar 7 (10 pts) 4. Update presentation: Mar 26 (10 pts) 5. Post-intervention energy memo: Apr 9 (10 pts) 6. Story board: Apr 11 (5 pts) 7. Final paper: Apr 18 (20 pts) 8. Group evaluation: Apr 25 (10 pts) 9. YouTube video: Apr 25 (20 pts)
Exam 1	14%	Mar 5
Exam 2	14%	Apr 23

The grading scale for this class will be the following: min of 97 A+, min of 93 A, min of 90 A-, min of 87 B+, min of 83 B, min of 80 B-, min of 77 C+, min of 73 C, min of 70 C-, min of 67 D+, min of 63 D, min of 60 D-, and less than 60 F. I reserve the right to adjust this scale (i.e., lower it) to account for variability in testing results.

Schedule:

- 8-Jan** **1. Introduction, course goals, and group project. Why behavior?**
Swim, J. K., Stern, P. C., Doherty, T. J. *et al.* (2011). Psychology's contributions to understanding and addressing global climate change. *American Psychologist*, 66(4), 241.
- 10-Jan** **2. What is energy? What is the potential to decrease individual energy use? Starting calculations**

Smil, V. (2006). *Energy: Beginners guide*: Oneworld. (Introduction and Ch 5: Energy in everyday life).

Pacala, S., & Socolow, R. (2004). Stabilization wedges: Solving the climate problem for the next 50 years with current technologies. *Science*, 305, 968-972.

Consider a spherical cow. (1988) John Harte

15-Jan

3. Calculating energy use

US EPA's EERE: <http://energy.gov/energysaver/articles/estimating-appliance-and-home-electronic-energy-use>

Lawrence Berkeley National Lab's Standby energy consumption: <http://standby.lbl.gov>

Michael Bluejay's website:

<http://michaelbluejay.com/electricity/howmuch.html>

Attari, S. Z., & Rajagopal, D. (2015). Enabling energy conservation through effective decision aids. *Journal of Sustainability Education*.

Project: Tell us who is in your group

Think about how you would make the public more energy literate.

Start HW1: Calculate your daily and yearly energy consumption.

17-Jan

4. What are effective behaviors to change?

Gardner, G., & Stern, P. (1996). *Environmental problems and human behavior*: Simon and Schuster Company. (Ch 10. Choosing the behaviors to change and the points of intervention)

Dietz, T., Gardner, G., Gilligan, J., Stern, P. C., & Vandenberg, M. (2009). Household actions can provide a behavioral wedge to rapidly reduce US carbon emissions. *Proceedings of the National Academy of Sciences*, 106(4), 18452-18456. <http://behavioralwedge.msu.edu/>

Browse: Gardner, G., & Stern, P. (2008). The short list: The most effective actions U.S. households can take to curb climate change. *Environment Magazine*, 50(5), 12-24.

Browse: Inskip, B. D., & Attari, S. Z. (2014). The water short list: The most effective actions U.S. households can take to curb water use. *Environment*, 56(4), 4-15.

Ponder: What is your best recommendation for energy conservation when someone has \$5, \$10, \$50, \$100, \$5000, \$50K to spend?

22-Jan

5. Research methods and experimental design

Chapter 8. Randomized Experiments, from Shadish, Cook and Campbell, Pg. 246-278

Browse: Chapter 9. Practical Problems 1: Ethics, Participant Recruitment, and Random Assignment, from Shadish, Cook and Campbell, Pg. 279-313.

Start HW 2: Design an experiment to decarbonize.

HW 1: Due

24-Jan

6. Social norms and system transitions for decarbonization

Sovacool, B. K. (2016). How long will it take? Conceptualizing the temporal dynamics of energy transitions. *Energy Research & Social Science*, 13, 202-215.

Sparkman, G., & Walton, G. M. (2017). Dynamic norms promote sustainable behavior, even if it is counternormative. *Psychological Science*, 28(11), 1663-1674.

Browse: Sunstein, C. R. (1996). Social norms and social roles. *Columbia Law Review*, 96(4), 903-968.

29-Jan

7. Thinking and deciding

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases, *Science*, 185, 1124-1131.

Hasties and Dawes (2001) Rational choice in an uncertain world. Ch 1. Thinking and deciding
Ch 2. What is decision making?

Project: Topics due

31-Jan

8. Perceptions of climate change, partisanship, and what to do

Watch TED talk

https://www.ted.com/talks/naomi_oreskes_why_we_should_believe_in_science?language=en

Oreskes, N. (2004). Science and public policy: what's proof got to do with it? *Environmental Science & Policy*, 7(5), 369-383.

Weber, E. U. (2016). What shapes perceptions of climate change? New research since 2010. *Wiley Interdisciplinary Reviews: Climate Change*, 7(1), 125-134.

Start HW 3: Critique another student's experimental design.

HW 2 Due. Bring two hard copies to class.

5-Feb

9. How to change behaviors? Part 1

Cialdini, R. B., Demaine, L. J., Sagarin, B. J., Barrett, D. W., Rhoads, K., & Winter, P. L. (2006). Managing social norms for persuasive impact. *Social Influence*, 1(1), 3-15.

Cialdini, R. (2001). *Influence: Science and practice*: Allyn and Bacon Boston. Ch 3 Commitment and Consistency

Browse: Prochaska, J., DiClemente, C., & Norcross, J. (1992). In search of how people change: Applications to addictive behaviors. *American Psychologist*, 47(9), 1102-1114.

7-Feb

10. How to change behaviors? Part 2

Abrahamse, W., Steg, L., Vlek, C., & Rothengatter, T. (2005). A review of intervention studies aimed at household energy conservation. *Journal of Environmental Psychology*, 25(3), 273-291.

Cialdini, R. (2001). *Influence: Science and practice*.
Ch 4 Social Proof
Ch 5 Liking

Browse: Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research*, 35(3), 472-482.

Start HW 4: Change your own behavior. Document pre- and post-energy consumption. What strategies work? Turn in your plan and results.

HW 3 Due. Bring two hard copies to class.

12-Feb

11. Judgments from memory

Hasties and Dawes (2001) Rational choice in an uncertain world.
Ch 4. Judgments from memory. (Ch. 5 in 2010)
Ch 5. Anchoring and adjustment. (Ch. 4 in 2010)

14-Feb

12. Perceptions and biases of resource use

Larrick, R. P., & Soll, J. B. (2008). The MPG Illusion. *Science*, 320(5883), 1593-1594. Also see: <http://www.mpgillusion.com/>

Attari, S. Z., DeKay, M. L., Davidson, C. I., & Bruine de Bruin, W. (2010). Perceptions of energy consumption and savings. *Proceedings of the National Academy of Sciences*, 107(37), 16054-16059.

Attari, S. Z. (2014). Perceptions of water use. *Proceedings of the National Academy of Sciences*, 111(14), 5129-5134.

Browse: Kempton, W., Harris, C. K., Keith, J. G., & Weihi, J. S. (1985). Do Consumers Know "What Works" in Energy Conservation? *Marriage & Family Review*, 9(1), 115-133.

19-Feb

13. Values, frames, and barriers

Hasties and Dawes (2001) Rational choice in an uncertain world. Ch 11. Complex values and attitudes. (Ch. 10 in 2010)

Gifford, R. (2011). The dragons of inaction: psychological barriers that limit climate change mitigation and adaptation. *American Psychologist*, 66(4), 290.

Dietz, T., Leshko, C., & McCright, A. M. (2013). Politics shapes individual choices about energy efficiency. *Proceedings of the National Academy of Sciences*, 110(23), 9191-9192.

HW 4 Due.

21-Feb

14. Group project outline presentation

Submit all presentations to Bronson by 12pm on Feb 20.

26-Feb

15. Credibility, communication, and advocacy

Attari, S. Z., Krantz, D. H., & Weber, E. U. (2016). Statements about climate researchers' carbon footprints affect their credibility and the impact of their advice. *Climatic Change*, 138(1), 325-338.
doi:10.1007/s10584-016-1713-2

Kraft-Todd, G. T., Bollinger, B., Gillingham, K., Lamp, S., & Rand, D. G. (2018). Credibility-enhancing displays promote the provision of non-normative public goods. *Nature*, 563, 245-248.

Minson, J. A., & Monin, B. (2012). Do-gooder derogation: Disparaging morally motivated minorities to defuse anticipated reproach. *Social Psychological and Personality Science*, 3(2), 200-207.

28-Feb

16. Food choice and fast and frugal heuristics (Peter Todd visits HBEC, Shahzeen away)

Todd, P. M., & Gigerenzer, G. (2000). Précis of simple heuristics that make us smart. *Behavioral and Brain Sciences*, 23(05), 727-741.

Hertwig, R., & Todd, P. M. (2003). More is not always better: The benefits of cognitive limits. *Thinking: Psychological perspectives on reasoning, judgment and decision making*, 213-231.

5-Mar

17. Exam 1

7-Mar

18. Beyond hard regulations: Using nudges

Johnson, E. J., & Goldstein, D. (2003). Do defaults save lives? *Science*, 302(5649), 1338-1339.

Pichert, D., & Katsikopoulos, K. V. (2008). Green defaults: Information presentation and pro-environmental behaviour. *Journal of Environmental Psychology*, 28(1), 63-73.

Submit questions/topics for class on 21-Mar
Project: Pre-intervention energy calculation memo

12-Mar

No Class: Spring Break

- 14-Mar** **No Class: Spring Break**
- 19-Mar** **19. Beyond nudges: Choice architecture**
 Thaler, R., Sunstein, C., & Balz, J. (2010). Choice architecture. *Available at SSRN 1583509*.
- Johnson, E. J., Shu, S. B., Dellaert, B. G. C., Fox, C., Goldstein, D. G., Haubl, G., et al. (2012). Beyond nudges: Tools of a choice architecture. *Marketing Letters*, 1-18.
- 21-Mar** **20. Your pick: We'll talk about your questions on any topic**
 Submit questions or topics on March 7th
- 26-Mar** **21. Group project presentation update**
 Submit all presentations to Bronson by 12pm on Mar 25.
- 28-Mar** **22. How do you want to be remembered? On the power of legacy**
 Zaval, L., Markowitz, E. M., & Weber, E. U. (2015). How will I be remembered? Conserving the environment for the sake of one's legacy. *Psychological Science*, 26(2), 231-236.
- Hershfield, H. E., Goldstein, D. G., Sharpe, W. F., Fox, J., Yeykelis, L., Carstensen, L. L., & Bailenson, J. N. (2011). Increasing saving behavior through age-progressed renderings of the future self. *Journal of Marketing Research*, 48(SPL), S23-S37.
- 2-Apr** **23. Rebounds and spillovers**
 Jaffe, A. B. and R. N. Stavins (1994): The energy-efficiency gap- What does it mean? *Energy Policy*, Vol. 22, No. 10, p. 804- 810.
- Gillingham, K., Kotchen, M. J., Rapson, D. S., & Wagner, G. (2013). Energy policy: The rebound effect is overlaid. *Nature*, 493(7433), 475-476.
- Browse:* Truelove, H. B., Carrico, A. R., Weber, E. U., Raimi, K. T., & Vandenberg, M. P. (2014). Positive and negative spillover of pro-environmental behavior: An integrative review and theoretical framework. *Global Environmental Change*, 29, 127-138.
- 4-Apr** **24. Emotions and risk**
 Hasties and Dawes (2001) Rational choice in an uncertain world. Ch 10. Evaluating consequences: Simple values. (Ch 9. in 2010)
- Slovic, P. (1987). Perception of risk. *Science*, 236(4799), 280-285.
- Loewenstein, G., Weber, E., Hsee, C., & Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, 127(2), 267-286.
- Browse:* Loewenstein, G., & Schkade, D. (1999). Wouldn't it be nice? Predicting future feelings. *Well-being: The foundations of hedonic psychology*, 85-105.

Browse: Loewenstein, G., & Lerner, J. S. (2003). The role of affect in decision making. *Handbook of affective science*, 619(642), 3.

9-Apr

25. Social dilemmas

Hardin, G. (1968). The tragedy of the commons. *Science*, 162(3859), 1243-1248.

Dawes, R., & Messick, D. (2000). Social dilemmas. *International Journal of Psychology*, 35(2), 111-116

Project: Post-intervention energy memo due

11-Apr

26. Solving social dilemmas

Messick, D. M., & Brewer, M. B. (1983). Solving social dilemmas: A review. *Review of personality and social psychology*, 4, 11-44.

Dawes, R. M., & Thaler, R. H. (1988). Anomalies: cooperation. *The Journal of Economic Perspectives*, 2(3), 187-197.

Elinor Ostrom's Nobel Lecture: Beyond Markets and States: Polycentric Governance of Complex Economic Systems

Project: Storyboard due

16-Apr

27. Morality and psychic numbing

Slovic, P. (2007). If I look at the mass I will never act": Psychic numbing and genocide. *Judgment and Decision Making*, 2(2), 79-95.

Browse: Haidt, J., & Kesebir, S. (2010). Morality. In S. Fiske, D. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology*, 5th edition (pp. 797–832). Hoboken, NJ: Wiley.

18-Apr

28. What happens next? My storytelling research and your future work

Check Canvas for readings

Project: Final paper due

23-Apr

29. Exam 2

25-Apr

30. YouTube video viewing.

Submit videos to Bronson by 12pm on Apr 24.

Project: Group evaluation sheets

Vote for your favorite videos online

Group Project

This is a semester-long group project that is worth 30% of your grade. To keep things simple, I have assigned 100 points to your project that will later be scaled to 30% of your final grade.

Challenge: *Students will apply psychological/behavioral methods to individual energy consumption behaviors to facilitate a decrease in energy consumption per capita, and in doing so, become change agents themselves.*

Contact me directly if you need help with unruly team members and need external authority to get your group back on path (which I hope you will not need to use). If you have questions about behavior change strategies, calculations, or intervention ideas see me.

General outline:

To do the group project, you will need to be able to:

1. Identify a behavior to change (one that will actually save energy)
2. Measure pre-intervention energy consumption
3. Implement the intervention
4. Measure post-intervention energy consumption
5. Describe success/failure, explain what you would have done differently
6. Summarize your project in a short paper
7. Create an educational and informative YouTube video to summarize each task in your project. Think carefully about how your video adds to the growing body of knowledge in this area.
8. Have fun!

Be respectful of the people whose behavior you are planning to measure and change. Even though the results from your work will not be published in a journal, please ensure subject safety (psychological and physical) and privacy (see: <http://researchadmin.iu.edu/HumanSubjects/>).

Detailed steps:

Group Assignment: You can either self-select into groups of 3 or we can assign you.

Design your project: (1) Identify a behavior that you want to change and (2) a population where the change will be taking place. Pick a behavior and a population that you have a good chance of changing. Once your group has brainstormed a few great ideas for the project, write them down in a one-page memo explaining (a) why you choose the behavior, (b) who the participants will be, (c) how will you measure behavior and email me. We will then set up a meeting time very early in the semester to discuss. Topics due Jan 29, 5pts.

In class presentation: Conduct a literature review on what has been done before in your chosen behavioral domain and population of choice (use the library, Google scholar, resources on campus, talk to Professors and other students in any department/area of interest, etc.). Present an outline of your project via an in-class presentation (5 minutes max). The class will give you feedback on your project afterwards. Your presentation should include the following (in an order that makes sense for your project):

- Behavior chosen (why the chosen behavior is important)
- Describe target population
- What your group intends to change
- What intervention strategy will be used

- Overview of literature review
- Time line of project and completion

Create a top-notch presentation (does not need to be PowerPoint, but that is what most people use). See Nancy Duarte's website for ideas and tips: <http://www.duarte.com/>. All group members do not need to present and you can choose one person from the group to present your project if that is what your group prefers. Presentations in class Feb 21, 10 pts.

Pre-intervention energy calculation and memo: Provide a brief written description of your project and explain where you are in the implementation process. Estimate the current energy consumption of the behavior you wish to change (consider doing a bounding analysis, i.e., figure out what the upper and lower bounds are for energy consumption per capita). Alternatively, *measure* the current pre-intervention energy consumed by the behavior chosen. Explicitly state assumptions and sources of uncertainty in your calculation or measurement. Submit the written description as a memo with a maximum of 4 pages, 12 point font. Use references (APA style) where applicable in the text (not included in page count). Due March 7, 10 pts.

Update presentation in class: Outline what has been done so far to achieve your project's goals. What have you found so far? Identify specifically which behavioral techniques from the class or elsewhere you have used to facilitate behavior change. What problems do you foresee with your project design? How will your group overcome these issues? What help do you need? You will get ten minutes of class time to present your work followed by a few minutes of peer questions. Presentations in class March 26, 10 pts.

Post-intervention energy calculation and memo: Estimate the actual savings brought about by your intervention. The savings (if any) can be calculated or measured, state assumptions and uncertainties of your calculation and/or measurements. I will not be grading you based on how successful your project was in facilitating the selected change and how much change your project brought about, but I do want *you and your group to give the project and behavioral change strategy your very best*. Submit this as a memo format with a maximum of 4 pages, 12 point font. Use references (APA style) where applicable in the text (not included in page count). Submit this with your pre-intervention memo (stapled). Due April 9, 10 pts.

Storyboard: Create a storyboard for your YouTube video communication. You can conduct an online search of what constitutes a storyboard for a video. This can be drawn out (does not need to be pretty, but does need to be useful). A storyboard should help you plan out your video; note effects, actors, dialog, sound etc. Make your videos engaging, entertaining, compelling and fun. You can be creative in the format you would like to submit your storyboard as long as it is legible. Your storyboard (and hence video) should contain what you did, why you did it, how much energy was saved (if at all), limitations of the project, and ways you would advise people to improve on your project in the future. Due April 11, 5 pts.

Final paper: Summarize your entire semester-long project (include all the steps 1-7 outlined above). Specifically summarize your data analysis. What did your group find?

Was the behavior change strategy successful? What are you adding to this body of research? What are your recommendations? Submit this as a memo format with a maximum of 10 pages, 12 point font. Use references (APA style) where applicable in the text (not included in page count). Due April 18, 20 pts.

Group evaluation: As this is a group project with a significant portion of your grade depending on cooperating with others, we want to ensure that there is an incentive to cooperate. *Each student* should divide 100 points between each group member. These points should reflect your assessment of the quality and quantity of work done by every team player in the group including yourself. Be fair. If people equally contributed work towards the project, you can assign equal points to each person. Explain your grade allocation (i.e., why you gave the person a high or low score). Due April 25, 10 pts.

YouTube video: Create a compelling, engaging and informative video. Post to YouTube, set Privacy to 'Public' and email a link to your video to me, I will collect and create a playlist for the class. Due April 25, 20 points.

Videos should have:

- Have a meaningful title (*not* HBEC version 2 take 3!)
- Maximum of 5 minutes long (and no longer)
- Identify group name and members (first name only if you would like to maintain privacy)
- Present an overview of the project- Identify the human behavior and energy issue that you set out to change, pre- and post-intervention energy consumption, and how effective the intervention was in facilitating the change desired.
- Review the results of your project
- Suggest further uses of your results and what others can do to go beyond what you have presented
- Make your video be publicly available on YouTube. Remember, you cannot tape people outside your group in the video unless you get their consent (i.e., you cannot videotape people unknowingly). Do not use copy written material without permission.
- Make the video interesting and fun to watch. Effectively communicate your findings

Here is an example of a video created by a science communicator for one of my papers:

http://www.youtube.com/watch?v=VHGR_p3Jnas&lr=1&user=georgezaidan

Video Creation Advice:

- *Planning:* making a detailed storyboard that describes each scene is very important and will save a lot of time
- *Shooting:* use a digital video camera, digital camera in "movie" mode, iPhone, Android or other video enabled device. The higher shooting quality the better. You can always compress the size later. Use a tripod to minimize shaking.
- *Audio:* You can use a studio in Wells Library E242 or the Media School (Franklin Hall) to capture voiceover audio with minimal background noise if you like

- *Editing:* use iMovie (available on any Apple Mac) or another simple video editing program like Windows Movie Maker. Apple and Microsoft have support for each of these programs. IU offers students access to a variety of software including Adobe Premiere for free. You can check out these programs at <https://iuware.iu.edu>.

Video Formatting: Note that YouTube will only accept the following video formats: MOV, MP4 (MPEG4), AVI, WMV, FLV, 3GP, MPEGPS, WebM .MOV, DnxHR, ProRes, CineForm, and HEVC.

YouTube Resources: <http://youtube.com>

<https://www.youtube.com/upload> - upload a video

<https://support.google.com/youtube/answer/57407?co=GENIE.Platform%3DDesktop&hl=en> - *how to* upload YouTube videos