

PORTLAND STATE UNIVERSITY
Mark O. Hatfield School of Government
Division of Public Administration

PA 567

**Energy Resources: Policies and Administration
(Northwest Energy Policy and the Columbia River)**

Spring Quarter, 2002, Thursdays 6:40-9:20 PM
Neuberger Hall 391 on the PSU campus

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Course Description

This course explores the extraordinary changes taking place in the realm of energy policy and the implications for the Northwest electric utility industry, its consumers, the economy and the environment. A cheap, abundant and reliable supply electricity, generated in part from the dams on the Columbia River and its tributaries, has long been the backbone of the Northwest economy. This power has allowed our region to compete successfully with the rest of the nation and beyond. Now, the region's entire energy system -- the players, the institutions, and the very rules of the game -- is in a state of flux. Even the future of some of the dams themselves is under debate.

The electric power industry in the Northwest and throughout the nation is in the midst of sweeping change. Powerful forces are pushing for the transformation of the the nation's last major regulated monopoly from a monopolistic to a competitive industry and new distributed energy technologies are challenging traditional centralized power plants. However, this transformation is far from guanteed, and California's disastrous experience with its version of electricity deregulation and the Enron debacle are causing many to reconsider the advantages and liabilities of the entire notion of energy industry restructuring.

Institutions such as the Bonneville Power Administration, the Northwest Power Planning Council, and the utilities themselves are seeking new roles and, in some cases, struggling for survival. Major changes to the operation of the Columbia River hydropower system have been under consideration, including the breaching of four lower Snake River dams and water draw-downs at some of the Columbia's major reservoirs, changes that would impact power production, navigation, irrigation and other uses of the river. Last year, a severe drought, a dysfunctional wholesale power market intensified by California's experiment with deregulation, a shortage of new power plants and near neglect of our conservation and renewable resource programs, and other factors have led to one of the most severe electricity crises the west coast has ever seen.

Stakeholders in the region seem able to agree on just one thing: all Northwest parties need to work together to ensure that national legislation to restructure the electricity industry does not alter the Northwest's priority access to the Columbia Basin's low-cost hydropower.

We will explore these and related issues, with the help of some of the Northwest region's top leaders in energy, water and salmon policy. We will begin with a review of the origins and history of Northwest energy policy. Particular attention will be given to the development of a major federal role in Northwest energy policy, the passage of the Northwest Power Act of 1980, the role of the Northwest Power Planning Council created by this Act, and various issues and controversies arising since the Act's implementation.

We will then be in a good position to explore some of the current "hot issues" in Northwest energy policy and their broader implications for the management of the Columbia River

This year we will explore the following “hot issues”:

- The changing roles of BPA, the Northwest Power Planning Council and the utilities in a more competitive and decentralized marketplace;
- Northwest political leaders’ strategies to protect Northwest consumers from efforts from other regions to increase Northwest electricity rates and reduce Northwest competitiveness;
- The causes of California’s disastrous experience with electricity deregulation and Enron’s collapse and the implications for the Northwest;
- Implementing Oregon’s unique version of retail competition;
- Balancing hydropower production and salmon recovery efforts;
- The debate over new approaches to dividing the region’s hydropower pie;
- The emerging role of green power, renewable resources, energy efficiency and the “energy web” in Northwest energy policy.

Our stellar line up of guest presenters will include:

- **Scott Brattebo**, Director, Regulatory Affairs, PacifiCorp
- **Jason Eisdorfer**, Legal Counsel, Citizens Utility Board of Oregon
- **Mark Hatfield**, former Senator and Governor, and now Distinguished Professor of Govt
- **Pamela Lesh**, Vice-President for Public Policy and Regulatory Affairs, Portland General Electric
- **Rob Lothrop**, Policy Director, Columbia River Intertribal Fish Commission
- **Dulcy Mahar**, Communications Manager, BPA
- **Robert McCullough**, Managing Partner, McCullough Research
- **John Saven**, Executive Director, Northwest Full Requirements Utilities and Northwest Irrigation Utilities
- **Rachel Shimshak**, Executive Director, Renewables Northwest Project
- **Chris Robertson**, President, Robertson Consulting
- **Richard Watson**, Director, Power Planning Division, Northwest Power Planning Council

Jeff Hammarlund, the course instructor, is an adjunct associate professor at the Mark Hatfield School of Government, a research scholar at the school’s Executive Leadership Institute, and the president of Northwest Energy and Environmental Strategies consulting firm. Jeff has held senior staff positions with the U.S. Senate Energy and Natural Resources Committee (during the passage of the Northwest Power Act) and the Department of Energy, and has been a guest scholar at the Brookings Institution. He has been director of conservation services for Southern California Edison and senior policy analyst for the Public Power Council (a utility trade association), and has consulted with utilities, environmental groups, and government agencies throughout the nation and abroad. A recipient of two advanced degrees from the University of Wisconsin-Madison, he is currently completing his Ph.D. dissertation through that university on new strategies for Columbia River governance in a more competitive energy environment.

Required Texts:

- Timothy Brennan *et al*, **Alternating Currents – Electricity Markets and Public Policy**, 2002 (available from PSU Bookstore)
- Jeff Hammarlund (ed), **Energy Resources Class Reader (CR)**, 2002, (available from Smart Copy, 1915 SW Sixth)
- Jeff Hammarlund (ed.) Electricity Issue of **Oregon’s Future Journal**, Spring 2002. (available from instructor.)
- Daniel Ogden, Jr., **The Development of Federal Power Policy in the Pacific Northwest**, (selected chapters from Ogden’s 1949 Ph.D. dissertation); (available from Smart Copy, 1915 SW Sixth)

- Ed Smeloff and Peter Asmus, **Reinventing Electric Utilities**, 1997, (available from PSU Bookstore)
- Some additional readings will be made available as handouts email attachments, or from the web throughout the quarter.

Caveat: The field of energy policy is fast-paced and highly fluid. Late-breaking articles and news stories will be distributed as new developments emerge.

Syllabus

Week 1 (4/4)

Reading Assignment for Week 1:

Handouts-Hammarlund, Oregon's Role as an Energy Innovator: A Historical Perspective, *Oregon's Future Northwest Electricity Issues**; Hammarlund, Benefits of the Columbia River and Summary of External Threats to the Federal Columbia River Power System.*

Class Reader-Hammarlund, Telltale Quotes from Our Case Studies*; series of maps of Columbia River Basin*; Hammarlund, Energy Restructuring in the Pacific Northwest: Where Are We Going? Conference Background Paper; Hammarlund, Northwest Forum on Preserving the Benefits of the Columbia River Conference Background Paper , An Inventory of Challenges to the Benefits of the Columbia River; Public Power Council, Threats Against BPA & Public Preference (series of congressional letters and statements); Northwest Power Planning Council, Roll On, Columbia and To Save the Salmon.

Web-Foundation for Water and Energy Education, What Makes the Columbia River Basin Unique and How We Benefit (www.fwee.org/c-basin.html)*

Part 1 Introduction - Jeff Hammarlund

Overview of course, class requirements, optional field trips

Overview of the Benefits of the Columbia River and Threats to the Future of Low-Cost Hydropower:

- Benefits of the Columbia River:
 - Hydropower
 - Navigation
 - Irrigation
 - Flood Control
 - Water supply
 - Fish and wildlife
 - Recreation
 - Personal and spiritual values
- Threats to the Continuation of the Northwest's Priority Access to Region's Low-Cost Hydropower:
 - Northeast-Midwest states
 - California
 - Nationalization of salmon recovery and dam breaching issue
 - Electric Restructuring and Disconnect between national and Northwest models of energy planning
 - Mergers
 - Financial crisis during a drought

- Ourselves

Part 2: The Development of Energy Policy in the Pacific Northwest

A. The Impact of the Columbia River on the Northwest Region

View historical video - *BPA and the Struggle for Power at Cost*. I also recommend borrowing another video from instructor for home viewing sometime during the quarter - *The River*.

Week 2 (4/11)

Reading Assignment for Week 2: Ogden- chapters 3-5*. Class Reader-NWPPC, Roll On, Columbia; NWPPC, To Save the Salmon; Blumm, The Northwest Hydroelectric Heritage: Prologue to the Pacific Northwest Electric Power Planning and Conservation Act*. Smeloff and Asmus, chapter 1*. Brennan, Introduction*.

B. The origins of Northwest power policy - Jeff Hammarlund

- Basic facts about the region
- The physical setting
- The three thrusts for development of the Columbia River
 - Navigation
 - Public power
 - Reclamation
- Building Bonneville and the Grand Coulee Dams

C. The Bonneville Project Act of 1937 - Jeff Hammarlund

- Key issues of debate

D. Policy development during World War II and immediate post war - Jeff Hammarlund

- The drive to launch publicly owned utilities in the Northwest
- The wartime power pool
- Post-war river development
- The direct service industries
- Another drive for a Columbia Valley Authority

Week 3 (4/18)

Reading Assignment for Week 3: Ogden-Chapters VI and VII*; Class Reader-NWPPC, Briefing Book: Background on the Columbia River Power System and the Northwest Power Planning Council (excerpts)*. Note: the full 2001 briefing book is available at www.nwcouncil.org/library; it provides an excellent summary); Cavanagh, *Electrical Energy Futures**; Lee, *Sustainability in the Columbia Basin* (chapter 2 of *Compass and Gyroscope*); Hemmingway, *The Northwest Power Planning Council: Its Origins and Future Role*; NWPPC, *Shipping Power South and The Intertie Issue*; Harrison, *A Matter of Trust*; BPA, *Issue Alert: How BPA Repays the Federal Investment in the Federal Columbia River Power System*; Smeloff and Asmus, chapters 2-3; Brennan, chapters 2-4*.

E. The struggle for upstream storage -Jeff Hammarlund

- The Corps of Engineers' Revised 308 Report of 1948
- The Hells Canyon Fight
- The Canadian Treaty
- Interregional interties
- The Regional Preference Act
- The Grand Coulee Third Power House
 - The Columbia Basin Account

- The Water Supply Act Formula for Setting Interest
- The Coordination and Allocation Agreements

F. The hydro-thermal program - Jeff Hammarlund

- Phase I
- Phase II
- Search for a congressional solution

G. Self-financing for Bonneville and subsequent repayment reform efforts - Jeff Hammarlund

- The Federal Columbia River Transmission System Act of 1974
- Repayment reform efforts and attempts to sell the power marketing authorities
- Refinancing BPA debt

H. BPA's transfer to the Department of Energy - Jeff Hammarlund

- Department of Energy Act
- BPA as a model for other power marketing agencies
- Rate reviews

Week 4 (4/25)

Reading Assignment for Week 4: Class Reader-Luce, When the Walls Come Tumbling Down: The Demise of the Northwest Power Act*; NWPPC, The Great Electric Rate Shock; NWPPC, Wanted: A Good Crystal Ball; NWPPC, Five Years with the Northwest Power Act; Colette, A Decade of Enormous Change; Collette, Least-Cost Concept Catching On; Collette, The Power Plant Called Efficiency*; Walker, Selling Super Good Cents; Collette, Efficiency Prevails; Curtis, A Marriage of Past and Future; Nybo and Hammarlund, The New Energy Economics in Montana and the Region; Hammarlund, What Is the Future for Energy Policy in the Pacific Northwest? (handout)*; BPA, New Means to Old Ends: Reinventing BPA*; Middaugh (ed.), Power Planning in the New Northwest; Collette, Beyond the Fortress Utility; Colette, Governors Convene Comprehensive Review*; Collette, Interview with Charles Collins; Comprehensive Review of the Northwest Energy System, Newsletters 1-4*; Duncan, Who Wants What; NWPPC. Putting It All Together*; NWPPC, Northwest Energy System: Yesterday/Today/Tomorrow*; Who Wants What (or to Avoid What) in the Comprehensive Review; Hammarlund, Utility Deregulation and the Environment: Exploring the Connection*; Smeloff and Asmus, chapters 4 and 5; Brennan, chapters 6-8*; Handout-Hammarlund, Trade Allies; Long Haul Partners.

I. The Pacific Northwest Power Planning and Conservation Act - Jeff Hammarlund

- Issues leading up to the Act
- Key provisions
- The roles of the Northwest Power Planning Council
- Planning in- the face of uncertainty
- BPA's new roles and obligations
- WPPSS and its problems

J. Resource acquisition in the 1980's under the Northwest Power Plan - Jeff Hammarlund

- Regional planning during a energy surplus and under conditions of uncertainty
- Integrated resource planning
- Resource acquisition during surplus conditions
- Conservation resource acquisition
- Model conservation standards and energy codes

K. Changes in energy industry since 1980's and the region's responses - Jeff Hammarlund

- The Northwest Power Act: the vision and the reality
- New BPA obligations and rate increases

- Factors making competition possible
- New pressures for competition in electric power markets
- Energy Policy Act of 1992 and FERC Orders 888 and 889
- Wholesale and retail restructuring
- BPA's new competitive position and response - reinvention
- Utility and other stakeholder responses to competition
- The Comprehensive Review of the Northwest Energy System
- Recommendations of the Comprehensive Review

Part 3: Current Policy Issues

Week 5 (5/2)

Note earlier time for special session- 4:00 to 6:30PM. The location is the Meyer Memorial Trust Boardroom, 7th floor of the Urban Center. After a break we will return for most of our regular class period to catch up on topics if we have fallen behind and review material in preparation for mid-term. **If you have selected the short research paper option, a one page proposal and abstract for final paper is due on or before 5/2.**

Reading Assignment for Week Five: *In preparation for unit 3A (Hatfield):* Class Reader-NWPPC, An Interview with Oregon Senator Mark Hatfield*; Transition Board, Progress Report on Development of the "Northwest Chapter" of National Utility Restructuring Legislation; Franks and Meehan, BPA and the Nation's Interests; Sliz and Lindsay, collection of articles from *NWPPA Bulletin* Washington Report* (most recent articles will be handouts); Hammarlund, California's Search for Energy Incites Fear in the Northwest*; *Oregon's Future*- articles by Derfler and Leone*. Web-Munson, Rethinking Bonneville, Northeast-Midwest Institute, www.nemw.org/rethinkingbonneville.pdf* ; Munson, BPA Machinations, http://www.nemw.org/bpa_machinations.pdf; Munson, Roundtable on Public Power, www.nemw.org/pmastate.htm. Handouts-Munson, Public Power in a Competitive Electricity Market; Munson, Public Power; Its time Has Come. Email-Hammarlund, California Energy Crisis Hits the Northwest Like a Tidal Wave.

In preparation for units 3B and 3C (McCullough): Email-McCullough, Deconstructing Enron's Collapse; Revisiting California; Testimony Before US Senate Committee on Energy and Natural Resources, Testimony before House Subcommittee on Energy and Air Quality*. Smeloff, chapter 4*; Brennan, chapter 5;* *Oregon's Future*-article by Grover and Warwick; Web-Foundation for Taxpayer and Consumer Rights, Hoax-How Deregulation Let the Power Industry Steal \$71 Billion from California, read at least executive summary, www.consumerwatchdog.org; Lovins, Electricity Solutuins for California, Rocky Mountain Institute, www.rmi.org/images/other/E-CwealthClub.pdf; Taylor and VanDoren, California's Electricity Crisis, <http://www.cato.org/electricity/california.html>.

- A. **The role of the Northwest congressional delegation in protecting the regional power system** – Senator Mark O. Hatfield
 - Review and assessment of Senator Hatfield's (and the Northwest congressional delegation's) roles in developing energy policy impacting the Pacific Northwest
 - Observations on strategies to preserve the benefits of the Columbia River.
 - Questions and answers
- B. **What went wrong in California?** – Robert McCullough, Managing Partner, McCullough Research
- C. **Deconstructing Enron's collapse** – Robert McCullough, Managing Partner, McCullough Research

Week 6 (5/9) Mid-term exam and guest presentation.

Reading Assignment for Week 6: No new readings. Prepare for mid-term. The mid-term exam is scheduled for the first 90 minutes of class. The pool of questions will be handed out on 4/25. I will be out of town, but Rick Mogran will proctor the exams and give the presentation during the last half of class. Those students taking the course for professional development are encouraged to arrive by 8:15 PM.

- D. **The decline of iron triangles and rise of issue networks and advocacy coalitions: implications for Northwest energy policy** – Col. Eric Mogran, recently retired Deputy Division Engineer, US Army Corps of Engineers-Northwestern Division and current student in our Ph.D. program

Week 7 (5/16)

Reading Assignment for Week 7: Class Reader-Wright, Letters to the Region, March 29*; BPA Journal, April 2001; Harrison, Mid-life Crisis-The Bonneville Power Administration Faces the Future; Hickok, Fundamentals of the Electric Power Situation in the Pacific Northwest CR); BPA, BPA's Tight Energy Supply and the Plan to Manage Through It; NW Energy Coalition, Northwest RTO Proposal Heads to FERC; RTO West Working Group, Characteristics and Functions of an Independent Transmission Company (ITC) within the Regional NWISCO; *Oregon's Future*-Hammarlund's Introduction to issue* and articles by Wright,* Weiss,* and Redman*, Peters*, and Carr*; Handouts- Wright, Letter to the Region, June 29, 2001; BPA, *Keeping Current*, BPA Infrastructure Projects: Ensuring Reliable Delivery of Power; *Keeping Current*, Bringing Power to the People: BPA's Plan to Assure Reliable Electric Transmission in the Northwest; *Keeping Current*, Blue Skies, Clean Water and "Green" Power: The Promise of Renewable Energy; *Keeping Current*, Working Together to Keep the Lights On and Costs Down; BPA, annual Report for 2001; BPA, maps of operating public agencies and cooperatives and investor owned utilities service areas. Web, Wright, Letter to the Region, April 2002, www.bpa.gov/corporate/kc/media/docs/letter_April2002.pdf; Wright, Striving Together to Preserve a Legacy, www.bpa.gov/corporate/kc/mediacenter/presentations/remarks_of_steve.shtml. Hickok, Power Crisis in the West-One Year Later, www.bpa.gov/corporate/kc/sp/sp040802.pdf. Brennan, chapters 12-13.

E. **The changing roles and responsibilities of the Bonneville Power Administration**

Dulcy Mahar, Communications Manager, BPA

- Implications for BPA of restructured wholesale markets and other major changes
- Reinventing BPA
- Balancing power needs with fish obligations
- BPAs relationships with its customers
- Addressing threats from interests outside the Northwest
- The implications of RTO West for BPA and the region
- Need for BPA and region to rebuild its electricity infrastructure

Week 8 (5/23)

Reading Assignment for Week 8:

In preparation for unit 3F (Watson:) Class Reader (under week 5)-Watson and NWPPC, Briefing to the Governors; NWPPC Press Release; Harrison, NWPPC, Actions Needed Now to Avoid Future Power Supply Problems; Handouts-NWPPC, Council Quarterly, Spring 2002; NWPPC, Issues for the Fifth Power Plan (also available at www.nwcouncil.org/library/2002/2002-01.pdf); Web-Comprehensive Review Steering Committee, Comprehensive Review of the Northwest Energy System*, www.nwcouncil.org/library/1996/cr96-26.htm, (see also summaries

and articles in Class Reader, week 4); Comments on Issues for the Fifth Power Plan, www.nwcouncil.org/energy/powerplan/comments/default.asp; NWPPC, Revised Fourth Northwest Conservation and Electric Power Plan, skim chapter 1 (Executive Summary), chapter 2 (The Evolving Northwest Electricity Industry), chapter 8 (The Future Role of the Northwest Power Planning Council), <http://www.nwcouncil.org/library/1998/98-22/Default.htm>.

In preparation for unit 3G (Eisdorfer and Lesh): Oregon's Future- articles by Hammarlund*, Eisdorfer*, DeFazio*, Bissonnette*, Lesh*, Brandid and Canon*. Class Reader- Hammarlund, Oregon Provides Jolt of Innovation; Oregon Energy Coalition, Supporting Energy Solutions That Are Right for Oregon; Fair and Clean Energy Coalition, Energy Restructuring: Why Oregon Did It Right; ORECA, Letter from Sandra Flicker and ORECA Position on Electric Industry Restructuring; Materials from Fair and Clean Energy Coalition on SB 1149; Oregon Public Utilities Commission, SB 1149 Summary By Issue; NWEnergy Coalition, Oregon Presents Draft Restructuring Rules; Oregon Public Utilities Commission, Summary of Proposed SB 1149 Rules; PacifiCorp, ScottishPower and PacifiCorp Announce Merger Agreement (with supporting materials-CR); PacifiCorp, Portfolio Approach - A New Way to Transition Small-Use Customers to Competitive Electricity Markets; Portland General Electric, Customer Choice and Customer Choice Plan. Smeloff and Asmus, chapter 6.

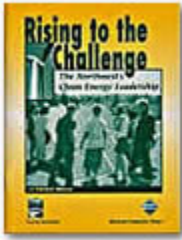
- F. **The Changing Roles of the Northwest Power Planning Council**, Richard Watson, Director Power Planning Division, Northwest Power Planning Council, with Jeff Hammarlund
- Council's mission under the Northwest Power Act
 - Changing roles for the Council in an increasingly competitive market
 - Conservation acquisition reinvention and the Northwest Energy Efficiency Alliance
 - Issues to be addressed in the Council's next power plan
- G. **Electricity restructuring at the state level** - Jason Eisdorfer, Legal Counsel and Energy Program Director, Citizens' Utility Board of Oregon, and Pamela Lesh, vice-President for public Policy and Regulatory Affairs, Portland General Electric, with Jeff Hammarlund
- The dynamics of electricity restructuring in Oregon
 - The perspective of Portland General Electric
 - The role of the Fair and Clean Energy Coalition
 - The "portfolio model"
 - Utility mergers and acquisitions
 - The role of the Energy Trust of Oregon

Week 9 (5/30)

Reading Assignment for Week 9:

*In preparation for unit 3H: Oregon's Future-*articles by Sampson*, Corwin* and Bloch*. Class Reader-NWPPC, Press Release: Climate and Water Outlook for Pacific Northwest - Spring 2001; NWPPC, Council Asks to Be Involved in Federal River, Dam Operating Decisions; NWPPC, Dam Aid; Curtis, The Life of a Salmon in the Columbia River Basin; Curtis, Ruling the River; Colette, A Gathering of Authorities; Mahar, Stretching the River; Vancelow, et al., Saving Salmon in the Pacific Northwest; Federal Agencies, Proposed Principles for 2001 FCRPS Operation; Save Our Wild Salmon Coalition, Press Release: Groups Offer Solution to Improve Columbia and Snake River Conditions for Salmon and Maintain Power Production, and Letter to Northwest Congressional Delegation. Email-

In preparation for unit 3I: Email-Draft Settlement Agreement; IOU/Public Power Discussion Draft*; Cavanagh, Incorporating Regional Stewardship Obligations in a "Slice of the System" Approach to BPA Service*; Editorial by Sara Patton*. Handout-Glyde, Utilities Propose Way to Carve Up BPA. *Oregon's Future*, articles by Derfler*, Leone*, Weiss*, and Redman*. Class Reader-Duncan, Proposal for a Columbia Basin Watershed Council; Hammarlund, Governance and the Columbia River Conference, Where Are We Going?*; Gov. Kitzhaber, Remarks to PSU



Conference on Columbia River Governance; NW Energy Coalition, Region Poised for New Round of Power Wars; Sperry, Focus: Oregon Governor Calls for New Effort to Save the Northwest's Fish, Low-Cost Power; Gov. Kitzhaber, Comments to the Seattle City Club; Karier and Cassidy, Regional Overseers Are Not Necessary for Northwest Resources; Brinkman, Locke Bolts on Regional Fish, Dam Authority; Northwest Governors, Models for Columbia River Governance; Northwest governors, Proposed Principles for Creating a New Regional Governance Entity for the Columbia River Basin

- H. **Balancing hydropower generation and salmon recovery**- Guest panel: John Saven, Executive Director Northwest Requirements Utilities and Northwest Irrigation Utilities; Scott Brattebo, Director of Regulatory Affairs, PacifiCorp; Angus Duncan, Executive Director, Bonneville Environmental Foundation; Rob Lothrop, Policy Director, Columbia River intertribal Fish Commission, with Jeff Hammarlund
- The role of hydropower in the Northwest economy
 - Relationship between regional hydro-power production and fish and wildlife protection
 - The benefits of the Columbia River for full requirements and irrigation utilities
 - The 2001 drought and the cancellation of the spill program
 - Tribal critique and energy vision
 - Direction from the Northwest Power Act and the Endangered Species Act
 - The role of the Bonneville Environmental Foundation
- I. **New strategies to divide the Federal power pie**- Guest panel same as Unit H.
- Genesis, benefits, and objectives of the "Settlement Agreement" or "Perma-Slice" proposal
 - Critiques of the proposal
 - Alternative governance priorities and structures

Week 10: (6/6)

Short research papers due.

Reading Assignment for Week 10: *Oregon's Future*-articles by Shimshak* and Gardner*. Web-Mazza, Accelerating the Clean Energy Revolution: How the Northwest Can Lead*, www.climatesolutions.org; Poised for Profit (executive summary), www.climatesolutions.org; Rising to the Challenge: The Northwest's Clean Energy Leadership (executive summary), www.climatesolutions.org. Class reader-NWPPC, Conservation; Its Back to the Future for the Most Efficient Energy Resource. Brennan, chapters 16-17*, Smeloff, Appendix C.

- J. **The emerging role for energy efficiency, renewables, distributed generation, green power, and the energy web in Northwest energy policy**, Rachel Shimshak, Executive Director, Renewables Northwest Project, and Chris Robertson, President, Robertson Consulting
- The role of green power and distributed generation in the Northwest energy mix
 - The implications for global warming concerns
 - The role of the energy web
 - Wind, fuel cell and biomass opportunities
 - A breakout strategy for photovoltaics

K. **Presentation of research papers and class discussion in preparation for final exam.**

Note: The take home final exam will be due on 6/13 at 6 pm. See handout for details. Remember to include your Writers Rubric.

Evaluation of student work: Course evaluations and grades will be based on student performance in four areas: the mid-term exam will count for 30% of the grade, the final exam will

count for 30%, the research paper and presentation will count for 30 %, and class participation and attendance will count for 10%.

The short research paper: I am expecting the research paper to be fairly short (perhaps 8-10 pages) but provocative. I hope it will present your point of view in a way that is well argued, defended by facts and reasoning, and well written. You will be asked to turn in a completed "Writer's Rubric" with your paper. (The paper will not be considered complete unless this is included.) This will be discussed further in class.

Optional combined final exam and research paper: In the past, some students have chosen to write a more extensive (approximately 20-25 pages) research paper on the final exam topic. This paper satisfies the requirements for both the final exam and the research paper. If this option is chosen, it is due on 6/13 at 6 pm. Talk to the instructor early if you are considering this option.

Office Hours: Since I am an adjunct professor, office hours become a little difficult. Feel free to schedule a time to speak by phone or use email. I am often available for a beer or soda after class. I can also sometimes squeeze us into the adjunct cubicle at the Urban Center.

2002 SYLLABUS

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