

Annual Report

FY 2016



Institute for Sustainable Energy

Tel 617-358-6248

595 Commonwealth Avenue, 502E
Boston, MA 02215

bu.edu/ise
iseinfo@bu.edu

Contents

In Brief	1
Institute Goals and Objectives	3
Research	6
Events	8
Communications	10
Appendix	Error! Bookmark not defined.
Current Full-Time Staff	11

In Brief

Strategic Highlights

The Institute was funded and officially started in January of 2016. Fiscal Year 2016 was very much a ramp-up phase in every aspect, establishing our administrative and operating structures, publicizing our mission and creating connections throughout Boston University. Beyond the BU community, the Institute is in the process of establishing itself as a world-class research center.

Research Highlights

In the six months that the Institute has been established, we have received three separate grants totaling over \$200,000. Our sponsors have included the Energy Foundation, the City of Boston/Green Ribbon Commission, and the Department of Energy. We have over 35 affiliated BU faculty members. The Institute has hosted or co-hosted several university symposia for the purpose of sharing ideas and educating the BU community and members of the public.

Peter Fox-Penner was chosen by the Department of Energy to produce the second installment of the Quadrennial Energy Review (QER) of the United States. Entitled "US Bulk Power Markets: Challenges & Recommendations" the report examined the current and future state of bulk power markets across the US.

A collaborative research effort between the Institute, Massachusetts state officials and the Brattle group, funded by the Barr Foundation, resulted in a whitepaper detailing clean energy policy options for the Commonwealth of Massachusetts. As a result of this whitepaper, the authors, including Peter Fox-Penner, testified before the Senate Oversight Committee on Global Warming. The new Massachusetts energy policy that was signed into law by Governor Baker on July 31, 2016 included many of the recommendations put forth in the whitepaper.

Operating Highlights

In the spring of 2016, the Institute issued its first national newsletter. The Institute also hosted and co-hosted many events including an Earth Week speaker series. The Institute also hosted and coordinated a Research on Tap seminar focused on sustainable energy.

After initial approval of the Institute charter in January 2016, staffing positions for the Assistant Director of Operations and Director of Research and Outreach Activities were approved. The Assistant Director was hired in June 2016 with the Director of Research officially joining the Institute in September of FY17. Five student research assistants have been instrumental in helping to coordinate events, creating marketing materials and assisting with on-going research, while also providing these students with useful exposure and experience. The Institute is in the process of formally establishing its operating procedures and administrative structure.

Looking Ahead

Fiscal year 2017 will be an exciting year marked by incredible growth as the Institute will be fully staffed for the first time. The Institute will have two post-doctoral associates dedicated full time to research. The Industry Council will be piloted in 2017 lead by the Director of Research, which will look to formally establish a relationship between ISE and sustainable energy industry leaders.

*The Institute has more than **35 affiliated faculty** across the University from business, engineering, law, to city planning, and more.*

Institute Goals and Objectives

The Institute engages in a wide range of activities, from research to sponsored campus events. The Institute's mission is to assist and promote interdisciplinary faculty research and expand collaboration with outside stakeholders, including energy technology firms, public agencies, other universities and research organizations and environment- and energy-focused NGOs.

It is through our sponsored research, events and communication with stakeholders that we are already meeting the goals and objectives detailed in the ISE Charter.

I. Objective Achieved

Serve as an interdisciplinary communications and collaboration hub between the schools and colleges within BU who are doing research into sustainable energy and related areas to promote collaboration and synergies on new and existing projects

ISE Activity

The Institute draws on the expertise from multiple departments and schools to develop and execute research activities of the highest quality. For example, the Green Ribbon Commission scoping study utilizes the expertise of the Co-PI Cleveland Cutler from Earth & Environment Department, CAS, while a whitepaper collaboration with LAW focused on the energy priorities for the incoming presidential administration.

II. Objective Achieved

Incubates and promotes new sustainable energy research across the University, and provides opportunities for students and faculty at all levels to participate in research projects to further their education as well as contribute to project research missions

ISE Activity

The institute has hired five student research assistants to assist with research, including work done for the Green Ribbon Commission scoping study, Climate Assistance for Least Developed Countries, and US Bulk Power Markets review. Faculty researchers from Questrom School of Business, Law, Engineering and Pardee have assisted on ISE sponsored research.

III. Objective Achieved

Serves as an educational resource to BU students and faculty, and to the BU community at large, through web and other information resources

ISE Activity

Establishing the ISE website and keeping it up to date with relevant information including specific pages dedicated to news, announcements, events and jobs. Information is gathered about BU as well as relevant external events and information.

IV. Objective Achieved

Helps develop and deliver new course offerings on sustainable energy and related topics for BU students as well as for specialized audiences

ISE Activity

Institute Director, Peter Fox-Penner, spent FY16 developing course material for his FY17 course to be offered in Fall 2016. He has also worked closely with faculty members of the Energy and Environmental Sustainability MBA concentration to help develop curriculum, recruit students and promote awareness.

V. Objective Achieved

Helps develop communication products, such as videos and podcasts, showcasing BU research

ISE Activity

The Institute hosted the Research on Tap in March 2016 which brought 15 faculty members to the stage for a series of "Micro-talks." Recordings of those talks are now kept on the ISE website and can be accessed by anyone. Similarly, a webinar about the nexus of water and energy was recorded and now lives on the ISE website. The Institute also maintains an official Facebook page to promote related research and events through social media channels.

VI. Objective Achieved

Hosts and promotes conferences, symposia, and workshops on sustainable energy

ISE Activity

The Institute hosted and co-hosted several events through Spring of FY2016. For further detail see the events section of this report.



VII. Objective Achieved


Creates focused collaborations between outside experts, industry groups, and the University through programs such as an Institute Affiliates program, visiting scholars, executives-in-residence, distinguished fellows and other university-community interactions

ISE Activity

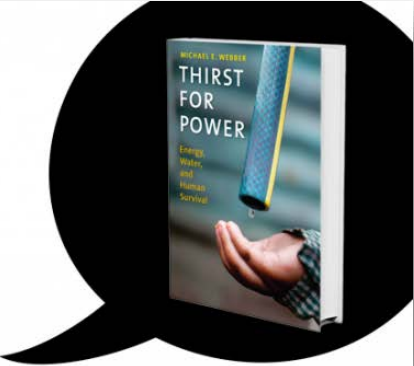
The Institute established a formal affiliation process and has over 35 affiliated BU faculty. To affiliate a faculty member must commit to contributing a written contribution to the website or attending an ISE sponsored event at least once a fiscal year. The Institute has five appointed Non-Resident Senior Fellows that have committed their time and expertise to the Institute for one calendar year. Their first year appointments run from July 1, 2016 to June 31, 2017.

**The Energy-Water Nexus:
Energy, Water, and Human Survival**

A talk with author Michael Webber



April 28 | 5:00 pm
HAR Room 212 | Questrom School of Business



Research



BOSTON 80 x 50 SCOPING STUDY

GREEN RIBBON COMMISSION

The City of Boston's Green Ribbon Commission and the City of Boston are preparing to revisit the City's plan to reduce greenhouse gas emissions 80% by the year 2050. The Commission has engaged the Institute to assist with scoping out the modeling and policy development needed for the updated study. We believe this work will lead to a state-of-the-art modeling approach that links policies, economics, and emissions more thoroughly than many urban climate plans. The project is co-directed by Cutler Cleveland and Peter Fox-Penner.

ELECTRIC UTILITIES' TRANSITION STRATEGIES

THE ENERGY FOUNDATION

Energy Foundation has contracted the Institute to prepare a series of briefings on four US electric utilities. The briefings, led by Peter Fox-Penner, take a deep-dive into each utility's asset profile, organizational structure, investor profile, clean energy exposure and positioning, and operative market structures and footprint. After each briefing is prepared, the ISE and EF teams will meet with each utility. The briefings and subsequent meetings serve to advise and encourage US utilities to transition to cleaner, more sustainable business models.

CLIMATE ASSISTANCE FOR LEAST DEVELOPED NATIONS

RESEARCH COLLABORATION WITH OXFORD UNIVERSITY

In collaboration with Oxford University's Oxford Climate Policy, the Institute is helping the world's most disadvantaged nations cope with the costs of climate change. The Oxford Climate Policy Subnational Finance Project's goal is to utilize sub-national financing bodies – mainly states, regions, and provinces that have carbon taxes or cap-and-trade systems – to allocate funds to the United Nation's Least Developed Country Fund. This fund is currently administered by the Global Environment Facility and has received \$961 million as of 2015. The Least Developed Countries comprise 48 nations and 880 million people. LDCs are highly disadvantaged, third world economies and are the most vulnerable to climate change effects. Subnational financing focuses on state, regional and local government programs to assist financing critical, international projects.

SUSTAINABLE ENERGY PRIORITIES FOR THE INCOMING PRESIDENTIAL ADMINISTRATION

WHITEPAPER COLLABORATION WITH BU LAW

Working jointly with Boston University's Center for Finance, Law and Policy, the ISE is engaging government regulators, industry experts and advocates to develop an extensive list of actions for the incoming Presidential Administration to use to promote environmental sustainability. The areas of discussion range from carbon risk weighting of capital to compliance credits within the Community Reinvestment Act. This project is on-going and will culminate in a series of proposals detailed in a whitepaper.

CLEAN ENERGY POLICY OPTIONS FOR MASSACHUSETTS

BARR FOUNDATION WHITEPAPER

With contributions from ISE Director Peter Fox-Penner as well as former Massachusetts State officials David Cash and Ann Berwick, the Brattle Group recently released a whitepaper detailing clean energy policy options for the state of Massachusetts. The report, prepared for the Barr Foundation, provided state policymakers with a series of recommendations that will help meet greenhouse gas reduction goals and ensure electricity reliability, while minimizing customer cost and risk. The recommendations include: developing a comprehensive energy planning process; allowing flexibility that will enable new technologies to enter the market; and grounding the state's clean energy policy in a diverse set of resources, including hydro, off- and on-shore wind, solar, energy efficiency and storage. Many of the recommendations were enacted in the new Massachusetts energy bill (HR 4568), adopted July 31, 2016.

US BULK POWER MARKETS: CHALLENGES & RECOMMENDATIONS

DEPARTMENT OF ENERGY, QUADRENNIAL ENERGY REVIEW

Institute Director, Peter Fox-Penner, was chosen by the Department of Energy to write the second installment of the Quadrennial Energy Review (QER) of the United States. By engaging key stakeholders throughout the US power industry, a workshop and subsequent report examined the future of bulk power markets. The report ultimately concluded that despite a US bulk power market that is functioning reasonably well, especially considering its enormous complexity and diversity, these markets – in every section of the country – face very large challenges that call for national policy improvements, research and technical assistance.

Events

[ISE Co-Sponsors: BU Conference on Sustainability Research](#)

On May 19, 2016, a one-day conference that explored BU research related to sustainability featured faculty from six schools and colleges, of which 13 are ISE affiliated faculty, and 6 are on the ISE Advisory Board. ISE Director, Peter Fox-Penner, was also a panelist.

[ISE Hosts Webinar with Michael Webber on *The Energy-Water Nexus*](#)

With an introduction made by ISE affiliated faculty, Cutler Cleveland, author and University of Texas faculty member, Michael Webber, presented his new book on the growing nexus of water and energy.

[Earth Week Speaker Series:](#)

[*The Future of Energy Efficiency*](#)

On April 19, 2016, Harvey Michaels, MIT professor, spoke on the importance of intelligent buildings in the future of energy efficiency. A discussion was led by Robert Kaufman and moderated by Kira Fabrizio. The ISE hosted this event as part of the Earth Week celebration and campaign to educate students and the general public on the importance of sustainability. Videos of their lectures can be found on the ISE website.

[*Urban Mobility in Clean, Green Cities*](#)

Between 2010 and 2050, the number of people living in world's urban areas is expected to increase by 80 percent. This growth will intensify the great challenges for urban mobility. Cities increasingly face problems caused by transport and traffic, and how to keep cities clean and green become critical.

Located on the Institute website are videos of Henry Kelly, University of Michigan, and Christos Cassandras, Boston University, lectures on urban mobility issues in clean and green cities. The seminar was moderated by Katharine Lusk, Boston University, and followed by a discussion led by Martin Chavez, former Mayor of Albuquerque.

[Fox-Penner Moderates ARPA-E Discussion](#)

On March 13, 2016, Boston University's Office of Research hosted Dr. Eric Rohlring, Deputy Director of the Advanced Research Projects Agency – Energy (ARPA-E). Dr. Rohlring gave a fascinating and thorough overview of ARPA-E's activities, moderated by ISE Director Peter Fox-Penner.

[ISE Hosts Research on Tap](#)

On March 3, 2016 the Institute made its debut with a symposium of diverse, cutting-edge sustainable energy research related topics conducted by BU researchers from all across the university. The symposium consisted of 15 five-minute "micro-talks,"

Communications

Spring 2016 Newsletter

The Institute published a spring 2016 on May 26, 2016 that served as our first publication. It was a mass communication for all Institute affiliates, friends and interested parties in and outside of the Boston University community.

ISE Website

The Institute website was created and is updated on an as needed basis, usually daily or weekly, with breaking energy and environmental news items as well as Institute events and research.

The ISE website also hosts a blog – *Blog Thoughts* (<http://www.bu.edu/ise/blog-thoughts/>) - that features in-depth exposés from experts on a variety of related topics. Posts have been written by: Peter Fox-Penner and Yingxiang Yang, a Brattle Group consultant, on coal mining in Inner Mongolia and Dr. Clark Bullard, University of Illinois professor, compares biofuels and electric cars.



Full-Time Staff



Peter Fox-Penner
Director &
Professor of Practice

Tel 202.256.4577

pfoxp@bu.edu



Jacqueline Ashmore
Director of Research &
Outreach Activities

Tel 617.353.7422

ashmore@bu.edu



Tess Kohanski
Assistant Director,
Operations

Tel 617.358.6248

tckohans@bu.edu



Margaret Hendrick
Post-Doctoral Associate

hendricm@bu.edu



John Helveston
Post-Doctoral Associate

jhelvy@bu.edu