**Energy and the Green City**

The Great Works Symposium presents the third in its 2009-2010 series on "ENERGY":

**ENERGY AND THE GREEN CITY/ SUSTAINABILITY AND PUBLIC POLICY**

UNIV 241, 3 credits
SPRING TERM, 2010

**Course Information:**

In 2009, Philadelphia’s Nutter administration released *Greenworks Philadelphia*. Building upon the City’s 2007 Local Action Plan for Climate Change and its GreenPlan, *Greenworks*lays out goals with measurable targets and specific initiatives regarding Energy, Environment, Equity, Economy, and Engagement to be met by 2015. This course is designed to critically examine the four targets set out to meet the *Greenworks* Energy goal: “Philadelphia reduces its vulnerability to rising energy prices.” To do this, students will use the Ecological Footprint model, asking: To what extent do the Energy targets of*Greenworks Philadelphia* reduce the City’s ecological footprint? Is the city the appropriate scale to consider the energy ecological footprint? What are the issues that complicate measuring the City’s energy ecological footprint? What are the implications of the*Greenworks* Energy targets for city policy?

This course, co-taught by Richardson Dilworth, Jerry Mead, and Dan Moscovici, will take up these questions – guest speakers will be featured, and small group meetings will facilitate critical thinking and research on the topic.

**Class Meeting Days and Times**

Lectures: Thursday, 6:00-7:20 p.m.
Sections: Thursday, 7:30-8:50 p.m.

**Instructors, Contacts, Office Hours**

**Richardson Dilworth**
Director, Center for Public Policy
Associate Professor of Political Science
Dept. of History & Politics
rd43@drexel.edu
215-895-2471

**Jerry V. Mead, PhD**
Watershed and Systems Ecology Section Leader
Academy of Natural Sciences
mead@ansp.org
215-405-5091

**Dan Moscovici**
Great Works Symposium Fellow
dmoscovici@gmail.com
215-688-2910
Hagerty Rm. 203

**Texts**

Chambers, N., Simmons, C., and Wackernagel, M. (2007). *Sharing nature’s interest*. London: Earthscan.

Other assigned readings will be made available via e-mail or blackboard, or will be available directly on the web. A reading schedule will be assigned and students must keep up with all assignments. The instructors may add supplemental readings as the course progresses. Please keep up with the weekly reading assignment schedule, and make sure you are aware of any reading updates given throughout the term.

**Assignments and Grades**

Class Participation (including weekly reaction/discussion papers): 25%
Mid-Term Exam: 35%
Term Project: 40%

This will be a very ACTIVE class! Participation comprises a large proportion of your grade. Please attend every lecture and every section/workshop meeting. Come to class having completed the reading assignments, prepared to meet research goals, and ready to take part. This will result in your getting the most possible from the course, and it will create a dynamic classroom environment. You will be evaluated with these expectations in mind.

Your class participation grade will be determined in part by your attendance and your role in section/workshop discussion. Additionally, for the seven weekly guest lectures, Weeks 1 through 9, you will be required to submit a brief (2 page) “critical summary” paper consisting of article summaries and questions /specific talking points related to the week’s topic and readings. This should be type-written and double spaced, and they should reflect your preparation for the week’s discussion. Please submit your questions to your instructor by e-mail no later than 6:00pm the night *before* class. You are to use these as the basis for the Q&A and discussion section during these weeks.

At mid-term you will complete an exam that will evaluate your completion and comprehension of assigned readings, and your understanding of material presented in lectures, panel discussions, and section meetings. The format will be written (essay), and it will be administered in class during Week 4. The last date on which a student may withdraw from the course is May 7. Therefore, students who score below a grade of 65 on this exam, or miss it for any unexcused reason will be expected to drop the course.

During Weeks 5 through 9, students will work in groups towards completion of a major term project. Students will address one of the four Energy Targets of *Greenworks Philadelphia*, examining the extent to which they will impact Philadelphia’s ecological footprint. Targets will be assigned on a first-come, first-served basis. Specifically, students will be expected to:

1. Articulate an accurate and concise summary of the specific Energy Target,
2. Put that information into the context of an ecological footprint analysis for Philadelphia,
3. Generate original research examining the extent to which Philadelphia has met these energy goals laid out in Greenworks Philadelphia (employing 5 original, citable research references, including but not limited to telephone interviews and official city agency/department reports), and
4. Synthesize research findings into an analysis of the impact that the *Greenworks*framework will have on Philadelphia’s energy ecological footprint, Including new perspectives for sustainability.

In collaboration with the group, students will research, write, and submit their work by the close of the term. The class will need to start thinking about the scope and direction of this project early on. In Week 10, groups will present their projects to the class and work with course instructors to develop their ideas and craft their contributions to the final project. . Though a significant portion of your grade on this project will be earned individually, the group dynamic is expected to push you to produce the most interesting and rigorous possible research effort. Final reports will be due the Thursday of Exam Week.

**Course Readings Available to Download:**

[Download the PDF package](http://www.drexel.edu/~/media/Files/greatworks/GWS%20Spring%202010%20Readings.ashx)

**Course Schedule**

**Week 1: April 1: Sustainable Development in Philadelphia (Past to Present)**

**Film:** *Greenworks Philadelphia*, an introduction, [http://www.phila.gov/green/greenworks/](http://www.phila.gov/green/greenworks/%22%20%5Ct%20%22_blank)

**Guest Speaker:**
Katherine Gajewski – *Director, Mayor’s Office of Sustainability, Philadelphia*

**Assigned Reading:**
\* *Greenworks Philadelphia* should already have been read (download document at:[http://www.phila.gov/green/greenworks/](http://www.phila.gov/green/greenworks/%22%20%5Ct%20%22_blank) )

**Week 2: April 8: Local Energy Policy and Ecological Footprints**

**Guest Speaker:**
Laurie Actman – *Director of Government Relations and Business Development, Viridity Energy*

**Assigned Reading:**

* Salon, D. et al. (2009). City carbon budgets: A proposal to align incentives for climate-friendly communities. *Energy Policy*, Article in Press.
* World Wildlife Fund. (2002). *Ecological Footprints: A Guide for Local Authorities.*
[http://www.gdrc.org/uem/footprints/wwf-ecologicalfootprints.pdf](http://www.gdrc.org/uem/footprints/wwf-ecologicalfootprints.pdf%22%20%5Ct%20%22_blank)

**Week 3: April 15: Ecological Footprint**

[\*\*\* Download the Midterm Exam\*\*\*](http://www.drexel.edu/~/media/Files/greatworks/Midterm_exam_41510.ashx)

**Guest Speaker:**
Jerry Mead – *Systems Ecologist, Academy of Natural Sciences*

**Assigned Reading:**
Chamber, N., Simmons, C., and Wackernagel, M. (2007). *Sharing nature’s interest*. London: Earthscan.

**Week 4: April 22: MID-TERM EXAM (in class)**

Undergraduate students complete an in-class mid-term exam
*\*\*Please answer two of the three questions\*\**
Graduate students meet with their section

**Week 5: April 29: Our Gas, Coal, Nuclear Footprint**

**FINAL PROJECT ASSIGNED**

**Guest Speakers:**

* Henry F Scheck, III - *Director, Outage Management, Exelon Power*
* John Ferrara, P.E. - *Program Manager Business Development Programs, Babcock & Wilcox - Modular Nuclear Energy*
* Paul M. Schmidt, Esq. – *Environmental Lawyer, Zarwin & Baum PC*

**Assigned Readings:**

* Pennsylvania Coal Association. Pennsylvania Coal Data 2007.
[http://www.pacoalassn.com/images/stories/databook2\_2007\_pacoal.pdf](http://www.pacoalassn.com/images/stories/databook2_2007_pacoal.pdf%22%20%5Ct%20%22_blank)
* Pennsylvania Department of Environmental Protection. (April 2009). Oil and Gas Well Drilling and Production in Pennsylvania.[http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-74407/5500-FS-DEP2018.pdf](http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-74407/5500-FS-DEP2018.pdf%22%20%5Ct%20%22_blank)
* Philadelphia Gas Works, Going Green. [https://www.pgworks.com/index.aspx?nid=347](https://www.pgworks.com/index.aspx?nid=347" \t "_blank)
* Chen, Q., Kong, Y., and Zhang, H. (2006). Effect of coal mining on regional ecological footprint based on GIS. *Proc. SPIE, 6418*. Title: Geoinformatics 2006: GNSS and Integrated Geospatial Applications.
* Chen, B. et al. (2007). Ecological footprint accounting for energy and resource in China. *Energy Policy*, 35, 1599-1609.

**Week 6: May 6: An Opportunity for Alternatives**

**FINAL PROJECT: SHORT DESCRIPTION DUE**

**Guest Speakers:**

* Kristin Sullivan - *Project Director - Solar America Cities*
* Nathaniel S. Doyno - *Partner & VP of Clean Technology - The Ecolibrium Group, LLC*
* Laila Reilly - *Manager of Mass Markets Community Energy Inc., PecoWind*

**Assigned Reading:**

* Dias de Oliveira, M.E., Vaughan, B.E., and Rykiel, E.J. (2005). Ethanol as Fuel: Energy, Carbon Dioxide Balances, and Ecological Footprint. *BioScience*, 55(7), 593-602.
* Eder, M., et al. (200). Ecological impact of renewable resource based energy technologies. Chemical Engineering Transactions, 18, 611-616.[http://www.aidic.it/cet/09/18/099.pdf](http://www.aidic.it/cet/09/18/099.pdf%22%20%5Ct%20%22_blank)
* Hill, S. (2007). Philadelphia’s trap of grease: National energy policy versus urban realities. *Public Works Management Policy* 2007; 11; 194-203.
* Stoglehner, G. (2003). Ecological footprint — a tool for assessing sustainable energy supplies. *Journal of Cleaner Production*, 11, 267-277.

**Websites:**

* Philadelphia’s Solar City Partnership. [http://www.phila.gov/green/solar.html](http://www.phila.gov/green/solar.html%22%20%5Ct%20%22_blank)
* BlackGold Biofuels [http://www.blackgoldbiofuels.com/](http://www.blackgoldbiofuels.com/%22%20%5Ct%20%22_blank)
* PECO Wind [http://www.peco.com/pecores/peco\_wind/](http://www.peco.com/pecores/peco_wind/%22%20%5Ct%20%22_blank)

**Presentations:**

* [Biofuels: Fueling the Future, by Nathaniel Doyno ](http://www.drexel.edu/~/media/Files/greatworks/WK6_Equilibrium_Group_NathanialDoyno.ashx)
* [Solar America Cities: Philadelphia, by Kristin Sullivan ](http://www.drexel.edu/~/media/Files/greatworks/WK6_Solar_Philly_KristinSullivan.ashx)

**Week 7: May 13: Tying it All Together – Electrical Transmission**

**Guest Speaker:**
Alan Elmy – *Manager Interconnection Project - PJM Interconnection*

**Assigned Readings:**

* Wamukonya, N. (2003). Introduction. In N. Wamukonya (Ed.), E*lectricity reform: Social and environmental challenges*, pp. 1-6. United Nations Environment Programme.
* Byrne, J. and Mun, Y. (2003). Rethinking reform in the electricity sector: Power liberalisation or energy reform. In N. Wamukonya (Ed.), *Electricity reform: Social and environmental challenges*, pp. 48-76. United Nations Environment Programme.
* Bradshaw, T.K. and Clark, W. (2003). The California experience: From deregulation debacle to flexible power. In N. Wamukonya (Ed.), *Electricity reform: Social and environmental challenges*, pp. 135-160. United Nations Environment Programme.

**Websites:**
PJM - [http://www.pjm.com/home.aspx](http://www.pjm.com/home.aspx%22%20%5Ct%20%22_blank)

**Presentation:**
[PJM Interconnection, by Alan Elmy](http://www.drexel.edu/~/media/Files/greatworks/WK7_PJM_Alan_Elmy.ashx)

**Week 8: May 20: A Regional Perspective and Plan**

**Guest Speaker:**
Robert Graff - *Manager, Office of Energy and Climate Change Initiatives, DVRPC*

**Assigned Readings:**

* *Connections: The Regional Plan for a Sustainable Future, The Long-Range Plan for the Greater Philadelphia Region; SUMMARY BRIEF*. Delaware Valley Regional Planning Commission. [http://www.dvrpc.org/reports/09047D.pdf](http://www.dvrpc.org/reports/09047D.pdf%22%20%5Ct%20%22_blank)
* McDonald, G.W. and Patterson, M.G. (2004). Ecological Footprints and interdependencies of New Zealand regions. *Ecological Economics*, 50, 49-67.
* DVRPC Regional Greehouse Gas Inventory: [www.dvrpc.org/EnergyClimate](http://www.dvrpc.org/EnergyClimate%22%20%5Ct%20%22_blank)

**Week 9: May 27: Buildings and Housing Stock**

**Guest Speaker:**
Sarah Shapiro – Green building lawyer, Obermayer Rebmann Maxwell & Hippel LLP
**Presentation:**[Red White & Green: Recent Changes to Federal Green Building and Renewable Energy Policy ](http://www.drexel.edu/~/media/Files/greatworks/WK9_PH1_no4473012v1_Drexel_Presentation.ashx)

**Assigned Readings:**

* U.S. EPA ENERGY STAR® (Summer 2006). Green Buildings and Energy Efficiency. Off the Charts - The U.S. EPA ENERGY STAR® Program’s E-Newsletter Covering Energy Management for the Financial Markets.
[http://www.energystar.gov/ia/business/guidelines/assess\_value/off\_the\_charts\_summer\_2006.pdf](http://www.energystar.gov/ia/business/guidelines/assess_value/off_the_charts_summer_2006.pdf%22%20%5Ct%20%22_blank)
* Washington State University Cooperative Extension Energy Program. (2002). Building Operator Energy Efficiency Ideas. [http://www.energy.wsu.edu/ftp-ep/pubs/engineering/operator.pdf](http://www.energy.wsu.edu/documents/engineering/operator.pdf%22%20%5Ct%20%22_blank)
* Kerkstra, P. (January 19, 2010). Phila. aiming to improve energy efficiency.*Philadelphia Inquirer*. [http://www.philly.com/philly/hp/news\_update/82034777.html](http://www.philly.com/philly/hp/news_update/82034777.html%22%20%5Ct%20%22_blank)
* Holden, E. (2004). Ecological Footprints and Sustainable Urban Form. *Journal of Housing and the Built Environment*. 19: 91–109.
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**Week 10: June 3: Student Project Presentation and Workshop**

**Exam Week: June 10: FINAL PAPERS DUE**