INTRODUCTION TO THE SPECIAL ISSUE: Québec Hydropower for a Green Massachusetts? Connections, Contradictions, and Contests of Renewable Electricity

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This Special Issue illuminates the profound and complex relationship between a serious policy effort to increase renewable electricity as a way to reduce carbon emissions in a densely populated economic region, and the environmental and social changes and political conflicts in more remote rural regions where the necessary infrastructure must be built. As described in the Acknowledgments section at the end, this Special Issue has been a five-year effort in which New England-based undergraduate students who care about sustainability, justice, and critical analysis, undertook much of the research. Unlike some related studies, the case study that animates the articles is located in the global North, and the remote and peripheral regions are farther north (though not the Far North). The issue is being published in the *Northeastern Geographer* because the geographies of the case study are focused on New England and Québec, closely aligning with the journal's purview. However, the case study itself, and many of the individual authors' insights, are relevant to questions about the wider sustainability and justice of the push for renewable power. In this Introduction, I provide broader theoretical and practical context for the articles, and for the issue as a whole. I emphasize the spatial and material linkages, political economies and political ecologies, and divided political geographies, inherent in the use of large-scale renewable electricity from remote locations as a route to climate mitigation. I refer to these here as the *connections*, *contradictions*, and *contests* of electricity.

This issue Introduction proceeds in four parts. Section I provides a brief literature review and draws out the themes of connections, contradictions and contests of renewable electricity. Section II takes us to Québec, the origin of the electricity that is the focal point of this Special Issue, orienting the readers to Hydro-Québec's current major hydropower construction project on the Romaine River, in the territory of the Innu First Nation, a river they call the Unamen Shipu. The third section outlines the seven articles in the Special Issue, which follow geographically from electric policymaking in Massachusetts to transmission infrastructure proposals first in New Hampshire and then in Maine, to the Romaine Unamen Shipu River in Québec. Section IV provides an analysis of the collective contributions of the articles to the themes of connections, contradictions and contests of renewable electricity that I introduce in Section I. A conclusion suggests some lessons and next steps for scholars and advocates of energy sustainability and justice in this region and beyond, and an Epilogue provides a summer

2022 update on the transmission line through Maine, the current status of Massachusetts' stalled effort to import more Hydro-Québec power, and related issues raised by the articles.

I. Critical Geographies of Renewable Electricity: Connections, Contradictions, and Contests

As climate change brings more frequent fires, floods, droughts and other disasters, along with the promise of much worse future calamities (e.g. Struzik 2020; DeConto et al. 2021; Masson-Delmotte et al. 2021; IPCC 2022), it is imperative that carbon emissions are drastically lowered. Electricity is a key sector in which this needs to happen, as most electricity is generated by burning fossil fuels, and in many places electric generation constitutes about one-third of greenhouse gas emissions. Moreover, the best chance of reducing emissions in other energy-consuming sectors like transportation and heating and cooling of buildings in many cases depends on electrification, so reducing emissions across those sectors also entails emissions reductions in electric generation (Farnsworth et al. 2018; Cleary 2019; U.S. EIA 2021).

For these reasons, there is in many places across the world a push for an energy transition to low- to no-carbon electricity. Much of the hope rests on replacing the burning of fossil fuels with renewable energy that comes from biophysical systems and dynamics such as wind, sun, and moving water.

Many scholars, policymakers and advocates have waxed hopeful about the potential for non-fossil-fuel energy to be more sustainable, democratic and just (e.g. Becker and Naumann 2017; Burke and Stephens 2018; Knuth 2019; Prakash and Girgenti 2020; Vanegas Cantarero 2020; Thomas and Erickson 2021). There are enormous negative ecological and social impacts of climate change, and deep spatial and social inequalities of fossil fuel energy (Healy, Stephens, and Malin 2019; IPCC Working Group II 2022). Mitigating climate change and changing our energy systems are necessary goals for any overarching plan to address a wide array of unsustainabilities and injustices (Sultana 2022).

However, geographers and critical scholars from other disciplines have also raised a number of important considerations about the wider sustainability and justice implications of the push for renewable electricity as it transforms social and natural landscapes. Their work has contributed to the rapidly growing literatures on energy geographies (e.g. Bridge et al. 2013; Huber 2015; Calvert 2016; Harrison and Popke 2017; Baka and Vaishnava 2020), sustainable energy (e.g. Mulvaney 2020; Vanegas Cantarero 2020), just energy transitions (e.g. Heffron and McCauley 2018; Jenkins et al. 2021; Sovacool 2021), and geographies of energy infrastructure (e.g. Bridge, Özkaynak, and Turhan 2018; Furlong 2020, 2021). This Special Issue taps and builds on their work to contribute to the effort to think critically and integratively about the challenges to achieving a just and sustainable transition to renewable electricity.

I draw out three themes from this critical literature that I believe can guide consideration of the wider sustainability and justice of shifts toward renewable electricity: spatial and material linkages (connections); political economies and ecologies (contradictions); and divided political geographies (contests). Section IV in this Introduction returns to these themes, highlighting the collective contributions of the issue's authors to these three critical themes.

Connections Of Renewable Electricity: Spatial And Material Linkages.

Both theoretically and empirically, geographers and other critical scholars have shown that energy transitions in general, and renewable energy development, production, and infrastructure more specifically, entail diverse and profound material and spatial changes. These changes are driven by, and alter, social, cultural, political, economic and environmental processes, practices, and relationships. For example, Huber and McCarthy (2017) argue that many renewable energies are placed in rural and remote locations, often in the global South, and often in the lands of indigenous peoples or other marginalized populations, harming access to traditional lands and resources, while benefits accrue mainly to urban and economic centers and the economies of the global North. Renewable energy development is often linked to a variety of land and resource dispossessions (e.g. Kramarz, Park, and Johnson 2021; Sovacool 2021). Riofrancos (e.g. 2019) among others has shown that renewable electricity often depends on a host of materials that come from mines and other extractive industries with severe local environmental impacts, far removed from the consumers celebrating their new green energy. Construction of renewable electricity may require movement of culturally distinct workers into remote areas, the constriction of movement of local or immigrant groups, or the development of socially and culturally unequal labor conditions that reinforce colonialism (Desbiens 2013; Mitchell 2013; Guimond and Desmeules 2018). Renewable electricity production may require long-distance transmission and transportation infrastructure, with their own significant footprints (Jones 2013, 2016); it may also produce significant waste (O'Sullivan, Golubchikov, and Mehmood 2020). A switch to renewable electricity may reshape energy use and consumption in unexpected ways that in some cases can exacerbate environmental and social impacts or inequalities (Harden 1996; Nye 1998; Smil 2010; Jones 2016; Boucher and Mérida 2022). More broadly, renewable energy transitions can have impacts on wider regional and global political economies and the people, places and ecosystems that depend on them (Newell and Mulvaney 2013). A critical analysis of the wider justice and sustainability of renewable electricity development must include tracing these connections of material and spatial linkages (cf. Healy, Stephens, and Malin 2019 for a model of similar tracing for a fossil fuel transition).

Contradictions of Renewable Electricity: Political Economies and Political Ecologies

Geographers and others have also shown that renewable energy is inherently entwined with (and constitutes and is constituted by) political-economic structures and systems and political-ecological relationships. I draw on this literature to highlight three kinds of what I call contradictions, political-economic and political-ecological entwinements of renewable electricity development with capitalist economic development that can lead to negative impacts on wider sustainability and justice[1]. These three contradictions are: renewable electricity as a socioecological fix; funding and finance of renewable electricity; and government institutions and policies that promote renewable electricity.

One key contradiction illuminated by critical geographers is the role of renewable electricity development as a *socioecological fix*. A central insight is that the deployment and operation of renewable energy infrastructure is driven and shaped not only by a desire for greenhouse gas

reduction for climate mitigation but also, like most other kinds of infrastructural and economic development, by investors' need to secure new targets of reliable profit for ever-increasing capital accumulation. Continued capital accumulation often relies on new rounds of built infrastructure in new or remade physical spaces (a "fix" for capital), producing uneven socioecological impacts—on livelihoods, lands, ecosystems, people, and cultures (McCarthy 2015; Ekers and Prudham 2017, 2018). Renewable electricity development in these new spaces is often promoted in the name of local or regional economic development, indeed is commonly lauded as sustainable development precisely because the energy is renewable, and also as just, because it brings electricity and development to new spaces and peoples (e.g. IEA 2021b). Yet capital's requirement of ever-expanding biophysical materials and spaces belies goals of ecological sustainability. As well, deploying and operating renewable electricity in remote, relatively un-developed lands and waters can negatively affect livelihoods and cultures dependent on productivity of and access to ecological systems, and, like peripheral development the world over, often has a host of negative and uneven social, cultural, and environmental effects. For these reasons renewable electricity development may run counter to social justice as well as sustainability (e.g. Labban 2012; McCarthy 2015; Harrison and Popke 2017).

Another contradiction of renewable electricity emphasized by geographers and other critical scholars has to do with *funding and finance*. A transition to renewable electricity requires that the infrastructure, land, resources, labor, etc. that are needed to build and operate renewable electricity are paid for. The amount of funding needed for a full energy transition from fossil fuels to renewable energy is enormous; as just one example, the International Energy Agency (IEA 2021c) estimates $4 trillion must be invested in low-carbon energy by 2030 in order to limit global warming to 1.5° C. Many critical scholars of political economy have noted that thanks to the legacies of neoliberalization and financialization over the last several decades, investments in renewable energy infrastructure today often rest on financialized debt (Baker 2021). This means that the flows of money and capital that enable and are produced by renewable electricity construction, operation and sales are increasingly opaque, potentially financially volatile, and hard to regulate. Furlong (2020) argues that there are also considerable continuities with postwar development, which also was often financed by debt. And, certainly, renewable energy is not unique among energy development projects in resting on financialized debt; rather, the point is that a renewable fuel does not mean a more just financing system. Despite the promises that overbuilding might be reduced with electric restructuring (see Vogel, this issue), renewable electricity development under neoliberalism and financialization today may risk instead an accelerated and exaggerated manifestation of what we have long seen: over-building of energy infrastructure in places where extractive profits are especially remunerative (with profits no longer limited by utility regulation), under-maintenance of that same infrastructure (with profits no longer guaranteed by regulation), and the potential for even more accelerated future debt crises for local, subnational, and national governments when development busts follow energy booms.

A third contradiction where renewable electricity development may conflict with sustainability and justice arises because renewable electricity placement, operation and funding must be regulatorily approved, facilitated, protected, and often incentivized by g*overnment institutions and policies*. This means that renewable electricity is also entwined in contradictory ways with politics

and government at multiple scales, levels, and locations. For example, if renewable electricity infrastructure is directly built, financed or subsidized by governments, it is often tied politically to ensuring that powerful or desired industries, companies or regions have access to cheap energy or investment opportunities (Hirt 2012; Vogel 2012; Klagge 2020). If governments instead must secure private-sector funding for electricity infrastructure, their electricity-promoting policies must ensure that investors are able to extract profit from public resources, their customers, or both (e.g. Baker 2021). These contradictory dynamics of course are not unique to renewable electricity; these are also important considerations for thinking about the sustainability and justice of electricity generated by fossil fuels and nuclear power, and of a host of other development resources (Mawdsley 2018). But recent changes in government and governance may make it even more difficult than in the past to oppose or mitigate impacts and contradictions. In the last 25 years or so, many regulatory frameworks and electric grids have undergone neoliberal restructuring, with rollbacks of direct government oversight and management, and re-regulation to support markets and competition. Reduced government regulations and new markets may be used to incentivize an energy transition, but the increasing control of governments and policy by financial institutions and interests may also undermine democratic participation, social welfare, and environmental protections (Beder 2003; e.g. Lambert 2006; Isser 2015; Newell and Phillips 2016).

These three contradictions provide highly useful analytical frames and questions that can illuminate issues of power, political economy, and political ecology, showing where to consider aspects of renewable electricity development that may lead to unjust and unsustainable outcomes.

Contests of Renewable Electricity: Divided Political Geographies

A third sustainability and justice consideration related to renewable electricity development that has been raised by geographers and other critical scholars is that the decision-making processes and forums of renewable electricity often inhibit full political participation. Poor, minority, and remote peoples, and non-capitalist concerns such as subsistence and cultural practices, for example, are likely to be underrepresented. Broader inclusion may better address the uneven impacts of renewable electricity.

The marginalization or exclusion of underrepresented people and interests has been a central concern addressed by the energy justice and just transitions literature. Scholars have written about a range of kinds of justice including distribution, recognition, procedural, spatial, restorative, cosmopolitan, and multispecies justice (e.g. McCauley et al. 2019; Celermajer et al. 2021; Jenkins et al. 2021). The focuses for many of these authors writing about energy justice are the inequitable access to energy, inequitable influence over energy siting decisions, and inequitable impacts of externalities from energy infrastructure, such as pollution.

In thinking through the implications on these kinds of issues of an energy transition, geographers have been especially interested to consider the extensive spatialities of renewable energy such as solar power, as this may cause landscape change, environmental impacts, and land dispossessions (e.g. Calvert and Mabee 2015; Baka 2017; Huber and McCarthy 2017). They have also focused on the rise in distributed energy systems, which some hope can be more inclusive and equitable (e.g. Thomas and Erickson 2021), while others offer more caution (Kruger and McCauley 2020).

A growing number of geographers and allied scholars have also suggested that the material outlay of infrastructure in local places provides an important gathering force for participation of polities who may be excluded in decision-making centers or by seemingly neutral market-driven processes (Bridge, Özkaynak, and Turhan 2018; Bosworth 2022). This may be important to enable people to grapple with the wider implications of renewable energy development.

Though this literature on geographies of energy justice is rich and robust, there are gaps in relation to the case study in this Special Issue. Few critical geographers or allied scholars have brought these kinds of questions to bear in analyzing the workings of large-scale electric grids or their governance institutions. Not many have critically examined the kinds of policy mechanisms that are common in the current effort to promote renewable power in many regional-to-continental electric systems today, such as the creation of wholesale markets for electric products and services, the development of renewable portfolio standards, and mandates for long-term power purchase agreements for low-carbon electricity (though there are growing forays e.g. Bakke 2017; Angwin 2020; Boyd 2020; Stokes 2020; Özden-Schilling 2021; Vogel and Vogel 2021). There has also been little systematic consideration of the political exclusion of relevant people and places that are within the same electric connection but in separate political jurisdictions (one partial exception is the analysis of the role of Nordic hydropower in the German energy transition, e.g. Farahmand et al. 2015; Sovacool 2017). There has also been little critical analysis of how different decision-making processes in different jurisdictions governs different components of electricity infrastructure such as generation plants versus transmission networks, and how this intersects with questions of justice and sustainability.

Together, these three considerations—*connections* of spatial and material linkages, *contradictions* of political economies and political ecologies, and *contests* of divided political geographies—point to ways to organize critical analyses when we consider the promotion and development of renewable electricity. What they do not suggest is that we should oppose efforts to promote renewable electricity until we can fully restructure current institutions, political economies, and decision processes. The authors in this Special Issue recognize that, as Dustin Mulvaney (2019, 2,4) writes in his book on solar power, "[A]ll forms of energy development have impacts or pose new or different risks to specific communities, ecosystems, and landscapes.... Identifying and resolving issues with... power supply chains, construction activities, operation, decommissioning, and end-of-life management can ensure more sustainable and equitable outcomes." In short, we need to provide integrated analyses in concrete cases to highlight choices and tradeoffs among materials, locations, interconnections, funding strategies, policies, and decision-making systems, and move forward.

In this Special Issue, our empirical focus is an approach to reducing greenhouse gas (GHG) emissions for one US state, Massachusetts. The core elements of this approach are: a state-based GHG reduction target; a mandated long-term power purchase agreement that will pay for a high-voltage, long-distance transmission line; siting deliberations and permits for the line that must be constructed in one of the northern New England states; and hydropower generated in and transmitted across indigenous territory by the provincial utility Hydro-Québec. This is a relatively mainstream, large-scale, capitalist, partially market- and partially regulatory-driven effort, advanced by a progressive jurisdiction with clear commitments to both GHG reduction

and to environmental justice. It is an important case study because this kind of effort is rapidly becoming a model (e.g. Dunn and French 2022).

The focus on hydropower is important too, as despite the popular and scholarly attention to wind, solar. biomass, and geothermal, hydropower remains the largest source of renewable power in North America and the world. Hydropower is also increasingly important in the energy transition because of its flexibility—its ability to stop and start quickly, offering the ability to balance intermittent resources like solar and wind (US DOE 2016; IEA 2021a; Miller, Simonelli, and Stark 2022). Today, much of the development of hydropower is happening in the global South. However, unlike oil and natural gas, electricity needs uninterrupted wire connections to flow. Much of the remaining new hydropower for US markets will come from remote Canadian rivers, many in indigenous lands (US DOE 2016; IHA 2021; Vine 2021). Thus, for those interested in supporting a just and sustainable energy transition in the North America, it is important to consider issues related to hydropower, especially Canadian hydropower[2].

II. Electric Power from the Romaine Unamen Shipu River

In a remote corner of northeastern Québec, the provincially owned electricity company Hydro-Québec is completing the last of four major dams on the Romaine River, or the Unamen Shipu River in innu-aimun language. The Romaine Unamen Shipu River is in the Côte-Nord region, that is, the north coast of the St. Lawrence River. It is also in the territory of the Innu First Nation, their Nitassinan, where Innu people used to travel up and down rivers annually hunting, fishing, gathering, and meeting, but now mainly live in communities, both in colonial settlements of reserves, and in cities (Massell 2011; Evans-Brown et al. 2017) (see maps, Figure 1). The river has been central to the lives, identities, culture, and livelihoods of the Innu people for millennia (Productions Perceptions 3i 2021).

Development of the Romaine River is playing out differently from the earlier development in the James Bay, a region of Québec made famous for Hydro-Québec development. The development of rivers that flow into the James Bay in the 1970s-1990s sparked major political conflicts that extended into the US. In the end, Hydro-Québec built most of its planned huge dams and reservoirs in the James Bay region, along with hundreds-mile-long access roads and transmission lines, with profound ecological and social ramifications. However, because of the controversy and its timing, James Bay development also led to one of the most generous comprehensive land claim settlements with indigenous people, with the Cree, the Inuit, and the Naskapi peoples. This was the first modern-day treaty in North America if not the world, often (though not always) lauded for its equitable, inclusive and generous compensation and mitigation package that was provided in exchange for ceded lands (Carlson 2008; Desbiens 2013; Evans-Brown et al. 2017).

In the Côte-Nord region, in contrast, there is no comprehensive settlement, no treaty. Hydro-Québec approached local Innu communities one by one. The individual communities do not have legal sovereignty to negotiate a treaty; that requires the unified organization and agreement of 11 bands of the Innu nation, 9 in Québec and 2 in Labrador (of the Canadian

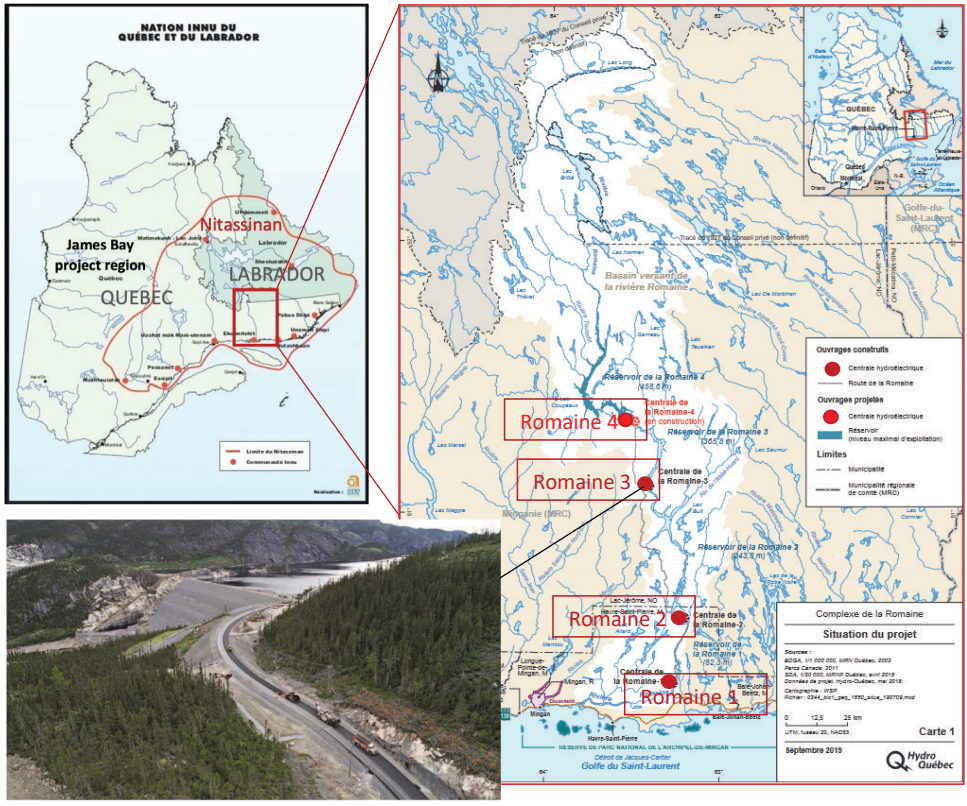

Figure 1. Locations of the Innu First Nations' Nitassinan and communities, the four Romaine River projects, and a photograph of the construction of an access road by Romaine-3. Sources: Hydro-Québec 2019a pp. 8, 16; Native Land Digital 2020. For similar maps see also Desmeules and Guimond, this issue, Maps 1 and 2; Hydro-Québec n.d.d.

province Newfoundland and Labrador). Instead, Hydro-Québec went into the communities, surveyed, in some cases started initial work, informed, and then negotiated. In the end the communities of Nutashkuan, Unamen Shipu, Pakua Shipu, and Ekuanitshit in the Romaine Unamen Shipu region all voted to approve agreements with Hydro-Québec. The settlement agreements allowed Hydro-Québec to build the four dams and reservoirs, and the transmission lines to connect them to the Hydro-Québec grid. For the Innus of Ekuanitshit, the band on the Romaine Unamen Shipu River, a 2009 agreement provided a $75 million package for economic and community development and cultural heritage activities and access, and preferred access to jobs on the construction sites (Desmeules and Guimond, this issue). These agreements are called Impact and Benefit Agreements. They are not treaties, and not fully public. They are privately negotiated between Indigenous communities and industry proponents. West of the

Romaine Unamen Shipu River, the Innu of Uashat mak Mani-Utenam also received a $125 million compensation package when key transmission lines ran through their Nitassinan; their package included economic development funds, environmental mitigation, jobs, and facilitated discussions on profit-sharing with mining companies. Public information has come largely from advocates, press releases, and reports, most of which preceded the agreements.

The electricity produced by the Romaine dams travels through new high-voltage transmission lines either north (from Romaine-3 and Romaine-4) or south (from Romaine-1 and Romaine-2), and then west to join the existing Québec grid. These interconnecting transmission lines themselves constitute major construction projects, investments in large fixed infrastructure across space and biophysical environment (Figure 2).

Figure 2. Transmission line from Romaine 2. Source: (Géomatique, Hydro-Québec Équipement 2015; Hydro-Québec n.d.a)

Once electricity from the Romaine projects joins the Hydro-Québec grid, it mixes with electricity from projects all over Québec and beyond. Thanks to the history of the James Bay, Hydro-Québec's electric grid is the most extensive in North America, connecting the generation facilities of 61 hydroelectric generating stations which generate from a system that includes 681 dams (Hydro-Québec n.d.d) (Figure 3).

Hydro-Québec's hydropower facilities produce far more electricity than Québec's residents and businesses need. For decades, the province has used its abundant, inexpensive hydropower as an economic development engine, drawing industry and investment to the province. Mines, aluminum smelting, bitcoin, and other electricity-intensive industries have grown up in Québec, powered by ample, cheap hydropower (Massell 2011; Desbiens 2013; Lowrie 2018; Hydro-Québec 2019b; Nolet 2020). When Hydro-Québec developed the James Bay projects, an additional goal became to export the excess, to provide direct revenue for the province (for broader context on the move to export electricity from Canada to the US see Froschauer 1999). In the 1980s and early 1990s, Québec and New England utilities and states worked together to build electric interties to send Hydro-Québec power to New England (NESCOE 2013; Swain 2019) (Figure 3). Today, about half of Hydro-Québec's exports go to New England (Hydro-Québec n.d.b, n.d.c).

For New England, imports of Hydro-Québec power currently constitute about 12% of the region's electric supply (ISO-NE n.d.). There has been considerable interest from New England to import more, both as a source of low-cost electricity and also as a central measure in their plans to reduce carbon emissions in the electric sector (NESCOE 2013; Stroup, Kujawa, and Ayres 2015).

Figure 3. Hydro-Québec's transmission grid, showing high-voltage interconnections to neighboring provinces and states (Hydro-Québec 2021).

However, on the US side, the political and economic geographies, and the mechanisms and institutions to develop electrical infrastructure are different from those in Québec. To begin, there are six different subnational jurisdictions in New England, that is, six different states, rather than the single subnational jurisdiction of the Province of Québec. The spatial distance between policymakers, electrical demand, and finance, all located primarily in southern New England and centered in Boston, Massachusetts, on the one hand, and the locations of hydropower potential and development in remote Québec, on the other, become much more fundamental where each is in a separate jurisdiction. The separations are even greater when there are in-between jurisdictions—the northern New England states of Vermont, New Hampshire and Maine—where a transmission line would need to be built (see Nolan and Rinaldi, this issue.)

There is also no giant publicly owned electric power company on the US side to finance large generation and transmission projects, negotiate settlements with local communities, or orchestrate environmental mitigation and local economic development. Instead, private companies and financing must be leveraged.

The fragmented governance of power generation, transmission and funding has led to a rather convoluted effort to pass policies in Massachusetts that can entice or mandate private-sector funding for a transmission to bring more Hydro-Québec power south. This Massachusetts-based policy making has been followed by close to two decades of efforts in Vermont, New Hampshire and most recently Maine, to get one or more physical transmission lines permitted and built.

III. Outline of the Special Issue Articles

This section outlines the articles of the Special Issue, highlighting both their individual contributions and the ways they work together to describe an integrated case study. The first article starts in Massachusetts, with a history of that state's drive for Hydro-Québec power. Authors Silverstein and Autery show that Massachusetts' initiative to import Hydro-Québec power grew out of a common activist and policymaker clamor to address climate change. In 2008 the state passed the Massachusetts Global Warming Solutions Act, and in 2010 followed with a mandate to reduce statewide greenhouse gas (GHG) emissions 25% below 1990 levels by 2020, 80% by 2050. But an ambitious numerical target did not answer the question, *how* to achieve these reductions? Silverstein and Autery provide insight into the politics of this "how" question in their article by showing the back-and-forth reports between the state and environmental groups. They show that the idea of importing Hydro-Québec power was supported by Massachusetts political leaders and agencies not only because it would be a large block of new low-carbon energy, achieving several percentage points of the GHG emissions reduction target at once, but also because it was thought to be inexpensive and relatively easy to obtain. Environmental groups argued that Hydro-Québec power was not a silver bullet, that it had significant environmental impacts, that costs might be higher than expected once a transmission line was built to bring Hydro-Québec power to Massachusetts, and that a transmission line was unlikely to be completed by 2020. Though the environmental groups

proved correct in their cautions, Silverstein and Autery argue that Massachusetts' continued decarbonization will involve increased Hydo-Québec imports.

Vogel takes up the next essay, providing background on Massachusetts' policy approaches to reducing GHG emissions. She argues that Massachusetts' approach to funding a new transmission line cannot be understood without a broader comprehension of late-20th-century and turn-of-the-21st-century electric restructuring. The main change wrought by electric restructuring in New England and elsewhere in the US was not privatization; most electric companies in the US had long been investor-owned. Rather, the major theme was the creation of markets and competition. To make competition work, policymakers separated the vertical functions of the old electric utilities—generation, transmission, and distribution—into different companies. But new competitive companies and the still-regulated distribution utilities found ways to influence or control markets, regulations, and the physical grid in ways that could protect them against too much competition. One way was to block regional funding for long-distance transmission. As a result, when Massachusetts wanted to import a large new block of Hydro-Québec power, it had to find a way to fund long-distance transmission itself. Using the regulatory authority it still retained, the state required its three electric distribution utilities to purchase a long-term contract for newly designated "clean" power; the contract could pay for transmission lines to reach existing low-carbon electricity. The utilities were allowed to put the costs onto their customers' rates—ironically much like funding systems prior to electrical restructuring. To balance out politically and discursively this government-directed regulatory mandate and funding system, the utilities were required to run a competitive Request for Proposals to select the vendor. Vogel argues that the proposal competition favored projects that guaranteed profits to utilities while externalizing costs onto other people and places and into the future, leading to political opposition, escalating costs, and implementation delay. This contribution shows us that the effort to meet decarbonization objectives using neoliberalized institutions, markets and competition can create convoluted and contradictory policy and outcomes.

The middle four articles focus on the in-between jurisdictions of New Hampshire and Maine, where there were deliberations over the siting of a high-voltage transmission line to electrically connect the end-point jurisdictions of Québec and Massachusetts. These produced much more public and protracted fights than in either Québec or Massachusetts.

Two contributions focus on the Northern Pass transmission line proposal in New Hampshire, first planned in 2008 and ultimately rejected by New Hampshire's Site Evaluation Committee in 2018, a rejection upheld by the New Hampshire State Supreme Court in 2019. In the first article on Northern Pass, Kroot aims to illuminate the role of rural areas, transmission infrastructure, and place-based attachments and solidarities that are often invisible to energy transition literatures and advocacy which is generally focused on other geographic scales. She forcefully argues against a not-in-my-backyard (NIMBY) framing of the protracted opposition to the Northern Pass project. Working from interviews with key stakeholders as well as analysis of material artifacts and site visits, Kroot produces a discursive analysis that shows Northern Pass opponents deployed a range of pro-environmental, solidarity, and anticorporatist positions. While interviewees were protective of place, their concerns were not confined to

their own places, or reducible to self-interest. Instead, they articulated larger sets of goals that aimed at alternative, more just, inclusive and equitable energy transitions. Kroot concludes that the "backyard" of rural areas like northern New England should not be simply spaces to be traversed, but partners and communities to be consulted, "a reminder of our interconnected energy futures" (p. 86).

Nolan and Rinaldi's study of New Hampshire's Northern Pass controversy reveals several layers of fraught politics in transmission project development and approval. Their article helps us understand geographically in-between jurisdictions and traditional regulatory bodies as sticking points in the low-carbon energy transition, and also potential forums for democratizing energy systems. The authors explain that Québec's and Massachusetts' desires to fund a high-voltage transmission line through New Hampshire are based not only on decarbonization intentions but also on the political-economic interests of Hydro-Québec, the province's state-run utility, and Eversource, Massachusetts' and New England's largest (investor-owned) utility corporation. People in rural and remote areas in Northern New Hampshire do not generally share the interests of those companies, and saw the transmission lines as obviously going *"somewhere else"* (p. 106), reinforcing felt histories of extractive relationships with southern New England. Opponents and New Hampshire state political authorities worked to influence the permitting process accordingly. Legislators and regulators opened decision making to wide participation, blocked the use of eminent domain to take land, and forced consideration of the effects on land use, employment, and the regional economy. The in-between, "transmission space" of New Hampshire became an open deliberative forum for New Hampshire citizens and interests, and it also became a destination for those from the end-point jurisdictions—Québec and Massachusetts— who did "not have the political sway to affect decision making in their own capitals"(p. 106). Nolan and Rinaldi's analysis confirms that "transmission routing and land use deliberation may be the greatest challenges during low-carbon energy" (p. 108) transitions, but, like Kroot, they argue this is an opportunity to protect the interests of rural people and places, and democratize the energy system.

Two contributions focus on the Maine-based transmission line project that succeeded the Northern Pass, variously referred to as New England Clean Energy Connect (NECEC) or the CMP (Central Maine Power) Corridor. In the first of the pair, Frederic uses telephone interviews of municipal officials, public hearings, and written reports, to trace the complicated process of NECEC permitting. Building from a brief review of several other transmission routing conflicts, Frederic notes that transmission conflicts are often urban-versus-rural conflicts, and also rural-versus-rural, as negotiated solutions often involve rerouting lines. He provides a rich array of empirical detail to help the reader, which enables him to explain why in Maine, much of the conflict played out in local government forums. In contrast to New Hampshire, state and federal authorities provided permits, and the governor strongly supported the line. Local governments did not have authority to stop the line, but they held public forums and voted on nonbinding resolutions. With extensive media coverage, it was here where much of the give-and-take negotiation happened, as well as the hardening of opposing positions. Eventually local activism led to a state-wide voter referendum to stop the line (see Epilogue for an update). Frederic argues that the Maine conflict is emblematic of a struggle to balance

local, regional, and global needs that will be increasingly common as we transition to non-fossil fuel energy. These will inevitably raise questions and conflicts of spatial justice, environmental justice, rural-vs-urban equity, expert-vs-public, and cultural conflicts.

McCourt finishes the series of four articles on the transmission conflicts with an article that lifts us out of either-or framing. To do this, he frames the Maine conflict by building from literatures that examine resource commons, enclosures, alternative economies, and discursive framings and communications. Following Lankford (2013), McCourt analyzes the language used by CMP Corridor proponents' and opponents' in public hearings in terms of how they portray the created and freed-up resources or "paracommons" to be produced by the transmission line. He categorizes statements into four kinds of perceived gains and impacts (Lankford 2014): the Proprietor System (Hydro-Québec, Central Maine Power, and Massachusetts customers), the Neighbors (communities around the new transmission line), the Wider Economy (Maine), and the Socioecological System (both the global climate and local and regional ecosystems and species). He finds that both proponents and opponents envision effects on all four categories, but they emphasize different recipients and different gains and impacts. In particular, proponents of the corridor emphasize gains to the Wider Economy in terms of electricity, electric rates, and economic development, and to the Socioecological System in terms of the global climate. Opponents perceive threats to the paracommons of regional tourism economies and the regional environment. McCourt suggests that this kind of analysis can both reveal unseen commonalities between opponents and also highlight competing interests, providing a more nuanced view of energy and environmental conflicts.

The final paper, previously published in French (Desmeules and Guimond 2019), takes us all the way North, to a close-up examination of the ways that the Romaine hydro-development is changing relationships to territory, river, and cultural identity felt by people from the Ekuanitshit Innu First Nation community. Authors Desmeules and Guimond use interviews to query the cultural, social and political experience of the community's changing relationship to the Romaine Unamen Shipu River. Most interviewees still feel a strong cultural identification with the river. In contrast, they have felt alienated from many aspects the Hydro-Québec development of the river and powerless to stop development plans. Many have experienced flooding and deforestation as profound cultural devastation. Much-touted job opportunities for indigenous communities have turned out mostly to be low-wage jobs in the construction work sites, where local Innu are largely segregated from and ignored by higher-paid white workers and Innu imported from other communities. Other benefits to the community from their settlement agreement have been experienced as mixed blessings. A much-appreciated fund pays for cultural research and business support—though it means that the cultural benefit from the river now flows through Hydro-Québec. The new access road to the four dams will provide the Ekuanitshit easier access to the river and the Nitassinan in general, but the road and the new rental lots for cottages will be open to everyone, meaning the territory is now shared with other people (non-indigenous local residents, hunters, fishers, tourists and others). This paper shows that renewable energy development is not simply a technical and material activity; it can catalyze new "dynamic and hybrid territorialities (cultural, political and social), in constant dialectic with daily experiences and new structural and socio-spatial relationships." This paper

shows the complexity of tradeoffs of renewable electricity development in remote locations, especially in indigenous communities.

IV. Contributions of the Special Issue: Connections, Contradictions, and Contests of Renewable Electricity

In this section I synthesize collective empirical and theoretical contributions of the Special Issue. I organize this section by the three themes reviewed at the beginning of this introductory essay: connections (spatial and material linkages); contradictions (political economies and ecologies); and contests (divided political geographies).

Connections of Renewable Electricity: From Green Massachusetts Energy Consumers, Through Northern New England Landscapes, to an Innu Community's Territory And River

The first contribution of this Special Issue is to make visible the wider spatial and material interconnections that are implicated in the effort to reduce greenhouse gas emissions in the state of Massachusetts by importing Hydro-Québec power.

Perhaps the most obvious interconnections are the material ones. Importing Hydro-Québec power links Massachusetts' desired energy transition to the radical alteration of previously undeveloped rivers in northern Québec ecosystems, and the carving-out of wide strips of boreal forest in Québec for roads and long-distance transmission lines. It also means similar carving-out of forest strips for transmission lines through remote northern parts of one or more of the northern New England states, and perhaps the construction and placing of interconnections buried underground or under water (articles by Kroot, Nolan and Rinaldi, Frederic, Desmeules and Guimond).

The Special Issue articles also show that these material changes mean a variety of impacts on human communities, values, economies, and identities, linking Massachusetts electrical consumers and energy transition advocates to a diverse array of changes across this electrically interconnected space. These include a reworking of First Nations people's relationships with their territories, landscapes, livelihoods, and identities (article by Desmeules and Guimond), visual and ecological impacts to valued landscapes in northern New England (articles by Kroot, Nolan and Rinaldi, Frederic, and McCourt), and payments and economic opportunities, and risks, for remote communities (articles by Frederic, McCourt, Desmeules and Guimond).

While many of these impacts and issues have been covered in the media in their respective state or provincial press (e.g. Pinette and Morissette 2010; Bever 2019; Evans-Brown et al. 2017), they only occasionally emerged into the Massachusetts policy discussions where the mandates for GHG reduction originated (e.g. Abel 2018).

The four articles on controversies over transmission lines in New Hampshire and Maine (by Kroot, Nolan and Rinaldi, Frederic, and McCourt) highlight an often-underemphasized topic in the energy geographies and energy justice literatures: the crucial role of transmission lines, given electricity's requirements for continuous physical wired connections, in shaping

the locations and impacts of potential electrical transitions (cf. Batel and Devine-Wright 2017; Özden-Schilling 2021). The landscapes and communities through which transmission lines run also emerge in these articles not as invisible lines connecting source to consumption but rather as tangible places full of ecological and human value, frequently rural and remote, with histories of extraction and settler colonialism, where transmission lines may feel like (and in fact be) yet another way to extract resources for the benefit of distant cities and centers.

The geography of transmission grid networks also emerges as important (article by Vogel). Where there are dense networks of open-flowing alternating current (AC) transmission lines, suppliers and consumers of electricity can interact in a fairly open market exchange, approximating the resource- and place-neutral goals of a competitive electricity marketplace. However, where there are few lines, a single new line can fundamentally alter the relationships between the resources and locations of generation and use.

Collectively, then, the Special Issue reveals that impacts on places of electric generation and transmission are directly implicated in a seemingly abstract GHG reduction target or a mandate to purchase a large block of clean electric power. This highlights the crucial importance of bringing these kinds of material and spatial interconnections into focus to ascertain wider issues of justice and sustainability.

Contradictions of Renewable Electricity: Geographically Remote Dams and Transmission Lines as Socioecological Fixes for Accumulation; Funding And Finance; Government Institutions and Policies

The second major contribution of this Special Issue is to reveal and analyze specific ways that the pursuit of renewable electricity development contradictions is entwined with political economies and political ecologies in northeastern North America. The seven articles reveal that while renewable energy may be advanced in the name of sustainability and justice in a progressive jurisdiction like the state of Massachusetts, the choice of *which* renewable energy and infrastructure, *where* renewable energy and transmission lines are built, and *how* the benefits and costs are distributed, may still have as much to do with securing the profits of powerful corporations and supporting the economic development ambitions of local, state and provincial jurisdictions and politicians as it does with reducing GHG emissions. This subsection is organized by the three kinds of contradictions laid out earlier: socioecological fixes, funding and finance, and government institutions and policies.

The construction of major dams in remote Québec and transmission lines in northern New England have acted as particularly promising *socioecological fixes* for capital. In other words, they have provided new geographies for investment, opportunities for capital seeking reliable profit, and inevitable socioecological impact. This includes the development of new resources (e.g. the Romaine River), new spaces (e.g. the Côte Nord), and new interconnections (e.g. a transmission line connecting the Québec and New England grids) (articles by Desmeules and Guimond, Nolan and Rinaldi). Several specific policies, institutions and infrastructures have also offered opportunities to extract especially renumerative or guaranteed profit, including a mandated,

customer-funded, power purchase agreement; a DC transmission interconnection whose owner will be able to control electrical flow between two major electrical grid regions; and new clean energy credits (article by Vogel).[3]

As in many areas of investor-led development the world over, owners and investors have worked to win these opportunities by offering jobs, perks and payments to local and state or provincial politicians in remote areas of northern Québec and New England where there has been limited development or where there has been longstanding economic decline. However, this has not always worked to win over local support (articles by Kroot, Nolan and Rinaldi, Frederic, McCourt, and Desmeules and Guimond), and proponents have also faced opposition from powerful companies that stand to lose their advantages to new competitors (article by Vogel).

Articles by Vogel, and Nolan and Rinaldi, provide insight into the contradictions of Massachusetts's drive for Canadian hydropower related to *funding and finance*. Despite the opportunities for large profit, the enormous costs of large dams and transmission lines have deterred investors. In the US, there was no way to fund a long-distance transmission line within the competitive regional electric markets created by neoliberal restructuring in the 1990s. As a result, Massachusetts' import of Hydro-Québec power was funded through a convoluted arrangement in which neoliberalized markets and financialized funding were strategically hybridized with guaranteed cost returns to the state's still-powerful electric utilities, billed to the utilities' customers (article by Vogel).

The case highlights several ways that renewable electricity development is entwined in contradictory ways with *government institutions and policies*. Unlike claims from critics of neoliberalization that electric sector reform has made governments unaccountable, Silverstein and Autery show that electric policymaking at least in Massachusetts is strongly influenced by environmental nonprofit groups and other advocates. At the same time, Vogel shows that the legacies of restructuring include far more opaque corporate actors. Desmeules and Guimond, together with this introduction, complicate our view of publicly owned electric utilities like Hydro-Québec, showing that they too may engage in exclusive decision-making, facilitate cultural dispossession, and be motivated by profit. The articles in this Special Issue thus provide nuance that contrasts both with mainstream policymakers' and analysts' embrace of markets and competition as the assumed best mechanisms for an electric system transition, and also with the sharp rejection of markets and profit motives by some critical scholars and activists. The articles here show that neoliberalized electric governance is both public and private, participatory and closed. The specific details matter, as they play out differently in different contexts across space and time.

Contests of Renewable Electricity: Material Connections, Jurisdictional Separations, Political Gathering Forces

The final major contribution of this Special Issue is to reveal specific ways that the political-geographical organization of decision-making shapes renewable energy development and the distribution of benefits, profits, costs, and impacts, particularly in Northeastern North America.

One clear emphasis the papers collectively make is the prominent role of *sub*national political decision-making forums and their spaces. Complementing Bridge, Özkaynak, and Turhan's (2018) Special Issue on national energy infrastructure, this Special Issue shows that in Northeastern North America, subnational jurisdictions—US states, a Canadian province, local jurisdictions, Indigenous Peoples and their traditional lands, and a regional electric governing body—are central sites of renewable electricity policymaking, with repercussions across state and international lines. Decisions and contests in these spaces determine preferred renewable resources, the placement of transmission and road infrastructures, the shape and size of mitigation and settlement packages, and allocations of benefits including electric power, claims to decarbonization, and profit.

The articles highlight three factors whose interaction has large influence over these subnational spaces' discourses, mobilizations and decisions: the location of proposed material infrastructure, the spatial jurisdiction of governing bodies, and the governing bodies' decision-making processes and membership. Across the articles, these three factors interact to enable and facilitate some discourses and mobilizations, while muting or blocking others.

In the end-point jurisdictions and governing forums, the three factors—location, jurisdictional geography, and decision-making process—interacted to limit or block open public debate about the specific material resources and geographic routes to bring low-GHG power from Québec to Massachusetts. However, in each end-point jurisdiction or decision-making forum, there was a distinct way they interacted to do this. In the northern end-point, thanks to Québec's large and inclusive spatial extent and the role of Hydro-Québec in the province's political economy, Hydro-Québec could plan and build dams, roads, and transmission lines in the province's remote periphery, and legitimize it with both discourse and financial flows that position hydropower as key to provincial economic development and a source of fiscal resources (article by Desmeules and Guimond; see also Hydro-Québec 2001; Desbiens 2013). In the southern end-point, Massachusetts had to work far more indirectly because the infrastructure would be built outside state territory, and because electricity was generated, transmitted, and distributed mainly by private-sector companies incentivized with neoliberalized policy mechanisms. But Massachusetts was also able to use these neoliberalized mechanisms to sidestep questions of impacts outside the state, arguing these costs would be internalized into markets or competitive proposals' costs (articles by Silverstein and Autery, Vogel). The third end-point governing forum, the regional grid operator, ISO-New England, is spatially extensive, including northern New England in its purview, but it could block open public debate because its rules are made in closed-door decision forums (article by Vogel).

It was the geographically in-between political spaces, where interconnecting transmission infrastructure was proposed—New Hampshire, Maine, and their local governments—that hosted the most open, inclusive, and contentious contests. Again, the interaction of location, jurisdictional geography, and decision process was key. The northern New England states had jurisdiction over transmission siting, but both the sale of the electricity and the ability to claim reduced GHG emissions would happen outside their borders. At the state level, they had the power to stop a transmission line that would provide them with no direct benefit; at the local level they could force rerouting around sites like sensitive stream crossings, delay decisions,

or bring about negative publicity. An additional factor that made these political spaces more democratically open and inclusive was that these jurisdictions had less neoliberalized, more traditional political and regulatory processes. Wide and unlimited publics could speak directly to material plans and impacts (articles by Nolan and Rinaldi, Frederic). A final factor in these contests was that there was a long history of extraction from northern New England by and for Massachusetts companies and residents, and in Maine, recent anger at Central Maine Power. The resulting resentment and suspicion could be amplified by opponents of the transmission lines.

A third contribution about the contests of renewable electricity concerns energy democracy. Nolan and Rinaldi, Kroot, Frederic, and McCourt, in their focus on contests over transmission lines in New Hampshire and Maine, affirm the role of material infrastructures as a gathering force for wide political mobilization (Bridge, Özkaynak, and Turhan 2018). Kroot argues that, rather than dismissing protest movements that stop infrastructure as selfish NIMBY movements, we should recognize them as advancing values of place and environment, airing legitimate historical grievances against extractive outside centers, inviting coalition-building across space—including First Nations voices that were not fully addressed in Québec—resulting in an important model of inclusive and democratic decision-making. Frederic's and McCourt's articles affirm and also complicate this point, showing that power producers who stood to gain or lose poured money in on both sides of the debates in New Hampshire and Maine, amplifying the political contests in ways that were neither simply about grass-roots-led environmental democratization nor pro- versus anti-development voices.

Together, the authors suggest that inclusive energy democracy requires the participation and consideration of the people and place-based concerns of remote and in-between places, as well as deeper transparency. In the absence of inclusive energy democracy in the end-point decision-making forums in Québec, Massachusetts, and ISO-New England, the activism, advocacy, and controversies that arose in New Hampshire and Maine represented in many ways a much-needed energy democratization. Frederic and Kroot put this in context of other fights, showing that opposition to pipelines and transmission lines has often been a crucial way for many actors and interests to influence energy development (cf. Bosworth 2022). McCourt argues that there needs to be a more open public discussion of how the benefits (as well as the costs) from electric policy and infrastructure should be distributed. Nolan and Rinaldi, and Vogel suggest that there needs to be more transparency about financial flows and corporate families, both of which have become opaque since electric restructuring, as this opaqueness may allow large portions of the rewards from renewable energy public investments to be channeled off to global financiers and investors. And both Kroot and McCourt emphasize the importance of alternate framings that consider commons resources and cross-place solidarities.

Contrary to lamentation about the way local and state politics can block infrastructure that is needed for an energy transition (e.g. Levitz 2022; Saul, Malik, and Merrill 2022; Roberts 2021), the articles in this Special Issue hint that a more democratic process might also be more efficient and effective. The political-geographical and socioeconomic separation between consumption, finance and decision-making on the one hand versus production, extraction and impact on the other clearly caused problems for the decision-making centers in this case

study, as local communities and states were able to mount effective resistance to stop and delay projects to which decision-makers and funders had devoted significant political and financial resources. A transmission line that had already been approved in Vermont provides a possible counter-example (article by Kroot). It was fully permitted following a robust political process, approved thanks to strong mitigation including burial of the line all along the route. However, it was rejected in Massachusetts' competitive RFP process, likely because of its additional cost compared to the proposed Northern Pass and NECEC lines. Several years and almost half a billion dollars later, with the Northern Pass line rejected and NECEC possibly headed toward rejection, the Vermont line might well stack up as having been a better option (see epilogue for more on this line and its owner).

V. Conclusion

What are the next steps for scholars and advocates of energy sustainability and justice in New England, Québec, and beyond? This Conclusion reflects on the collective lessons from all the articles for future analyses and advocacy related to a just, sustainable energy transition.

First, as outlined in this Introduction, this Special Issue suggests that to understand and address a full range of justice and sustainability considerations, we must consider the connections, contradictions, and contests of renewable electricity. Thinking about *connections* of renewable electricity means tracing the material and geographical implications of efforts to reduce greenhouse gas emissions, even when advanced through abstract targets, markets, and competitive mechanisms. Thinking about *contradictions* means analyzing the ways in which renewable electricity promotion is entwined with the political ecologies and political economies of capitalist economic development, which will inevitably have uneven impacts on wider sustainability and justice. Three key lenses to consider such contradictions are: renewable electricity development as a socioecological fix, the politics and political economies of funding and finance of renewable energy, and the entwinements of government institutions and policies that aim not only to advance an energy transition but also to provide development opportunities to powerful industries, companies, or regions. Thinking through *contests* means analyzing the way that divided political geographies may obstruct inclusive participation and thus energy democracy and justice. Within the analysis of contests of divided political geographies, it is important to consider how the interaction of three factors—location of proposed or likely material infrastructure, the spatial jurisdiction of governing bodies, and the governing bodies' decision-making processes and membership—may shape where, whether, and how different voices and values are included or excluded.

This Special Issue offers one effort to provide this kind of analysis. However, while the analysis of connections, contradictions, and contests is crucial, this Special Issue reveals that it cannot necessarily point to obvious or easy solutions. Rather, its usefulness is to help reveal trade-offs, to illuminate marginalized voices and concerns and uneven political-economic power, and to suggest more participatory and transparent processes.

The articles in this Special Issue suggest several more specific and practical lessons that come from the case study of Massachusetts' drive to import Hydro-Québec power. The first is

that when policymakers in jurisdictions like Massachusetts plan to advance renewable energy, if they want to do it while addressing issues of sustainability and justice, they need to think beyond their abstract targets and lofty goals to think through how reaching these targets will play out in the tangible world, including beyond their own jurisdictional boundaries. Where and in whose places and lands will infrastructure be built, or landscapes and ecosystems transformed? Providing forecasting analyses like these when abstract policy measures are passed would allow a much more inclusive consideration of possible tradeoffs, that are not always embedded in the costs of market prices and competitive bids.

In the second case-specific lesson, transmission emerges as both a major sticking point and an opportunity for a just and sustainable energy transition. As in the case of Massachusetts' aim to import Hydro-Québec power, new transmission is essential to enable a transition to renewable electricity (cf. Joskow 2020; Jacobs 2021; NREL n.d.; Roberts 2021). A wide range of people and environments will be impacted all along the routes of any line, and also across electrical networks, as new electrical routes alter geographies of generation and consumption. As new transmission lines are proposed and built, we are likely to see repeated opposition, as in New Hampshire and then Maine, particularly in in-between jurisdictions where people may perceive their lands and resources as being extracted for outside benefit. Policy analysts and policymakers are beginning to think about transmission issues, for example with studies of transcontinental transmission grids in the US and Canada (NREL n.d.), and a new Federal Energy Regulatory Commission initiative to expand transmission funding and expedite permitting (FERC 2022). Some pundits have advocated for an end to the ability of state and local jurisdictions to stop transmission lines through their territories, as was long ago done for pipelines (Roberts 2017 provides background on this idea). This Special Issue's case study suggests that an approach that limits local and state authority to challenge transmission lines might well enable new transmission lines that could enable renewable energy development and use (as in Québec), but it would be at the cost of reduced energy democracy and trampling of legitimate place-based values. An alternative approach is to bring in voices of communities along transmission routes earlier (cf. Susskind et al. 2022), to be far more willing to spend the cost to bury transmission lines (Swain 2019), and to work to build mitigation and local support agreements that truly help local communities, not just with construction jobs but with inclusive long-term benefits (cf. Columbia Basin Trust n.d.). Clearly, we need more scholars, activists, policy analysts, and policymakers actively engaged in trying to find ways to build transmission for an energy transition while remaining committed to energy justice across geographical space (e.g. Batel and Devine-Wright 2017; Özden-Schilling 2021).

Third, building on the previous two points, this issue's case study suggests that to advance energy justice and sustainability it is crucial to bring in voices of concern or opposition, even across political borders. Among the many places and communities that will be affected by renewable energy development are remote and rural areas through which large transmission lines must be built and will become permanent parts of the landscape. Voices in these in-between communities should not be dismissed simply as NIMBY; considering them fully offers an opportunity for more inclusive decision making and potentially less delay later. [4]

Fourth, this case study reveals that it is crucially important that we find a way to rollback

at least two key aspects of electric and corporate deregulation: the construction of opaque electricity corporations and exclusive decision-making processes; and the removal of oversight over electric profits. Driving many of the policy and funding choices in these articles were utility corporations and corporate families, which emerge as surprisingly powerful more than two decades after electric restructuring (cf. Peskoe 2021). It is not unreasonable that these corporations are part of the decision-making process. The problems are that because of utility company deregulation and other changes to corporate regulation, the influence of these companies is not well seen or understood, and they seem in many cases to be driving and shaping how we go about advancing an electric transition—often while they obstruct other options and a consideration of a full range of tradeoffs, sometimes to the public's detriment, and even their own. Additionally, the profits they generate from public policy and investment are unseen and accountable, and there is no way to ensure they are shared in proportion to public investments and publicly incentivized or guaranteed profits (Lusiani 2022; Vogel, this issue).

The Special Issue articles do not elaborate on the ecological impacts of major hydropower plants or transmission lines, but they show many people in New Hampshire, Maine and Québec voiced concerns for these. A sustainable, just energy transition must be responsible not only to the environmental threat to world climate systems, but also to local and regional species, ecosystems and biodiversity. This is a key tenet of the growing field of multi-species justice, and it is fundamental to a world that faces an extinction crisis as dire as the climate crisis (Ruckelshaus et al. 2020; Celermajer et al. 2021).

Equally, the articles do not touch much on the alternatives to a massive buildout of renewable energy. However, they make apparent that there are significant, geographically wide-ranging impacts of renewable energy development. No wonder transmission line opponents in New Hampshire and Maine point their fingers back toward Massachusetts, calling for reducing energy use in the centers of energy consumption, rather than focusing on importing renewable electricity from somewhere else. Another step for critical scholars of an energy transition is to focus not just on a shift to different energy sources, but how to dramatically reduce our energy consumption. There are bridges to be built with advocates and scholars of proposals like smart growth, reuse and repair, transportation mode shifts, and eating lower on the food chain (e.g. Hughes 2020; Weissman and Folger 2020; Mass EEA n.d.c; Project Drawdown n.d.). Critical geographers and allies could help illuminate the tradeoffs and competing interests between these and investments in large-scale renewable energy development (cf. Thoyre 2021).

Special Issue co-editor Matt McCourt and I hope this Special Issue serves as an empirical case and critical analytical lens for scholars and activists to build from. Our aim is that it can help support a just, sustainable energy transition attendant to the connections, contradictions and contests of electricity, in Massachusetts, New England, Québec, and beyond.

Epilogue

The articles in this Special Issue were finalized in 2021. As I finish this Introduction to release the issue online in Summer 2022, I offer readers an update.

On November 2, 2021, after the costliest citizen referendum campaign in Maine history (Popp 2021), Maine voters approved a measure to reject the NECEC transmission line to be built through the western Maine in order to bring Québec hydropower south to Massachusetts. Subsequently, the Maine Department of Environmental Projection suspended the permit for the project, and, with $450 million already spent, construction was halted (Popp 2021; Turkel 2022a). Currently some four different lawsuits are in play over the future of the line (Turkel 2022c). It is not certain, however, that the project is dead. Maine environmental regulators recently affirmed their permits (Turkel 2022b). We have yet to see whether Massachusetts may eventually have to go "back to the drawing board" to select a different proposal (Gelles and Philippe 2022).

In spring 2021, while still awaiting the outcome of its hydropower import initiative, Massachusetts passed a new Climate Roadmap law (Massachusetts General Court 2021). This law accelerates the state's GHG reduction timeline. In the face of slow movement on hydropower imports, neither this law, nor the updated Clean Energy and Climate plan issued a few months earlier in December 2020 (Miller et al. 2020), nor initiatives since, have specifically targeted hydropower imports. Instead, there is emphasis on wind and solar energy, and buildings, heating, and transportation improvements (Massachusetts General Court 2021; Young 2021; Shankman 2022; Mass EEA n.d.b).[5]

While Massachusetts' import of Hydro-Québec power has slowed, the provincial utility giant's production and ambition to export its hydropower has not. The last of the Romaine project dams is anticipated to be completed this year, 2022 (Hydro-Québec n.d.e). Hydro-Québec has also eagerly pursued other potential customers. Recently, New York City committed itself to a long-term contract to bring Hydro-Québec power to the city (Dunn and French 2022). Interestingly, the contractor is TDI, the same owner as the Vermont line that might be next on Massachusetts' list should the NECEC line be rejected by Maine.

This move by New York City, and the continuing pursuit of transmission contracts by companies like TDI would seem to affirm the suggestion by authors Silverstein and Autery in their article, that one way or another, Hydro-Québec imports will be part of Massachusetts future. Beyond Massachusetts, numerous national reports and initiatives have recently emphasized the importance of hydropower and long-distance transmission to the goal of reducing carbon emissions. Models show a crucial role for Hydro-Québec power to provide both baseload and flexible power and storage to the US Northeast and beyond (NREL 2021, NREL n.d.; see also FERC 2022; ISO-NE 2022).

I am unaware at this time of any initiative, much less progress, to bring back transparency and accountability to the financing and profits received by electric companies that come from public policy and customer-guaranteed returns. This accountability remains lost with the demise of the 1935 Public Utility Holding Company Act. Unlike Northern Pass and NECEC, TDI is not even part of a utility company conglomerate; instead, like a growing number of independent generation companies, this transmission company is part of an investment group—in this case, Blackstone. Though its stakeholder support and environmental impacts may be better, TDI's finances are perhaps even more inaccessible to the public than those of the utility families. The one major initiative related to transparency is a major push to open up the black box of ISO-

New England decision-making, led by state governors of New England and non-governmental organizations (Ropeik 2018; Jacobs 2020; Office of Attorney General Maura Healey 2020).

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Undergraduate researchers have been inspiring and energetic contributors of this project at every step. Authors Clara Silverstein (BS UMass 2021), Molly Autery (BS UMass 2022), Josh Nolan (BS UMass 2018), Alexandra Rinaldi (BA UMass 2019), and Maddy Kroot (BA Dartmouth 2019), were all undergraduate students when they did the bulk of their research for their articles. The two students who started earliest in this project, Emily Chang (BA Mt Holyoke 2018) and Steve Hayes (BA UMass 2019), have had busy post-college careers and were unable to complete articles to publish in this issue. Though Chang's and Hayes' names do not show up as authors of any of the articles in this issue, the issue simply would not have been possible without their high-quality deep research, thinking and enthusiasm that started the project. In particular, their work is behind the portion of this introduction on Hydro-Québec's history and geography.

This Special Issue is dedicated to undergraduate researchers, to the people and places of New England and Québec, and to the hope for a just and sustainable energy future.

Endnotes

[1] My usage of the term contradiction is theoretically broader and empirically more focused than Marx's and O'Connor's two contradictions of capitalism (O'Connor 1998), and Harvey's seventeen contradictions (Harvey 2014). My conception recognizes and builds on their deeper theorizations.

[2] Similar to US acquisition of Canadian hydropower, mainland Europe and Britain have been working to increase imports of Nordic hydropower (e.g. Farahmand et al. 2015; cf. Sovacool 2017; Reed 2022) .

[3] None of the articles in this issue investigate in detail the private-sector financing for any of these projects, but one must assume that there are powerful investors who stand to profit from Québec provincial bonds Hydro-Québec private contractors, Massachusetts electric utilities, and the utility corporate families that have proposed to build the power lines, and a host of contractors on the US side.

[4] Massachusetts has a new environmental justice policy that informs communities and groups of proposed energy projects. While a major step, it does not appear to include consideration during the development of abstract policy goals like GHG reduction targets, nor potential impacts on communities outside state borders (Mass EEA n.d.a).

[5] The new state environmental justice policy (note 4) was created as a part of the climate roadmap law.

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