Transportation and the Environment

UCLA Luskin School of Public Affairs
Urban Planning 258 / Public Policy 223   Fall 2014

This Draft of the Syllabus Current as of September 29, 2014. Watch for Updated Editions

When?  2014 Fall Quarter
Mondays and Wednesdays from 3:30 to 4:50 pm

Where?  Public Affairs Building Room 2050

Who?  Professor Emeritus Martin Wachs
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Office Hours: Mondays and Wednesdays: 2:00 to 3:00 p.m. and 5:00 to 6:00 p.m. and by appointment

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What?  Over more than sixty years, environmental policy and transportation policy developed in complementary ways. Today, the environmental impacts of transportation projects are as important to society – and to planners and policy analysts - as are the transportation or mobility impacts. This course provides an introduction to the relationships between transportation and the many dimensions of the environment. While each topic in itself could justify an entire class, and indeed such courses are available elsewhere in the university, the emphasis here will be on the history, policy, and practices related to transportation planning and the environment. The science, such as the chemistry, physics, and ecology of those relationships, will only be touched upon lightly.

COURSE WEB SITE:

This syllabus and all required and recommended readings will be available at the class web site available through CCLE. Students are not expected to read all the “recommended readings.” They include materials by the instructor, recent newspaper articles relevant to the course, and materials used by the instructor in class preparation and are for your further reading if interesting to you. All PowerPoint presentations used in the class by the instructor and guest lecturers will
be placed on the web site by the end of the date on which they were presented. Study questions for the oral final examination will also be placed on the course website.

**Oral Final Examination:**

Each student in the class will meet with the instructor for twenty minutes in room 5353 late in the second week (last week of classes) or early in the third week of December (final exam week). A sign-up schedule of appointments will be used to schedule your examination. Before the Thanksgiving Holiday break the instructor will provide the class with ten or twelve study questions. You may prepare for the examination by attending classes, writing the papers, and studying these questions individually and in groups. Each oral examination will include at least two of the study questions and at least one question based upon the readings (not specific facts or figures that would require memorization, but basic concepts from the readings). There will be no trick questions or attempts to trip you up.

**PLEASE DO NOT USE LAPTOPS AND PLEASE TURN OFF PHONES DURING CLASS. CONSIDER THE CLASS A TEXT MESSAGING AND E-MAIL FREE ZONE. WHEN THE SESSION STARTS, PLEASE SIGN OFF AND ENGAGE FULLY WITH THE CLASS.**

**Course Grades:**

Each of three papers described below will count for 25% of your grade in the course for a total of 75%.

There will be three unannounced quizzes during the quarter. Each quiz will take ten minutes at most and will consist of one or two questions based on required readings assigned prior to the date of that quiz. The questions will be factual and straightforward. The two highest quiz grades you receive will each count for five per percent of your course grade; the lowest of the three scores will be discarded. If you miss a quiz because of absence, your two other quizzes will both be counted. If you miss more than one, a grade of zero will be entered for the second.

The oral final examination will account for 15% of your grade. The sign-up procedure will become available before the Thanksgiving Holiday so you can plan with your other final exams in mind.
COURSE SCHEDULE AND READINGS:

Session 1: Monday, October 6th: Review of Course Syllabus and Requirements; Discussion of How to Approach the Topic

Recommended Reading:

(Note: this is a classic article that you need not reread if you are familiar with it. It is a MUST; if you have not read it earlier and will be discussed in class. It provides a philosophical base for much of the course): Hardin, G. "The Tragedy of the Commons." *Science*, December 1968, pp. 1243-1258.

Session 2: Wednesday, October 8th: Framework for thinking about Transportation and the Environment: Laws, Regulations, Prices and Policy

Required Reading:

*Introduction to the US Legal System*, The “Lectric Law Library. “
[http://www.tenant.net/Court/Legsystm/uslawssum.html](http://www.tenant.net/Court/Legsystm/uslawssum.html)

[https://people.hofstra.edu/geotrans/eng/ch8en/conc8en/ch8c1en.html](https://people.hofstra.edu/geotrans/eng/ch8en/conc8en/ch8c1en.html)


Recommended Reading:


Session 3: Monday, October 13th: A Thousand Years Ago; A Hundred Years Ago; NOT a New Concern; NOT Only About Autos.

Required Reading:

E. Morris, “From Horse Power to Horsepower, ACCESS No. 30 (Spring 2007), pp. 2-9.


Recommended Reading:


Session 4: Wednesday, October 15th: History of Transportation Planning and a Growing Environmental Movement; The Emergence of “Sustainability.“

Required Reading:

Recommended Reading:


Session 5: Monday, October 20th: Lecture by Jaimee Lederman: Transportation, Endangered Species, Habitat Conservation

Required Reading:


Recommended Reading:


Session 6:  Wednesday, October 22nd:  The Clean Air Act and Transportation,  
Part I

Required Reading:


Recommended Reading:


Session 7. Monday, October 27th: The Clean Air Act and Transportation, Part II
And Discussion of Air Quality in China

Required Reading:

Health: Designing, Planning, and Building for Healthy Living, Chapter 4: “Air Quality,”
pp. 65-89.

A. Gomez-Ibanez, William B. Tye, and Clifford Winston, eds., Essays in Transportation

Recommended Reading:

Julie Makinen and Doug Smith, “Beijing’s Smog Makes Los Angeles Air Look Good,” Los
stats-2014910-story.html

The 2012 Air Quality Management Plan for Southern California has been published and the
South Coast Air Quality Management District is already preparing the 2016 plan. The AQMP is
a massive document. The Executive Summary is available at:
http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2012-
air-quality-management-plan/final-2012-aqmp-%28february-2013%29/executive-summary-
final-2012.pdf It is recommended that you scan the document and get a sense of its contents to
appreciate its breadth, depth, and scope, and read the sections that seem to relate most to your
particular interests.

Session 8: Wednesday, October 29th: NEPA and Transportation Projects

Required Reading:

Center for Environmental Excellence by AASHTO. NEPA Process
http://environment.transportation.org/environmental_issues/nepa_process/

Recommended Reading:

Linda Luther. The National Environmental Policy Act: Background and Implementation,
Congressional Research Service Report for Congress, Nov., 2005
Session 9: Monday, November 3rd: CEQA and Transportation. Guest Lecture by Juan Matute, Associate Director of UCLA Institute of Transportation Studies

Required Reading:


California Governor’s Office of Planning and Research. “Updating Transportation Impacts Analysis in the CEQA Guidelines”
http://www.opr.ca.gov/docs/Final_Preliminary_Discussion_Draft_of_Updates_Implementing_S_B_743_080614.pdf

Recommended Reading:


Juan Matute and Stephanie Pincetl, Use of Performance Measures that Prioritize Automobiles over Other Modes in Congested Areas - J. Matute and S. Pincetl, California Center for Sustainable Communities, UCLA
http://next10.org/sites/next10.org/files/2.%20Prioritizing%20Automobiles%20over%20Other%20Modes%20of%20Transportation%20in%20Congested%20Areas.pdf

Session 10: Wednesday, November 5th: Transportation and Clean Water Requirements

Required Reading:


Recommended Reading:


**Session 11: Monday, November 10th: Transportation and Noise Impacts**

**Required Reading:**


**Recommended Reading:**


Session 12: Wednesday, November 12th: The Connection between Transportation and Health

Required Reading:


Recommended Reading:


Session 13: Monday, November 17th: Transportation and Carbon: Part I

Required Reading:


Recommended Reading:


Session 14: Wednesday, November 19th:  Transportation and Carbon: Part II

Required Reading:


Recommended Reading:


Session 14: Wednesday, November 19th: California Carbon Legislation: AB 32 and its Implications

Required Reading:


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**Recommended Reading:**


**Session 15: Monday, November 24th: Cap and Trade Program and Implications for Transportation**

**Required Reading:**

Center for Climate and Energy Solutions, *Climate Change 101: Cap and Trade*, 12 pages

**Recommended Reading:**

California Air Resources Board Cap and Trade Web Site:
http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm

Christopher R. Knittel, *The Importance of Pricing Transportation Fuels within California’s Cap and Trade Program.*


**Session 16: Wednesday, November 26th: California SB 375 and Sustainability Plans**

**Required Reading:**


Recommended Reading:


K. Engel, “State and Local Climate Change Initiatives: What is Motivating State and Local Governments to Address a Global Problem and What Does This Say About Federalism and Environmental Law?” *The Urban Lawyer*, 38(2006), pp. 1015-

Session 17: Monday, December 1st: Transportation and Environmental Justice

Required Reading:


Recommended Reading:


**Session 18: Wednesday, December 3rd:** Panel of Guest Speakers on Environmental Justice

Panelists have been invited and they have been asked to provide readings that were not available at the start of the term.

**Required Reading:**

**Recommended Reading:**

**Session 19: Monday: December 8th:** Guest Lecture: “The Tea Party and Property Rights Activists Pushing Back Against Agenda 21 and Sustainable Communities Planning,” by Dr. Karen Trappenberg Frick, Assistant Director, University of California Transportation Center, Berkeley.

**Required Reading:**

http://usj.sagepub.com/content/early/2014/04/07/0042098014528397

**Recommended Blog Post:**

*Karen Trapenberg Frick, “Can planners find common ground with Tea Party and property rights activists agree on means even if they don't agree on ends?”* in Bill Fulton's California Planning and Development Report at http://www.cp-dr.com/node/3536

**Session 20: Reviewing the Course: Five Questions for Class Discussion**

In preparation for the oral final examination, participate in a class discussion that expands upon the themes of this course: Should projects having the potential to improve the environment be exempt from environmental review requirements? How should California improve CEQA? Will AB 32 be long remembered and SB 375 quickly forgotten? The five discussion questions will be distributed in advance of the class.
PAPER ASSIGNMENTS: Two by Two and One by One

Each member of the class must submit two papers that are written collaboratively in teams of two students plus one paper written individually. The paper assignment options appear below.

Papers should be double spaced in twelve point type. Margins of one inch should be used left and right. Each paper must be the original work of the authors. Sources that were consulted in writing the papers must be appropriately identified. Quotations from the work of others should be indicated by the use of quotation marks for short passages or by indented, single spaced paragraphs if they are longer. The source of every quoted statement should be identified using a footnote.

Papers may be submitted up until midnight on the stated due dates. Late papers will be assessed a penalty of half a letter grade (e.g. A becomes A-) with an additional deduction of half a letter grade per week of lateness. Papers should be submitted electronically as WORD Files and not as PDFs because it is easier for the instructor to add comments to a WORD file. Please submit your paper as a WORD file attachment to an e-mail message sent to mwachs@ucla.edu. The instructor will acknowledge receipt of the submitted paper as soon as possible and later will return graded papers with comments to the e-mail address from which you submitted the paper.

If you wish to propose to write a team or solo paper on a different topic, send an e-mail request and description of the alternative paper to the instructor WELL IN ADVANCE of the due date.

Part I. Team Assignments – Two by Two

Select any two of the following three “team” assignments and write a ten page paper in response to each chosen assignment after forming a team of two class members. You may but are not required to form the same teams of two people for each of your team papers. The due dates for the papers are specified. The purpose of teaming is to recognize that these are emotionally, philosophically, and technically complex topics and there is room for wide differences of opinion. Teaming is intended to encourage discussion and even debate among class members as well as sharing the tasks of research and writing. A single grade will be assigned to each paper and both team members will be assigned the same grade. Since most professional planning is done by teams, this is good practice for your professional career.

Team Assignment 1: Glenwood Canyon. Paper Due October 27th.

A famous stretch of Interstate Highway 70 passes through Glenwood Canyon in Colorado. The canyon is wonderfully beautiful to human observers and rich in natural treasures: scenic cliffs, waterfalls, unique species habitats, pristine forests. It is also clearly the most logical route for an important link in the trans-national Interstate Highway System through a rugged mountain range, where an early gravel road and an important part of the trans-national railway also intruded. This road segment was one of the last sections of the Interstate System to be completed because controversy raged. It raises important general questions about transportation systems and the environment. On one hand, some environmentalists argued and brought legal action to stop the
road from being built. The pristine environment should be protected from horrible intrusions at all costs. Engineers argued that the route was central to the completion of the system and the locale was not at all pristine, having been impacted by roads and railroads for hundreds of years. The “painful compromise” was to design what many consider to be one of the most beautiful roads in the world, and no expense was spared to accomplish this. It was built to be hidden from view as much as possible while providing motorists with magnificent vistas. Sections are in tunnels to protect the most sensitive areas as much as possible. Colored pavement was used so have the road would blend in with the rest of the landscape and graceful structures were used along with tunnels in sensitive locations. The road design incorporated wonderfully scenic rest areas and bike paths. As a result, tens of thousands of travelers per day are able to travel and to experience nature at its most magnificent. Some grumble with absolute justification that the harm done to nature was not worth the intrusion and ultimately that the project was an environmental disaster – we put lipstick on a huge pig that is still a pig! Others argue with impressive logic and clear justification that this is an example of responsible context-sensitive design and a model that can be emulated in rare but important and similar locations.

If you have never traveled this road, you may use the internet to take a virtual tour of the area or look at a video on YouTube that features the canyon and the highway. As a neophyte planner the case of this road provides you with an opportunity to consider your own values. Should roads be excluded and such environments kept pristine? Of course pristine environments are experienced by very, very few people. Can you support the construction of such transportation facilities (highways or railroads or bikepaths) that are designed with care and sensitivity and that provide people with the satisfaction of experiencing such environments? It is possible to argue instead that local decision making processes should be allowed to reach different conclusions in different cases, depending on their specifics and upon the will of the local people. It is also possible to argue that local people should have no greater say than others in such cases. Write a paper, citing sources and arguing cogently whether such projects in sensitive areas should be prohibited, encouraged, or treated as unique cases based on local conditions, history and politics.

Team Assignment 2: Environmental Impacts of California High Speed Rail. Paper Due November 17th

California is continuing to pursue implementation of its plan for construction of a high speed rail system. Many citizens earnestly believe that construction of the high speed rail network is justified on the basis of environmental improvement – in the future less energy will be consumed and fewer emissions of greenhouse gases will occur than would be the case if the project were not undertaken. Others argue that the energy consumed in construction, the intrusion into habitats by the project, the sprawl that it will induce, and reliance on automobiles for accessing the rail system all portend environmental costs that will surely exceed benefits. Several groups are suing to stop the rail project on environmental grounds. The internet contains many accounts of lawsuits and many advocacy documents about the environmental impacts of the project, and environmental impact statements have been prepared and challenged related to the program. Select any environmental aspect of the project and assess it in detail. Select and describe one law suit or one dispute over environmental impacts of an alignment decision or some other aspect of the project and “deconstruct” the arguments of the contending parties. Do not write
generally about its environmental impacts. Are stakeholders’ positions about particular environmental benefits and costs actually masking other benefits and costs for the parties to the dispute? Are the data being used by contending parties verifiable and credible? How are short-term and long-term environmental impacts being weighed against one another in the case that you examined? Are CEQA and NEPA being used effectively and as they were intended to be used when they were written into law? These questions are illustrative and you need not answer each and every one. You may delve into the environmental disputes over elements of the rail program with respect to any location or in in any manner that suits your team’s interests.

Team Assignment 3: Municipal or MPO Greenhouse Gas Reduction Plans. Paper Due December 3rd

Many cities, towns, and Metropolitan Planning Organizations (MPOs) in the United States have stepped out ahead of their states and the Federal Government to develop plans for the reduction of carbon and other greenhouse gas emissions. A web site you may consult provides an introduction to many such local plans, though there are others as well: http://www.gcp-urcm.org/Resources/CityActionPlans Review any two municipal or regional plans for the reduction of GHG emissions, and critique them. At least one of the plans should be within the US, and at most one may be from abroad, though both may be American in origin. Focus primarily upon how they attempt to influence GHG reduction through transportation-related strategies, but do not ignore how the transportation elements of the plans compare and relate to other elements as well. What do they attempt to achieve and do you estimate that they will succeed or fail? Are the goals realistic? Do the plans seem specific and binding? Will they influence travel behavior and a transition to “clean” travel modes? Compare the two plans that your team reviewed and summarize what you learned from studying their differences. Your analysis and comparison should be limited to ten pages, and you may append summaries of the two plans in one-page appendices for each.

Solo Policy Memo Assignment: One by One

In addition to the two team assignments each student in the class must complete one additional individual or solo policy memo. Below are the choices of policy memos that you may undertake, and due dates associated with each one. Each policy memo should be sharp and clear and no longer than seven pages in length.

Solo Assignment 4: Assessing NEPA. Assignment Due November 12th

The National Environmental Policy Act (NEPA) has been described by some reviewers as being “almost constitutional” in its reach and in its assignment of responsibilities. It holds the agency proposing a project responsible to fully assess its environmental impacts and to afford citizens opportunities to comment on the draft before it is finalized. This has dramatically increased interest in and competence with respect to environmental assessments within transportation agencies. But, in the end these agencies primarily are charged with building transportation projects and operating transportation programs. Another model was proposed in the early days when passage of NEPA was being debated in the Congress. It would have created a separate and
independent department of government for environmental review. Transportation (and other) projects would have been subject to environmental review by an independent authority responsible only for environmental reviews in all sectors. The agency putting forward the project would not be in charge of its review. With the passage of nearly fifty years since NEPA was enacted, we can observe its effects but we can only guess how different things would be had the other model of environmental review been enacted into law. Write a paper assessing the strengths and weaknesses of NEPA and comparing them to the situation that you think might exist today had the alternative model been enacted as the law of the land. Ultimately is it a good idea for transportation agencies to play the lead role in assessing the environmental impacts of their proposed projects?

Solo Assignment 5: Environmental Streamlining Assignment Due November 26th

Environmental reviews, the process of obtaining permits, and responding to law suits related to environmental impacts can cause long delays when an agency is trying to build a highway, transit facility, or bike path. Associated with these delays are the direct costs of addressing challenges and cost escalation in construction and land acquisition. Project delays of twenty years and more have been documented. Many legislators and transportation officials have for years been urging “environmental streamlining.” Presumably this means simplifying the review process while insuring responsible and thorough environmental review. Describe the delays and costs of the environmental review process. Do you believe that environmental streamlining is possible or does the concept inevitably imply reducing the care and thoroughness of environmental impact review? In support of your position provide two or three brief examples of actions that might be taken to “streamline” environmental review and explain how this form of streamlining would either enhance transportation policy or threaten greater environmental damage.

Solo Assignment 6: The Future of AB 32 and SB 375. Assignment Due December 8th

Governor Jerry Brown has asked you to prepare recommendations for California environmental policies that he might pursue in his final term as governor. In particular, he would like to know whether he should support the continuation of programs currently in place for implementation of AB 32 and SB 375 or whether he should promote changes in the nature of state programs by which these measures are being implemented. He also would consider amendments to these laws to make them more effective or repealing them should you conclude that they are ineffective. You may in this assignment address one of these important laws or the other or both of them.

Solo Assignment 7: Environmental Exemptions Assignment Due December 10th

A large number of environmental regulations were reviewed in this class. There are limits on intrusions into wetlands, limits on air pollution, greenhouse gases, habitats of endangered species, noise in neighborhoods and more. Projects must complete NEPA assessments if they employ Federal funding and CEQA requirements even if they do not. Some projects that clearly would be beneficial to the environment must bear enormous costs to comply with environmental reviews, and at times the Governor and legislators have proposed that desirable projects be exempted from (state) environmental review requirements in order to make them more attractive
to investors and easier to implement. Examples include construction of high speed rail in California or the construction of a factory that will produce electric cars or components for them such as batteries. Write an op ed for the Los Angeles Times either supporting or opposing environmental exemptions for environmentally desirable outcomes, citing your reasons and supporting them with appropriate evidence.

Solo Assignment 8: “Assessing Agenda 21” Due December 12th

Agenda 21 is a non-binding, voluntarily implemented action plan of the United Nations with regard to sustainable development. It is a product of the UN Conference on Environment and Development held in Rio de Janeiro, Brazil, in 1992. It is an action agenda for the UN, other multilateral organizations, and individual governments around the world that can be executed at local, national, and global levels. It has been affirmed and modified at subsequent UN conferences. The concept of “sustainability,” is largely derived from “Agenda 21.” Perhaps surprisingly, a vigorous program of opposition to “Agenda 21” has arisen in the US, and many now consider it to be an “international conspiracy” against America. Guest Lecturer Karen Frick presented some of this debate in her lecture, and much more is available on line. Your assignment is analyze the principles of Agenda 21 and the basis of opposition to it in a short paper for a general audience. Imagine that you are writing for The Economist or for Atlantic Monthly. The assignment is NOT to advocate or refute advocacy. It is to explain what is going on and to analyze the differing and competing points of view.
Transportation Research Part D: Transport and Environment publishes original research and review articles on the environmental impacts of transportation, policy responses to those impacts, and their implications for the design, planning, and management of transportation systems. It covers all aspects of the interaction between transportation and the environment, from localized to global impacts. All impacts are considered, including impacts on travel behavior, air quality, ecosystems, global climate, public health, land use, economic development, and quality of life. The journal invites submissions of research papers on all modes of transportation. This includes maritime and air transportation as well as all modes of ground transportation. Abstract and Figures. Abstract The aim of this research is to draw the attention to the inconvenient problems caused to our environment by the transportation process. As an example it is presented a comparative analysis between Romania and European Union, as for the energy consumption of transport relative to GDP between 2000-2012 years. The research continues with this analysis versus time element that is the energy consumption of transport relative to GDP for EU vs time 2001-2012; that means the evolution of the European Union as a whole, with all the 28 countries. Furthermore, the study presents the energy consumption of transport relative to GDP for Romania vs time 2001-2012. The issue of transportation and the environment is paradoxical since transportation conveys substantial socioeconomic benefits, but at the same time, transportation is impacting environmental systems. On one side, transportation activities support increasing mobility demands for passengers and freight, while on the other, transport activities are associated with environmental impacts. Further, environmental conditions impact transportation systems in terms of operating conditions and infrastructure requirements such as construction and maintenance (see Transportation and Space for a review of these constraints). The growth of passenger and freight mobility has expanded the role of transportation as a source of emission of pollutants. However, trade and transportation may actually decrease emissions if production is â€œdirtierâ€ than transportation. This column uses a new â€œdirtiness indexâ€ to capture how environmentally harmful a firm is and demonstrates how transportation can reduce global emissions if the production of transport services is cleaner than the production it substitutes. One example where transportation is relatively likely to have positive effects on the environment is transportation by electric train. This mode of transportation will have a dirtiness index below most production sectors due both to low CO2 emissions and to high costs per transported unit. WHO Library Cataloguing in Publication Data Transport, environment and health / edited by Carlos Dora and Margaret Phillips. (WHO regional publications. European series ; No. 89) 1.Environmental health 2.Transportation 3.Environmental policy 4.Accidents. Traffic 5.Vehicle emissions â€“ adverse effects I.Dora, Carlos II.Phillips, Margaret III.Series ISBN 92 890 1356 7 (NLM Classification: WA 810) ISSN 0378-2255. Text editing: Mary Stewart Burgher Design & layout: Susanne Christensen, In-House Cover photo: Â© Christina Piza Lopez.