



Community-based climate action planning as an act of advocacy: a case study of liberal arts education in a rural community

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Abstract

The current lack of comprehensive federal climate policy highlights the critical need for effective subnational climate policy and programs. We describe our efforts to create and cultivate a community-based multi-stakeholder group centered around local climate change planning and advocacy in a small, rural New York municipality. The literature on sustainability planning emphasizes the importance of collaborative work to build new capacities, develop knowledge, and create community commitment over the long term to advocate for municipal policies that prioritize climate change mitigation and resilience. However, case studies of rural community contexts are lacking in the literature, and rural communities may not have the planning and other resources found in the municipal offices of larger, urban communities. We argue that higher education institutions, especially those situated in small rural communities, have a vital role in supporting the climate strategies of local actors and can develop productive partnerships through research and co-curricular education. We discuss several challenges to effective campus-community partnerships, including the need to balance student engagement in community-based research with the traditional liberal arts model of education, engaging and sustaining the participation of community partners, and differential access to resources in rural spaces.

Keywords Environmental advocacy · Climate change policy · Local government · Community-based research

Introduction: community-based collaboration in the context of subnational climate policy

Anthropogenic emissions of greenhouse gasses have affected the earth's climate. This has and will continue to have widespread and catastrophic impacts on human and natural systems (IPCC 2014). In the continued absence of comprehensive federal climate change policy in the USA, collaborative partnerships between a range of actors and institutions at regional, state, and local levels of government are a means to address this void and provide opportunities for a shared policy-making process. Despite the many reasons that a

nationwide set of policies and resources would be beneficial, subnational efforts have led to a range of important innovations and models in climate planning that may help address the unique challenges and resources found in specific communities (Krause 2011; Wood et al. 2014; Woodruff and Stults 2016; Boswell et al. 2019).

Over 30 US states have created a climate action plan of some kind, and dozens have policies such as renewable portfolio standards to incentivize renewable energy development in order to reduce greenhouse gas (GHG) emissions (US EPA 2017). At the local government level, the US Mayors Climate Protection Agreement has shown that GHG emissions can be reduced through local government leadership and action, and over 1000 signatory cities across the USA have committed to meaningful GHG emission reduction targets in their respective communities (Burns 2016). Many local government signatories to that agreement are larger urban cities, and while there are also many medium-sized towns included, most are in relatively urban contexts.

At the same time that regional, state, and local actors are working to create climate mitigation policies, i.e., policies that reduce anthropogenic greenhouse gas emissions that

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contribute to climate change, disastrous climate-related events are already having widespread impacts across the USA (NOAA National Centers For Environmental Information 2020). These impacts are forcing communities, large and small, to also implement climate adaptation strategies to reduce risk, financial and personal hardships, and potential loss of life (USGCRP 2018). We argue that the majority of climate adaptation frameworks and programs has been designed with a focus on large, urban (especially coastal) communities, leaving smaller, rural communities without the direction or resources to reduce their vulnerabilities and overcome ongoing impacts.

In this paper, we examine New York State's Climate Smart Communities program and examine many of the local governments participating in the program in order to explore the specifics of how local government size and urban-rural context may shape the resources that can be brought to bear in climate planning work. We describe and analyze the potential roles for institutions of higher education in this process, reflecting on our own experiences working with the Town and Village of Hamilton, New York, to research and implement climate mitigation and resilience strategies. Employing a community-based research methodology, and with the involvement of students via the environmental studies curriculum at our home institution, Colgate University, we argue that, in addition to creating the tangible benefits of new climate policy, collaborative climate action planning can bring ancillary benefits such as building and strengthening the social networks, community dialogs, and shared values needed to achieve long-term climate goals.

To facilitate this work, in 2016, we helped to found the Hamilton Climate Preparedness Working Group, a coalition of elected officials, community members, university staff, faculty, and students, and others, to plan and coordinate the climate efforts of Hamilton's municipal government and community. Much of our work to date has been in pursuit of certification under New York's Climate Smart Communities (CSC) program, a comprehensive system for cities and other municipalities to develop and track a range of climate change initiatives (New York State Department of Environmental Conservation 2020a). Madison County, the county where Hamilton is located, achieved CSC certification in 2017, and the Town and Village of Hamilton each gained certification in 2020. The CSC program is a points-based system that includes specific actions such as upgrading light bulbs or installing charging stations for electric vehicles as well as planning work such as developing climate action or resiliency plans.

Many of the communities that have achieved certification to date include larger municipalities with technical staff that may be able to dedicate time and resources toward managing the certification process for programs like CSC. For smaller municipalities, however, with few or no staff dedicated

exclusively to sustainability initiatives or even planning more generally, support in the form of expertise, leadership, and other resources must come from community partners. Indeed, community engagement is a key element emphasized in the philosophy and approach for CSC (New York State Department of Environmental Conservation 2020b). Institutions of higher education are likely sources for this support; New York has 350 colleges, universities, and other post-secondary institutions, including more than 100 public campuses in the SUNY and CUNY systems (Office of Higher Education, New York State Education Department 2020). While these institutions represent an enormous potential resource for supporting communities as they seek to achieve climate goals, we emphasize a community-based research (CBR) approach to help bridge the aims and methods of academic and community practitioners (Strand et al. 2003a, b; Dukes et al. 2011).

CBR approaches emphasize collaborative research and planning and are meant to break down barriers between academic knowledge and the specific needs and goals of community members and groups. The collaborative approach at the heart of CBR methods provides a context where students, academic researchers, municipal leaders and staff, and representatives from local organizations form a multi-stakeholder coalition to advocate for climate-centered policies. Here, we note a potential risk in local climate action planning that is collaborative with outside partners: over-reliance on an outside partner providing technical assistance or analytical capacity might create a kind of "support trap" and thereby stymie the growth of such capacity within the local government's workforce. We will return to this point.

New York State climate policy

New York State has emerged as a national leader in climate change policy, along with states such as California, Massachusetts, and a handful of others that have implemented programs and goals considerably more ambitious than federal policy. In 2019, New York's legislature passed the Climate Leadership and Community Protection Act (CLCPA 2020), which sets specific goals and timelines for statewide decarbonization, including a carbon-free electric system by 2040 and reduction of carbon emissions to 85% of 1990 levels by the year 2050; offset projects are to be used to provide the additional 15% (Anonymous n.d.; Morris and Farmer-Alum 2019). Achieving the goals of the CLCPA will likely require new programs aimed explicitly at incentivizing climate planning at the local and county level, i.e., to "nudge" and support the creation of local government climate mitigation, adaptation, and resiliency plans.

The state climate program most relevant for our local context is New York's Climate Smart Communities program, an

interagency program led by the state Department of Environmental Conservation. CSC allows communities to seek state certification as “climate smart” at bronze, silver, and gold levels of certification, similar to the way that programs like LEED building certification and others rank projects on the accumulation of points in different categories of environmental efficiency and sustainability. To date (December 2020), more than 300 New York communities have adopted the CSC pledge, and 55 have been certified at the bronze level or higher. The Town and Village of Hamilton were certified at the bronze level in May 2020; Madison County was certified bronze in February 2017 (New York State Department of Environmental Conservation 2020c).

After adopting a 10-point CSC pledge, municipalities form a task force and assign a coordinator to guide the action items needed to attain certification. These actions are collected under 12 categories listed in Table 1 (New York State Department of Environmental Conservation 2020d). All action items must be documented according to specific guidelines detailed for each item, and in many cases, that documentation requires significant resources to justify completion of an action item. For municipalities with small staffs, this documentation process may be difficult to prioritize and complete.

Grant resources and technical assistance are available to communities who have the resources to take advantage of them. Again, smaller municipalities likely have fewer resources to invest in grant applications to support completion of a climate action plan (CAP) or carbon emissions inventory (and many New York State grants require a 50% match from the community or entity receiving the grant). Regional resources to support communities are also available, but there is a limit on how much of the work can be done directly for a given municipality, given the need to solicit community input and feedback for climate planning efforts; not only is this work advocated in the literature on best practices for climate change planning (e.g., Boswell et al. 2019), it is an explicit requirement of the CSC guidelines, especially for those items

that are considered “priority actions” and are at the center of a community’s efforts to research and plan. These items include municipal and community carbon emission inventories, climate action plans, inventories of natural resources and hazards, and strategies for adaptation and resilience. In sum, many of the priority items for CSC certification involve complex research, robust information analysis, and significant investments of time, often requiring considerable resources and community input. Given the need for local climate planning and action, the question then becomes: who has the skills and resources to lead and complete these efforts, and who does not? We argue that support for communities engaged in this work is a form of climate change advocacy and turn toward a more detailed discussion of what that advocacy looks like.

Climate advocacy via policy capacity and community-based research

What does it mean to be an advocate in the context of climate planning and community-based responses to specific climate challenges? The theory and praxis of environmental advocacy have not been extensively defined in the literature, but some trends and guidelines are evident. Reiners et al. (2013), in a survey of ecologists’ attitudes toward environmental advocacy, suggest a tension between the norms and ideologies of scientific work and efforts to effect political and cultural change. Advocates such as Rachel Carson are the best known figures in this effort, but the confluence of the civil rights movement, anti-war and anti-nuclear protests, and the rise of environmental science in the 1960s and after created a pathway for rank-and-file scientists to blend research and advocacy (Frickel 2004; Moore 2008).

Advocacy with or on behalf of specific communities presents its own set of challenges. The literature on environmental justice movements shows that experts can serve as important allies to communities fighting for recognition and remediation of toxics and other environmental problems (Peña 2005). Policy studies scholars use the term “policy analytical capacity” to describe the resources and opportunities for policy actors to engage in the work of “shaping agendas, designing the content of policies, gaining an understanding of the context in which policies are implemented, and steering the evaluation of policy outputs and outcomes” (Elgin et al. 2012; Weible et al. 2012, p. 127). Research on policy analytical capacity shows that government bodies have more capacity for this work than might be expected, given trends toward privatization, though actors in higher education and consulting groups have higher capacity to conduct research related to climate change policy (Elgin et al. 2012). Kekez et al. suggest that collaborative partnerships between government and non-government actors focused on the “co-production” of policy may allow citizens to “actively contribute to service they

Table 1 Twelve action categories for climate smart communities certification (New York State Department of Environmental Conservation 2020d)

1. Build a climate-smart community
2. Inventory emissions, set goals, and plan for climate action
3. Decrease energy use
4. Shift to clean, renewable energy
5. Use climate-smart materials management
6. Implement climate-smart land use
7. Enhance community resilience to climate change
8. Support a green innovation economy
9. Inform and inspire the public
10. Engage in an evolving process of climate action
11. Innovation
12. Performance

personally receive” (Kekez et al. 2018, p. 244). Ideally, when citizens work together with municipal officials and academic experts, these boundaries become blurred, and we discuss more specific examples of these partnerships below.

Evidence of policy analytical capacity, therefore, can suggest the ability of policy actors and other experts with relevant capacity to serve as a resource to support the development and adoption of local climate change policies. At the same time, strong policy analytic capacity is not necessarily synonymous or even compatible with advocacy, especially in cases where policy actors might serve as a resource for communities seeking to implement new policies and practices: if those expert allies take an overly strong role in determining the methods, arguments, and priorities for community interests, that community misses opportunities to build their own capacities for addressing a specific problem and improving future resiliency. We term this dilemma the “support trap,” where reliance on external policy analytical capacity may inhibit communities from developing their own internal capacity to develop policy. Cole (1995) suggests that advocates should focus less on one-time interventions and more on longer-term capacity building that helps communities develop the means to understand and address the structures that limit their ability to self-advocate and effect change (especially for those communities without existing resources in wealth, political connections, or racial privilege and power; pp. 708–709).

Cole’s emphasis on collaborating and capacity building accords well with community-based research (CBR) models of participatory knowledge creation (Strand et al. 2003a, b; Dukes et al. 2011). CBR practices are intended to break down the traditional barriers between academic researchers and community members and encourage shared goals and methods to support community empowerment. Strand et al. highlight several benefits to be gained from CBR methods, and one especially relevant example for our case is the educational gains for students who complete coursework and research projects in the context of a CBR model:

The collaborative nature of CBR makes it a highly effective mode of teaching, learning, and empowerment for everyone involved. Students benefit from the best combination of experiential and intellectual learning strategies... Training and resources brought to the table by the college or university are transferred to the community partner such that the organization may become self-sufficient and research-capable. And collaboration also enhances the quality of the research in myriad ways, as community members bring to the research table ideas, perspectives, language, and knowledge that inform every stage of the group’s work (Strand et al. 2003a, p. 7).

It would be a mistake to over-idealize the potential of CBR methods, especially given the cultural and structural forces that shape the lines between different status and identity groups. However, we argue that CBR is a promising mode of climate change advocacy. Communities around the world are already facing impacts from climate change, and there is an almost unlimited need for each community to assess and mitigate their current climate footprint and to develop plans for increased climate resiliency. When college and university classes and projects directly engage in local climate planning, the potential exists to not only bring capacity to bear on the hard work of policy promulgation but also to build capacity within the local community (Strand et al. 2003). Both CBR and community climate planning offer the opportunity to also deliver a deepening of social ties within a community and the building of community capital. Using the CBR model of the democratization of knowledge creation and dissemination, institutions of higher education can become advocates of a sort. The following sections describe in more detail our experiences in a local setting as well as the statewide landscape of climate change planning and community action in New York.

The Town and Village of Hamilton, New York, in the context of statewide climate change planning

Located in the geographic center of New York State, the Town and Village of Hamilton are small municipalities with low population densities. Administratively, New York State is divided into counties, then townships, and then cities, villages, and hamlets (New York Department of State 2020). So the Village of Hamilton is housed within the Town, and each is part of Madison County. The larger Central New York region is largely rural, with the urban centers of Binghamton, Syracuse, and Utica each within a 75-mile radius around Hamilton (see map in Fig. 1). This mix of rural and urban communities means that a strict binary between the two categories is not an especially helpful distinction for our analysis, and following the work of Isserman (2005), we adopt a four-fold categorization that includes rural, rural-urban, urban-rural, and urban communities.

This way of defining geographic space creates a more comprehensive spectrum between the poles of rural and urban and is especially helpful for seeing trends in the kinds of communities who are pursuing climate planning and preparedness. For example, though the US Census Bureau technically defines the Village of Hamilton as an urban community (because its population exceeds 3000 persons), it has a relatively low population density compared with other villages in New York. Madison County ranks as a “rural-urban” county in Isserman’s typology, meaning that it leans rural, and the landscapes, geography, and economic structures of the county bear

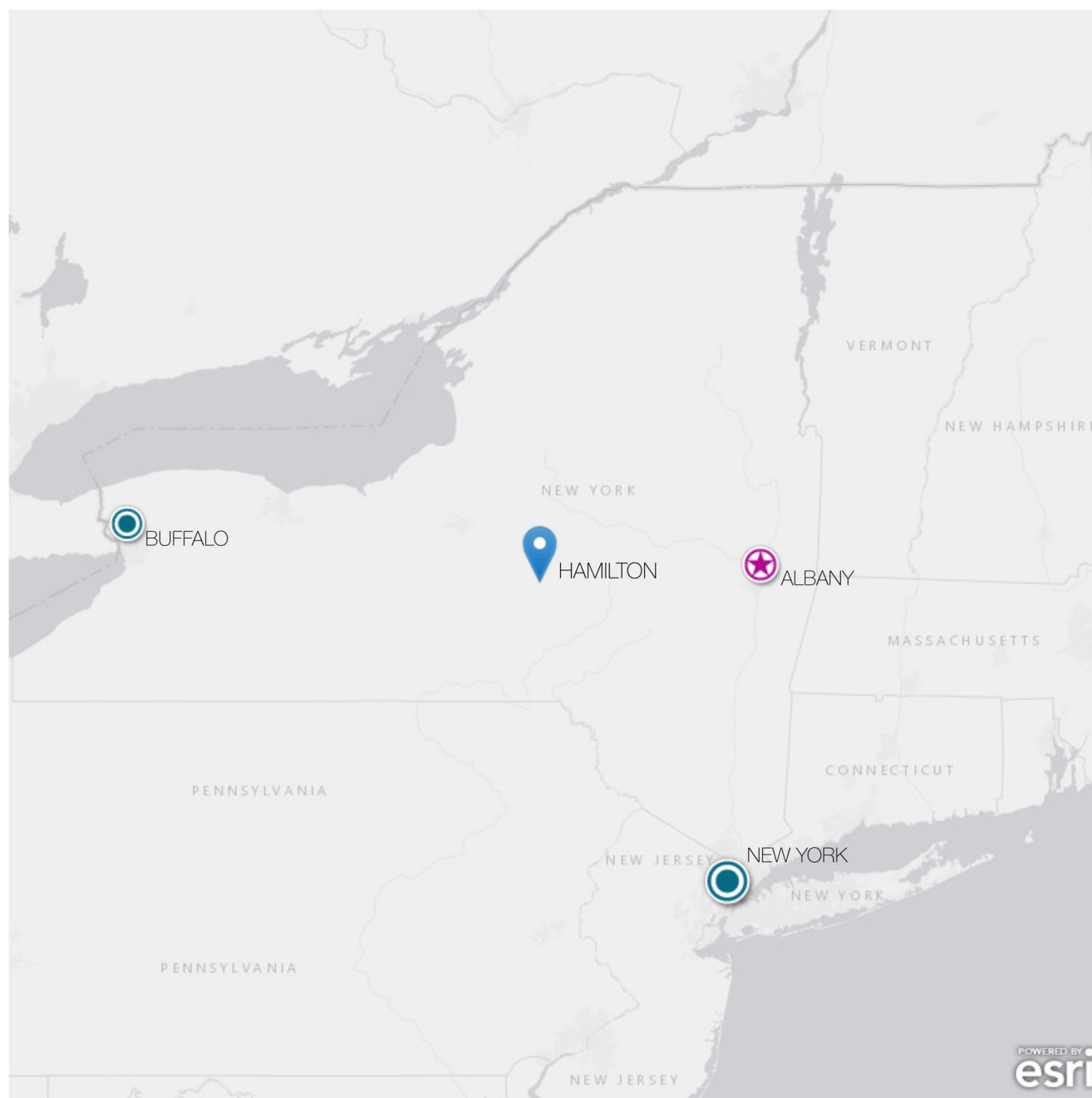


Fig. 1 Location of Hamilton, NY within New York State (National Geographic MapMaker)

this out. Agriculture is the largest industry in Madison County, and though the dairy industry has been in decline for decades, it retains a lasting influence. The demographic figures in Table 2 show that both the Town and Village of Hamilton are relatively affluent, with levels of income in line with median values for New York State, and with poverty rates well below state levels. At the same time, census tracts within just a few miles of Hamilton have poverty rates closer to 15 or even 20%, demonstrating the uneven distribution of wealth and privilege in rural-urban communities (ACS 2018 data via Social Explorer).

Table 2 also includes summary data for New York municipalities designated as Climate Smart Communities as of August 2020. These data show that the Town and Village of Hamilton are in some respects quite representative of the state as well as other communities with the CSC designation: the Village of Hamilton (as well as Madison County) is the median value for family income among CSC municipalities and is just below the statewide median. The Town of Hamilton is less affluent than other CSC-certified towns but is just above the statewide value for median household income and has a lower rate of poverty. While Madison County is a rural-urban

Table 2 Selected Demographic Statistics for State of New York, the Town and Village of Hamilton, and New York municipalities designated climate smart communities 2018 (demographic figures from 2018 ACS 5-year estimates via Social Explorer)

Community	Population	Population density (persons/sq. mile)	Rural/urban county type	Median income	Families in poverty
New York State	19,542,209	416	NA	\$65,323	10.9%
Village of Hamilton	3860	1560	Rural-urban	\$64,107	0.0% ¹
Town of Hamilton	6511	157	Rural-urban	\$66,920	7.8%
Madison County	71,359	109	Rural-urban	\$60,228	6.7%
All CSC Certified villages (<i>n</i> = 9)	3860	3773	Urban (mode)	\$64,107	5.0%
CSC cities (<i>n</i> = 11)	27,772	5228	Rural-urban and urban (bimodal)	\$48,186	14.0%
CSC towns (<i>n</i> = 20)	14,429	295	Rural-urban (mode)	\$74,156	5.0%
CSC counties (<i>n</i> = 11)	179,303	275	Rural-urban (mode)	\$60,228	8.0%

¹ The 2010 US Census reports a poverty rate of 1.9% for the Village of Hamilton (Social Explorer)

county in Isserman's typology, both the Town and Village of Hamilton have population densities nearly 50 % under the median values for other towns and villages with the CSC designation. In summary, the Town and Village of Hamilton are relatively average when compared with statewide measures of affluence but are somewhat less affluent than other CSC-designated municipalities, and each community leans more toward the rural end of the continuum than other CSCs.

At the time of writing, there were 51 CSC-certified communities, including 9 villages, 20 towns, 11 cities, and 11 counties. In an attempt to better contextualize our specific work with the Village of Hamilton and Town of Hamilton, we looked for patterns in the profiles of other New York towns and villages that have received certification. In particular, we noted where communities had access to external policy analytical capacity to support their work, where and how much policy actors took the lead for community efforts, and which sectors these actors represented, including higher education, government offices, and consulting groups. We share some observations here about the confluence of socio-demographic data and the climate planning projects that towns and villages submitted to the CSC program.

Villages

Villages are a distinct and important part of the governance structure of New York, with more than 500 villages throughout the state. Unlike cities, villages must exist within a town and may have services provided by the town, such as policing. Analysis of certification documents shows that all 9 CSC-certified villages used some form of external policy capacity in their climate planning efforts, though those forms of support varied in terms of who did the work and how fully external to the community those sources of support appear to be. For example, some communities have connections to expertise and leadership from local institutions of higher education,

including villages where the local task force is led by staff who also happens to be a sustainability director at a major university (Village of Hastings-on-Hudson). In several cases, certified villages also drew on technical assistance from state and regional agencies that prepared reports directly for a specific community, or developed a broader set of data that supported the certification process for a range of municipalities. For example, in 2012 consulting firm ICF International published a report (funded by the New York State Energy Research and Development Authority) that detailed greenhouse gas inventory data for six counties in the mid-Hudson River Valley region (ICF International 2012). That inventory data was used as the basis for several villages that gained points toward CSC certification. Similarly, a village such as Piermont was able to deploy a number of vulnerability assessments prepared for the community by external consultants (Zemaitis et al. 2018, p. 17). Other villages (and many towns and counties) were able to use elements from broader comprehensive planning documents that included components focused on sustainability.

In each of these cases, the villages gained certification via a range of reports, plans, and inventories, with each of these documents worth a certain number of points in the NY CSC framework. As communities gain points and achieve certification, however, we also ask whether that municipality also gained policy analytic capacity through the effort, or whether that work was delegated to consultants and state agencies. If the latter, then certification efforts might be considered a support trap, where communities may not be able to continue their own work and instead need to continually seek external support through grants and other sources of technical assistance. The support trap has very practical implications for these communities, given that CSC certification must be renewed every 5 years, and communities without the capacity to update data such as emissions inventories on a periodic basis may find it hard to maintain their certification.

Towns

There are more CSC-certified towns than certified villages, cities, or counties. Compared to the groups of CSC-certified villages, cities, and counties, respectively, the group of CSC-certified towns had the highest median income and the lowest median poverty rates. The group of towns also varies the most in population, which may be considered a proxy, albeit an imperfect one, for resources, because larger towns tended to have higher median incomes and likely higher tax bases to fund public budgets.

Our qualitative analysis of the CSC documentation revealed a significant distinction regarding climate planning documents between the towns with robust planning or conservation departments and those without such internal capacity. Some towns now have dedicated sustainability coordinators, demonstrating both the resources and the commitment to have built-in policy analytic capacity for climate change planning. Larger towns, with higher median incomes, in more urban contexts usually have larger public budgets and well-resourced planning or conservation departments. These towns are better able to participate in programs like the CSC program without external policy capacity, and if these towns do need some support, there are usually regional planning entities and private sector resources available. And thus, these towns are better able to capitalize on resources made available by becoming a CSC-certified community. Examples of towns that fall into this category from our study are Cortlandt, Hempstead, and Southampton.

If larger population size and higher median income are indicators of the level of resources a town can bring to climate planning efforts, we did notice some trends in towns with fewer resources compared to towns with more resources. Of the 20 CSC-certified towns, 18 used some external analytic capacity in their climate planning efforts in some way, usually in the completion of the greenhouse gas inventories or CAPs. Examples of some sources of the external capacity are community-based non-profit organizations and engineering firms. But for 9 of the 18 towns that used external policy capacity in climate planning efforts, it was a college or university source such as students, professors, or a combination thereof that aided in these efforts. In some cases, such as the Cornell Cooperative Extension of Tompkins County, a higher education group became a source of external policy capacity for multiple CSC-certified towns. This indicates that, at least in the case of the CSC program, college and universities, though not a monolithic block, play a fairly large role in supporting towns, especially smaller and less wealthy towns, by providing external technical and policy analytical capacity for local climate action planning.

Advocacy via University-Municipality Partnerships: The Hamilton Climate Preparedness Working Group

Based on our analysis of the factors that may allow towns and villages to gather and marshal the resources needed to develop climate planning capacity and gain certification in programs like Climate Smart Communities, we worry that smaller towns and villages, with lower median incomes, in more rural contexts, with less robust tax bases and budgets will need to find external policy capacity to participate in these programs. Not every community can fall back on comprehensive regional planning to develop climate change policies. Into this gap, we see an essential role for higher education to provide policy analytic capacity and deploy the tools of community-based research to help develop municipalities' own internal capacity for this work. While not all communities will have the benefit of a university with the resources and staff willing to fill this gap, as noted above, New York is relatively rich in its sheer number of private and public institutions of higher education. Further, integrating students into the work of CBR and collaborative climate change planning provides an important pathway to developing successive generations of climate leadership, with experience working for policy development and implementation. We share the case of our work developing such a partnership between our home institution, Colgate University, and our hometowns, the Town and Village of Hamilton, New York.

Our case is centered on the Hamilton Climate Preparedness Working Group (HCPWG 2020), a coalition of stakeholders and representatives from town and village governments; local not-for-profit organizations and development agencies; Colgate University students, staff, and faculty; representatives from Cornell Cooperative Extension; and at large, community members. The stated mission of HCPWG is to

...research, plan, and promote policies and programs in response to existing and future impacts of climate change. The Working Group supports efforts to reduce the greenhouse gas emissions that contribute to climate change, working collaboratively with our local communities to track and cut emissions. The Working Group also seeks to identify people and resources vulnerable to the impacts of climate change, in order to promote the sustainability of our communities for the twenty-first century and beyond.

Pursuit of CSC certification has been a major goal of the group, though the broader aim of developing a collective vision and process for climate preparedness and resilience is at the heart of the group's mission. Student research and engagement are a key resource for developing the methods and tools

needed to achieve these goals, and Colgate University has provided student support via several sources of curricular and co-curricular programs.

The university's environmental studies program includes several courses built on CBR principles, including ENST 241: Sustainability and Climate Action Planning and ENST 390: Community-based Study of Environmental Issues. Students in these courses directly contributed to projects for HCPWG since 2016, tasked with analysis and creation of municipal greenhouse gas inventories, community greenhouse gas inventories, energy benchmarking for municipal buildings, vulnerability assessments, and resiliency plans. Colgate also has a sustainability program, directed through its Office of Sustainability that is a nationally recognized leader in climate change planning and action (Colgate University 2020a, b; Second Nature 2011; Association for the Advancement of Sustainability in Higher Education 2019; Sierra Club 2019). Student internships are provided through the Office of Sustainability, along with additional internship support from Colgate's Upstate Institute, a CBR-centered research institute dedicated to supporting not-for-profit organizations and community-oriented businesses in the region (Colgate University 2020a, b).

Added up, these resources provide support for as many as two dozen or more students each year to directly engage in community-based climate change planning efforts, including work that helped the Town and Village of Hamilton achieve CSC certification in 2020. From a practical standpoint, this meant that the students conducted semi-structured interviews with town and village staff, leadership, and relevant community members, analyzed existing reports at the state and regional level (e.g., Madison County's CSC documentation), synthesized the material into a final report, and presented it to the Town and Village. These community-based projects were certainly supervised by their professors and university sustainability staff, but it is fair to claim that the students did the vast majority of the information collection and analysis that was involved. Staff from the Office of Sustainability and the Upstate Institute also played a key role in developing reports, data sources, and other essential tools for completing these projects. These offices also provide important financial and logistical support, including budgets for meetings and the students' internships and critical work in communication and organization, including maintenance of the HCPWG website (HCPWG 2020).

Examples of student-community collaboration include a "roadmap" document that laid out for the Town and Village of Hamilton which action items in the CSC program were either completed, within reach, or longer-term objectives for each municipality. That document helped to organize and plan a complex set of potential projects and directions, allowing local government officials to see that CSC certification was possible and to prioritize the action items to get there. The students completed or helped complete the municipal and

community greenhouse gas inventories for both the Town and the Village and a Climate Resilience Planning Self-Assessment for both the Town and the Village.

In another project, a student team worked with a member of the Town of Hamilton Board of Supervisors to complete a vulnerability assessment process developed by the Nature Conservancy (Anonymous n.d.). Again, this effort highlighted the key areas of vulnerability for the Town, and the process of completing the assessment not only led to that awareness, but the interaction helped students see how sustainability planning worked in practice: small, sometimes tedious steps that lead not to a final answer, but more often as a handoff to another group or office. Both of these examples also highlight project structures and resources that often lead to the most successful outcomes—in each case, students partnered with local government officials to work within an existing framework rather than developing a research plan or tool from scratch. The CSC list of action items and the resiliency assessment tool gave students and their community partners a relatively structured research question to use for developing and completing their projects; the structure of those programs, in turn, also gave officials a sense that they were working with standardized and accepted frameworks. This is not to say that all student-community projects need to be guided by existing tools, but rather that this is often a way that undergraduate students can reliably complete a project in a one-semester timeframe that benefits community partners.

Students who continue their work into additional semesters or summer research internships have been able to develop more advanced projects, and in fact our working group is currently partnering with an alumnus who now works as a sustainability consultant, to complete a climate action plan for the Town and Village of Hamilton municipal operations. See Table 3 for a list of all major reports and projects that support the work of HCPWG and were completed by Colgate environmental studies students. While not an exhaustive list of all CSC-related student community-based research projects completed over the years, this list includes the documents that were directly submitted to the CSC program coordinator and represents the building blocks of how student research in the community can directly aid in the governance of local communities. The list also demonstrates the way that projects can be used over time to develop more complex planning tools and documents; for example, analyses such as climate inventories and vulnerability assessments ultimately inform visions for climate resiliency and community climate action plans.

These examples demonstrate a clear and direct case of community-based policy analytical capacity. Not only have the town and village benefited in terms of policy change, but the praxis of students learning and doing climate action planning democratizes knowledge creation and dissemination and creates a sense of investment in civic engagement for students

Table 3 Student authored reports and projects used by the Town and Village of Hamilton to become CSC Certified (2017–2020)

Year	Student-authored/co-authored CSC report
2017	Roadmap: Incorporating Climate Smart Communities Program into the Town of Hamilton's Draft Comprehensive Plan
2017	Town of Hamilton Municipal GHG Inventory
2018	Town of Hamilton Community GHG Inventory
2019	Village of Hamilton Municipal & Community GHG Inventory
2019	Town of Hamilton Climate Vulnerability Assessment
2019	Village of Hamilton Climate Vulnerability Assessment
2019	Town of Hamilton Resiliency Planning Self-Assessment
2019	Village of Hamilton Resiliency Planning Self-Assessment

(Strand et al. 2003b). The “Colgate bubble” is a frequent topic of discussion on campus—the concern is that, though students are living and learning in a community, they are often insulated from it. CBR methods are a great way to pop that bubble and allow students and community members to meet and learn from each other. While not a representative set of experiences, student evaluations from a recent semester of the courses, ENST 390: Community-based Study of Environmental Issues and ENST 241: Sustainability & Climate Planning, where students were tasked with supporting the Town and Village of Hamilton with projects to support CSC certification, demonstrate those connections:

I learned a lot about how communities work in terms of the environment and what the priorities of small towns really are. Environmental issues span every aspect of day to day life, so seeing how they affect the place we live in was interesting.

I was able to understand government agencies, and organizational structures that were at play in Hamilton. It was the first time that I was in contact with community members in this way. I learnt about the community and the people who run this place.

This course had real-world connections so I feel better prepared to go into the sustainability industry with background knowledge from this course.

This course gave me a lot of insight into how local governments function in developing climate action planning and it also gave me a better understanding of how community engagement is carried out.

For their part, community partners for student work seem to find the support helpful for achieving goals that they would not otherwise be able to accomplish. For example, in 2016, Colgate's Upstate Institute conducted a survey of all community partners who had sponsored summer research interns, to discern in part whether hosting organizations found that the

benefits of student help were worth their effort in terms of time, training, and other resources needed to accommodate a student intern. The survey results demonstrated that 98% of partners felt that the benefits outweighed the commitments of hosting a student intern (Dudrick and Henke 2016).

As noted above, Colgate University has many resources that help support a mission of CBR-centered climate change action. In other ways, however, the liberal arts model and undergraduate student population at a school like Colgate has some drawbacks when compared to other institutions of higher education. The philosophy of the liberal arts emphasizes a general education, breadth instead of depth of knowledge, and the all-purpose tools of critical thinking and analysis over technical or pre-professional training. By its nature, policy analytic work is often technical, requiring specialized knowledge and training. While Colgate students can take courses that provide them with much technical knowledge of fields such as policy analysis, environmental science, statistics, qualitative research methods, and many other tools of the policy-making trade, the university's offerings cannot likely match the depth of training that students might be able to attain at a much larger institution such as our nearby neighbor, Cornell University. In particular, the graduate programs at a school like Cornell not only provide training to support the kind of research and community capacity building we advocate for here, but graduate work in their specialized masters and doctoral programs also provides the opportunity to include communities through the thesis work that students complete to attain graduate degrees. While some of our students are able to continue projects and partnerships beyond a single semester of work, more frequently their efforts are confined to the structure of a single course.

With all that said, deep and long-term commitment to local climate change advocacy—at least in the model we detail here—does not necessarily come from the development of a single course or even a full curriculum, but rather from the way that multiple stakeholders develop shared goals, tools, and discourses. This is where a group like HCPWG can help to keep momentum and progress on the broader goals of the community over a longer period of time. Even through their engagement with community members via a single course

experience, students develop a sense of how research can be deployed in service of building the sustainability and resilience of their own communities. In this way, the act of teaching through methods of community-based research becomes an act of advocacy.

Conclusion

To promulgate the kinds of policies and plans that are needed to become certified in the CSC programs, and participate in similar programs across the nation, local governments need policy analytic capacity. Kekez et al. (2018, p 246–247) describe elements of local government policy analytic capacity at the organizational and system level as, “organizational information capacities, alignment of budget and other policy inputs with outputs and outcomes...opportunities for knowledge generation, mobilization and use.” When these analytical competencies are absent or in short supply within a given government’s resources, there can be policy gaps, especially in areas outside typical government services such as climate change planning.

Communities attempt to fill this climate policy gap by securing external policy analytic capacity from private firms, NGOs, and especially institutions of higher education. We worry about external policy analytic capacity preventing, or at least not fostering the growth of, internal policy analytic capacity within the government staff and leadership or the surrounding community. We term this the support trap, and it is similar to what Kekez et al. (2018, p244) describe as the “asymmetric dependence” that can emerge when local governments engage outside groups in order to co-produce or co-manage policy. But in cases where institutions of higher education are nested within specific communities, community-based research is a means to help fill the local climate planning policy gap and avoid the support trap.

Some best practices of CBR include ensuring the primary interests or needs of the community partner, in our case a village or town, are met, and also ensuring that the partners’ organizational capacities are enhanced. Higher education institutions can meet these goals if the actors and the community partners adopt shared, long-range, social change perspectives (Strand et al. 2003). As an example, there must be less emphasis on what we, as higher education resources, are doing *for* the towns and more emphasis on what we are doing *with* the towns and what we are enhancing together. The model of CBR as praxis invites us to consider local climate action planning as a laboratory space to teach and learn *by doing*. Dukes et al. (2011) argue that CBR projects are most effective when all participating partners focus first on developing or uncovering a common understanding of the problems they seek to address. In our case, we attempted this through a series of community meetings and open forums engaging the

students in the convening of a diverse group of community members.

Dukes et al. (2011) offer additional best practices such as jointly agreed upon indicators of success to measure progress and to publish and build upon small victories. We have attempted to do this with a public-facing website including the collection of all CSC-relevant documentation, a spreadsheet for planning and tracking the progress of HCPWG initiatives over months and years, and press releases to announce the completion of goals, including especially CSC certification. Building these successes can link individuals in the community more effectively, inspire internal investment within the local government, and increase the community capacity, in an attempt to skirt the support trap. Not only have the town and village benefited in terms of policy change, but the praxis of students learning and doing climate action planning democratizes the knowledge creation and dissemination process and builds civic engagement in students (Strand et al. 2003a, b). In this way, we believe community-based research can become a form of community advocacy.

We believe we have been at least moderately successful when it comes to this final point on avoiding the support trap. But it is hard work, as meaningful and successful community advocacy often is. We offer the story of our collaborative community-based climate planning project as a story of climate advocacy. And we call on our colleagues at other colleges and universities to engage in this work, too. Despite the unequivocal reality that, without comprehensive intervention, climate change will have devastating impacts on human communities, the US federal government has created very little meaningful or comprehensive climate legislation. In fact, the federal government has even taken numerous steps backward during the Trump administration. This policy vacuum has provided the space for a surge of action at the subnational level, where states, counties, and municipalities serve as laboratories for the creation and implementation of climate policies and plans. There is a real need for this work and for the future leaders of our country to develop the practical skills needed to conduct a greenhouse gas inventory, benchmark building energy uses and transportation emissions, and lead their communities in a shared process of change through meaningful and community-appropriate climate mitigation and adaptation planning. We encourage our colleagues and their students to step into the role of climate advocates through the praxis of collaborative community-based climate action planning.

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