

RENEWABLE ENERGY PROJECT FINANCE

AND DEVELOPMENT

Vermont Law School Summer

Session 2020, Term 3

July 6, 2020 - July 16, 2020

9:00 AM to 12:00 PM

Brian H. Potts & Andrew Hanson

Syllabus and Course Information

1. Course Overview: This course will provide an in-depth look at the legal and regulatory issues associated with the development and project financing of renewable energy projects such as wind, hydro, solar, and battery storage. After completing this course, students will have a solid understanding of how to help vet the economics of renewable projects and get them permitted, financed, built, hooked-up to the grid and operational. Together the instructors of this course have helped get over \$5 billion dollars in electric utility infrastructure up and running—including hundreds of MWs of wind and solar power and hundreds of miles of high-voltage transmission lines. Using a combination of their practical, hands-on knowledge, targeted readings, and in-class exercises, this course will give you all the tools you need to help build and finance this country's renewable energy future.

2. Materials: The required course textbook is:

E.R. Yescombe, "Principals of Project Finance", Academic Press; 2nd edition (December 9, 2013).

Additional materials are available on the course website on the TWEN site. Please print (double-sided) all materials for each day's class to review ahead of time and bring them with you to class. Email Chenfang Yang (cyang@vermontlaw.edu) if you need assistance accessing this site.

PLEASE NOTE: Don't panic if you do not understand all of the math and equations in some of the readings. You will generally not be expected to recreate all of these calculations. However, you will be expected at the end of the course to have a basic understanding of simple energy conversions and industry fundamentals. Also, don't freak out if the class readings appear long. We have included a lot of material that you are only required to skim and/or bring to class.

3. Examination: Open book, take home, due on July 18, 2020 at 4:00 PM. Further detailed instructions will be provided at the end of the course.

4. Instructor Contact Information:

- Office Phone: Andrew Hanson (608-663-7498)

Brian Potts (608-663-7493)

- E-mail: bpotts@perkinscoie.com
ahanson@perkinscoie.com
- Office Hours: By appointment

5. Course Requirements:

Class Attendance: Vermont Law School (VLS) requires that you attend class. We will circulate the roll at each class for your signature. Your signature without amendment on the roll indicates that you attended the entire class period. Anyone who is more than five minutes late for class without an acceptable excuse, or anyone who is more than five minutes late for two classes for any reason, will be marked absent for the class.

Preparation: So that we can have a meaningful discussion of the issues, you are expected to come to class fully prepared by reading all the required materials in advance. You will be held responsible for the contents of all non-optional reading materials on the final exam.

Simulations and Presentations: The design of this class gives you as a student a lot of opportunity to interact with the class. Accordingly, you will be required to complete any assigned simulations and oral presentations on time and according to instructions.

Final Exam: There will be a written final examination. This examination will be take home, open book. Performance on the exam will be a major determinant of your grade in the course.

Conduct/Honor Code: You are expected to conduct yourself in a professional manner throughout all aspects of the course. You are expected to abide fully by the VLS Honor Code.

Class Participation: A portion of your grade will be based on "class participation." Note that participation is not defined by the quantity but rather the quality of your participation. In fact, it is unlikely that a student who talks too much will receive the full points for class participation, as that student will be depriving others of time to share their ideas and insights. So, plan to be an active but respectful member of the class!

6. Schedule and Required Readings:

CLASS 1 (Potts)

Monday, July 6, 2020

THE ECONOMICS OF RENEWABLE ENERGY

On Course Website:

Rubin, Introduction to Engineering & the Environment, Chapters 5 (Electric Power Plants and the Environment) and Chapter 13 (Economics and the Environment) (excerpts)

Lazard, Lazard's Levelized Cost of Energy Analysis--Version 12.0 (Nov. 2018) (excerpts)

Tyler Stehly, et al., 2017 Cost of Wind Energy Review (NREL, Sept. 2018) (excerpts)

Ran Fu, et al., U.S. Solar Photovoltaic System Cost Benchmark: Q1 2018, (NREL, Nov. 2018) (excerpts)

CLASS 2 (Potts)

Tuesday, July 7, 2020

PROJECT FINANCE BASICS

Yescombe, Principles of Project Finance, Chapter 2 (What is Project Finance?) and Chapter 3 (Project Development and Management) (but skip Section 3.7)

On Course Website:

Thomas Jenkin, et al., Estimating the Impact of Residual Value for Electricity Generation Plants on Capital Recovery, Levelized Cost of Energy, and Cost to Consumers (NREL 2019)

CLASS 3 (Hanson)

Wednesday, July 8, 2020

SPONSORING A PROJECT: THE INTERCONNECTION PROCESS,
OBTAINING LAND RIGHTS AND PERMITTING

On Course Website:

The Law of Solar, Chapter 1 (all) & Chapter 5 (pages 4-11)

MISO Business Practices Manual, Generator Interconnection, Chapter 5, pp. 34-47

Law of Solar, Chapter 6

CLASS 4 (Hanson)
Thursday, July 9, 2020

DOCUMENTING THE DEAL: REQUEST FOR PROPOSALS (“RFPs”) &
POWER PURCHASE AGREEMENTS

Yescombe, Principles of Project Finance, Chapter 6 (Types of Project Agreement) (only Section 6.3), Chapter 7 (Common Aspects of Project Agreements)

The Law of Solar, Chapter 3

On Course Website:

Template Solar and Wind Power Purchase Agreements (just skim but bring to class)
Template Request For Proposals

- Consumers Energy (Solar, Wind)
- NV Energy (Solar, Wind, BESS)

CLASS 5 (Hanson)
Monday, July 13, 2020

SUB-CONTRACTS AND OTHER AGREEMENTS: EPC AND O&M
CONTRACTS, ETC.

Yescombe, Principles of Project Finance, Chapter 8 (Sub-Contracts and Other Related Agreements) (everything but Section 8.8)

On Course Website:

Best Practices in Photovoltaic System Operations and Maintenance, 2nd Ed., National Renewable Energy Laboratory (Dec. 2016) (focus on Appendix E, Examples of Scope of Work Documents)

CLASS 6 (Potts)
Tuesday, July 14, 2020

DEBT FINANCING

Yescombe, Principles of Project Finance, Chapter 4 (The Project-Finance Markets), Chapter 5 (Working with Lenders) (only Sections 5.1 - 5.5.8), Chapter 12 (Financial Structuring) and Chapter 14 (Project-Finance Loan Documentation)

Law of Solar, Chapter 7

CLASS 7 (Potts)
Wednesday, July 15, 2020

DEVELOPMENT OF AN INDEPENDENT TRANSMISSION LINE

On Course Website:

FERC Order 1000 (excerpts)

Direct Testimony, Tom Dagenais in Cardinal-Hickory Creek Proceeding (PSCW Docket 05-CE-146)

Tony Clark, Order No. 1000 at the Crossroads: Reflections on the Rule and its Future (April 2018)

DOE/FERC, 2017 Transmission Metrics, Staff Report (October 2017) (just skim)

CLASS 8 (Potts & Hanson)
Thursday, July 16, 2020

MITIGATING PROJECT RISKS & INDUSTRY ISSUES

“How to Value a Solar Development Pipeline”, Parts 1-4, Leslie Hodge, Greentech Media, March 8, 2019,

Disparities in rooftop photovoltaics deployment in the United States by race and ethnicity, Deborah A. Sunter, Sergio Castellanos, and Daniel M. Kammen, Nature Sustainability, Vol. 2, January 2019.

“‘We Too Must Improve’: Clean Energy Industry Looks Into Mirror on Racial Inequity”, Emma Foehringer Merchant, Greentech Media, June 4, 2020

7. Grading

Your grade in this course will be based on the following:

Final Examination:	75 percent
General Class Participation:	25 percent

8. Further Information/Updates: This course syllabus provides tentative assignments for this course. We may amend the syllabus, depending on how the class develops. Additions or modifications to assignments, as well as changes to any of the dates above or other important information, will be posted on the web site and announced in class. This is designed to be a formative, collaborative class. In other words, unless you take responsibility for your own learning, you will not get much out of this course.