



Tuck

TUCK SCHOOL
OF BUSINESS

Founded 1900

2016-17 REPORT ON THE REVERS CENTER FOR ENERGY

MISSION AND VISION

The Revers Center for Energy's mission is to inspire and shape tomorrow's leaders in energy while engaging today's energy community of scholars, students, alumni, and executives. The Center makes the Tuck School of Business at Dartmouth a focus of energy leadership by taking advantage of the school's core strengths: academic excellence, broad-based management training, and a tight network of students, faculty, and alumni.

The vision of the Revers Center for Energy is to establish Tuck as the preeminent business school for learning practical leadership in the energy industry. The Center achieves its goals by building and tapping a network of global business leaders, establishing and maintaining leadership in research and academics, and developing a distinctive blend of courses and programs that support student exploration of complex, multidisciplinary issues across the energy industry and equip graduates with the tools to manage near- and long-term leadership challenges within the energy industry. This starts with the fundamentals of the core MBA curriculum and extends to specialized electives, customized experiential learning, faculty collaboration, and corporate and alumni outreach.



ENERGY IN THE CLASSROOM

Using a *learning platform* metaphor approach, the ultimate objective of the Center is to develop practical leadership skills through a combination of in-class training, exposure to outside resources and experiential learning to hone and refine practical skills before entering the workforce. This includes both top-tier leadership skills that are valuable within the C-suite of an organization as well as development of 'useful' skills that MBA graduates can employ immediately.

To build these learning platform pathways, we must first acknowledge that the energy industry is large and highly complex in its structure and economics, requiring knowledge across a spectrum:

- General energy and sectoral knowledge
- Economics: navigate complex energy markets

- Finance: managing access to and the deployment and operation of capital-intensive resources
- Strategy: understanding the competitive landscape and key drivers for success
- Technology: operate and innovate sophisticated technology
- Policy: manage critical government stakeholder relationships

In addition to the rigorous general management MBA curriculum, Tuck offers the following elective courses exploring discrete energy challenges:

BUSINESS AND CLIMATE CHANGE MINI-COURSE, PROFESSOR ANANT SUNDARAM (FALL TERM)

Climate change and its impacts raise momentous concerns. Hundreds of companies worldwide are aggressively getting in front of it, since they are the constituency with the strongest links to climate change: companies are the primary source of greenhouse gas emissions; equally, by deploying R&D, financial resources, technologies, and talent, they will be the ones to provide solutions to address climate change. There is an emerging, multi-trillion-dollar 'climate economy' that will help to mitigate and adapt to climate change. The purpose of this course is to introduce key questions related to 'Business and Climate Change': (1) What is climate change, and why should you as an MBA, and the company you work for, care? (2) What does the emerging climate economy mean for your career, your firm, your industry? (3) How do companies measure and manage emissions? (4) What are the tools and frameworks to understand regulatory responses (e.g., a carbon tax or cap-and-trade), and to assess how a company's business model is exposed to climate change? (5) What do you need to know about the global policy-making process vis-à-vis climate change, and how it will impact business?

Guest Lecturer's in 2016-17 included: Edan Dionne, Director, Corporate Environmental Affairs and Andres Rodriguez, Manager, Energy Management & Climate Protection, IBM Corporation.

SUSTAINABLE BUSINESS COURSE, PROFESSOR ANDREW KING (WINTER TERM)

The purpose of this course is to introduce sustainability, the effective strategies for advancing it, the role for business, as well as the tools for advancing it. This includes consideration of unilateral, technological, and multilateral strategies for advancing sustainability. The most significant challenges to sustainability are reviewed, as are instructive case examples for how to analyze them.

The course also provides working knowledge of important economic and social trends, including an impartial view of potential responses to climate change, and analyzes the extent to which different technologies (wind, solar, gas, coal, and nuclear) and business-led strategic responses may be part of the solution. There is a focus on general skills useful for all managers, and helping managers recognize the source of these problems and frameworks to address them. This class uses a combination of cases and analytical tools: simulation, empirical evidence, historical study, and visiting experts.

Guest Lecturer's in 2016-17 included:

- Liza Casella, Casella, covering recycling and the circular economy
- Auden Schendler, Aspen Skiing Company, covering energy efficiency
- Corey Brinkema, President Forestry Stewardship Council, Covering Forest policy

ENERGY ECONOMICS COURSE, PROFESSOR ERIN MANSUR (SPRING TERM)

The purpose of this course is to introduce students to energy markets, including structure, competition, investment, regulation, as well as, strategy and policy. Students begin by exploring questions such as, what units are used to measure energy, what are the main sources of energy, how do we use energy and how has energy intensity changed over time. They end with a deeper understanding of economic determinants of industry structure, the evolution of competition, drivers of supply and demand in various markets, the roles of storage and transportation, market power and antitrust concerns, and the rationales for economic and environmental regulations. Oil, natural gas, energy commodities, LNG, power, renewable technologies, nuclear power, and environmental regulation are covered. Students, working in small teams, will engage in competitive strategy games to learn about the oil and electricity industries. They will simulate OPEC countries in the oil industry and then for-profit firms in a restructured electricity market.

Guest Lecturer's in 2016-17 included Scott Fisher T'98 of The Northbridge Group.



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INDEPENDENT STUDY

The Center sponsored six independent study projects on energy, up from three last year. Professor Mansur oversaw a Center for Business, Government, and Society case writing project on the investor-owned utility, National Grid, and a worked with another student on renewable energy development in Mexico. April and Erin oversaw three additional Center projects on greenhouse gas impact reporting for a private equity firm's cleantech infrastructure fund, a grid-scale battery storage project with a Boston-based start-up, and a private equity firm's business analysis on an storage assets in the Caribbean. The final project was conducted over the summer in support of a broader Dartmouth review of campus energy, this time focused on district heating and cooling. Past Dartmouth studies have included wind, solar, and fuel diversity analysis.

CONFERENCES AND SPEAKER SERIES

CONFERENCES

NORTHEAST WORKSHOP ON ENERGY POLICY AND ENVIRONMENTAL ECONOMICS

June 13-14, 2017, The Revers Center for Energy—with support from the Irving Institute for Energy and Society—hosted this regional academic conference that was organized by Professors Erin Mansur (Tuck), Kenneth Gillingham (Yale) and Shanjun Li (Cornell). The two-day conference brought together about 40 professors and graduate students from 15 universities and colleges throughout the Northeast to present and discuss research in progress on a wide variety of economics questions. This regional conference has been held for several years but this was the first time it was at Dartmouth.

2017 BUSINESS AND SOCIETY CONFERENCE

On Friday, February 24th, Professor Anant Sundaram, moderated the “Assessing Solar City-Tesla Merger Impacts” panel. In November 2016, Tesla Motors' shareholders agreed to a \$2 billion all-stock merger with SolarCity. Elon Musk and many others in the energy industry see solar and storage as the path to a sustainable energy future. The panel explored key questions such as: Why is the combination of these technologies so important? Who benefits from this type of vertical integration? Did this deal happen at a fair price? Are there governance concerns, even though Musk did not vote? Do any of these evaluations hinge on government policies or support? The panel evaluated why this deal was proposed, debate the benefits to different parties, and consider the profitability under a new administration. Panelists included, Karsten Barde D'04, T'11, Program Manager, National Grid, Mateo Garcia T'15, Associate, Power and Utilities Investment Banking, Bank of America Merrill Lynch, Don Kendall T'76, Managing Director/CEO, Five Stone Capital, and Dan Reicher D'78, Executive Director, Steyer-Taylor Center for Energy Policy and Finance, and Professor of the Practice of Law, Stanford University.

SPEAKERS AND SPEAKER SERIES

SPRING TERM CLIMATE CHANGE SPEAKER SERIES

The Center co-sponsored this series with Professor Sundaram; the Center for Business, Government, and Society; and the Irving Institute for Energy and Society.

- March 27, 2017. David Hone, Climate Change Advisor, Shell. Topic: “Business, Energy and the Paris Agreement”; the outlook for the global energy system and its constituent businesses, in the context of the Paris Climate Agreement.
- Apr 17, 2017: Kathy McLeod, Managing Director, The Nature Conservancy. Topic: the linkages between climate and adaptation strategies, and how TNC uses financial tools to address climate risks”
- May 2, 2017: John Morton, former White House Senior Director for Energy and Climate Change at National Security Council. Topic: climate finance
- May 15, 2017: Ashley Schulten, Green Bond Portfolio Manager, BlackRock. Topic: Green bond markets and green investing

Event poster for "MANGROVES AND MARKET SOLUTIONS, HOW THE NATURE CONSERVANCY USES FINANCIAL TOOLS TO ADDRESS CLIMATE RISKS". The poster is green and white. It features a photo of Kathy McLeod, Managing Director, Climate and Risk Investment, The Nature Conservancy. The event is part of the "CLIMATE CHANGE SPEAKER SERIES" and is co-sponsored by the Arthur L. Irving Institute for Energy and Society, the Center for Business, Government & Society, and the Revers Center for Energy. The date is Monday, April 17, 12-1:00 PM. Light lunch is available, and sign-up is on Tuckstreams.



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OTHER SPEAKERS

- September 14, 2016. Elyse Allan D'79, T'84, President & CEO, GE Canada.
- October 14, 2016. Daniel Reicher D'78, Executive Director of the Steyer-Taylor Center for Energy, Policy and Finance at Stanford University. Topic: "Energy and Society."
- January 17, 2017. Sergei Petrov T'12, Head of Strategy, Russian State Atomic Energy Commission (Rosatom). Topic: "Global Energy Markets and 2017 Outlook"
- Jan 20, 2017: Inauguration Week - Energy and Environment Panel. Dartmouth, Tuck, and Thayer hosted a week of topical panels during inauguration week, with the final panel focused on energy and environment. Topics ranged from the future of renewables, fossil fuels and nuclear; climate and environmental policy and regulation; the role of government; and how we might anticipate industry changes over the next four years.
- Apr 6, 2017. Jonathan Elkind, Assistant Secretary of Energy for International Affairs 2015 2017, US Department of Energy. Topic: Clean Energy and International Climate Collaborations, examining the implications for the Paris Climate Agreement, renewable energy industries, and U.S. energy collaborations.
- April 6, 2017. Thad Hill T'95, CEO, Calpine. Topic: "Investing and Operating in Restructured Electricity Markets"
- May 3, 2017: William Fraizer D'78, Chevron Australia. Topic: Global Energy and LNG Industries – Evolution, Trends and Careers, co-sponsored with The Thayer School of Engineering



STUDENT EXPERIENTIAL LEARNING

GLOBAL ENERGY FORUM

January 26-28, 2017, the Center sponsored four students to attend the Global Energy Forum, in Beaver Creek, Colorado, focused on the 'rise of North America as a global energy powerhouse'. The Center coordinated with Stanford University's Precourt Institute for Energy and the Precourt Energy Efficiency Center to obtain 'scholarships' covering meals and lodging for all four students. Picture, l-r, are Josh Hotvet T'18, Evan Coates, T'17, Viveka Ranjitsinh T'17, Estephany Ley Monarrez T'17.

CERAWEEK 2017

For the third year in a row, Tuck's Revers Center for Energy has sent a delegation to CERAWeek, the premier annual international gathering of energy industry leaders, experts, technology innovators, and policymakers. This year, through added funding support from the Arthur L. Irving Institute for Energy and Society, we were able to extend participation to Dartmouth undergraduate students. April Salas, Ian Falik T'17, and Julian Marcu D'18 attended. The Center is a member of the newly established *Future Leaders Program*, which provides private briefings on selected energy topics by industry experts and analysts.



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Pictured at CERAWeek 2017 (l-r): Dan Reicher D'78, Will Frazier D'78, April Salas, Julian Marcu D'18, and Ian Falik T'17

CASE COMPETITIONS

The Revers Center for Energy funded two energy case teams to compete at the following energy case competitions:

- October 2016. McCombs National Energy Case Challenge in Austin, TX, focused on an oil and gas exploration and production company managing through a low oil price environment.
- December 2016. Univ. of Michigan Ross School of Business Renewable Energy Case Competition in Ann Arbor where we placed 3rd! This case focused on a clean energy start-up. The winning team is pictured, holding their winnings.



MENTORSHIP PROGRAM

The Revers Center for Energy launched the inaugural Energy Leadership Mentorship Program in Fall 2016. The Mentorship Program connects Revers Student Fellows with successful energy industry leaders. The objective of this program is to cultivate a strong network and community of Tuck “energy” alumni. This program furthers the Mission and Vision of the Revers Center for Energy by facilitating a transfer of knowledge, wisdom, resources, and life experiences. The program is designed to create lasting, meaningful mentorship relationships through two-way dialogue that extends far beyond the duration of the program. The inaugural 2016-17 Mentors were: Eric Spiegel T'87, Siemens, President and CEO, retired; Scott Brown D'78, New Energy Capital, CEO; Bob McGaughey, ArcLight Capital, Head, Commodity Markets; Don Kendall T'76, Blue Earth Capital / Kenmont Capital Partners, LP; Elyse Allan D'79, T'84, GE Canada, President and CEO; Mike Miskovsky T'90, Cleantech CEO; Chansoo Joung T'87, Apache Offshore Investment Partnership, Board; Thad Hill T'95, Calpine, CEO.

FELLOWS PROGRAM

Revers Center for Energy student fellows work with Center leadership and Tuck faculty, staff, and alumni to create opportunities for students to learn about the energy industry, both in and outside of the classroom. Our 2016-17 fellows are listed on the next page. The 2017-18 fellows were selected in March 2017, and are the largest fellows cohort, at 10, selected to-date. Our fellows for 2016-17 are listed on the next page.



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Evan Coates T'17
interests: oil and gas,
energy finance



Shawn Curley T'17
interests: wind power



Ian Falik T'17
interests: oil and gas,
and investment banking



Andy Ladygin T'17
interests: energy
investing, commodities,
investment mgmt



Danielle Musa T'17
interests: renewable
energy, efficiency and
demand-side mgmt



Viveka Ranjitsinh T'17
interests: solar energy
and sustainability



Nick Ritter T'17
interests: solar energy,
oil and gas



Andrew Zabel T'17
interests: renewable
energy

ADDITIONAL HIGHLIGHTS

We are delighted to announce that Madeleine Bothe has joined the Revers Center for Energy as Program Manager. In this new role, Madeleine will initiate, plan, and manage Center programming and initiatives, including content development, outreach, and measuring impact. Madeleine will also support student, faculty, and alumni engagement efforts, and assist with development of strategic initiatives that engage a broad range of energy industry business leaders.

Madeleine comes to Tuck from the Climate-Knowledge Innovation Community (C-KIC) at Imperial College London, United Kingdom (UK), where she managed a portfolio of academic partnerships, and their contributions to the UK education program. She has also made material contributions to the UK education strategy, and managed education programs, such as a three day executive education pilot course on Sustainable Cities. Prior to that, she held positions at the London School of Economics and Political Science (LSE), Fleet Tutors, and Dartmouth College.

Madeleine has a bachelor's degree in international business and management, with concentrations in marketing and French intercultural studies, from Dickinson College in Carlisle, Pennsylvania.

Please join us in welcoming Madeleine, her husband, and her beloved rescue dog Sprinkle back home to the Upper Valley, and to Tuck!



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