

## Energy Project Development & Finance

Spring 2020, Berkeley Law 270.65  
Wednesday 6:25pm – 9:05pm, Law School Room 170  
3 Units

**Instructors:** Todd Glass  
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### Course Description:

The course will follow the progression of the development and financing of an energy project. In addition to covering utility-scale energy generation, the course will address issues unique to the development and financing of other modern types of energy infrastructure, including distributed energy resources, energy storage, demand response, energy efficiency, electric vehicle infrastructure, biofuels, fuel cells, and portfolios of small projects. In the first half of the course we focus on energy project development, including federal and state energy regulatory and jurisdictional issues, site development, interconnection, offtake arrangements, project construction, operation and maintenance and disposition. In the second half of the course we will cover project financing, including corporate structuring, joint venturing, equity, debt and tax equity financing. The course addresses the theoretical foundations for risk allocation and project finance structures typically used in the energy and infrastructure industries, while also covering practical negotiation and contract drafting strategies for addressing business, transactional and legal issues that arise on energy projects. We will also discuss cutting edge energy industry developments and policy issues in the context of project development and finance.

Students will complete the course with a fundamental understanding of how energy projects are developed and financed, and how the key regulatory and commercial forces affect the development of such projects, with a particular emphasis on the factors important to non-conventional energy projects. While the course focuses specifically development and finance of energy projects, students will acquire skills broadly useful to transactional legal practices in other industries that incorporate aspects of corporate law, commercial transactions, technology transactions, regulatory proceedings and financing transactions.

The course is taught by Todd Glass and Scott Zimmermann, partners in the Energy and Infrastructure practice at Wilson Sonsini Goodrich & Rosati.

**Please note this course follows Berkeley Law's Academic Calendar and the first day of instruction is Wednesday, January 15, 2020. It is required all students attend the first class including students on the waitlist. This is an interdisciplinary course and we encourage interested graduate students from outside Berkeley Law to enroll.**

**Course Materials:** The book listed below is required. All cases and other materials referenced in the syllabus below will be available on bCourses (<https://bCourses.berkeley.edu>).

- E.R. Yescombe, *Principles of Project Finance* (YCL Consulting Ltd. 2d Ed. 2014).

Our old text book is available in the library and can also be used as a resource: Scott L. Hoffman, *The Law and Business of International Project Finance* (Cambridge 3d Ed. 2007). Select readings from Hoffman will be posted on our bCourses site.

**Prerequisites:** None required. LAW 270.6 (Energy Law & Policy) and LAW 270.7 (Renewable Energy Law and Policy) are recommended, although our course is designed to be complementary to these. LAW 251.1 (Corporate Finance) and LAW 250 (Business Associations) are also recommended but not required. As part of a broader curriculum on energy, we strongly recommend ER 200 (Energy & Society) and/or MBA 212 (Energy and Environmental Markets) during your time at Berkeley.

**Grading:** 10% class participation; 20% group project; 70% final exam

**Meetings:** 14 Classes

**Final Exam:** The final exam will be a take-home written exam which can be completed at any time during the final exam period. You will have 6 hours to complete the exam.

**Office Hours:** The instructors are available to meet with students by appointment, generally before class in Café Zeb. Please don't hesitate to contact us to set up a time.

**Group Project:** We will form teams of three to four students, and each team will be assigned a different case study concerning a project. The case studies range from a utility-scale solar project, a wind project, and a combined cycle gas-fired combustion turbine project to a portfolio of energy efficiency projects, and other more novel technologies and business models. Each group will present its project to the class, which will act as the investment committee charged with deciding whether to invest in the project. In addition to your prepared presentation, you will receive questions from the finance committee during your presentations. The total presentation time including questions will be approximately 30 minutes. The prepared portion of your presentation should be 15 minutes. As you prepare, focus on addressing the points outlined below. Review the case study materials, course readings, and any other outside sources to prepare a presentation of your project.

- Describe the site and any site control, environmental and permitting issues.
- Who is the offtaker and/or customer?
- Are there any transmission or interconnection issues?
- How is the project regulated? Are there any regulatory approvals necessary or issues?

- Describe the technology and where it has been used before.
- Who will be building the project? Operating and maintaining the project?
- How will the financing structure be optimized?
- Provide a summary of the project economics.
- What is unique about the project? What are the critical steps in development and financing?
- Address any risks associated with each of the above points, and how those risks will be allocated.

**Learning Outcomes:** The ABA requires that the law school as a whole, as well as individual instructors, adopt learning outcomes for our students. Learning outcomes are not only required, but they are also an important step in creating an effective course. Berkeley Law Learning Outcomes are the competencies that students will develop by the conclusion of their legal education. Students in the course will be expected to achieve the following Berkeley Law Learning Outcomes:

- Knowledge and understanding of substantive and procedural law;
- Legal analysis and reasoning, legal research, problem-solving, and written and oral communication in the legal context;
- Exercise of proper professional and ethical responsibilities to clients and the legal system;
- Other professional skills needed for competent and ethical participation as a member of the legal profession; and
- Using the law to solve real-world problems and to create a more just society.

**School-wide Policies:**

1) A “credit hour” at Berkeley Law is an amount of work that reasonably approximates three to four hours of work per week for 15 weeks, including a) classroom time, b) time spent preparing for class, c) time spent studying for, and taking, final exams, d) time spent researching, writing, and revising papers and other written work, and e) time spent preparing for and completing any other final project, presentation, or performance. For the purposes of these calculations, 50 minutes of classroom instruction counts as one hour, and the 15 weeks includes the exam period. You can expect to spend this amount of time per unit per week on in-class and out-of-class, course-related work as described above.

2) Students who need classroom accommodations or want to discuss implementation of their accommodations in this class are advised to contact Kyle Valenti, Director of Student Services ([kvalenti@law.berkeley.edu](mailto:kvalenti@law.berkeley.edu)) as soon as possible.

Student Services schedules all exams, including accommodated exams, as the law school is committed to anonymous grading. PROFESSORS DO NOT HAVE THE AUTHORITY TO RESCHEDULE EXAMS. Any student who seeks an accommodated or rescheduled exam for documented medical reasons or for religious observance should contact Student Services in 280 Simon Hall, 510-643-2744, [kvalenti@law.berkeley.edu](mailto:kvalenti@law.berkeley.edu).

3) The [Academic Honor Code](#) governs the conduct of all students during examinations and in all other academic and pre-professional activities at Berkeley Law.

4) If you are in need of economic, food, or housing support, you can find help at <http://basicneeds.berkeley.edu>. You may be eligible for money to buy groceries via <https://calfresh.berkeley.edu> or our Food Assistance Program. If you are in need of food immediately, please visit our UC Berkeley Food Pantry at <http://pantry.berkeley.edu>.

5) The University of California is committed to creating and maintaining a community dedicated to the advancement, application and transmission of knowledge and creative endeavors through academic excellence, where all individuals who participate in University programs and activities can work and learn together in an atmosphere free of harassment, exploitation, or intimidation. Every member of the community should be aware that the University prohibits sexual violence and sexual harassment, retaliation, and other prohibited behavior (“Prohibited Conduct”) that violates law and/or University policy. The University will respond promptly and effectively to reports of Prohibited Conduct and will take appropriate action to prevent, to correct, and when necessary, to discipline behavior that violates this policy. For the complete UC Policy, definitions, compliance and procedures, please access the full text: <http://policy.ucop.edu/doc/4000385/SVSH>.

Resources: If you have further questions or concerns about reporting behavior related to sexual harassment, sexual violence, and/or protected category discrimination, please contact the Office for the Prevention of Harassment and Discrimination (OPHD) by phone 510-643-7985 or email [ask\\_ophd@berkeley.edu](mailto:ask_ophd@berkeley.edu).

Path to Care Center Confidential Advocates provide affirming, empowering, and confidential support for those that have experienced gendered violence, including: sexual harassment, emotional abuse, dating and intimate partner violence, sexual assault, stalking, and sexual exploitation. Advocates bring a non-judgmental, caring approach to exploring all options, rights, and resources. They can be reached by phone (510) 642-1988 or email <http://sa.berkeley.edu/dean/confidential-care-advocate>.

## Course Schedule

### Class 1

**1/15/20 Introduction; Project Development & Finance Overview; Presentation of Case Studies; Quick history of rise of independent power in the US**

Required:

- Yescombe, Ch.1 and §§ 2.1 – 2.3, “What is Project Finance?” pp. 1-12.
- *Project Finance for Renewable Energy and Clean Technology Projects*, September 2014, pp. 3-7.
- Richard Munson, *From Edison to Enron: The Business of Power and What It Means for the Future of Electricity* (Praeger Publishers, 2005), pp. 103-114.
- Roberts, “Utilities Have a Problem: The Public Wants 100% Renewable Energy, and Quick” *Vox*, Sept. 17, 2018

Suggested:

- *The Current War* (Director’s Cut), the movie released in 2019, “The dramatic story of the cutthroat race between electricity titans Thomas Edison and George Westinghouse to determine whose electrical system would power the modern world.”
- *From Edison to Enron*, 43-102
  - No need to read in depth; just peruse a readable history of the development of the electric utility sector in the US.
- Project Finance Glossary (a reference, not a reading assignment) – Yescombe, Glossary, pp. 499-539.

### Class 2

**1/22/20 Offtake Agreements: Energy vs. Capacity, Environmental Attributes/RECs, Power Purchase vs. Leasing, Merchant, Availability, Curtailment, Regulatory Oversight, Change-in-Law Risk; Corporate Procurement of Renewable Energy**

Required:

- *Hoffman*, Ch. 19 “Power Sales Agreements” pp. 222-242.
- *NRG Power Marketing, LLC v. Maine Public Utilities Comm’n*, 558 U.S. 165 (2010) (see questions on first page of the reading in bCourse.)
- *Iberdrola Renewables, Inc. et al. v. Bonneville Power Admin.*, 137 FERC ¶ 61,185 (Dec. 7, 2011) (see questions on first page of the reading in bCourses.)
- Peter Mostow, “Five Approaches to Corporate Purchase of Renewable Energy”, *Corporate Counsel* (May 22, 2014)

Suggested:

- Power Purchase Agreement by and between Fire Island Wind, LLC and Chugach Electric Association, Inc., June 21, 2011
  - No need to read in depth; just review TOC and peruse the contract.
- Google's Green PPAs: What, How and Why, September 17, 2013, pp. 1-6.

### Class 3

**1/29/20 Site Control, Permitting and Environmental:** Siting, Environmental Law, Real Estate (Title, Options, Easements, Leases), Hydroelectric Licensing

**Guest Speaker:** Peter Mostow, Wilson Sonsini Goodrich & Rosati

Required:

- *Save Panoche Valley v. San Benito County*, 217 Cal. App. 4th 503 (2013).
- Institute for Local Government, *Understanding the Basics of Land Use and Planning* (2010), pp 7-26, 31-36.
- US Environmental Protection Agency, *Lender Liability and Applicability of All Appropriate Inquiries* (2018).
- Gosnell & Kelly, *Peace on the River? Social-Ecological Restoration and Large Dam Removal in the Klamath Basin, USA*, *Water Alternatives* 3(2): 361-383 (2010).
  - *Focus on the FERC relicensing process that is described beginning on page 371.*

Suggested:

- ASTM, *Standard Practice for Environmental Site Assessment Phase 1*, E1527-05, Sections 1, 3, 4 and 7.
- Panoche Valley EIR Executive Summary.
  - *Skim for an example of an Environmental Impact Report that relates to the project that is the subject of the assigned case.*
- *Weaver's Cove Energy v. Rhode Island*, No. 08-2440 (1<sup>st</sup> Cir. 2009) (*focus on the analysis of federal preemption in Sections I and III.A, noting how preemption was strengthened by the Energy Policy Act of 2005*)

### Class 4

**2/5/20 Generation: Regulation and Policy:** FERC Regulation of Independent Power, State PUC Regulation of Procurement and RPS implementation; Cost-based vs. Market-based Rates; 2000-01 West-wide Power Crisis

**Guest Speaker:** Stan Berman, Berman and Todderud LLP

Required:

- *Independent Energy Producers Ass’n v. California Pub. Utilities Comm’n*, 36 F.3d 848 (9<sup>th</sup> Cir 1994).
- *FERC v. Electric Power Supply Assn*, 557 U. S. \_\_\_\_, 136 S. Ct. 760 (Jan 25, 2016)
- *Hughes v. Talen Energy Marketing, LLC*, \_\_\_ U. S. \_\_\_\_, 136 S. Ct. 1288 (Apr 19, 2016)
- Database for State (and Federal) Incentives for Renewables & Efficiency (DSIRE) – <http://www.dsireusa.org/>

Suggested:

- Richard F. Hirsh, *Power Loss: The Origins of Deregulation and Restructuring in the American Electric Utility System* (MIT 1999); Section II, pp. 71-131

**Class 5**

**2/12/20 Interconnection and Transmission: Regulation and Policy:** Regulation of public utilities; FERC/State Jurisdiction; PURPA, Order No. 888, RTOs, ISOs and Interconnecting Utilities, Queues and Processes Allocation of Cost of Interconnection and Transmission Upgrades

Required:

- Federal Power Act, Sections 201, 205, 206, 210, 211
  - Peruse the whole act and find the relevant sections
  - **Hint:** The original section references are listed in the parenthetical captions under each section; all the sections are found in 16 USC § 824: 201- 16 USC § 824; 205 - 16 USC § 824d; 206 -16 USC § 824e; 210 - 16 USC § 824i; 211 - 16 USC § 824j.
- Lynne Keisling, *Deregulation, Innovation, and Market Liberalization: Electricity Regulation in a Continually Evolving Environment* (Routledge, 2008) (read Ch 2 excerpts in bCourses)
- *New York v. Federal Energy Regulatory Comm’n*, 535 U.S. 1 (2002) (refresh if you have already read this in another course)
- *From Edison to Enron*, pp. 115 - 132.

Suggested:

- Steven Ferrey, *Law of Independent Power* (Thompson/Reuters West 2008) §§ 10.78.1 – 10.90.

**Class 6**

**2/19/20 Engineering, Procurement, and Construction:** Managing Technical Risks, Warranties, Pricing, Scope, Scheduling, Changes, Completion Criteria, Serial Defects, Intellectual Property, Disputes, Liquidated Damages; plus a discussion of future utility business models

Required:

- Hoffman, Ch 15 “Construction Contracts” pp. 164-187.
- *El Dorado Irrigation Dist. v. Traylor Bros.* (E.D. Cal. Jan 2006).
- 2016 Southern California Edison DER/DSO whitepaper
- Spector, “Utilities ‘Need to Be More’ Than Electricity Providers”, Greentech Media, Feb 6, 2019
- O’Connor, “The Great Divergence . . .”, Retail Energy Supply Association, Sept 2018

Suggested:

- Sample TOC to Form EPC Contract (peruse; no need to read)

**Class 7**

**2/26/20 Intro to Project Finance:** General Project Finance Concepts, Corporate Structures, Partnerships

Required:

- Yescombe, §§ 2.4 – 2.6, “What is Project Finance?” pp. 13-27.
- Yescombe, §§ 3.1 – 3.6, “Project Development & Management” pp. 29-44.
- Yescombe, § 12.4, “Debt:Equity Ratio” pp. 327-329.
- *Project Finance for Renewable Energy and Clean Technology Projects*, September 2014, pp. 3-7 (review from Class 1), pp 7-15.

Suggested:

- Esty & Sesia, *An Overview of Project Finance and Infrastructure Finance—2014 Update* (July 29, 2014), pp 1-42.

**Class 8**

**3/4/20 Debt, Equity, Credit Support and Other Financing Topics:** Types of Debt and Equity, Credit Support, Guaranties, Insurance

Required:

- Yescombe, Ch. 4, “The Project Finance Markets” pp. 61-77.
- Yescombe, §§ 5.1-5.4, “Working With Lenders” pp. 79-95.
- Yescombe, § 14.7, “Lender’s Security” pp. 382-386.
- Yescombe, § 14.4, “Control of Cash Flow” pp. 371-379.
- Yescombe, § 14.14, “Intercreditor Issues” pp. 400-401 (intro only).
- ABA, *Model Joint Venture Agreement Checklist*, pp 1-21.



**Class 9**

**3/11/20 Tax Equity and Financial Modeling:** Tax Equity Structures, Forecasting, Cost and Revenue Assumptions, Capital Costs and Operating Costs, Sensitivities, IRR and Debt Coverage Ratios

Required:

- Raikar & Adamson, *Tax Structures for US Financing Renewable Energy Projects*, unpublished, pp 1-16.
- Raikar & Adamson, *Introduction to Project Finance, Chapter 2 – Financial Modeling*, unpublished, pp 14-19.
- Stanford GSB Case Study, *SolarCity: Rapid Innovation*, March 27, 2015, pp 1-10.
- Martin, *Solar Tax Equity Structures*, September 10, 2015, pp 1-8.
  - *Focus on the Partnership Flip structure.*
- Yescombe, Ch. 13, “The Financial Model” pp. 345-365.

**Class 10**

**3/18/20 Trends in Renewable Energy Finance:** Backleverage, Property-Assessed Clean Energy, Securitization, Yield Cos and Other Trends in Renewables Project Finance

Required:

- Moran & Chase, *Renewable Structures - Choices & Challenges*, pp 1-10.
- NREL, *PACE Financing Opportunities for Lawyers* (September 2014), pp 1-4.
- O’Sullivan & Warren, *Solar Securitization: An Innovation in Renewable Energy Finance* (July 2016), pp 12-31.
- *Esty and Kane*, Calpine Corporation: The Evolution from Project to Corporate Finance, pp 1-10.

Suggested:

- New York Bar, *Structured Financing Techniques*, 50 Bus. Law. 527, 1994-1995, pp 527-560.

**3/25/20 Spring Break**

**Class 11**

**4/1/20 Operations and Maintenance:** Force Majeure applied; Change in Law; Disposition and Abandonment

Required:

- Hoffman, Ch 17 “Operations and Maintenance Contracts” pp. 198-208.
- *Northern Indiana Public Service Company v. Carbon County Coal Co.* 799 F.2d 276 (7<sup>th</sup> Cir. 1986).
- *URI Cogeneration Partners v. Board of Governors for Higher Education*, 915 F. Supp. 1267 (D.R.I. 1996).

Suggested:

- Steven Ferrey, *Law of Independent Power* (Thompson/Reuters West 2008) §§ 10.139 – 10.143.

**Classes 12 & 13**

**4/8/20 and 4/15/20 Group Presentations**

Required:

- Case studies – To be posted on bCourses.
- Investment Committee Memo Template
- Investment Committee Memo Process
- Yescombe, Ch. 9, “Commercial Risks” pp. 197-256.
- Yescombe, §§ 11.1-11.3, “Regulatory & Political Risks” pp. 295-300.

**Class 14**

**4/22/20 International Projects and Partners: Equator Principles, Cross-Border Trends, Multilateral Development Banks/Export-Import Banks, Federal Corrupt Practices Act**

Required:

- Yescombe, §§ 16.1, 16.2, 16.2.1, 16.4.4, “Export Credit Agencies” pp 443-446, 458-460.
- Yescombe, §§ 16.5, 16.5.1, 16.5.2, “Multilateral Development Banks” pp 462-469.
- The Equator Principles III, p 1-11.
- Wright, *Global Banks, the Environment, and Human Rights: The Impact of the Equator Principles on Lending Policies and Practices*, Global Environmental Politics 12:1, February 2012.
- Center for Resource Solutions and Energy Peace Partners, *Peace Renewable Energy Credits: Facilitating High-Impact Projects in Fragile Regions*, March 2019, pp 1-13.

Optional:

- U.S. Department of Justice, *A Resource Guide to the U.S. Foreign Corrupt Practices Act*, 2012, pp 10-35.

**Review Session**

**Tentatively 6:25-9:05pm, Wednesday 4/29/20, Room 170 – To be confirmed in class.**