




2019

# Clean Energy and Climate Policy in Massachusetts

Dwayne Breger

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Office Hours  
Ag Engineering 204  
Mon 3:30-5:00pm; Thurs 9:00-10:00am  
or by appointment  
*NOTE: Please email in advance, my availability is subject to change, week by week.*

**Meeting Location and Time**

Location: Chenoweth Lab 329  
Tuesday/Thursday 1:00-2:15pm

**Credits:** 3

**Permissions/Prerequisites:** Graduate student standing; junior or senior undergraduates in Environmental Science, Natural Resources Conservation, Building and Construction Technology, Resource Economics, or Mechanical and Industrial Engineering; or other majors with permission of instructor and demonstrated completion of basic coursework in economics and environmental/natural resources/public policy.

**Course Description**

Over the past 20 years, Massachusetts has evolved as a leader in clean energy policy, which has led to market development, job and economic growth, and reductions in greenhouse gas and other emissions. This course will provide direct insights into the brief history of these policy developments, including policy objectives, legislative and regulatory roles, tradeoffs of costs and benefits, the use of analytical methods to establish program design, and stakeholder perspectives and engagement. The course will explore the market and economic development and challenges that have resulted from the policy, and explore the economic tradeoffs and distributional impacts that may result. Lastly, the course will consider the current energy and climate issues in Massachusetts and the latest policy development and proposals that will impact our energy future.

**Learning Objectives**

The course will provide students with an understanding of 1) the current clean energy policy and market landscapes in Massachusetts and regionally, and 2) the roles and activities of state government to address clean energy and climate priorities. Students will learn critical thinking skills pertaining to how state policy makers and agency staff develop state goals and implement programs to bring change about, in light of costs, benefits, uncertainties, and stakeholder perspectives. Students will learn and utilize analytical thinking and tools to design policy programs, and to evaluate market conditions resulting from policy. The course will enhance students experience in communicating results in writing, graphically, and in oral presentation, and in working effectively in small groups. The course will prepare students to work effectively in the clean energy market as project developers, consultants and analysts, and in the public sector.

**Assignments and Grading**

In addition to completing all readings and being prepared to participate in class, students will be required to complete short project assignments and three exams. Assignments will be posted in advance on the course Moodle website.

Grading will be determined as follows, adjusted by attendance (see Attendance Policy):

Assignments	30%
Exam 1	20%
Exam 2	20%
Exam 3	20%
Class Participation	10%

### **Attendance Policy**

Attendance will be taken daily. As this is a discussion-based class, you are expected to attend. Absences will detract from your grade as follows:

- 0-3 absences: no adjustment
- 4-6 Absences: adjusted down one grade (e.g. B+ to B)
- 7-9 Absences: adjusted down entire letter grade (e.g. B+ to C+)
- 10 or more: grade adjusted to F

### **Grading Scale**

100 - 94% A	76% - 73% C
93% - 90% A-	72% - 70% C-
87%-89% B+	69% - 67% D+
86% - 83% B	66% - 64% D
82% - 80% B-	below 64% F
79% - 77% C+	

Note: Graduate students cannot earn grades of C-, D+ or D. Graduate students with scores below 73% will earn a grade of F.

### **Text and Readings**

No text book is assigned for this course. The course will draw on readings from a variety of sources, primarily using public source documents in the policy making process and literature and reports from energy and environmental experts and organizations. PDFs or photocopies of required readings will be made available for download from the course website in accordance with university and copyright policies.

### **Course Policies**

Students are expected to attend all classes and are responsible for any work missed. Use of cellphones in class is prohibited. Laptops or tablets may be used for taking notes, but not for email, social media, or other personal reasons – it is distracting for you, and for your classmates. Students are expected to adhere to the Academic Honesty Policy located at: [https://www.umass.edu/dean\\_students/academic\\_policy](https://www.umass.edu/dean_students/academic_policy), and are also expected to adhere to the code for classroom civility located at: [https://www.umass.edu/dean\\_students/campus-policies/classroom](https://www.umass.edu/dean_students/campus-policies/classroom). Please ask me if you have any questions about either of these policies.

### **Accommodations**

The University of Massachusetts Amherst is committed to providing an equal educational opportunity for all students. If you have a documented physical, psychological, or learning disability on file with Disability Services (DS), you may be eligible for reasonable academic accommodations to help you succeed in this course. If you have a documented disability that requires an accommodation, please notify me within the first two weeks of the semester so that we may make appropriate arrangements.

### **Academic Honesty and Classroom Civility**

Since the integrity of the academic enterprise of any institution of higher education requires honesty in scholarship and research, academic honesty is required of all students at the University of Massachusetts Amherst. Academic dishonesty is prohibited in all programs of the University. Academic dishonesty includes but is not limited to: cheating, fabrication, plagiarism, and facilitating dishonesty. Appropriate sanctions may be imposed on any student who has committed an act of academic dishonesty. Since students are expected to be familiar with this policy and the commonly accepted standards of academic integrity, ignorance of such standards is not normally sufficient evidence of lack of intent. Students are expected to adhere to the Academic Honesty Policy located at: [https://www.umass.edu/dean\\_students/academic\\_policy](https://www.umass.edu/dean_students/academic_policy), and are also expected to adhere to the code for classroom civility located at: [https://www.umass.edu/dean\\_students/campus-policies/classroom](https://www.umass.edu/dean_students/campus-policies/classroom). Please ask me if you have any questions about either of these policies.

## Course Outline, Readings, and Assignments

The outline below is subject to change. Readings and assignments will be provided on a continuous basis on the course Moodle website.

		<b>Class / Topics</b>	
Spring 2019 Date		<b>Part I: Introduction – Energy in Massachusetts and Policy Foundations</b>	
Jan-22	1	Introductions, Overview of Objectives, Syllabus, Assignments, and Expectations Overview of Energy Supply and Demand in Massachusetts	
Jan-24	2	Greenhouse Gas Emissions – Sources and Trends	
Jan-29	3	Ethics for Policy – Utilitarianism and Respect for Persons Laws and Regulations Market Imperfections and Distributional Impacts	
Jan-31	4	Methods in Policy Analysis Benefit/Cost Analysis, Regional Economic Impact, GHG Lifecycle Analysis, Technology Assessment	
		<b>Part II: Restructuring the Electricity Market and the Dawn of Clean Energy Policy</b>	
Feb-5	5	Key Provisions of the 1997 Electric Industry Restructuring Act Opening competitive markets for independent electric generators Redefining the role of regulated electric utilities EE and RE System Benefit Charges, Renewable Energy Portfolio Standard (RPS)	
Feb-7	6	Restructured Electricity Market Utilities and competitive retail electric suppliers The New England electric grid and ISO-New England	
Feb-12	7	Delivering Energy Efficiency to MA Sectors	
Feb-14	8	Regulatory development and key provisions of the RPS	
Feb-21	9	Renewable energy sources in MA and region, and early RPS supplies	
Feb-26	10	Exam #1	
		<b>Part III: Modern Frameworks for Clean Energy and Climate Policy in Massachusetts</b>	
Feb-28	11	CO2 Cap and Trade - Northeast Regional Greenhouse Gas Initiative (RGGI) Policy development	
Mar-5	12	Market auctions and trading Program reviews and outcomes	
Mar-7	13	Expansion of Clean Energy Policies - 2008 Green Communities Act The Green Communities Program Decoupling energy efficiency	
Mar-19	14	Expansion of the RPS programs, solar carve-out, long term contracts Broadening net metering eligibility for distributed renewables	
Mar-21	15	Committing to GHG Reductions – 2008 Global Warming Solutions Act Key Provisions – binding commitments, economy-wide, targets and timetables	
Mar-26	16	Holding the state accountable - Kain et al. v. MasDEP case Progress to 2020 target	
Mar-28	17	Guest Lecture - GHG Accounting, Progress to 2020, Planning towards 2050	
Apr-2	18	Exam #2	

<b>Part IV: Current Policy Issues and Market Conditions</b>		
Apr-4	19	Sustaining Solar PV Growth in MA Ending of SREC II Program Launch of SMART Program
Apr-9	20	Solar PV project development across MA Issues in siting, ownership, land use, net metering Business growth and market conditions
Apr-11	21	Addressing our thermal energy use and emissions Adding renewable thermal to the APS
Apr-16	22	Renewable thermal technologies and products Issues around modern wood heating
Apr-18	23	Paving the way for large-scale renewable resources Overview of large-scale hydro and offshore wind resources Long-term contracts for large-scale hydro and offshore wind Dawn of the offshore wind industry in MA
Apr-23	24	Energy Storage – Linchpin for a clean and efficient electric grid transformation Energy storage technologies and applications Benefits of energy storage to renewable integration and electric market efficiency
Apr-25	25	Guest Lecture - TBD
Apr-30	26	Course Review, Q&A Career and job opportunities in clean energy
Exam Week		Exam #3