



UNC

CENTER FOR CLIMATE, ENERGY, ENVIRONMENT AND ECONOMICS

2016-2017 ANNUAL REPORT

Mission. Carolina Law's Center for Climate, Energy, Environment and Economics (CE³) has two interrelated missions. First, the Center is expanding opportunities for Carolina Law students to develop a deep understanding of the critical energy and environmental challenges of the day through research, new courses, externship opportunities, moot court competitions, and scholarships. Second, the Center is informing public policy and private sector decision-making at the state and federal levels through non-partisan, objective analysis and stakeholder engagement. We begin our projects by engaging stakeholders in government, business and communities to identify pressing energy and environmental issues. CE³ then utilizes students, UNC faculty, and Center staff to provide analysis and identify innovative legal responses.

Placed in the heart of one of the nation's premier public research universities, CE³ is quickly establishing itself as a place faculty, students, scholars, and energy and environmental stakeholders look to for expertise on an evolving landscape of energy best practices. Early projects include an analysis of state efforts to assess the value of solar energy, educating community stakeholders about ratemaking and energy investments, coauthoring a pre-election white paper identifying six electricity sector challenges facing the next president, and a series of workshops for utility commissioners, academics, and electricity sector stakeholders coinciding with meetings of the National Association of Regulatory Utility Commissioners. Moving forward, CE³ will focus its efforts on the implications of applying existing electricity sector law (largely enacted in the 1970s and earlier) to the evolving electricity sector, as well as ongoing education for students and stakeholders.

The Center and its Staff. Professors Victor Flatt and Jonas Monast served as CE³'s co-directors during the 2016-2017 academic year. On June 30, 2017, Professor Flatt left the Carolina Law faculty to join the faculty of the University of Houston Law Center. Professor Monast assumed the role of sole CE³ director on July 1st, 2017. Heather Payne continues to serve as CE³ Assistant Director and has taken on teaching responsibilities at Carolina Law.

CE³ has a number of affiliated faculty at Carolina Law, including David Ardia, Don Hornstein, Joe Kalo, Maria Savasta-Kennedy, and Judith Wegner. In addition, UNC professors Andy Yates (Economics Department) and Stephen Arbogast (Kenan-Flagler Business School) serve on the CE³ advisory board.

Advisory Board. CE³ held its inaugural Board of Advisors meeting on February 3, 2017. This group provides guidance, on a volunteer basis, and assists CE³ with other activities as needed. Advisory Board members and their biographies can be found at <http://www.law.unc.edu/centers/ce3/about/board/>.

Funding. CE³ receives support from the Duke Energy Foundation, the Taft Distinguished Professor Chair, and the C. Boyden Gray Distinguished Professor Chair.

STUDENT EDUCATION AND OPPORTUNITIES

Student Research Assistants

Research assistants support work on many of CE³'s projects. CE³ research assistants over the past year include William Barber III (Class of 2018), Agnes Gambill (Class of 2017), Sam Helton (Class of 2017), Kyle Leopard (Class of 2018), Ethan Trotz (Class of 2018), Tas Lagoos (Class of 2018), Kristin Brunn (Class of 2019), Nicolas Eason (Class of 2019) and Jonathan Zator (Class of 2019). In addition, CE³ funded the following students to participate in targeted projects: Shannon O'Neil (Class of 2017, Pricing of Distributed Energy Resources Think In and Municipal Utilities and Cooperatives Conference), Kristin Athens (Class of 2017, Municipal Utilities and Cooperatives Conference), Seth Yeazel (Class of 2019, Pricing of Distributed Energy Resources Think In and subsequent research), Ethan Blumenthal (Class of 2018, Pricing of Distributed Energy Resources Think In), Kathleen Riley (Class of 2018, Pricing of Distributed Energy Resources Think In), Gavin Kim (Pricing of Distributed Energy Resources research), and Miles Wobbleton (Pricing of Distributed Energy Resources research).

Full Scholarship for Incoming Students

CE³ provided the first full scholarship for environmental law in the country. The inaugural recipient is Kristin Brunn, Class of 2019. In addition to receiving funds for her education, Ms. Brunn will have specific research assistant and externship opportunities as the scholarship recipient. The story of the CE³ scholarship was featured on Carolina Law's website, and can be found here: <http://www.law.unc.edu/news/2016/06/01/ce3-effecting-environmental-change-through-schola/>. Erin Grubbs was selected as the next CE³ scholarship recipient. Ms. Grubbs graduated with a B.S. in Environmental Engineering from Clemson University and a Masters of Environmental Law and Policy from the Vermont Law School, and has been working for Exxon Mobil in Houston, TX. We look forward to welcoming her and the rest of the Class of 2020 in August.

Moot Court Teams

Carolina Law students again participated in the Jeffrey G. Miller National Environmental Law Moot Court Competition, hosted by the Elizabeth Haub School of Law at Pace University, and the National Energy and Sustainability Moot Court Competition, hosted by the West Virginia University College of Law. The Pace/NELMCC team consisted of Kristin Athens and Brooklyn Hildebrandt (both Class of 2017) and Tas Lagoos (Class of 2018). The Energy and Sustainability team, who won their competition, consisted of Jenica Hughes (Class of 2017) and Amanda Aragon and Rachel Procaccini (both Class of 2018). Additionally, Amanda Aragon received the Best Oralist Runner-Up award for the competition. Twenty-six local attorneys volunteered their time to help judge practice rounds and advise the students. Heather Payne, CE³ Assistant Director, coached both moot court teams.

Summer Stipends

CE³ provided funding for students working at public interest positions over the 2017 summer. Jordan Luebke, Class of 2018, is working at the U.S. Department of Justice Environmental and Natural Resources Division; Coker Holmes, Class of 2019, is working at the Nature Conservancy; James Borden, Class of 2019, is working at the Environmental Division of the North Carolina Department of Justice; and Kathleen Riley, Class of 2018, is working at the Sierra Club.

Courses

Courses offered during the 2016-2017 year at Carolina Law as part of the environmental and energy curriculum include:

- Administrative Law (Donald Hornstein)
- Energy Law (Jonas Monast)
- Environmental Law (Victor Flatt)
- Environmental Law Practice and Policy (Maria Savasta-Kennedy)
- Environmental Markets (Victor Flatt)
- International Environmental Law (Heather Payne)
- Natural Resources Law (Jonas Monast)

ENGAGEMENT AND ANALYSIS

Events

Law, Policy, and the Future of Solar Financing, April 22, 2016. This one-day, invitation-only workshop was co-sponsored by CE³, the Center for Banking and Finance, and the UNC School of Government Environmental Finance Center. The workshop discussed: (1) the future demand for solar energy, (2) the current state and viability of financing options for solar energy projects (both small scale distributed and utility scale), and (3) financing challenges and solutions to increasing the availability of private sector financing of solar deployment through legal and policy changes. A white paper capturing the issues and ideas discussed at the workshop has been published. Information about the conference, including the recommendations white paper, is available at <http://www.law.unc.edu/centers/ce3/workshops/solarfinancing/>.

Power Shift: Regulating the Evolving Electricity Sector. July 25, 2016. CE³ partners with Harvard University's Environmental Law Project and Duke University's Nicholas Institute for Environmental Policy Solutions to host regular meetings with energy regulators, practitioners, and legal scholars to explore the legal, policy, and economic implications of the rapidly changing electricity sector. The July 2016 Power Shift meeting coincided with the regular summer meeting of the National Association of Regulatory Utility Commissioners (NARUC) to allow federal and state officials to participate in the meeting. Discussion topics included current challenges facing state utility commissions (featuring Commissioner ToNola Brown-Bland with the NC Utilities Commission and Commissioner Ann Rendahl with the Washington Utilities & Transportation Commission), utility rate cases and their implications for energy resource decisions, the evolution between federal and state

jurisdiction over the electricity sector, and energy-related challenges facing the 45th president.

The 2016 Carolinas Climate Resilience Conference, September 12-14, 2016. Don Hornstein (remotely), Victor Flatt, and Heather Payne, along with Dr. Greg Characklis of UNC's Department of Environmental Sciences and Engineering, presented "Insurance, Hedges, Markets, and Adapting to Climate Change."

PUC Collaborative Meeting, September 30 – October 1, 2016. CE3 hosted a workshop for energy scholars focusing on state-level electricity regulation September 30th - October 1st. Participants included: Hari Osofsky (University of Minnesota Law School), Ann Carlson (UCLA School of Law) and William Boyd (Colorado Law), Shelley Weldon (University of South Carolina School of Law), Kate Zyla (Georgetown Climate Center), Jonas Monast (University of North Carolina School of Law), Dalia Patino Echeverri (Duke University) and Christina Reichert (Duke University), and Sarah Adair (Duke University). The lively lunch discussion on Friday focused on energy law scholarship during a period of rapid change. Matt Nelson with Strata Solar joined the group for a conversation on valuing renewables, including modeling, planning, and uncertainty.

16th IEA-IETA-EPRI Annual Workshop on Greenhouse Gas Emission Trading, October 18, 2016. Professor Monast participated in the 16th Annual Workshop on Greenhouse Gas Trading, held at the Organization for Economic Cooperation and Development in Paris, France. The event, cosponsored by the International Energy Agency, the International Emissions Trading Association, and the Electric Power Research Institute, brings together climate policy experts from the United States, Europe, and Asia to explore new developments in international, national, and subnational emissions trading programs. Jonas provided an update on market-based compliance options under the Clean Power Plan and the ongoing litigation challenging the rule.

Symposium on Climate Change Ethics, October 28, 2016. Professors Flatt and Savasta-Kennedy participated in panel discussions during the Symposium on Climate Change Ethics, hosted by the UNC Parr Center for Ethics. The full day conference featured panels on: life in the Anthropocene and the value of nature; rising sea levels and duties to future generations; and responsibility for climate change and duties to other nations. The keynote focused on climate justice.

Pricing of Distributed Energy Resources Think-In, November 11, 2016. This invitation-only event posed three major questions for attendees to brainstorm: 1) How do we value electricity-sector resources generally? How are distributed energy resources (including resources such as rooftop solar or larger-scale Qualifying Facilities) similar to and different from these other electricity-sector resources? How does that affect value considerations? 2) How can PUCs, RTOs, and FERC improve transparency regarding the costs and benefits of DER, including how those costs are allocated among ratepayers? 3) What are the key outstanding legal questions regarding how DER is valued in electricity markets? Following input at the Think In, CE³ framed four questions to research, with the answers to the first two enlightening the research required to answer questions three and four: 1) What limits on the definition of "avoided cost" for compensation of a qualified facility, if any, does PURPA or federal law create? 2) Given the requirements of PURPA, how can a state PUC

encourage/discourage particular qualifying facilities? These first two questions allow us to consider the outside parameters that currently exist for determining compensation of DER under the most important federal statute: PURPA. The answer to these questions define what the law requires and allows, and how that framework could be used to “nest” values determinations about DER. It does not address the process by which values will be decided or calculated per se. It represents a way that they can be integrated into state electricity policy once those values have been determined. If no values discussion has occurred, this also demonstrates at least some of the values and costs that are favored by using a legally allowed compensation method under PURPA. While PURPA creates the overall framework, states have implemented – and continue to implement – PURPA in different ways. To help stakeholders and states understand what others are doing, CE³ is working to compile what categories or elements different states have chosen to include when determining the value that distributed resources should be compensated at. Research and analysis on those values is part of an ongoing CE³ project.

Festival of Legal Learning: Environmental Law Symposium, February 11, 2017. Each year, CE³ participates in UNC School of Law’s premier CLE event, the Festival of Legal Learning. This year, the topics covered included environmental justice, an update on the environmental and energy laws of North Carolina, potential changes to the federal flood insurance program, and an in-depth discussion of possible environmental and energy policies and changes under the Trump administration. Ten students chose to write papers specifically for the Symposium; these papers, always a key part of the materials given to participants, can be found at <http://studentorgs.law.unc.edu/elp/symposium/>.

Powershift: Regulating the Evolving Energy Sector, February 12, 2017. CE³ co-hosted the semi-annual Power Shift: Regulating the Evolving Energy Sector meeting with Harvard Law School’s Environmental Policy Initiative and Duke University’s Nicholas Institute for the Environment. Held during NARUC’s winter meeting in Washington, D.C., the forum allowed energy scholars and practitioners to hear from Acting Chairman Cheryl LaFleur, PUC Commissioners and others on topics of current debates at PUCs around the country, nuclear energy, renewables deployment, and agency decision-making.

North Carolina Journal of Law and Technology 2017 Symposium: The Impact of Demand Response Technology on the Electricity Sector, February 24, 2017. CE³ sponsored JOLT’s annual Symposium, which brought together an outstanding group of experts to discuss the impact of smart metering, smart solar inverters, new storage systems, and other demand response technology on the electricity sector. Alexandra B. Klass from the University of Minnesota provided the keynote address.

UNC Clean Tech Summit, March 2-3, 2017. CE³ participated as a Campus Partner in the University of North Carolina Clean Tech Summit, which was co-hosted by the UNC Institute for the Environment and the UNC Kenan-Flagler Business School Center for Sustainable Enterprise. The CE³ panel, Trends in Climate and Energy Policy, provided attendees with an overview of where the electricity sector currently stands and where it might be going given the 2017 political climate. CE³ also took the opportunity to host a table at the networking lunch, providing undergraduate students the opportunity to learn more about CE³’s work and Carolina Law in general.

Municipal Utilities and Cooperatives: Transitioning to a Lower Carbon Future Conference, March 24, 2017. CE³ co-hosted this conference with the Florida State University College of Law, Environmental, Energy & Land Use Program. Municipally-owned utilities (munis) and electric cooperatives (co-ops) provide electricity to millions of customers throughout the United States. Yet the important role of munis and co-ops is sometimes overlooked in the field of energy law. Recent market changes, such as rapidly declining costs of solar photovoltaic panels and wind energy, have led to dramatic changes in the U.S. energy mix. As consumers respond to these changes by demanding more diverse sources of energy, including lower-carbon options like renewable and nuclear energy, munis and co-ops will be at the forefront of this transition. Panelists discussed the differences between small and large co-ops/munis serving rural, low-density versus concentrated consumer populations; transitioning from utility-scale coal-fired generation to other options, including stranded cost issues; expanding purchasing options—consumer “green buying” options and muni and co-op participation in PPAs for renewable energy; and examples of expanding self-supply, with muni and co-op-built and operated renewable generation. CE³ continues to work with our co-hosts to develop three case studies, providing insights from the conference to other municipal utilities and cooperatives.

North Carolina’s Energy Future, June 24, 2017. This half-day seminar provided an overview of state energy law and explored upcoming decision points that will affect the future of North Carolina’s electricity sector with around 30 community members. The seminar began with an overview of the state’s ratemaking process and the agencies overseeing the state’s electricity sector. Afternoon sessions focused on upcoming decision points that will affect the state’s energy mix and lessons that North Carolina can learn from other states, including trends affected electricity planning. In addition to an overview of HB 589 being presented, there was also a discussion of the value of solar and other distributed energy resources.

CE³ Reports

Law, Policy, and the Future of Solar Financing. This white paper explores the legal and policy implications of increasing the finance of solar energy. After summarizing the current challenges and the session presentations, the paper identifies five main issues brought forward in the discussion during the Workshop, including uncertainty, deal complexity and standardization, varying and changing state policies, policy choices around utility-scale versus distributed installations, and the rate of return for solar projects. The paper concludes with seven recommendations, and is available at <http://www.law.unc.edu/documents/clear/workshops/financingsolarwhitepaperoctober2016.pdf>.

Illuminating the Energy Policy Agenda: Electricity Sector Issues Facing the Next Administration. The next president will take office during a period of rapid market and regulatory change for the U.S. electricity sector. Due to statutory deadlines, pending lawsuits, and agency rulemakings--if not by choice--the next president will tackle energy policy. To prepare policymakers for what promises to be a dynamic period in electricity law and policy, a new paper from CE³, the Harvard Environmental Policy Initiative, and Duke University's Nicholas Institute for Environmental Policy Solutions provides an overview of six key areas of federal policy, and for each area, identifies the decision points--in time or circumstances--

that will force the next administration to make choices that shape the future of the grid. For each decision point, the paper explores the next president's options and the authorities that he or she could deploy. The paper is available at <https://nicholasinstitute.duke.edu/climate/publications/illuminating-energy-policy-agenda-electricity-sector-issues-facing-next-administration>.

Faculty Scholarship

Faculty and staff at Carolina Law associated with the Center have published a wide variety of scholarship on important issues, including the following published in 2016 and 2017:

Victor Flatt

- *Unsettled: How Climate Change Challenges a Foundation of Our Legal System, and Adapting the Legal State*, BRIGHAM YOUNG U. L. REV. (2017).
- *Environmental Markets, Environmental Decision Making*, in EDWARD ELGAR, ENCYCLOPEDIA OF ENVIRONMENTAL LAW SERIES, 2016 (LeRoy C. Paddock, Robert L. Glicksman, & Nicholas S. Bryner, eds.).
- *Technology Wags the Law: How Technological Solutions Changed the Perception of Environmental Harm and Law*, in Oxford Handbook on the Law and Regulation of Technology (Roger Brownsword, Eloise Scotford and Karen Yeung, eds) (2016).

Jonas Monast

- *From Top-Down to Bottom-Up Climate Policy: New Challenges in Carbon Market Design*, 8 SAN DIEGO J. CLIMATE & ENERGY L. 175 (2017).
- *On Markets, Morals, and Climate Change: Exploring Pope Francis' Challenge* (with B. Murray and J. Wiener), 80 LAW & CONTEMP. PROBS. 135 (2017).
- *Major Questions About the Major Questions Doctrine*, 68 ADMIN. L. REV. 445 (2016).
- *Revisiting the NAAQS Program for Regulating Greenhouse Gas Emissions under the Clean Air Act*. This working paper, co-authored by Prof. Jonas Monast, examines the challenges and opportunities of using the National Ambient Air Quality Standards (NAAQS) program to regulate greenhouse gases if the EPA must take this approach. The paper can be found at https://nicholasinstitute.duke.edu/sites/default/files/publications/ni_wp_17-01.pdf.

Heather Payne

- *All of the Above: One-Way State Regulatory Frameworks Impact the Utility of the Future*, 8 GEO. WASH. J. ENERGY & ENVTL. L. 78 (2017).
- *A Long Slog: What a Ten Year Hydroelectric Relicensing Process Demonstrates about Public Participation and Administrative Regulation Theories*, 53 IDAHO L. REV. 41 (2017).
- *Incenting Green Technology: The Myth of Market-based Commercialization of No- and Low-Carbon Electricity Sources*, 24 N.Y.U. ENVTL. L.J. 404 (2017).

Don Hornstein

- *Lessons from U.S. Coastal Wind Pools about Climate Finance and Politics*, 43 B.C. ENVTL. AFF. L. REV. 345 (2016).

CONCLUSION

CE³ has had a productive and engaging year. Some projects, like the Value of Distributed Energy Resources, will continue into the upcoming academic year, as will our focus on expanding educational opportunities for students, for stakeholders, and for our community. We are looking forward to another fruitful year in 2017-2018.