



The challenge of coordinated civic climate change education

Peter Buckland¹ · Eban Goodstein² · Rob Alexander³ · Barry Muchnick⁴ · Mary Ellen Mallia⁵ · Neil Leary⁶ · Rob Andrejewski⁷ · Susannah Barsom⁸

Published online: 20 February 2018
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Abstract

Many sustainability educators want to more effectively engage their students with climate policy. They also seek to support students' civic and change agent skills and dispositions to take on critical social, economic, and environmental challenges that require collective action. Training young people for civic leadership and collective action is integral to the mission of higher education and part of achieving that mission has been to share success stories. This article shares anecdotal but research-informed reflections on the Power Dialog, a twenty-state, multi-month, civically minded, coordinated climate change educational program developed for college students to provide input to state governments on the Clean Power Plan. The Power Dialog was crafted on theories and practices of democratic education, behavioral economics, policy theory, and up-to-date climate science and risk assessments. This reflection shows that factors in state government, strong interinstitutional networks and leadership, and programs inside of the universities themselves were critical for success. The article concludes by recognizing that the national, state, and local political landscapes have shifted with the Trump administration and educators will need to respond accordingly.

Keywords Behavioral economics · Civic engagement · Climate change education · Coordinated education · Education for sustainability · Energy policy · Policy window

Many sustainability educators want to more effectively engage their students with climate policy. They also want to

bolster their students' volition to take on critical social, economic, and environmental challenges, develop their civic and change agent skills, and build their ecological literacy and sustainability competencies. Often, though, we overemphasize individual action as the means for changing the world and creating sustainable societies (Maniates 2001). This reality demands transformative changes to our higher education programming that moves away from an emphasis on individuality and emphasizes collective action grounded in core democratic principles.

Throughout American history, training young people for civic leadership and collective democratic action has been integral to the mission of higher education. During our republic's founding, both Thomas Jefferson and Benjamin Franklin argued that an educated citizenry was essential to the success of our fledgling democracy, collectively working to establish institutions and policies committed to teaching the practical dimensions of democracy (Akadjian 2015). The Morrill Act of 1862 established land-grant colleges and universities to engage marginalized populations. Following the end of the Civil War, higher education helped rebuild and expand local and national economies, providing increased access to education. President Truman established the President's Commission on Higher Education at the close of World War

✉ Peter Buckland
pdb118@psu.edu

¹ Sustainability Institute and Department of Educational Theory and Policy, Penn State University, 102 Land and Water Research Building, University Park, State College, PA 16802, USA

² Bard Center for Environmental Policy, P.O. Box 5000, Annandale-on-Hudson, NY 12504-5000, USA

³ Department of Political Science, James Madison University, Miller Hall, MSC 7705, Harrisonburg, VA 22807, USA

⁴ Department of Environmental Studies, St. Mary's College of Maryland, Kent Hall 105, St. Mary's City, MD 20686, USA

⁵ Office for Sustainability, University at Albany, 1400 Washington Avenue, Albany, NY 12222, USA

⁶ Center for Sustainability Education, Dickinson College, P.O. Box 1773, Carlisle, PA 17013, USA

⁷ University of Richmond, 28 Westhampton Way, Richmond, VA 23173, USA

⁸ School of Earth, Energy & Environmental Sciences, Stanford University, 473 Via Ortega, Y2E2 Building, Suite 226, Stanford, CA 94305, USA

II. The Commission concluded that democracy is the force driving higher education's transformation and leadership. The first volume ended with a clarion call: "The first and most essential charge upon higher education is that at all levels and in all its fields of specialization, it shall be the carrier of democratic values, ideals, and process." (President's Commission on Higher Education 1947, 102).

Beyond its foundational importance, teaching through a civic engagement model has been framed to have real practical value for students. A recent national study involving over one hundred four-year colleges, universities, community colleges, private and government funding agencies, higher education associations, and disciplinary associations concluded students who engage in civic learning are more likely to persist in college and finish degrees, to obtain transferrable skills prized by employers, and to develop habits of social responsibility and civic participation (The National Task Force on Civic Learning and Democratic Engagement 2012).

Similarly, emerging evidence points to positive impacts on civic learning and engagement for college students who avail themselves of high-impact civic engagement pedagogies (Colby et al. 2003; Jacoby, Barbara and Associates 2009). Studies indicate that the more students engage in diverse interactions inside and outside the classroom, the more likely they are to collaborate across differences, think more complexly about larger social and environmental issues, and actively commit to working with others to shape a more equitable world (ASHE 2006; Gurin et al. 2011). Civically engaged education can enable a "pluralistic democratic theory that moves beyond liberal democracy and closer toward achieving social justice and caring" in the spirit of Myles Horton's Highlander School (Thayer-Bacon 2004, p. 7; Scobey 2010). Such education is both about civic engagement and how to practice civic engagement. Students can see "democracy always-in-the-making" (Thayer-Bacon 2004, p. 18) and exercise their knowledge in the public sphere. Democracy is not merely "a system and method of governance, but also a way of life and philosophy of human relations" (Peters et al. 2010, p. 10). As they become more knowledgeable and civically and rhetorically able, students can play their part in confronting "secrecy, prejudice, bias, misrepresentation, and propaganda as well as sheer ignorance [with] inquiry and publicity" that can better address social policy (Dewey 1927, p. 209).

Faculty can behave as responsive and proactive participants in civic and public life. Our programs can provide learning opportunities that identify, frame, and solve problems, create public goods, extend democratic ideals, and build and exercise power for the common good. They can adopt what Harry Truman called the role of "critic and leader as well as servant" (quoted in Peters et al. 2010, p. 10). Complex issues such as climate change intensify these philosophical and pragmatic connections between democracy and higher education

by contending with citizen passivity (the US Census Bureau's recent population survey indicated only ten percent of citizens were inclined to contact a public official in 2013; National Commission on Civic Renewal 1998) while at the same time facing the dire threats of overshooting our planet's boundaries (Rockström et al. 2009). However, environmental crises can serve up remarkable opportunities to develop a safe and just space for humanity (Raworth 2017) and cleaner and economically vibrant energy solutions (Inglis 2013).

As higher education increases its publicly engaged scholarship and teaching around sustainability (Johnston et al. 2012; Smith et al. 2015), sustainability educators have the opportunity to engage in the attempt to halt or reverse environmental crises, inform proactive and progressive environmental policies, and create an engaged citizenry for whom ecological education and citizenship education are synonymous (Orr 2004). Sustainability education requires deep and broad knowledge, the development of communication and analytical skills, and opportunities for peer-to-peer learning, experiential learning, and network and community building (Shriberg and MacDonald 2013). Even though climate education initiatives confront the contentious world of identities, worldviews, and partisan politics (see Oreskes and Conway 2010; McCright and Dunlap 2011; Kahan et al. 2012), effective, functioning democracies are ecosystems of deliberative practices that empower people to work together in what Elinor Ostrom calls the "coproduction" of the public good (London 2010, iv). In other words, climate change and sustainability education provides a key opportunity to shift the problem-solving focus from the individual to the collective levels within democratic societies.

This essay contributes to the growing critical educational scholarship to help shape practices for effective climate change education (see Henderson et al. *forthcoming*). We provide the theoretical framework and moral warrant for a program that was intended to demonstrate the efficacy of a "coordinated climate education" approach. We designed this approach to engage students collectively as critical citizens. Our anecdotes and reflections are intended to provide some evidence of how coordinated sustainability education can engage climate change issues through a non-partisan process that focuses on the cultivation of the knowledge, skills, and values necessary for effective environmental citizenship (Bell 2005). While we do not detail participation on a granular level, we state some tentative positive outcomes and describe opportunities for future action including designing future endeavors to be researched.

Background

On the week of April 4, 2016, thousands of students from more than fifty colleges and universities visited twenty state capitals to participate in the Power Dialog (Table 1), an event culminating months of coordinated effort to teach students

Table 1 Participating states

Alaska	Arizona	Colorado	Georgia
Hawaii	Indiana	Massachusetts	Maine
Maryland	Michigan	Minnesota	North Carolina
Nebraska	New Hampshire	New York	Oregon
Pennsylvania	Texas	Virginia	Washington

about US climate policy and the EPA's Clean Power Plan (CPP). The project connected college students with state officials and other representatives of civil society to discuss policy efforts to cut global warming pollution and to explore the US commitment to reduce emissions under the Paris Agreement.

The Power Dialog was conceived, organized, and coordinated by a team at Bard College's Center for Environmental Policy headed by its director, Eban Goodstein. The project's steering committee included leaders from the National Council on Science and the Environment, Resources for the Future, and the US Partnership for Education for Sustainable Development. The Bard organizers recruited university-based teams to host public dialogs in state capitals, some headed by students, others by faculty, and others by university staff. To help students prepare for their state dialogs, the national project provided educational resources and an early-spring webinar series with leading climate experts. Webinars focused on climate-related impacts on public health, employment, environmental justice, state policy options, interstate cooperation in designing pollution control systems, and the international dimensions of US climate action. Each state's coalition of colleges and universities crafted their own educational materials as well.

The organizing model for the Power Dialog leaned on Heath and Heath's behavioral economic approach (2012). They state that initiatives need to focus on a clear and effective goal for participants, motivate them to generate turnout, and offer a relatively easy template for participation. The CPP created such an opportunity by focusing on the policy window of each State Implementation Plan (SIP) for the CPP.

The EPA created the CPP to reduce greenhouse gas emissions from the US's power sector by up to 32% by 2030. The CPP joined land use, automotive, heavy truck, and building-based plans to reduce emissions 26–28% overall by 2025, enabling the USA to file its nationally determined contribution to participate in the Paris Agreement. Under the CPP, each state's pollution control agency was responsible for creating a power plant emissions reduction plan based on the carbon intensity of its own power sector (Natural Resources Defense Council 2016). For example, Pennsylvania would be required to reduce carbon emissions by 35% by 2030 because of its coal-heavy energy market while Vermont would have to do nothing because its power sources are renewable and nuclear, both of which are low-carbon. The CPP offered several

emissions-reductions options including carbon-pricing, increasing energy efficiency, smart grids, converting power plants from coal to natural gas, increasing renewable energy sources while retiring fossil fuel sources, carbon capture and sequestration, or other technologies. Additionally, the practical rather than political focus of environmental departments could have limited the danger of overly partisan engagements that have characterized public climate change rhetoric during our students' lives (see Oreskes and Conway 2010; Powell 2011; Mann 2012). Through engagement with environmental regulators and interested officials, the organizers believed that students could witness and participate in a “roll-up-the sleeves” approach typical of much state-level energy and air pollution control planning.

The Power Dialog organizers were motivated by the fact that state policy makers frequently speak with organized interests such as fossil fuel lobbyists, power companies, utility operators, and environmental organizations but that they have little input from a critical stakeholder group—millennial college students—who will bear the brunt of unfolding climate change impacts in the USA. If current projections hold, by 2050, Philadelphia's climate will resemble that of contemporary Orlando (Shortle et al. 2015, pp. 42–43), sea level rise of about a foot or more will put about one million people in the USA at high risk (Hauer et al. 2016), and western and mountain states will face 46% more days of high wildfire potential (Kenward et al. 2016, p. 15). The 2017 Atlantic hurricane season, western wildfires, and near-record ice melt have only amplified concerns about climate-related catastrophes. It is incumbent upon us to facilitate ways for young people to participate in the decision-making processes that affect the world they will inherit (Alliance for Climate Education 2016; Association for the Advancement of Sustainability in Higher Education 2016; National Wildlife Federation 2016; Second Nature 2018). It is also our ethical duty to do so because of climate change's impacts on the world's vulnerable communities (see Brown 2013; Garvey 2008).

The Power Dialog created a relatively easy template for collaborative participation. It offered educators a straightforward opportunity to engage students directly with their peers and with top state officials making high-level policy decisions. The EPA mandated that each state's official implementing the CPP had to engage with stakeholders. This gave students a chance to participate, in or even lead a lively dialog with a statewide audience that could include the media. Adding to the motivation was students' knowledge that they were participating in a national event.

The Power Dialog used a unique policy and civic education practice window created by the CPP's mandated public outreach (Kingdon 1995; McLendon and Cohen-Vogel 2008). That is, the political conditions created a window through which students could work together to offer policy solutions

(Kingdon, p. 167, p. 178). The educators involved developed programming where students could act as policy entrepreneurs, hooking their policy ideas and political insights into an urgent sustainability problem with political and policy momentum (p. 182), solutions that had some chance of adoption. Because of the CPP's reach and the nature of environmental regulations, it also created interdisciplinary learning possibilities. Students could learn and synergize lessons in architecture, demography, ecology, economics, electrical and mechanical engineering, ethical theories and practical ethics, law, physics, policy theory, political science, public health, rhetoric, and visual art and carry them out within our democratically created institutions. It also should have become clear to them that the "systems thinking" that is so often emphasized in sustainability education was the only feasible approach to this Power Dialog.

In February 2016, the Power Dialog was poised for national implementation: state coordinators had stepped forward in thirty states, with interest expressed in another half dozen. However, the Power Dialog model was challenged on February 9, 2016, when the Supreme Court placed a stay on the CPP (de Vogue 2016). Many Republican administrations stopped officials from CPP planning, including public outreach. In such states, the policy window closed or narrowed down to an academic discussion on state policy regarding the Paris commitments. Facing the proposition that no top state officials would attend, the perceived "effectiveness" of investing in the Power Dialog declined. At the same time, with no live policy on the table, the event became much less exciting to organizers. Finally, the Power Dialog went from being easy to organize (with a clear, high-profile state official obligated to attend, and an audience guaranteed) to being a complicated event with no obvious headline to interest audiences or the media.

Despite these challenges and for reasons made clear in the next section, Power Dialogs convened in twenty states. In the end, four states had participation from 200 or more students: 300 in New York, 230 in Pennsylvania, 225 in Virginia, and 200 in Minnesota. These states had attendance from between six and fifteen colleges. Other state events ranged in size from twenty to seventy-five students attending. At some events, there were workshops held in advance of the dialog. All states convened conversation with top officials. Anecdotal evidence from conference calls and emails indicates that students' question-and-answer sessions were well-informed, challenging, and productive with students, planners, and regulators reporting a sense of strengthened engagement in their state initiatives.

The Power Dialog successfully convened students and state regulators for facilitated interactions around the CPP. A decentralized but coordinated planning process generated diverse Power Dialog events with diverse outputs and outcomes. As a whole, the Power Dialog reinforced existing networks, created new and maintained old partnerships, and

coordinated participation in democratic processes. By dissolving traditional academic institutional and disciplinary boundaries, the Power Dialog created projects dealing with climate change in way that reflected democracy at its best and most challenging.

Conditions for success

As the organizers and participants in the New York, Pennsylvania, Maryland, and Virginia Power Dialogs, we will share a collective and reflective analysis of the coordinated climate education success we experienced in the face of many challenges within our states. We stress both anecdotal nature of our data and subsequent analysis and the strength of the theoretical underpinnings of this coordinated civic climate change initiative. Three conditions enabled the Power Dialog's success in New York, Pennsylvania, Maryland, and Virginia. First, positive support from Governor's offices and state agencies defined the political contexts for the Power Dialog in each state. Second, we each had strong state-level organizational capacities for facilitating intercollegiate cooperation, coordination, and collaboration. Third, our universities each had programs characterized by natural and strategic alignment with the Power Dialog.

1. Supportive state leadership and resilient policy windows

Despite the Supreme Court's stay, New York's, Pennsylvania's, Maryland's, and Virginia's Governors remained committed to implementing the CPP based upon their support for addressing climate change through state-level policies. For example, Pennsylvania's Democratic Governor Tom Wolf directed then Department of Environmental Protection (DEP) Secretary John Quigley to continue planning and implementation. Sec. Quigley said, "It just makes good business sense to continue to plan for what we know is going to happen. This is inevitable. It's smart for Pennsylvania if we're going to maintain our role as an energy exporter and maintain the role of our energy economy" (Cusick 2016). Multiple stakeholder listening sessions convened by the PA DEP across the Commonwealth gave special attention to environmental justice communities (Honey 2015) and demonstrated significant support for the CPP, helping to create a context in which the PA Power Dialog would be welcomed by state policy makers. DEP Secretary Quigley, Deputy Secretary Patrick McDonald, and other DEP staff attended the Pennsylvania Power Dialog.

In New York and Virginia, Governors Cuomo (D) and McCaulliffe (D) directed their pollution control agencies to continue developing guidelines in preparation for a possible lift of the Supreme Court stay. In addition, Cuomo is overseeing the Reforming Energy Vision (REV) initiative via the Public Service Commission (PSC) to achieve a goal of 50%

of New York's energy through renewables by 2030, exceeding goals set by the Clean Power Plan (Governor's Press Office 2016).

Maryland's leadership protected—and even enhanced—the state's climate commitments. Guided by the Greenhouse Gas Emission Reduction Act of 2009 (GGRA) and recommendations from the Maryland Climate Change Commission, Senators Paul G. Pinsky and Delegates Dana M. Stein and Kumar P. Barve sponsored and shepherded a reauthorized and expanded version of Maryland's GGRA through the General Assembly in 2016. The new GGRA endorsed a 40% GHG reduction by 2030 and included other provisions to produce a net economic benefit to the State; encourage new employment related to alternative energy and greenhouse gas emission reduction technology; and protect vulnerable communities from disproportionate negative impacts (EPA 2016).

At the Maryland Power Dialog, students from St. Mary's College of Maryland and Salisbury University organized presentations by and discussions with Luke Wisniewski, Chief, Climate Change, Air, and Radiation Management Administration, and Leigh Williams, Director of the Maryland Energy Administration, as part of a day-long conference in Annapolis. Having been invited to the event, and having learned of the Power Dialog activities in the State House, the Chair of the Environment and Transportation Committee Kumar P. Barve dropped in to announce the passage of the 2016 GGRA and to commend the students for their engaged citizenship on such an important issue.

In several states with Republican governors such as Tennessee and Florida, Power Dialog initiatives that had gotten underway were abandoned following the Supreme Court stay by state-level organizers, due to inability to attract state official participation. Though a number of states proceeded with Power Dialogs, some legislatures, like Virginia's, have moved to block implementation (Virginia's Legislative Information System 2016).

2. Convening and championing state-level networks for cooperating, coordinating, and collaborating

Drawing from Keast et al. (2007) who describe a continuum of ways that organizations may work together to achieve outcomes larger than what one campus may realize alone, we observed how our different Power Dialog efforts reflected each of our balances between cooperating, coordinating, and collaborating with one another. Briefly, cooperating is a low intensity, limited connection approach to informally working with others to achieve one's own goals. Coordinating involves more intensive task sharing to achieve collective goals while maintaining organizational autonomy. Collaborating entails blurring organizational boundaries to form more unitary identities and blending of resources. Moving between each of

these modes of interacting in an explicitly stated manner while championing the project through existing state-level networks directly influenced the resulting Power Dialog programming.

For example, in Virginia, the sustainability directors at University of Richmond (UR) and Virginia Commonwealth University (VCU) convened and championed a series of conference calls for representatives of twelve different campuses. Linked by existing sustainability and environmental studies networks, this group moved toward a collaborative model of a shared mission and vision for the event with a series of facilitated group discussions. Once sufficient dialog among group members generated a picture of what the event would look like, the mode shifted to UR and VCU members coordinating on event details. The remainder of the campuses cooperated through information sharing as they developed their own campus-specific activities. When the Supreme Court decision came through and the state pollution agency indicated interest in continuing with CPP work, the time spent in a collaborative mode at the start of the Virginia group's work enabled them to quickly decide to continue pursuing the shared vision and mission. If the group had operated in only a coordinating or cooperating mode, the willingness to continue forward may have been diminished. In the end, students from nine Virginia universities and one high school served on a panel representing their institutions.

In Maryland, faculty in similar Environmental Studies programs at St. Mary's College of Maryland and Salisbury University coordinated capstone seminar and service learning experiences for the Power Dialog. They collaborated on new public-facing research assignments, co-developed course materials, and sponsored virtual plenary class sessions and working groups to pilot a new regional institutional partnership centered on complex environmental and social issues. Both faculty leaders also leveraged the resources and networks of other programs and centers at their respective institutions including St. Mary's College's Center for the Study of Democracy and the Office of Government and Community Relations at Salisbury University.

Similarly, faculty and staff of Dickinson College's Center for Sustainability Education leveraged their membership in the Pennsylvania Environmental Resource Consortium (PERC) to reach out to faculty from approximately fifty colleges and universities to convene a planning group. PERC member schools have a robust history of collaboration on sustainability education, campus operations, and engagement. Supported by Dickinson's staff, the relationships that had developed over past PERC collaborations facilitated a collaborative approach to visioning, program planning, inviting state officials and other featured speakers, organizing student panels, and promoting the event to faculty, students, and representatives of governmental and non-governmental organizations. The PERC planning group acted similarly to the UR and VCU champions; they took a lead in task coordination,

identifying and inviting governmental and non-governmental organizational participants, and co-designing a curricular framework.

In a fourth example, planning the New York Power Dialog also occurred through existing networks with an initial convener and the use of collaborative visioning followed by coordinated action. A faculty member in the University at Albany's Political Science Department created a course around the Power Dialog and teamed up with an Environmental Economics professor. They served as the academic anchors. Internal sustainability networks proved effective in garnering on-campus involvement and administrative support. The campus then formed a collaborative team who created and coordinated three distinct activities: a juried poster session, student-led workshops, and the evening dialog.

To leverage statewide participation, committee members accessed the New York Coalition for Sustainability in Higher Education and the Environmental Consortium for Colleges and Universities to recruit participation in the event, either in person or virtually via a webcast of the evening presentation. An adjunct faculty member with contacts in the Governor's office was able to solicit participation by high-level state officials. Fortunately, the Power Dialog dovetailed nicely with the work of Governor Cuomo and the Public Service Commission in creating a new energy vision for the state (Reforming the Energy Vision, or REV), which calls for aggressive implementation of renewable energy. As a result, the Chairman of Energy and Finance for the state who serves on the Governor's Executive Cabinet, and a high-ranking DEC official agreed to take part. In total, ten campuses attended the day's events and another four viewed the dialog piece online.

3. Alignment with existing student interests, program priorities, and policies to generate efficacy

A third factor that facilitated the Power Dialog's success as a climate education event was its strategic alignment with student interests, programs, and policies. This occurred because the events promised direct interaction with top state officials specifically about climate policy. It established high levels of perceived efficacy, or excitement, for allocating scarce time and resources.

The Pennsylvania team incorporated student input to create a day-long series of presentations, panels, discussions, question-and-answer sessions, and a World Café event. Speakers included faculty, students, the DEP Secretary and DEP Policy Director, and representatives from PennFuture, PA Public Utility Commission, Exelon Energy, and the Natural Resources Defense Council. Most student participants were enrolled in courses that prepared them for the Dialog through study of climate change and/or climate change policy. A dozen of the students from different institutions presented

their perspectives on one of three panels on CPP implementation strategies, CPP effects, and the CPP's legal and political challenges. The format aligned with academic programs from across Pennsylvania.

For example, students in Penn State University's Sustainability Leadership minor are dedicated to leading a collective pursuit of a more sustainable world. While their majors span the humanities, arts, architecture, engineering, the physical, biological, and social sciences, and policy studies, their academic, professional, personal, and civic interests aligned through this minor, a minor in which they develop sustainability competencies (Engle et al. 2016) and leadership capabilities. The Power Dialog helped the Sustainability Leadership minor's students realize key provisions of the university's 2016–2020 Strategic Plan including that they confront “directly and assertively the global challenges of climate change and sustainability in all their complexity” and “promote sustainability and become advocates for change” (Penn State 2016, p. 7).

Similarly, in Virginia, students in the Westhampton College Government Association (WCGA) at UR, for example, were drawn to the Power Dialog's opportunity for direct engagement in the legislative process. A member of the WCGA organized a discussion panel between student ambassadors from nine Virginia colleges and one high school and the head of the Department of Environmental Quality and the Deputy Secretary of Natural Resources. Through conference calls and lunch on the day of the event, this group planned out their questions and the order of events and built collaborative spirit. The energy and momentum provided by the student involvement directly influenced UR leadership to invest significant resources and persuaded the UR President to participate. Environmental Studies and Biology faculty organized a student-centered poster session highlighting the work of dozens of students.

Maryland's Power Dialog capitalized on the growing size and popularity of Environmental Studies majors at two public higher education institutions. At St. Mary's College of Maryland, a junior level “Keystone Seminar” provided the foundational forum for synthesizing insights from multiple disciplines to reflect on the philosophical and pragmatic underpinnings of environmental citizenship. The course delivers public-facing service learning opportunities to the school's Environmental Studies major, which “aims to train leaders and global citizens, to develop new knowledge, and to devise solutions that will restore and sustain the health of our communities and planet.” Similarly, a “Capstone” class at Salisbury integrates core concepts and methodologies from the humanities, social sciences, and natural sciences in an interdisciplinary and holistic approach to understanding and proposing solutions for specific environmental issues. Taken together, the co-joined classes worked on the Power Dialog not only to develop in students an environmental ethic that

demonstrates critical reflection about their roles and identities as citizens, consumers, and environmental actors, but also to practice skills in communicating complex issues to a general audience.

Guided by carefully structured research and reflective writing assignments, rubrics, and project vision statements co-created by faculty, students collaborated across the campuses all semester. Convened around a range of interdisciplinary topics related to renewable energy, students formed small working groups to develop annotated bibliographies, to research effective communication strategies, and to create original infographics on their topics. Student teams spanning both institutions developed a schedule for a one-day conference in Annapolis; drafted an invitation letter and invited almost one hundred legislators, representatives, policy makers, educators, and non-profit leaders; generated questions for and introduced guest speakers; moderated discussion; presided over their infographics during a formal poster presentation session; created a website to document and record their activities; and implemented follow-up events and exhibits on their respective campuses following the Power Dialog on April 4.

Likewise, in New York, although a faculty and staff committee collaborated to provide visioning, students led program implementation and coordination. On the event day, student moderators oversaw the evening dialog, introduced speakers, organized student representatives, and coordinated audience questions. In addition, over twenty student posters were presented followed by six student-led workshops on topics ranging from “What is the Clean Power Plan?” to “Intro to Environmental Advocacy.” Participating students submitted questions to state officials prior to the event. Questions were vetted, organized, and shared. Similar to the Virginia experience, campuses selected one student to sit on the dais to pose their inquiries. During the dialog, audience members were invited to write down additional questions, most of which were cataloged for a possible follow-up program. A student from the Maldives—a low-lying island nation facing rising sea levels—opened the event by asking how states could contribute direct assistance toward developing renewable energy technologies and adaptation measures in other countries. This moment connected state-level policy in the USA to climate effects around the world.

Student responses and feedback across the Power Dialogs indicate that this opportunity may have resonated with students’ interests and priorities. Specific comments from Pennsylvania, Maryland, and New York included the following:

- “For the power dialog, I think all the workshops were helpful in focusing on a more specified topic and allowed students to learn more detail of a particular area.”
- “I thought the power dialog went very well and was interesting and informative.”

- “We should organize these type of power dialog workshops and poster sessions every semester (if possible) to raise awareness about climate change to keep the environment sustainable.”
- “I liked how everything was done. It has both a visual and discussion style aspect to it, I believe that helps more people grasp the topic and learn more.”
- “What challenged me the most: The Power Dialog. Deciding what do with it and doing the student panel...I spent a lot of time and energy on it. Although it was a challenge I feel sorry for the future [course name omitted] classes that won’t be able to experience the dialog.”
- “I thought [the Power Dialog] was a really great opportunity for engagement with our community and I thought the idea of being able to make a difference really inspired each of us to do deeper thinking.”
- “It helped me realize that it isn’t that hard to get involved (especially with local govt.) and that interactions like this aren’t just a pony show. Even if we didn’t change anyone’s mind about the actual power plan or environment in general, we at least convinced the presenters that we care, are engaged, and are worth having in the conversation.”
- “It allowed me to better understand the political realm, especially one from an environmental perspective. It helped me better understand how to communicate ideas and information in this realm. It also helped me better know how to portray my own voice and ideas in a more public setting.”

These comments represent just the surface of our experiences. Admittedly, they do not contain negative cases. But, conversations in van-rides home, follow-up discussions in classrooms that followed, and even final-day reviews of our classes indicate that this coordinated climate change education made a positive difference in our students’ lives. We do not know whether the individual events strengthened or altered policy commitments.

Closing thoughts

Despite the momentum lost by the Supreme Court’s stay of the CPP, the Power Dialog process provided a collaborative and coordinated organizational model for the faculty and staff at the institutions in the four states discussed here. Based on feedback over phone calls with representatives from other states, the coordinated civic climate change education effort seemed to create or bolster a robust climate conversation in all twenty states that emphasized civic engagement in democratic processes. Attending students reported being excited that they had engaged directly with top policy makers and walked away inspired and wanting to become more involved. Under optimal conditions, we could conceive that well-designed national educational initiatives that link to real-time policy windows

can create opportunities for educators to move beyond the “classroom as usual” emphasis on individual actions and engage students directly with one another to identify climate solutions in their own communities.

Each author agrees that participating faculty and students across states found the Power Dialog to be an effective way to develop clean energy policy discussions and literacy even if deep decarbonization commitments did not result and we do not have measures of changes in energy or sustainability literacy. Future iterations of the Power Dialog and other coordinated climate change education should be designed with such assessments and analysis in mind. However, the Power Dialog leveraged existing policy mandates and policy windows to link real-time policy processes with education for civic engagement and sustainability. The resulting content created high-profile student involvement and generated excitement. Finally, while organizing the Dialogs was time-consuming and challenging, the effective use of established networks made it relatively easy for faculty and students to participate in creative ways that were germane and applicable to their state and institutional contexts. Overall, collaborators across all participating states expressed high interest in future events like this one.

The organizers had hoped that the academic year 2017–2018 would see the realization of Power Dialog II. However, the election of Donald J. Trump and his appointment of Scott Pruitt to head the Environmental Protection Agency has altered that prospect as federal action undermines the CPP and reduces federal-level environmental leadership. We do note, however, that there will be other opportunities for engagement at different levels of government and organizations, particularly as state governments, the private sector, and non-governmental organizations pick up environmental protection slack. For example, Citizens Climate Lobby (2017) and republic[En] (2017) are both promoting a revenue-neutral tax on carbon. This proposal aligns with both the Democratic Party platform (2016, p. 27) and pro-business organizations such as Risky Business (Risky Business 2017). With a bipartisan Climate Solutions Caucus in the House of Representatives seeming to embrace the idea, there may be a new pragmatic window of opportunity ahead (Milman 2017). We also note that states, hundreds of cities, municipal governments, corporations, and colleges and universities have signed onto the “We Are Still In” letter that commits to action aligned with the Paris Agreement’s goals to keep warming well below 2 degrees Celsius (We Are Still In 2017) and dozens of American mayors signing the Chicago Climate Charter (Berke 2017).

Numerous climate change mitigation and adaptation policy proposals will emerge in the coming years. As the federal government approaches climate change in new and perhaps unexpected ways, some of these proposals will present an opportunity for second or third approaches at a national

dialog. Other opportunities will present themselves at the state or local governmental level. The key to fully realizing future Power Dialogs will be the shift to coordinated climate education across campuses that take advantage of the emergence of appropriate policy windows which create natural spaces for student civic engagement. Then, we can collaboratively build empowering educational activities, bring students in touch with policy decision-makers and stakeholders, and use our commitments and expertise to become democratic climate critics, leaders, and servants.

References

- Akadjian D (2015) 7 things our founders believe about public education. Daily Kos. Accessed from: <https://www.dailykos.com/story/2015/1/27/1360440/-7-things-our-founders-believed-about-public-education>
- Alliance for Climate Education (2016) What We Do. Accessed from: <https://acespace.org/what-we-do>
- Association for the Advancement of Sustainability in Higher Education (2018). Who We Are. Accessed from <http://www.aashe.org/about-us/who-we-are/>
- Association for the Study of Higher Education (ASHE) (2006) Research on outcomes and processes of intergroup dialogue. Higher Education Report 32(4):59–73
- Bell DR (2005) Liberal environmental citizenship. Environ Politics 14(2): 179–194. <https://doi.org/10.1080/09644010500054863>
- Berke J (2017) More than 50 US mayors just signed a charter to meet the Paris Agreement goals without Trump. Business Insider. Accessed from: <http://www.businessinsider.com/paris-agreement-2-year-anniversary-us-mayors-step-up-2017-12>
- Brown D (2013) Climate change ethics: navigating the perfect moral storm. Routledge, New York
- Citizens Climate Lobby (2017) Carbon fee and dividend policy & FAQs. Accessed from: <https://citizensclimatelobby.org/carbon-fee-and-dividend/>
- Colby A, Ehrlich T, Beaumont E, Stephens J (2003) Educating citizens: preparing America’s undergraduates for lives of moral and civic responsibility. Jossey-Bass, San Francisco
- Cusick M (2016) Despite legal limbo, Pennsylvania continues work on Clean Power Plan. State Impact PA. Accessed from <https://stateimpact.npr.org/pennsylvania/2016/04/05/despite-legal-limbo-pennsylvania-continues-work-on-clean-power-plan/>
- Democratic Part (2016) Democratic Party Platform. Accessed from: http://www.presidency.ucsb.edu/papers_pdf/117717.pdf
- de Vogue A (2016) Appeals court hears high-stakes challenge to Obama’s clean power plan. CNN Politics. Accessed from <http://www.cnn.com/2016/09/27/politics/clean-power-plan-obama/>
- Dewey J (1927) The public and its problems. Swallow Press, Athens
- Engle E, Barsom S, Vandenberg L, Sterner G, & Alter T (2016) An exploration of competencies in sustainability: working paper 2014–2015. Accessed from <http://sustainability.psu.edu/fieldguide/resources/engle-e-barsom-s-vandenberg-l-sterner-g-alter-t-2016-an-exploration-of-competencies-in-sustainability-working-paper-2014-2015/>
- Environmental Protection Agency (2016) Clean Power Plan: state at a glance: Maryland. Accessed from <https://archive.epa.gov/epa/sites/production/files/2016-09/documents/maryland.pdf>

- Garvey J (2008) The ethics of climate change: right and wrong in a warming world. Continuum International Publishing Group, London
- Governor's Press Office (2016) Governor Cuomo announces establishment of clean energy standard that mandates 50 percent renewables by 2030. Accessed from <https://www.governor.ny.gov/news/governor-cuomo-announces-establishment-clean-energy-standard-mandates-50-percent-renewables>
- Gurin P, Nagda BA, Sorenson N (2011) Intergroup dialogue: education for a broad conception of civic engagement. *Lib Educ* 97(2):46–51
- Hauer ME, Evans JM, & Mishra DR (2016) Millions projected to be at risk from sea-level rise in the continental United States. *Nat Clim Change*
- Heath C, Heath D (2012) Switch: how to change things when change is hard. Broadway Books, New York
- Henderson J, Long D, Berger P, Russell C, & Drewes A (forthcoming) Expanding the foundation: Climate change and opportunities for educational research. *Educ Stud*
- Hopey D (2015) DEP names new Environmental Justice Office director power source. Accessed from <http://powersource.post-gazette.com/powersource/policy-powersource/2015/10/29/DEP-names-new-Environmental-Justice-Office-director-named/stories/201510290233>
- Inglis B (2013) Changing the dialogue on energy and climate: Bob Inglis at TEDxJacksonville. Retrieved from <https://www.youtube.com/watch?v=FUMcnx1QU24>
- Jacoby, Barbara and Associates (2009) Civic engagement in higher education: concepts and practices. Jossey-Bass, San Francisco
- Johnston L, Collins B, Boyle A, Womack HD (2012) Looking at sustainability through a different LENS. *Sustainability* 5(4):244–247. <https://doi.org/10.1089/sus.2012.9943>
- Kahan DM, Peters E, Wittlin M, Slovic P, Ouellette LL, Braman D, Mandel G (2012) The polarizing impact of science literacy and numeracy on perceived climate change risks. *Nat Clim Chang* 2(10):732–735. <https://doi.org/10.1038/nclimate1547>
- Keast R, Brown K, Mandell M (2007) Getting the right mix: unpacking integration meanings and strategies. *Int Public Manag J* 10(1):9–33. <https://doi.org/10.1080/10967490601185716>
- Kenward A, Sanford T and Bronzan J (2016) Western wildfires: a fiery future. Climate Central. Accessed from <http://assets.climatecentral.org/pdfs/westernwildfires2016v2.pdf>
- Kingdon JW (1995) Agendas, alternatives, and public policies, 2nd edn. Addison Wesley Longman, New York
- London S (2010) Doing democracy: how a network of grassroots organizations is strengthening community, building capacity, and shaping a new kind of civic education. Kettering Foundation, Washington, D.C.
- Maniates MF (2001) Individualization: plant a tree, buy a bike, save the world? *Global Environ Polit* 1(3):31–52. <https://doi.org/10.1162/152638001316881395>
- Mann M (2012) The hockey stick and the climate wars: dispatches from the front lines. Columbia University Press, New York. <https://doi.org/10.7312/mann15254>
- McLendon MK, Cohen-Vogel L (2008) Understanding education policy change in the American states: lessons from political science. In: Cooper BS, Cibulka JG, Fusarelli LD (eds) The handbook of education politics and policy. Routledge, New York, NY, pp 30–51
- McCright AM, Dunlap RE (2011) The politicization of climate change and polarization in the American public's views of global warming, 2001–2010. *Sociol Q* 52(2):155–194. <https://doi.org/10.1111/j.1533-8525.2011.01198.x>
- Milman O (2017) The Republicans who care about climate change: 'They are done with the denial'. *The Guardian*. Accessed from: <https://www.theguardian.com/environment/2017/apr/27/climate-solutions-caucus-republicans-trump>
- National Commission on Civic Renewal (1998) A nation of spectators: how civic disengagement weakens America and what we can do about it. National Commission on Civic Renewal, College Park
- National Wildlife Federation (2016) Campus ecology. Accessed from: <http://www.nwf.org/campus-ecology.aspx>
- Natural Resources Defense Council (2016) The road from Paris: the United States progress toward its climate pledge. Accessed from: <https://www.nrdc.org/sites/default/files/paris-climate-conference-US-IB.pdf>
- Oreskes N, Conway E (2010) Merchants of doubt: how a handful of scientists obscured the truth on issues from tobacco smoke to global warming. Bloomsbury Press, New York
- Orr David (2004) Earth in mind: on education, environment, and the human prospect. 10th Anniversary Edition. Washington, D.C.: Island Press
- Penn State University (2016) Our Commitment to Impact. The Pennsylvania State University's Strategic Plan for 2016–2020
- Peters SJ, Alter TR, Schwartzback N (2010) Democracy and higher education. Michigan State University Press, East Lansing
- Powell JL (2011) The inquisition of climate science. Columbia University Press, New York. <https://doi.org/10.7312/powe15718>
- President's Commission on Higher Education (1947) Higher education for American democracy, volume 1, establishing the goals. Washington, D.C.: Government Printing Office
- Raworth K (2017) Doughnut economics: 7 ways to think like a 21st century economist. Chelsea Green Publishing, White River Junction
- republic[En] (2017) Environmental tax reform. Accessed from: <http://www.republicen.org/taxreform>
- Risky Business (2017) From risk to return: investing in a clean energy economy. Accessed from: <http://riskybusiness.org/site/assets/uploads/sites/5/2016/10/RBP-FromRiskToReturn-WEB.pdf>
- Rockström J, Steffen W, Noone K, Persson Å, Stuart Chapin F, Lambin EF, Lenton TM, Scheffer M, Folke C, Schellnhuber HJ, Nykvist B, de Wit CA, Hughes T, van der Leeuw S, Rodhe H, Sörlin S, Snyder PK, Costanza R, Svedin U, Falkenmark M, Karlberg L, Corell RW, Fabry VJ, Hansen J, Walker B, Liverman D, Richardson K, Crutzen P, Foley JA (2009) A safe operating space for humanity. *Nature* 461(7263):472–475
- Scobey D (2010) Across: heterogeneity of civic education. In: Smith MB, Nowacek RS, Bernstein JL (eds) Citizenship across the curriculum. Indiana University Press, Bloomington, pp 185–198
- Second Nature (2018) Climate Leadership Statement. Accessed from <http://secondnature.org/wp-content/uploads/Climate-Commitment-2017-Second-Nature.pdf>
- Shriberg M and MacDonald L (2013) Sustainability leadership programs: emerging goals, methods & best practices. *J Sustain Educ* 5. Accessed from http://www.jsedimensions.org/wordpress/content/sustainability-leadership-programs-emerging-goals-methods-best-practices_2013_06/
- Shortle J, Abler D, Blumsack S, Britson A, Fang K, Kemanian A, Knight P, McDill M, Najjar R, Nassry M, Ready R, Ross A, Rydzik M, Shen C, Wang S, Wardrop D, and Yetter S (2015) Pennsylvania climate impacts assessment update: May 2015. Environment and Natural Resources Institute. Penn State University. Accessed from <http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-108470/2700-BK-DEP4494.pdf>
- Smith W, Litzky B, Fadigan K (2015) The pursuit of pura vida in the educational experience. *Proceedings of the International Association for Business and Society* 26:212–219. <https://doi.org/10.5840/iabspoc20152619>
- Thayer-Bacon B (2004) An exploration of Myles Horton's democratic praxis: highlander folk school. *J Educ Found* 18(2):5 Retrieved from <http://ezaccess.libraries.psu.edu/login?url=http://search.proquest.com/docview/1468389644?accountid=13158>

- The National Task Force on Civic Learning and Democratic Engagement (2012) A crucible moment: college learning and democracy's future. Association of American Colleges and Universities, Washington, D.C.
- US Census Bureau (2013) Current population survey, November 2013: civic engagement supplement file. Retrieved from <https://www.census.gov/programs-surveys/cps/technical-documentation/complete.2013.html>
- Virginia's Legislative Information System (2016) HB 2 Clean Power Plan; state implementation plan, General Assembly approval. Accessed from <https://lis.virginia.gov/cgi-bin/legp604.exe?161+sum+HB2>
- We Are Still In (2017) Homepage. Accessed from: <https://www.wearestillin.com>