Strategic Innovations for Energy Efficiency

5.0

Mgt 290-2 CRN 42289

Spring 2012 Wednesday 12:10-3:00 1302 Gallagher Hall
Office Hours by Appointment

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Just refrigerator efficiency saves more energy than all that we're generating from renewables, excluding hydroelectric power... I cannot impress upon you how important energy efficiency is. It doesn't mean you eat lukewarm food and your beers are lukewarm. You can still have it; you just make a better thing.

– Stephen Chu, Secretary, U.S. Department of Energy, Nobel Laureate in Physics

Today few doubt that reliance on fossil fuels is contributing to climate change, environmental disasters, and economic support for regimes that do not serve the interests of their populations and industrialized nations. It is also true that fossil fuels are and will remain critical to the quality of life many people have, or aspire to. How are corporations dealing with the reality of energy use today, with its political, environmental, and financial concerns?

The most important strategic response to energy use that firms can take is energy efficiency. The efficient use of energy is a hedge against price volatility and supply uncertainty, saves money when done well, and offers the fastest and most effective way to reduce greenhouse gas emissions. Over time an effective energy efficiency response by business will have an economic, political and social impact.

This course examines energy efficiency as a strategic solution to corporate financial, competitive, and sustainability goals. The course covers three topics: 1. energy fundamentals for non-experts, 2. corporate strategies for reducing energy consumption, and 3. energy efficiency as a new market opportunity. Although there will be some technical materials this is a strategy course and does not presume expertise in energy nor the intention of entering the energy industry. Rather, we will focus on energy as a critical business input – much like financial inputs – to examine how efficiency strategies can manage this resource wisely to meet corporate goals.

COURSE REQUIREMENTS

READINGS are linked below. We will also host speakers from government and industry.

ASSIGNMENTS: This course is a collective learning class and students will be actively involved in the organization and discussion of topics each week.

GRADING

1. LEADING A CLASS: 25% (may be done with others). Students will be asked to present materials to the class, as well as to lead discussions with guests. When appropriate students should prepare discussion questions, slides that can be made available to the class, demonstration, conduct role play, hold a debate or use some other means for helping the class to understand an issue. I will work with you to define the topics.

2. PROBLEM SETS: 25% Students will be given two energy efficiency problem sets to complete and return to the instructors before class discussion on the topic.

3. WHITE PAPER: 25% Students will write 4-6pp on a topic with instructor approval. The White Paper will be written for possible publication on the EEC website and may include PowerPoint and graphics as well as a written document. White Papers identify a situation or problem, bring data to bear on it, and make a recommendation as to a course of action. White papers were originally government documents but are now used by businesses and think tanks to argue for products and policies. Think of it as a long editorial.

   Here are two takes on this: http://www.stelzner.com/copy-HowTo-whitepapers.php and http://www.dirjournal.com/business-journal/how-to-write-a-white-paper/

   Examples: http://www.cree.com/products/pdf/cree_led_lifecycle_whitepaper.pdf
   http://www.scribd.com/doc/20536588/Calvert-White-Paper-The-Future-for-Alternative-Energy
   http://www.vmware.com/files/pdf/WhitePaper_ReducePowerConsumption.pdf
   http://www.nec.com/global/prod/express/library/pdf/idc_ecocenter.pdf

4. ENERGY EFFICIENCY PROPOSAL: 25%. This can be a solution for corporate application OR a proposal for a new product or service. The proposal should a. Analyze a problem or opportunity. b. Describe the solution and why it has promise for success. c. Examine the barriers (policy, financial, technical, competitive, etc.) your proposal might face. d. Explain how you would overcome these barriers. I recommend doing this assignment in groups of 3-5 people who have a variety of skills and experience. 15-25pp as appropriate. These will be presented to the class at the last class meeting. May be done as a group.

5. DISCUSSION BONUS: [+]Students are expected to attend class and to participate in a way that increases learning for everyone. Students who add appreciably to the learning of others through their participation in class will get a "+" added to their grade. For example if your grade tallies equal a B+ but you have been a thoughtful and active member of the class your final grade will be an A- recognizing your contribution to learning.

OVERVIEW OF COURSE

Class 1: 4/4	Introduction to Course: The Problem and the Opportunity
Class 2: 4/11	Energy Basics: Eric Markell, former Sr. VP Strategy, Puget Sound Energy, on Utilities
Class 3: 4/18	Energy Efficiency Costs and Benefits: Aaron Singer, Pacific Carbon Exchange
Class 4: 4/25	Energy Efficiency Community-Corporate Strategic Partners: Ben Finkelor, EEC (Class to be held at West Village).
Class 5: 5/2	Energy Efficiency and Corporate Sustainability Strategy: Bill Mitchel, Sr. Dir. Microsoft
Class 6: 5/9	Energy Efficiency and Social Enterprise/Emerging Markets: Kurt Kornbluth, Dir. D-Lab
Class 7: 5/16	Water-Energy Efficiency: WEEC, Program Manager Ned Spang and Peter Yolles CEO WaterSmart
Class 8: 5/23	Energy Service Companies: Jim Davis, CEO Chevron Energy Solutions
Class 9: 5/30	Energy Efficiency as Business Opportunity: CLTC Tour
Class 10: 6/6	Student Projects/Papers/Last Thoughts

1. April 4 Introduction to Course

Readings: (Please Read Before First Class)

McKinsey Report:

http://besustainable.pbworks.com/f/McKinsey+Quarterly_How+the+world+should+invest+in+energy+efficiency.pdf

2. April 11 Energy Basics: Generation, Distribution, Transmission, Utilization, Regulation

Guest Speaker: Eric Markell, Sr. former VP and Chief Strategy Officer, Puget Sound Energy

Part 2: Institutional Overview of Energy Efficiency (Meier)

Doing business (and making a profit) in energy efficiency is complicated because of the many overlapping institutions. Who are the key players in energy efficiency?

States, National, Global |Private, Government, Other

Read: http://www.aceee.org/topics/utility-regulation-and-policy

Energy Efficiency Policy in the United States: Overview of Trends at Different Levels of Government www.nrel.gov/docs/fy10osti/46532.pdf

Part 3: Due Diligence: Where's the Data?

How do I estimate the size of a market for a new venture?

Review: Seattle City Light Residential Appliance Saturation Survey (Smartsite); Commercial Building Energy Consumption Survey (CBECS) and the Energy Information Administration at http://www.eia.gov/consumption/ ; Review the top page, the tabs, and scan the FAQs.

Buildings Energy Data Book: ***buildingsdatabook****.eren.doe.gov/*

Transportation Energy Data Book: ***http://cta.ornl.gov/data/index.shtml***

2. April 18 Energy Efficiency: Costs and Benefits, Incentives and Barriers

Student Presentation: What are Principal-Agent problems, and what do they have to do with energy efficiency?

Guest: Aaron Singer, CEO Pacific Carbon Exchange http://www.pcarbx.com/

Folk Quantification of Energy

http://www.sciencedirect.com/science/article/pii/0360544282900305

Altering Planes and the Way They Fly, to Save Fuel

http://www.nytimes.com/2009/04/30/business/energy-environment/30aviation.html?_r=1&ref=businessspecial2

Boeing ppt (on SmartSite)

Energy Efficiency in Buildings: World Business Council Report

http://www.wbcsd.org/includes/getTarget.asp?type=d&id=MjU5MTI

The Bumpy Road to Net Zero Energy

http://www.eceee.org/eceeeorg/columnists/Alan_Meier/the-bumpy-road-to-net-zero-energy

An Evangelical Crusade to go Green with God

http://www.npr.org/templates/story/story.php?storyId=128130198&sc=17&f=1001

Creating a California Energy Efficiency Market

http://www.pcarbx.com/PressDownloads/PcarbXEECMktPlanPrecis.pdf

3. April 25 Energy Efficiency: Community Challenges and Opportunities

Student Presentation: What makes a community sustainable? Is growth sustainable?

Guest: Ben Finkelor, Exec Director UC Davis **CLASS WILL MEET AT WEST VILLAGE**

Village Homes, Davis CA

http://www.villagehomesdavis.org/homes

Sæle, Hanne, Havard Nordvik, Pal Næsje, and Oivind Hagen. 2005. "What Prevents Organisations from Implementing Energy Savings Measures? Case Studies of Norwegian Public and Commercial Companies." (on SmartSite)

West Village opens:

http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2011/10/23/BAK61LK8KM.DTL

http://westvillage.ucdavis.edu/

Net Zero Energy Community

http://www.nrel.gov/docs/fy10osti/46065.pdf

5. May 2 Energy Efficiency and Corporate Strategy

Student Presentations: Two students, each to present the case of a corporation that pursues an energy efficiency strategy. See Pew Report below for inspiration.

Guest: Bill Mitchel, Sr. Director, Partner Strategy & Business Development, Microsoft Corporation

Pew Center Report http://www.greenbiz.com/sites/default/files/Pew-Center-EE-Report.pdf

6. May 9 Energy Efficiency, Social Institutions and Social Values

MEET AT THE D-LAB, GROUND FLOOR ACADEMIC SURGE

Student Presentation: What energy efficiency practices work in developed countries that would not work well in the US? What would have to happen to make that change?

Guest: Kurt Kornbluth, Director UC Davis D-Lab

Energy and the Developing World

https://www.mckinseyquarterly.com/Promoting_energy_efficiency_in_the_developing_world_2295

Social Institutions as Levers

http://interfaithpowerandlight.org/

7. May 16 Water-Energy Efficiency

Student presentation: How would a water-energy efficient house look and operate? Give real examples of technologies and behaviors.

Guests: Ned Spang, Program Director UC Davis Water Energy Efficiency Center, and Peter Yolles, CEO and Founder, WaterSmart Software

Readings: TBA

8. May 23 Energy Efficiency as Market Opportunity: ESCOs

Guest: Jim Davis, CEO Chevron Energy Solutions (Invited)

Readings TBA

9. May 30 Energy Efficiency as Market Opportunity: Products

CLASS WILL BE HELD AT THE CALIFORNIA LIGHTING TECHNOLOGY CENTER http://cltc.ucdavis.edu/

We will have a tour and briefing on the direction of the lighting industry domestically and globally.

10. June 6

Student Projects/White Papers/Final Thoughts