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How to build a powerline: Fast policies for decarbonization, the slow work of public participation, and the profitability of energy capital

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ABSTRACT

Community opposition to new low-carbon energy infrastructure – and resulting project delays and cancellations – is increasingly taken by some climate activists, policymakers, and scholars as evidence of the incompatibility between urgent decarbonization and expanded public participation. This paper argues that too narrow a focus on this duality risks overlooking an additional mandate: the profitability of energy capital. This paper intervenes in the 'rapid vs. just transitions' debate by arguing that building low-carbon energy infrastructure requires a balancing of trade-offs between speed, local support, and profit for private developers. Using a case study of a controversial transmission project in the northeastern United States, I argue that project delays are attributable not (just) to uncooperative publics, but to energy capital's drive for profit, which discourages compromises with host communities that would increase project costs but cultivate local support. By treating the social legitimacy of low-carbon energy infrastructure as contingent on its ability to meet criteria for public acceptability, this paper argues that the slow work of public participation can in fact be the route to 'fast policies' for decarbonization when it fosters developer norms in line with community expectations for projects.

1. Introduction

Can we have an energy transition that is both fast and just? This tension has emerged as central to the just energy transitions literature, which must balance the urgency of reducing carbon emissions against activist, scholar, and policy demands for more just, inclusive, and participatory energy governance. Meaningful public participation takes time, and public opposition to new energy projects can lead to project delays or cancellations. Proponents of energy justice – theorized through the "three tenets" of distributive, procedural, and recognition justice [1], among other justice principles [2–5] – are therefore increasingly placed in the epistemologically and politically uncomfortable position of observing local communities kill clean energy projects. This paper is concerned with the politics that emerge at the confluence of these two demands: the urgent need to decarbonize and the slow work of public participation.

Broadly speaking, these two goals are often taken as antagonistic. Skjølsvold & Coenen [6] note that there have been limited prior studies that bridge discussions that advocate "fast policy" in energy transitions with those that advocate making those transitions more inclusive and democratic. Reviewing the literature on transitions in geography and science and technology studies, the authors observe that the "lack of enough time" is identified as "delegitimizing participatory processes [because] participatory and democratic processes require time – a resource that in practice is often scarce" (p. 3), pointing to a need to go beyond a simplified vision of "chronopolitics."

Newell et al. [7] tie the tensions between "rapid" and "just transitions" to a need to understand the technical and financial roles of incumbents, as well as questions of "legitimacy" in energy decision-making. The authors go on to argue that "participatory processes may enhance considerations of justice but slow the speed of action, while working with incumbents may accelerate transitions but entrench injustice," leading to a need for further research that "addresses these dilemmas head on [by] paying attention to the ways in which institutions and incumbent actors handle the trade-offs between different justice dimensions" (p. 3).

I address these calls by arguing that the 'trade-offs' between 'fast policies' for decarbonization and the slow work of public participation have tended to underemphasize energy capital as an actor. By energy capital, this paper refers to firms that pursue profit through the extraction, generation, and provision of energy as a commodity. 'Trade-offs' imply the need for negotiation. Framing the debate as being between 'rapid' and 'just' transitions belies the role of the profit motive in shaping how energy infrastructure is designed, how its impacts are

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mitigated, and how host communities are engaged – and in turn, profit's impacts on rapid and just transitions.

Of course, local publics are not the only publics with a legitimate stake in energy politics. For Newell et al. [7], central to the tensions between urgent decarbonization and expanded participation are the multi-scalar politics of cosmopolitan justice, where the most vulnerable to climate change at a planetary scale may have no real voice in decision-making in siting renewable energy generation in the United States, for example. I understand participation not as a "panacea for addressing all justice issues" [[7] (p. 2), see also [8]] but through "process" frameworks for energy democracy [9] that stress the capacity of expanded public participation to shift the locus of energy governance away from fossil fuel regimes and status quo incumbents [10,11]. This focus on incumbents reminds us that project delays and cancellations are not (only) caused by the demands of uncooperative (local) publics, but by project developers that do not cultivate sufficient local support for projects and by regulatory and funding bodies that do not anticipate host community concerns in their permitting statutes, contract solicitations, and climate legislation. In short, without considering the profit motive, we risk equating rapid transitions with the ones most expedient for for-profit developers.

This paper explores these dynamics through the case of high-voltage transmission development in New England, a region in the northeastern United States. Individual states within the region have adopted ambitious climate targets, with five of the six New England states pledging to reduce their greenhouse gas emissions by 80 % (relative to 1990 levels) by 2050. Regional decarbonization depends in part on increasing imports of hydroelectricity from Quebec, a province of Canada immediately to the north, in order to balance intermittent renewable generation from solar and wind. Such imports hinge on the construction of new transmission lines to deliver that hydroelectricity to regional load centers in southern New England.

While the need for expanded Quebecois hydropower in the regional energy mix has been identified by multiple actors, the actual development of such transmission has been driven primarily by the state of Massachusetts, which directly contracted for the interstate transmission of this hydropower via power purchasing agreements. However, the original recipient of this contract – the Northern Pass project in the state of New Hampshire – was the object of fierce opposition along its route, eventually leading to the defeat of the project when its final permit was denied in 2018.

Rather than seeing this controversial transmission project and the local opposition that bedeviled it as evidence of the inherent irreconcilability of 'fast policies' for decarbonization and the slow work of public participation, I argue that it can more productively be analyzed as a miscalculation of the trade-offs between speed, public acceptability, and profit for the developer. While the opposition succeeded in delaying and then killing the project, general consensus emerged quickly as to what changes host communities required in order for the project to be locally acceptable. What was slow, in this case, was the willingness of the transmission developer to acquiesce to public demands for enhanced siting mitigation and improved community engagement and compensation, pointing to a need for proactive state policies to encourage new developer norms.

The rest of the paper proceeds as follows. First, I present a framework for understanding fast policies for decarbonization versus the slow work of public participation through their shared, though divergent, conceptualizations of the social legitimacy of energy capital. Foregrounding profit as a third factor alongside speed and participation highlights the ways in which the social legitimacy of low-carbon energy infrastructure is not inherent, but constructed and contested between different actors, here loosely grouped into energy capital, host communities, and the state. I then present my case study of the Northern Pass project in more detail, discussing why its social legitimacy was assumed by project developers and the ways in which oppositional publics contested this legitimacy and proposed more locally acceptable alternatives. Viewed amidst the trade-offs between speed, local support, and profit, I trace how the developer effectively took a calculated risk in favor of profit, ultimately leading to the project's cancellation when its final permit was denied.

2. Social legitimacy, fast policies, and slow work

In this section, I draw on work from energy geographies, political ecology, and science and technology studies to understand how the social legitimacy of for-profit energy infrastructure is constructed and contested.

2.1. Fast policies for energy capital and the state

Social legitimacy is an endemic dilemma for capital, as its pursuit of profit degrades the conditions of (re)production necessary to ensure continued profitability [12]. Climate change exemplifies this tendency, as the emission of greenhouse gases as a socioenvironmental externality increasingly jeopardizes profits, fixed infrastructure, and more-than-human life, albeit unevenly. This degradation is increasingly leading to a crisis of social legitimacy for capital, as the scale of socioecological damage, the extent of (especially fossil fuel) capital's early knowledge of these consequences, and capital's interference through misinformation, lobbying, and sometimes outright violence become apparent [13–15]. Calls for energy transition, both in the literature and outside it, increasingly posit that capitalism is the root cause of climate change, and that only structural transformations of the planet's political economy can truly mitigate the climate crisis [16,17].

Capital, of course, would like to protect its social legitimacy. Political ecologists point to several mechanisms for doing so, of which I focus on two. First, infrastructure projects can serve as socioecological fixes for capital, temporarily resolving crises of overaccumulation, underproduction, and social legitimacy [18–22]. Clean energy infrastructure projects can allow capital to address its three endemic crises at once: sinking overaccumulated capital into investments; ameliorating underproduction by reducing emissions and smoothing the flow of energy commodities across space; and establishing the social and environmental benefits of for-profit capital investment by evoking its "greenness."

Second is the role of the state, which is tasked with ensuring conditions of production and managing capital's excesses to safeguard the broader political economy's social legitimacy [12,23]. The state (at both the national and subnational level) sometimes facilitates capital's socioecological fixes directly, for instance through eminent domain to secure rights-of-way for transmission corridors, while delegating to capital many legislative climate targets via mechanisms like power purchasing agreements [24–26]. Under power purchasing agreements, the state enters into contracts with energy capital to finance infrastructure development and purchase energy. These dynamics are especially apparent in the case of peri-state entities like utilities, which in the US are primarily for-profit corporations responsible for delivering energy as a basic amenity [26]. At the same time, the state is tasked with the strategic management of trade-offs as certain policies emerge as sociopolitically viable and not others, further endorsing the displacement of infrastructural development and its concomitant land use changes to areas less capable of resistance or more willing to accept land use changes in exchange for development [27].

These two mechanisms for social legitimation come together in legislated mandates to facilitate 'fast policy' for decarbonization by encouraging – and increasingly by directly procuring – low-carbon energy. New investments in energy infrastructure can acquire both revenue streams and social legitimacy by responding to state clean energy procurements: by securing those contracts, energy infrastructure is both a fix for capital and a policy solution for the state. This poses obvious advantages for capital, but also represents the growing role of the state in energy markets that, in the US case and especially New England, have

been dominated by for-profit owners of generation, transmission, and distribution. As the contract solicitor, the state can set additional terms and constraints beyond what might be otherwise required by regulators, particularly in the case of decarbonization where the broader goals of clean energy procurement might be tied to goals for environmental protection or social justice. In turn, support of a project by the state is taken as a proxy for support of the project by constituents.

This social legitimization by the state is not absolute: the state is also responsible for ensuring that the mandate for public participation in infrastructure permitting is met. Public participation here is taken to include a spectrum of mechanisms through which the public is informed, engaged, consulted, or compensated for projects, particularly when those projects involve land use changes [28]. These can range from one-sided communication of intended project plans to extensive processes of consultation and negotiation.

From the perspective of capital, the value of public participation has often been conceptualized through the "social license to operate," which broadly refers to a project's approval, tacit or explicit, to operate within a given community, understood alternatively as a normative goal to improve company-community relations or as a source of risk that must be mitigated [29,30]. This concept has been translated outside of its original context of the mining sector to other controversial land use changes, including energy [31–33]. This points to capital's awareness of the necessity for public – especially local – support for a project that goes beyond the legal requirements of permitting mandated by the state, though the concept and its origins in industry consulting has been subject to critiques that it is an instrumentalist and performative approach to participation rather than one concerned with distributive and procedural justice [29,30,34].

While the exact requirements for public participation differ across time, space, and context, public participation envelops a set of processes through which a project's social license to operate is secured. Sometimes, these requirements for public participation are minimal or non-existent, especially in contexts with weak regulatory regimes and when land is already owned by the developer. In other contexts, there may be multiple layers of public participation necessary to secure the legal and social license to operate.

2.2. Slow work of energy democracy and local acceptability

These mechanisms for public participation in energy infrastructure development, rather than establish capital's public acceptability, can sometimes become spaces for public contestation that undermine the social legitimacy of low-carbon infrastructures. Resistance to clean energy infrastructures – its rationales, actors, and discourses – differs between places, projects, and communities, including within the lifespan of a single controversial project. In turn, the ways in which that resistance is framed by others is also contingent, for example through the lenses of land grabbing [35], environmental injustice [3], resource nationalism [36] or indigenous sovereignty [37].

Opposition to energy infrastructures like transmission, however, is often understood as climate NIMBYism (the Not-In-My-Backyard "movement"), as was the case with Northern Pass. Climate NIMBYism is a discourse generally leveraged against white, wealthy property owners in rural or suburban areas of the Global North, making it distinct from other common explanations for resistance to clean energy projects [27]. These 'NIMBY' actors tend to have secure property rights and enfranchisement in various permitting and voting regimes. These privileges have allowed 'NIMBYs' to succeed in slowing or blocking proposed projects, sometimes with the effect of displacing projects to other communities that lack the capacity to oppose locally-unwanted land uses. My intent is not to downplay the privileges of 'NIMBY's actors. In fact, it is these privileges that give 'NIMBYs' their sociopolitical relevance to the social legitimation of low-carbon energy infrastructure: climate NIMBYism is a problem for energy capital and its visions for decarbonization precisely because so-called NIMBY communities have the cultural, financial, and sociopolitical capital to delay or block projects.

'NIMBYism' has been critiqued in the literature as a pejorative and value-laden label without explanatory power [38–40]. The alleged hypocrisy of climate 'NIMBYs' is premised on a "social gap" [41,42] between public acceptance of energy infrastructure and private resistance to specific projects, which Wolsink [39] describes as driven by "people that combine a positive attitude [towards renewables] and resistance [to particular projects] motivated by calculated personal costs and benefits" (p. 53). In other words, 'NIMBYs' recognize the social legitimacy of energy projects but reject them anyway, though the term is often used simply as shorthand for local resistance.

Bridge et al. [43], however, argue that "understanding place attachment and the emotional responses that people can have to energy landscapes provides a more productive approach than simplistic assertions of NIMBYism for analyzing conflicts over energy landscapes" (p.335). Scholars have offered alternative explanations for NIMBYism, such as "qualified criteria" for support for projects [41,42] or "place-protective behaviors" [40] that condition whether a project will be embraced or rejected by host communities.

This emphasis on social acceptability connects to the social legitimacy of projects: public acceptance of infrastructure is not an automatic corollary of the project's broader societal benefits, but a qualified outcome of various criteria by which a project's acceptability might be judged at multiple scales. However, Batel et al. [44] is critical of this language of "acceptance," arguing that it reflects a top-down approach to infrastructural development beholden to the planning of incumbents, largely energy capital and the state, in which the public's only options are to passively adopt or actively resist technomanagerial plans. Instead, the authors argue for a language of "support," orienting discussion away from a binary 'social gap' between support and opposition and towards a spectrum of different technological options, route designs, compensation packages, and consultation protocols through which a project's acceptability can change.

This language of 'support' as something to be actively cultivated, rather than assumed to arise automatically from the broader-scale benefits of a project, brings us to the issue of participation, with Chilvers and Kearnes framing participation as "the means through which societies legitimate claims to both political and epistemic authority" [[28 (p. 4)]. Seen in this light, public participation is not just a one-way mechanism through which a public is convinced to accept a pre-given project, but an iterative process through which the project's social legitimacy is co-produced. Participation is therefore a mechanism through which a project's social license to operate can be demonstrated by capital – what Newell et al. [7] caution as potentially providing "a veneer of procedural legitimacy" (p. 2) – but also a means through which a community can exert demands on project designs and outcomes.

This connects to the emerging literature on energy democracy, which links the shift from carbon-intensive to low-carbon energy systems with broader transformations of power dynamics within energy governance. The exact nature of this connection differs between usages of the term, with this paper following what Szulecki and Overland [9] refer to as the 'process' framing: energy democracy as "a process – which, through dispersed grassroots initiatives and a transnational social movement, is challenging energy incumbents" (p. 2), with the incumbents in this case being for-profit transmission developers and the state.

Under this process framing, energy democratization is a struggle over power and authority in energy governance, fought over and actualized through the processes of participation. As Burke and Stephens [10] explain, this democratization brings in "perspectives other than those of incumbents with vested interests in the status quo, potentially shifting the political and institutional context within which decisions about future energy choices are made" (p. 39. In other words, greater participation in energy decision-making can create room for consideration of concerns beyond those of incumbents, such as the profitability of new and existing investments.

What this paper refers to as the democratization of energy decision-making is this push to challenge 'incumbents' within existing processes of energy governance and their presumptions about what constitutes a socially legitimate project. By centering the 'vested interests' of energy capital, this framework inserts profitability alongside speed and greater participation as a third mandate shaping infrastructure conflicts. In this framing, social legitimacy is earned through the willingness to adjust project designs and compensation to achieve local acceptability, not just the ability to meet state climate goals.

3. Case study: the Northern Pass project

This paper draws from research conducted on transmission development in New England, with ongoing fieldwork beginning in May 2023, as well as prior research on opposition to the Northern Pass project conducted between 2018 and 2019. In order to identify and contextualize the concerns of host communities that ultimately led to the defeat of Northern Pass, the project relies on mixed qualitative methods, most significantly semi-structured interviews. At the time of writing, 41 interviews have been conducted in Massachusetts and New Hampshire, with each interview lasting approximately 60 minutes. Interview participants were identified from official intervenors in the Northern Pass permitting process, as well as from relevant MA state energy agencies, the regional grid operator, and developer staff. This initial pool was supplemented via snowball sampling. As per the study's IRB guidelines, interview participants have been de-identified to protect confidentiality.

Interviews are complemented by document analysis of publicly available project reports, environmental impact statements [45], working group reports [46], press coverage, and protest materials archived by a local historical society in Sugar Hill, NH or available online. This data is further supplemented by over 70 hours of participant

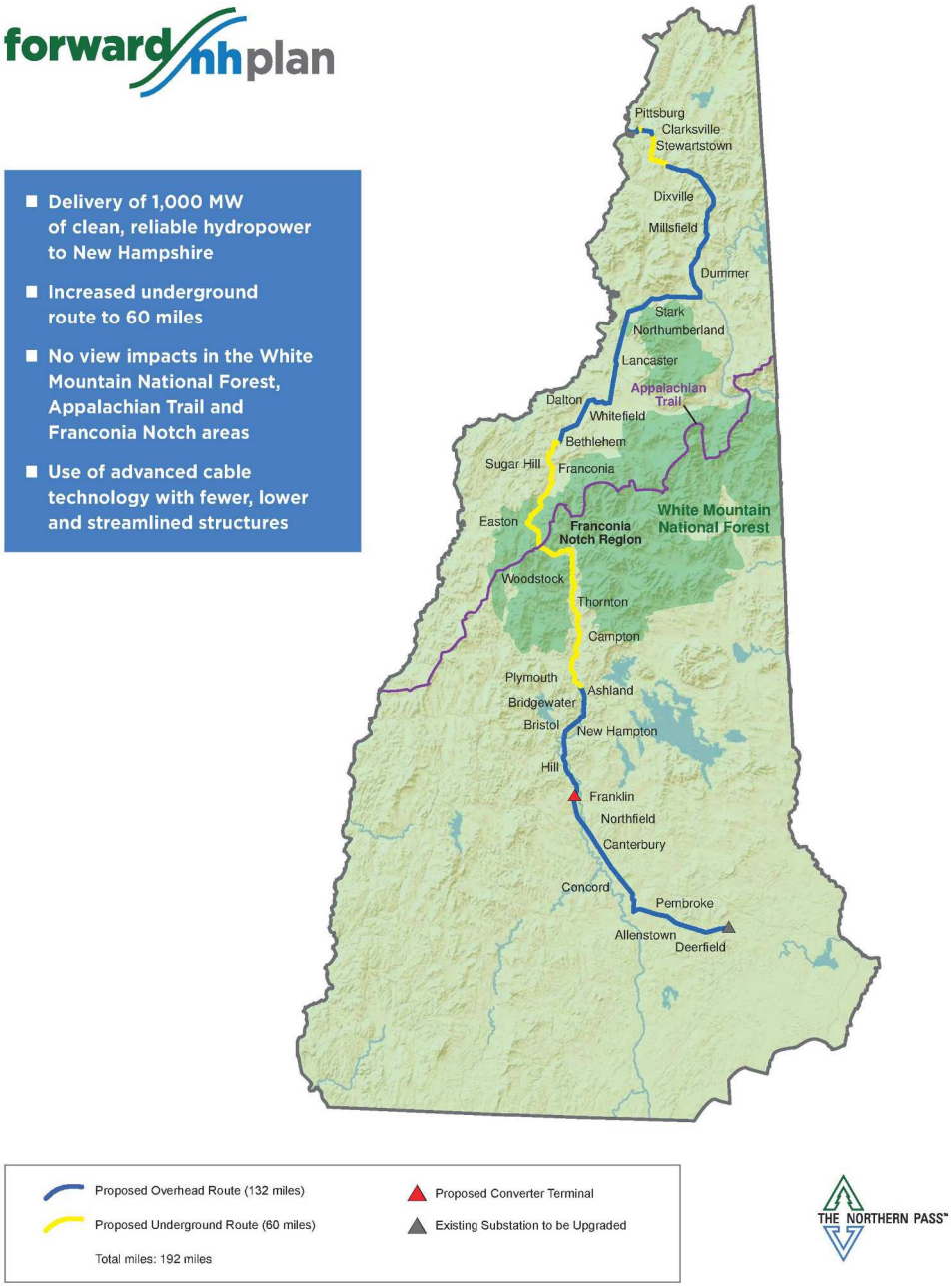

Fig. 1. Map of the finalized route of Northern Pass.

observation of proposed routes, activist meetings, and meetings by government and regulatory bodies concerned with transmission.

The New England electrical grid currently relies on natural gas for roughly half of its generation, which leads to both significant carbon emissions and price volatility, while roughly 28 % comes from clean energy sources (as defined by Massachusetts standards, which include large-scale hydroelectric generation but not nuclear). In order to meet its legislated targets of 40 % renewable electricity by 2030, the state of Massachusetts directly solicited proposals in 2016 for 9.54 terawatt-hours per year of low-carbon energy – enough for around 1.2 million households [47]. This contract is known as an 83D contract. Bids for this contract included a mix of new generation within the state of Massachusetts and interstate transmission of clean energy generated elsewhere.

Massachusetts selected the Northern Pass project, a 192-mile transmission line through New Hampshire, developed by Eversource, one of the largest utility companies in the region. Initially entirely above ground, the final route included 60 miles of buried lines under state roads through the White Mountain National Forest and in Coos County, where Eversource struggled to secure new rights-of-way. A map is given in Fig. 1.

Northern Pass was initially conceived as a merchant project, where transmission is developed as a speculative for-profit venture rather than planned by the regional transmission operator and funded through its cost-allocation methods; the latter is by far the most common model for transmission development in the United States. Officially announced in 2010, the project was several years into the environmental impact assessment and permitting processes by the time it submitted its bid for Massachusetts' clean energy procurement in 2017, with a proposed in-service date of late 2020. At the point in which the contract was awarded in early 2018, Northern Pass had secured all necessary permits except one.

Opposition to Northern Pass arose soon after its formal announcement in 2010. The core of the opposition included abutting property owners, town governments, and prominent environmental non-profits such as the Society for the Protection of New Hampshire Forests and the Appalachian Mountain Club. Opponents contested Northern Pass via multiple tactics, including by refusing to sell new rights-of-way, direct intervention in the permitting process, and lobbying at the state legislature.

One week after Massachusetts announced it had awarded Northern Pass its 83D contract, the New Hampshire state siting body unanimously ruled to deny the permit, citing the near-universal opposition of the towns along the proposed route and the failure of Northern Pass to demonstrate that it "served the public interest" of New Hampshire. Northern Pass's appeal of this decision was denied, and Massachusetts revoked its 83D contract.

Northern Pass therefore presents a case study where a project selected for a state clean energy procurement contract was killed by the opposition of host communities. Northern Pass is especially instructive because of the length of its development timeline – from its original conception as a merchant project in 2009 to the denial of its NH permit appeal in 2019 – providing a longer window to study the evolution of project design, oppositional tactics, and developer concessions. Given that transmission development has been identified as a major arena of energy investment to achieve decarbonization goals [5], Northern Pass offers a key cautionary tale, as further discussed in the concluding section.

4. Discussion: Decarbonization, democratization, profit

Northern Pass is just one example of a slew of new low-carbon energy infrastructure killed by local opposition, buttressing claims that "voters are not good for climate" [48]. How does the urgency of decarbonization make it seem not only acceptable but necessary to sideline public participation in energy governance? Here, I present an analysis that follows how the social legitimacy of Northern Pass was constructed by energy capital and state actors, only to be contested by publics, ultimately arguing that the fate of the project needs to be understood within the confluence of 'fast policy,' public participation, and the profit motive.

4.1. Presuming public acceptability

One root of the conflict over Northern Pass lies in the fact that the for-profit developers of Northern Pass believed that the project would enjoy public acceptance without needing to first engage in significant community outreach and consultation prior to project announcement, what has been termed a "decide-announce-defend" model of infrastructural development [49].

Interviews with individuals involved in energy planning and policy in the study area suggested that the baseline paradigm for transmission planning is one where public acceptability is assumed. A staff member at a NH-based non-profit tied this attitude to the experience building the Phase Two line, a transmission line from Hydro-Quebec built in the 1980s and the last project of similar scope built in the region:

> The folks who remembered the grand old days of, Oh, we just proposed a power line and we got to build it, and then when people didn't like it, they protested with their shotguns, but we just steamrolled that protest. Which happened with the Phase Two line. It was approved with minimal public input, and then when people didn't like the construction of this massive corridor, there were literally farmers with their shotguns. And [the developer] just got the police to move them away. Those are the days that those folks are yearning for. And frankly, those days are completely, completely gone.

Transmission developers now operate in a paradigm where they must justify the social legitimacy of their investments to the public – which they increasingly accomplish through reference to state climate targets and the decarbonization crisis.

Northern Pass had its origins in the New Hampshire Climate Action Plan of 2009, which indicated support in the New Hampshire state government and relevant agencies for a new transmission line importing hydropower from Quebec [50]. This meant that Northern Pass from its infancy understood itself as operating both under the general banner of energy transition and with the implicit endorsement of the New Hampshire state government. As the same interview participant explained:

> [Eversource thought] There it is, in the plan. Now we just have to go do it… But then what they did wrong was, they said, We're just going to go pick the route. We're going to decide where we're going to go. And we're just going to announce it, and flowers will be thrown at our feet… They announced the thing and then just no further outreach. They did no community engagement. And then they were like, Man, why isn't everyone just seeing things our way?

This sense that Northern Pass was automatically publicly acceptable because it addressed an identified policy need was further bolstered by its success in the Massachusetts 83D solicitation. As an instrument of social legitimation, however, the 83D contract did more to ensure decarbonization than it did to ensure extensive public participation. This is partially by design: the goal of the 83D contract was to facilitate the financing of a project that might not otherwise be built. This meant that it was intended to provide a guaranteed revenue source far upstream in project development timelines, before projects typically begin formal announcements and community engagement processes, so that the project could more easily secure financing for the upfront capital investment.

While the 83D solicitation did include requirements for "site control" and "community relations" to mitigate permitting risk [51], these criteria reflected the early planning stage envisioned for projects, with

site control, for instance, requiring an exact planned location for the project but not full permitting. Reflecting expectations for a project that has not yet been announced, these standards for mitigating permitting risk fall short of expectations farther along in a project timeline, while still providing a kind of "box-checking" for Northern Pass that it had done the prescribed community engagement.

Evidence also suggests that the developer assumed that permitting risk was largely a factor of population density, so that acceptability could be maximized by siting through more rural areas. Fig. 2 shows an excerpt from a 2009 scoping report commissioned by the developer, shared with me by one Northern Pass opponent who acquired it as part of a records request during the permitting process [52]. In it, the developers suggest that they anticipated increased permitting risk as the line passed from an average population density of 33 people per square mile in the north to 206 per square mile in its southernmost reaches (with the final proposed route terminating in Deerfield, NH rather than Londonderry, NH). Given that opposition was fierce along the entire proposed route and perhaps most intense along its northernmost course (roughly north of Plymouth on the graph), this points to a fundamental miscalculation of the dynamics of public acceptability along the route.

These dynamics, rooted in particular policies and a broader culture of planning, worked to promote an understanding of Northern Pass as already publicly acceptable. Northern Pass followed an established baseline for public participation, as laid out by the 83D solicitation and by the existing permitting processes at the federal and state level. Developers thought they had selected a route that minimized siting difficulty by routing through areas with low population densities. Its social legitimacy established both by its decarbonization credentials and its "box-checking" for permitting risk, Northern Pass thought it had its social license to operate in hand, pending the awarding of its permits. What more could the public want?

4.2. Identifying criteria for local support

Publics along the proposed route of Northern Pass, it turned out, had several demands. Analysis of oppositional discourses, drawing from interviews and document analysis from newspapers and protest materials, suggests that the resistance to Northern Pass is better understood not as an absolute opposition to a transmission line, as suggested by climate NIMBYism, but as a set of concerns with the processes of local engagement and design choices made by the developer.

At a more fundamental level, opponents of Northern Pass argued for the need for earlier and more comprehensive community engagement - what one interview participant called a "community first approach" - rather than the decide-announce-defend model where developers selected the route and then expected 'flowers thrown at their feet.' Property owners and town officials resented that they were not consulted in advance of the project announcement and felt as though their acceptance or support for the project was either assumed or taken as unnecessary. To a certain extent, this reflected the reliance of Northern Pass on already-existing rights-of-way, where Eversource had the legal license to construct infrastructure on private land and where the cumulative impact of expanding existing corridors in both width and height was taken to be negligible.

This also reflected its legal status as contracting with the state of Massachusetts, not New Hampshire. As a staff member for the New Hampshire Office of the Consumer Advocate put it:

> [Northern Pass] was never going to be paid for by New Hampshire customers, but neither was it going to benefit them, at least not in any significant way. And so Eversource basically felt, Well, we're just kind of running a big extension cord smack in the middle of New Hampshire. So New Hampshire should be kind of indifferent to it.

This 'extension cord' mentality underlaid what opponents felt was Eversource's insufficient community engagement.

Eversource attempted to conduct "damage control" by making certain concessions to establish community benefits for New Hampshire that went beyond a declining tax return. The Forward NH fund, for instance, was announced in 2015 and would have provided $200 million for economic, tourism, and community development, particularly along

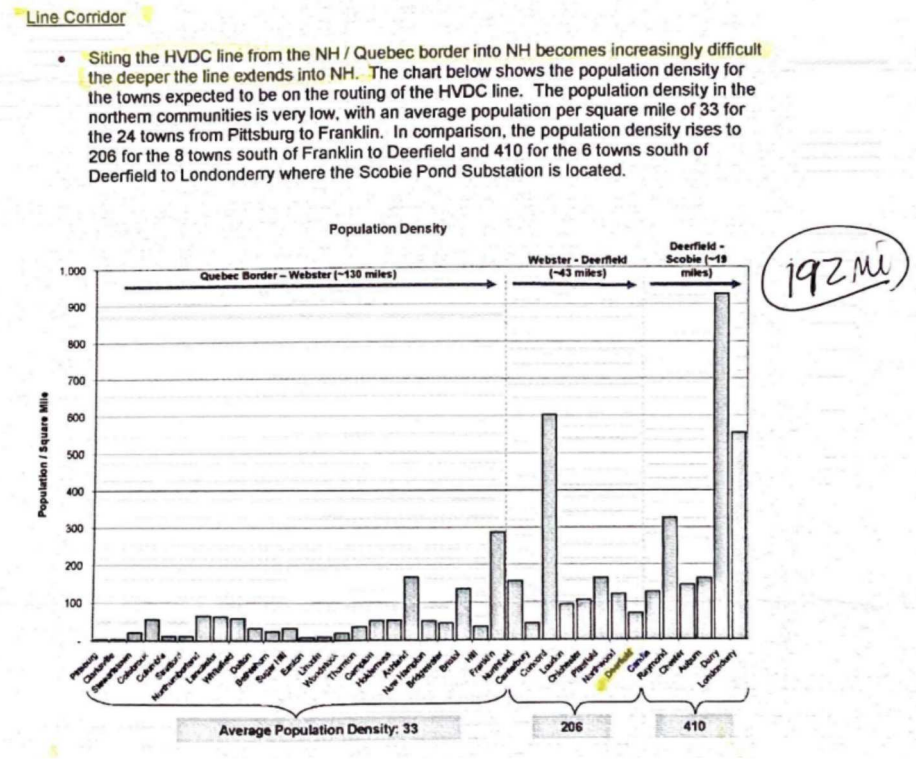

Fig. 2. Excerpt from a 2009 scoping report on prospective permitting risk and "siting difficulty" as measured by population density.

the northern section of the route. However, the general stance of opponents was that this fund was insufficient and failed to take into account local economic conditions, particularly relative to estimates for the prospective damages to the tourism-based economy, estimated at $13 million annually in one study [[53] (p. 14)]. While the project promised job creation, particularly through a project labor agreement with unionized electrical workers in the state, opponents noted that these jobs were generally temporary, as transmission lines themselves generate relatively few long-term jobs after construction is complete.

Speaking to the trade-offs between speed, local support, and profit, opponents saw their own credibility in the permitting process as bolstered by their ability to advocate for alternatives to Northern Pass as proposed. While the opposition had a variety of different visions for energy futures and routes to decarbonization, their most consistent demand was for complete line burial to mitigate visual and environmental impacts. This was seen as essential to preserve the "cultural landscape" of New Hampshire, protect the tourism economy, and maintain property values along the line. Demands for complete burial arose early in the controversy. One early mention, in a draft op-ed for the *Littleton Courier* in November 2010 archived at the Sugar Hill Historical Society, argues that:

> We view 'route alternatives' [different proposed above-ground routes] as a divide-and-conquer strategy that would pit local communities against one another and distract us from collectively insisting that the Northern Pass project follow the universal best practice for these lines: bury them… Burying HVDC is a common practice in Europe and is being adopted more and more widely in the US. Why not use it for this project? Insist that the developers invest the money now to install the least damaging and most secure transmission line. There will be no turning back later.

The same op-ed went on to advertise membership in the largest email listserv for opponents, fittingly called "Bury Northern Pass." Undergrounding of the entire route was put forward, early and frequently, as a base condition for public acceptability and support. At issue, then, was less the location of the line in "the backyard" but insufficient siting mitigation once it was put there.

Eversource agreed in 2015 to bury 60 miles of Northern Pass, but this was not interpreted by the opposition as a compromise made in response to their concerns. 8 miles of the buried section were in Coos County along state roads because Eversource failed to secure new overhead rights-of-way. The remaining 52 miles were buried through the White Mountain National Forest, where burial became necessary to receive a Special Use Permit from the US Forest Service without time-intensive amendments to its land and resource management plan. In effect, the developer recognized a trade-off between speed and profit, accepting undergrounding through the National Forest as a necessary expense to receive this permit in a timely manner. Some opponents also interpreted this burial as part of a "divide-and-conquer" strategy, as it buried the line through the wealthy towns of Sugar Hill, Franconia, and Easton, perceiving it as a concession to "buy" support from more affluent communities.

Undergrounding transmission is relatively uncommon in the United States but a common siting practice in Europe, and is increasingly being adopted in the US to mitigate visual impacts and wildfire risks. Opponents acknowledged that undergrounding was more expensive than above-ground lines, though the exact extent to which this would raise project costs was debated. Eversource initially argued that burial would increase costs from $3 million per mile to upwards of $20 million per mile [54], though the federal Department of Energy's alternatives analysis estimated a cost of $5.7 million per mile for burial [45].

Opponents also noted that the cost of burial depended on the technology used and the conditions of the route itself. Northern Pass elected to bury the line under state roads that were largely "unimproved," with bedrock close to the surface, which significantly increased the difficulty and cost of undergrounding. Undergrounding is much less expensive if done underwater or under surfaces that had already been "softened," such as along interstate highways. The alternatives analysis from the project's federal environmental impact statement found the Interstate 93 corridor, which parallels Northern Pass's proposed route, to be the lowest-cost option for burial [45]. Because interstate highways are also wider, complete road closures could also largely be avoided. Prompted by Northern Pass opponents, the New Hampshire state legislature designated official transmission corridors down New Hampshire's three interstate highways in 2016, promising streamlined permitting if this siting mitigation measure were adopted [55].

This reading of 'NIMBY' demands of Northern Pass and its developers suggests that opposition was not absolutely opposed to the construction of a transmission line through their landscapes. What they contested, instead, was the processes and mentalities through which they were engaged by the developer and the designs taken as a baseline for project acceptability, proposing instead policies of early community consultation, compensation packages tailored to host communities, and siting mitigation via burial and co-location with existing infrastructures. Viewed as valid stakeholders in a participatory process, 'NIMBYs' seem less like the enemy of fast policy and more like the price of doing business, communicating criteria for acceptability that needed to be balanced against speed and profitability but were not mutually exclusive.

4.3. Barriers to compromise

Why, then, did Eversource not acquiesce to opponent demands for burial or re-routing along designated transmission corridors?

At a policy level, Northern Pass was locked into a particular route, technological design, and budget when it submitted its bid to the Massachusetts 83D solicitation, making it more difficult to change project designs after 2017 without risking revenue streams. These lock-in effects are especially worth noting given the 83D's intention to facilitate projects far upstream in their development. That being said, the demands by host communities for the project to be completely undergrounded and co-located along interstate highways was communicated well in advance of the 83D solicitation, via op-eds, protests, and public meetings held as part of federal and state permitting processes.

More fundamentally, in a context where the developer assumed the project to be already socially legitimate, I argue that it weighed potential profit more heavily than public acceptability, which in turn led to a drawn-out permitting battle and ultimately cancellation. This paper understands Northern Pass as an (attempted) socioecological fix, investing capital while ensuring the flow of low-carbon electricity from Quebec to meet Massachusetts's policy needs, but the ultimate purpose of a socioecological fix is to ensure the continued profitability of capital. Northern Pass, after all, was originally envisioned as a merchant project, to make profit for its shareholders. Its 83D contract did not transform this underlying goal.

While explicit cost-benefit analyses by the developer are not publicly available, the alternatives analysis from the federal environmental impact statement provides one account of the trade-offs [45]. Compared to the project as proposed, the alternative involving complete burial along Interstate 93 was found to lead to fewer environmental, visual, and historic impacts; greater short- and long-term job creation; improved resiliency against extreme weather; and lower greenhouse gas emissions and loss of carbon sinks. However, this buried option had higher construction costs than the project as proposed; in turn, "because of the higher construction cost, the underground alternatives would be disadvantageous to [the developer] but provide additional tax revenue to local taxing jurisdictions" (p. S-18).

The cheapest way for Eversource to construct a transmission line from Quebec to Massachusetts was to use its existing rights-of-way whenever possible, run the line aboveground whenever possible, and conduct the minimum of public engagement required to secure its permits and the 83D contract. The social legitimacy of its benefits for

decarbonization notwithstanding, Northern Pass was a project designed by a for-profit entity, albeit eventually within the constraints of a contract with the state (though notably not the state through which it was to be built). Read amidst trade-offs between public support and profit, Northern Pass started from an assumption of social legitimacy and took a calculated risk about what concessions it needed to grant host communities, the delays of the resulting permitting battle, and its profit margins off the 83D contract – a gamble that ultimately led to its failure altogether.

Northern Pass opponents repeatedly stressed to me that, had Eversource agreed to completely bury the line along the interstate, the project would likely have been constructed by its in-service date of 2020. Complete undergrounding would have been more expensive, but it also could have been made a condition for mitigating permitting risk by the 83D contract solicitation, pointing to inadequate incentives in state procurement policies. The expense of this undergrounding could be reduced by re-routing, but this would have required Eversource to pay to access other rights-of-way, whereas it could use its existing rights-of-way for free. Simplifying access to rights-of-way along linear corridors like highways could further incentivize these routes.

The flipside of profit is cost, and in order to compete for the 83D contract, Northern Pass needed a bid that was cost-competitive, implying an effective ceiling on the price tag of the project and thus the "budget" for concessions without jeopardizing financial viability. While cost was among the factors considered by Massachusetts state agencies in awarding the 83D contract according to public testimony and interviews with relevant officials, it was not the sole one. Most notably, when it was awarded the contract, Northern Pass was already more expensive than other comparable transmission projects in the bidding pool, costing 1.6 billion USD compared to 950 million USD for one project and 1.2 billion USD for another.

Read through a process lens of energy democracy, the demands of 'NIMBYs' raise the standards for public acceptability, and thus the social legitimacy of projects, beyond the status quo encoded in existing permitting processes and contract solicitations. Overhead transmission along existing rights-of-way, in this case, represents a 'vested interest' of incumbent transmission developers, who are incentivized to resist changing norms for public acceptability.

5. Conclusions: Reconciling 'fast policy' and public participation

In this paper, I have used the case of one controversial transmission project in New Hampshire to argue that public participation in and of itself is not the enemy of 'fast policy' to address the decarbonization crisis, as accusations of climate NIMBYism imply. In the case study examined, so-called 'NIMBYs' did not oppose new infrastructure absolutely. They communicated the conditions through which local support could be achieved, most notably through complete undergrounding of the line and co-location along existing linear infrastructures. For developers, these concessions would have increased the cost of the project and cut into profits, and developers were further limited in what changes they could make to the project after submitting a bid into the MA 83D contract solicitation. By refusing to fully negotiate with local communities, however, the developers ultimately doomed the project. Undergrounding might be expensive, but not as expensive as project cancellation – whether measured in dollars, time, emissions, or public goodwill burnt in pursuit of a controversial project.

That capital is driven by a desire for profit is, of course, no surprise, but the relevance of this profit motive in disputes between host communities and developers has largely gone underemphasized in previous analyses of energy infrastructure controversies. It takes (at least) two to argue, but scholarly, policy, and popular discussions have tended to place the responsibility for project failures on oppositional 'NIMBY' publics, rather than with the energy capital and state power behind a given project.

This connects to Luke & Huber [26] who argue that "the overlap of public and private interest in electricity capital requires greater attention because it is a site where the pace and form of decarbonization is managed" (p. 1707). This paper intervenes in this literature by positioning infrastructure permitting as a process of negotiation between local publics, energy capital, and the state, problematizing presumptions that low-carbon energy infrastructure is inherently socially legitimate and thus publicly acceptable without first engaging in extensive processes of public participation. As Sovacool et al. [5] argue, "the dilemma will be to determine how, institutionally, to embed equity and justice principles in the combination of regulation and markets that combine with the physical assets [of the grid] to create a cyber-physical-social system" (p. 8).

To be clear, my argument is not in favor of politics of delay or a narrow emphasis on the local. I am instead arguing that the route to 'fast policy' instead lies in working with and through host communities, rather than against them, and that the way to do this is through early and thorough engagement that accepts a priori that negotiations in design and compensation are necessary for projects to be built in a timely manner. Rather than a strategy for delay or a performance of consultation, participation should be approached as a method to build more acceptable projects by preemptively identifying points of contention. Particularly for projects funded through initiatives like the Massachusetts 83D contract, the state – at federal and subnational levels – has the prerogative to incentivize projects that prioritize public benefits and minimize impacts to host communities.

My point here is ultimately a pragmatic one. The United States, like other Global North countries, is a current and historic major emitter of greenhouse gases. The dominant policy imaginary for reducing those emissions involves transitioning its carbon-intensive energy system to a low-carbon one through the massive build-out of centralized renewable generation (and associated infrastructure like transmission) to power an electrified future. Understanding and addressing resistance to infrastructure build-out is necessary to ensure that the development of low-carbon infrastructure occurs quickly and effectively.

While climate change is a planetary problem, siting and permitting typically fall under local and subnational jurisdictions. At the national scale, delays and cancellations of low-carbon energy infrastructure are driving a regulatory push for "permitting reform," which broadly speaking aims to speed infrastructure permitting through expedited impact reviews and, particularly in the case of interstate transmission projects, moving decisions to federal rather than state jurisdiction.

While such proposals may speed infrastructure buildout, my concern is that such permitting reforms misdiagnose the problem, assuming these controversial projects represent the best – or only – possible siting locations, infrastructural designs, and community compensation packages, rather than the plans most conducive to capital accumulation while still fitting state and federal solicitations. Moving such permitting to a federal authority raises other issues. For one, permitting is a closely-held local land use authority in the US, and attempting to shift jurisdiction risks opening another political front in an already contentious energy planning space. It also exposes permitting to the turbulence of national election cycles. More fundamentally, public involvement in permitting is already an arduous, time-consuming process, and a move to the federal level would increase the distance – physical, social, symbolic – between (especially rural) community members and decision-makers, potentially prioritizing speed at the expense of participation and inclusivity.

Newell et al. [7] argue that there is a "need for participatory spaces to be aligned with the need for rapid and just transitions so that the *deliberation* is more over different pathways and less the speed or depth of change required" (p. 2, emphasis mine). Permitting is a negotiatory space, and a path to decarbonization that justifies constraints on public participation stands to alienate host communities, diminish public goodwill towards climate policies, and subsidize capital profits at the expense of community sense of place, property values, and protected

landscapes – all while, I suspect, still exposing projects to delays from litigation and direct action [5].

Participation is not necessarily an enemy of fast policy for decarbonization, and can in fact facilitate it, if it promotes proposals with greater public support – and, by avoiding extensive permitting battles, can help developers avoid Northern Pass's costly failures. I conclude by making three recommendations to better reconcile speed, local acceptability, and profit.

First, there is a need for paradigm shifts for transmission developers. An alternative (though not mutually exclusive) approach to permitting reform would be for "proposal reform," where developers adjust their baselines for siting, mitigation, consultation, and compensation to preemptively avoid common concerns of host communities. Under proposal reform, developers accept some trade-offs to profit in order to increase local support, improve the project's overall chance of success in permitting, and therefore promote more rapid transitions.

In the wake of Northern Pass, evidence of such evolving developer norms is already emerging in my study area. For example, one of Northern Pass's competitors for the 83D contract was another Hydro-Quebec transmission line, TDI's New England Clean Power Link (NECPL), which was entirely buried under state roads and Lake Champlain in the state of Vermont. A more recent proposal for hydropower transmission, National Grid's Twin States Clean Energy Link, was also buried under state roads through Vermont, after which it crossed New Hampshire by utilizing reconductoring technology to carry more electricity on existing infrastructure in its rights-of-way without expanding its visual footprint.

Both projects engaged in community consultations ahead of project announcements to develop tailored compensation packages. For example, opposition from the Conservation Law Foundation, a regional environmental group, pushed NECPL to increase its public benefits plan by 75 %, including additional funding to support environmental remediation in Lake Champlain [56], and the Conservation Law Foundation subsequently endorsed the project. As a result of siting mitigation and compensation packages, neither project generated significant local controversy, based on my review of local news media and interviews with energy planners and transmission opponents in the region. These examples suggest that norms are already self-correcting as developers weigh calculations of speed, public acceptability, and profitability, though these changes are certainly not yet universal.

Unfortunately, neither of these projects has been built – though not necessarily because they are more expensive. The NECPL did not receive the 83D contract despite costing 1.2 billion USD to Northern Pass's 1.6 billion USD and being fully permitted at the time of the decision. While the exact reasons for this decision have been redacted from public records of the 83D evaluations, one criterion by which proposals were judged was the experience of the developer in the New England service area, and NECPL's developer is not one of New England's existing transmission owners, pointing to one way in which incumbent actors are favored in existing systems. When Northern Pass was killed, Massachusetts awarded the contract to another Hydro-Quebec transmission line, the New England Clean Energy Connect, developed by a different incumbent transmission owner, which is itself embroiled in several years of community opposition.

Twin States, meanwhile, had an anticipated cost of 2 billion USD when announced in 2023, which is comparable to Northern Pass's cost in 2018 when adjusted for inflation. Furthermore, Twin States was selected for a federal Transmission Facilitation Program grant in large part due to the rigor of its community engagement, providing it with an undisclosed share of a 2.5 billion USD revolving fund [57]. Local support pays in more ways than one. However, Twin States has not secured a power purchasing agreement, and has also not moved forward [58].

This points to a second policy need, which is for continued and expanded financial incentives from the state, at both the subnational and federal levels. While developers could build new transmission without state financial support, such merchant projects have proven incredibly uncommon in the US, with only a single merchant transmission line built in New England back in 2002. To accelerate decarbonization, developers therefore need state prompting.

Reflecting its more active role in infrastructure procurement through power purchasing agreements, states can push new paradigms in infrastructure planning by issuing additional procurements that incorporate common criteria for acceptability into contract requirements. Grants through initiatives like the federal Transmission Facilitation Program can financially mitigate trade-offs between profit and public acceptability. The state can also promote the adoption of transmission innovations that reduce the land use impacts of expanding transmission capacity, such as the use of reconductoring and grid-enhancing technologies, as was recommended by the Massachusetts Clean Energy Transmission Working Group in 2023 [46].

Third, in addition to state procurements and grants, there is room for greater coordination of transmission buildout between actors who currently act within planning silos. For example, state energy and transport agencies should collaborate to designate transmission corridors along interstates or railroads, offering streamlined permitting and low-cost rights-of-way to nudge developers to site along existing linear infrastructures. Furthermore, regional transmission operators should take a more proactive role in planning "public policy transmission," a capacity that falls under their federal authority but has been seldom utilized to date. While a more detailed discussion of regional transmission operators is outside the scope of this paper, they represent an institution in which to adjudicate the trade-offs between speed, public acceptability, and profit at the regional scale, rather than state-by-state.

Northern Pass reads as a cautionary tale, where plans for a transmission 'extension cord' turned into a decade-long failure and a multi-billion-dollar loss for the developer. In the US alone, studies suggest the transmission system may need to grow by 66 % by 2035 to meet the Biden administration's decarbonization goals [59], in addition to the need to build new renewable generation and storage systems, which face controversies of their own. State energy planners and developers should know that a 'decide-announce-defend' model is liable to lead to resistance. Future research should explore 'NIMBY' opposition to low-carbon energy projects, as well as projects with local support, to generate best practices in project design and community engagement in support of a new paradigm in infrastructural development: the preemptive work of public participation.

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Maddy Kroot: Writing – review & editing, Writing – original draft, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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References

[1] D. McCauley, R. Heffron, K. Jenkins Stephan, Advancing energy justice: the triumvirate of tenets, Int. Energy Law Rev. 32 (2013) 107–110.
[2] K. Jenkins, D. McCauley, R. Heffron, H. Stephan, R. Rehner, Energy justice: a conceptual review, Energy Res. Soc. Sci. 11 (2016) 174–182, https://doi.org/10.1016/j.erss.2015.10.004.
[3] D. McCauley, R. Heffron, Just transition: integrating climate, energy and environmental justice, Energy Policy 119 (2018) 1–7, https://doi.org/10.1016/j.enpol.2018.04.014.
[4] B.K. Sovacool, S.E. Bell, C. Daggett, C. Labuski, M. Lennon, L. Naylor, J. Klinger, K. Leonard, J. Firestone, Pluralizing energy justice: incorporating feminist, anti-racist, indigenous, and postcolonial perspectives, Energy Res. Soc. Sci. 97 (2023) 102996, https://doi.org/10.1016/j.erss.2023.102996.
[5] B.K. Sovacool, S. Carley, L. Kiesling, Energy justice beyond the wire: exploring the multidimensional inequities of the electrical power grid in the United States, Energy Res. Soc. Sci. 111 (2024) 103474, https://doi.org/10.1016/j.erss.2024.103474.
[6] T.M. Skjølsvold, L. Coenen, Are rapid and inclusive energy and climate transitions oxymorons? Towards principles of responsible acceleration, Energy Res. Soc. Sci. 79 (2021) 102164, https://doi.org/10.1016/j.erss.2021.102164.
[7] P.J. Newell, F.W. Geels, B.K. Sovacool, Navigating tensions between rapid and just low-carbon transitions, Environ. Res. Lett. 17 (2022) 041006, https://doi.org/10.1088/1748-9326/ac622a.
[8] S. Droubi, R.J. Heffron, D. McCauley, A critical review of energy democracy: a failure to deliver justice? Energy Res. Soc. Sci. 86 (2022) 102444 https://doi.org/10.1016/j.erss.2021.102444.
[9] K. Szulecki, I. Overland, Energy democracy as a process, an outcome and a goal: a conceptual review, Energy Res. Soc. Sci. 69 (2020) 101768, https://doi.org/10.1016/j.erss.2020.101768.
[10] M.J. Burke, J.C. Stephens, Energy democracy: goals and policy instruments for sociotechnical transitions, Energy Res. Soc. Sci. 33 (2017) 35–48, https://doi.org/10.1016/j.erss.2017.09.024.
[11] E. Greenberg, C. McKendry, Contested power: Energy democracy and the repoliticization of electricity in the western U.S, Energy Res. Soc. Sci. 73 (2021) 101942, https://doi.org/10.1016/j.erss.2021.101942.
[12] J. O'Connor, Capitalism, nature, socialism a theoretical introduction*, Capital. Nat. Social. 1 (1988) 11–38, https://doi.org/10.1080/10455758809358356.
[13] M.T. Huber, Petrocapitalism, in: Int. Encycl. Geogr, John Wiley & Sons, Ltd, 2017, pp. 1–6, https://doi.org/10.1002/9781118786352.wbieg0265.
[14] P. Somerville, Preventing catastrophic climate change, Capital. Nat. Social. 29 (2018) 110–119, https://doi.org/10.1080/10455752.2018.1477429.
[15] T. Culhane, G. Hall, J.T. Roberts, Who delays climate action? Interest groups and coalitions in state legislative struggles in the United States, Energy Res. Soc. Sci. 79 (2021) 102114, https://doi.org/10.1016/j.erss.2021.102114.
[16] G. Mann, J. Wainwright, Climate Leviathan: A Political Theory of our Planetary Future, Verso, 2018.
[17] R. Pearse, Theorising the political economy of energy transformations: agency, structure, space, process, New Polit. Econ. (2020) 1–13, https://doi.org/10.1080/13563467.2020.1810217.
[18] N. Castree, B. Christophers, Banking spatially on the future: capital switching, infrastructure, and the ecological fix, Ann. Assoc. Am. Geogr. 105 (2015) 378–386, https://doi.org/10.1080/00045608.2014.985622.
[19] M. Ekers, S. Prudham, The metabolism of socioecological fixes: capital switching, spatial fixes, and the production of nature, Ann. Am. Assoc. Geogr. 107 (2017) 1370–1388, https://doi.org/10.1080/24694452.2017.1309962.
[20] M. Ekers, S. Prudham, The socioecological fix: fixed capital, metabolism, and hegemony, Ann. Am. Assoc. Geogr. 108 (2018) 17–34, https://doi.org/10.1080/24694452.2017.1309963.
[21] D. Harvey, The geopolitics of capitalism, in: D. Gregory, J. Urry (Eds.), Soc. Relat. Spat. Struct., Houndsmill and London, 1985, pp. 128–163.
[22] J. McCarthy, A socioecological fix to capitalist crisis and climate change? The possibilities and limits of renewable energy, Environ. Plan. Econ. Space 47 (2015) 2485–2502, https://doi.org/10.1177/0308518X15602491.
[23] C. Parenti, The 2013 ANTIPODE AAG lecture: the environment making state: territory, nature, and value, Antipode 47 (2015) 829–848. doi:https://doi.org/10.1111/anti.12134.
[24] J. Angel, Towards an energy politics in-against-and-beyond the state: Berlin's struggle for energy democracy, Antipode 49 (2017) 557–576, https://doi.org/10.1111/anti.12289.
[25] C. Legacy, C. Gibson, D. Rogers, Infrastructural gaslighting and the crisis of participatory planning, Environ. Plan. Econ. Space (2023) 0308518X231209979, https://doi.org/10.1177/0308518X231209979.
[26] N. Luke, M.T. Huber, Introduction: uneven geographies of electricity capital, Environ. Plan. E Nat. Space (2022) 251484862211252, https://doi.org/10.1177/25148486221125229.
[27] R. Lake, Volunteers, NIMBYs, and environmental justice: dilemmas of democratic practice, Antipode 28 (1996) 160–174, https://doi.org/10.1111/j.1467-8330.1996.tb00520.x.
[28] J. Chilvers, M. Kearnes (Eds.), Remaking Participation: Science, Environment, and Emergent Publics, Routledge, 2016.
[29] J. Gehman, L.M. Lefsrud, S. Fast, Social license to operate: legitimacy by another name? Can. Public Adm. 60 (2017) 293–317, https://doi.org/10.1111/capa.12218.
[30] J.R. Owen, D. Kemp, Social licence and mining: a critical perspective, Resour. Policy 38 (2013) 29–35, https://doi.org/10.1016/j.resourpol.2012.06.016.
[31] A. Barich, A.W. Stokłosa, J. Hildebrand, O. Elíasson, T. Medgyes, G. Quinonez, A. C. Casillas, I. Fernandez, Social license to operate in geothermal energy, Energies 15 (2022) 139, https://doi.org/10.3390/en15010139.
[32] S. Stephens, B.M.K. Robinson, The social license to operate in the onshore wind energy industry: a comparative case study of Scotland and South Africa, Energy Policy 148 (2021) 111981, https://doi.org/10.1016/j.enpol.2020.111981.
[33] M. Xu, Y. Liu, C. Cui, B. Xia, Y. Ke, M. Skitmore, Social acceptance of NIMBY facilities: a comparative study between public acceptance and the social license to operate analytical frameworks, Land Use Policy 124 (2023) 106453, https://doi.org/10.1016/j.landusepol.2022.106453.
[34] J. Barnett, K. Burningham, G. Walker, N. Cass, Imagined publics and engagement around renewable energy technologies in the UK, Public Underst. Sci. 21 (2012) 36–50, https://doi.org/10.1177/0963662510365663.
[35] K. Yenneti, R. Day, O. Golubchikov, Spatial justice and the land politics of renewables: dispossessing vulnerable communities through solar energy mega-projects, Geoforum 76 (2016) 90–99, https://doi.org/10.1016/j.geoforum.2016.09.004.
[36] S.T. Hansen, E. Moe, Renewable energy expansion or the preservation of national energy sovereignty? Norwegian renewable energy policy meets resource nationalism, Polit. Geogr. 99 (2022) 102760, https://doi.org/10.1016/j.polgeo.2022.102760.
[37] A. Curley, Carbon Sovereignty: Coal, Development, and Energy Transition in the Navajo Nation, University of Arizona Press, Phoenix, 2023.
[38] K. Burningham, Using the language of NIMBY: a topic for research, not an activity for researchers, Local Environ. 5 (2000) 55–67, https://doi.org/10.1080/135498300113264.
[39] M. Wolsink, Wind power and the NIMBY-myth: institutional capacity and the limited significance of public support, Renew. Energy 21 (2000) 49–64, https://doi.org/10.1016/S0960-1481(99)00130-5.
[40] P. Devine-Wright, Rethinking NIMBYism: the role of place attachment and place identity in explaining place-protective action, J. Community Appl. Soc. Psychol. (2009) 426–441.
[41] D. Bell, T. Gray, C. Haggett, The 'social gap' in wind farm siting decisions: explanations and policy responses, Environ. Polit. 14 (2005) 460–477, https://doi.org/10.1080/09644010500175833.
[42] D. Bell, T. Gray, C. Haggett, J. Swaffield, Re-visiting the 'social gap': public opinion and relations of power in the local politics of wind energy, Environ. Polit. 22 (2013) 115–135, https://doi.org/10.1080/09644016.2013.755793.
[43] G. Bridge, S. Bouzarovski, M. Bradshaw, N. Eyre, Geographies of energy transition: space, place and the low-carbon economy, Energy Policy 53 (2013) 331–340, https://doi.org/10.1016/j.enpol.2012.10.066.
[44] S. Batel, P. Devine-Wright, T. Tangeland, Social acceptance of low carbon energy and associated infrastructures: a critical discussion, Energy Policy 58 (2013) 1–5, https://doi.org/10.1016/j.enpol.2013.03.018.
[45] Final Northern Pass Transmission Line Project Environmental Impact Statement Summary, US Department of Energy. https://www.energy.gov/sites/default/files/2017/08/f35/EIS-0463-FEIS-Summary.pdf, 2017. (Accessed 23 July 2024).
[46] MA Clean Energy Transmission Working Group, Report to the Legislature, MA Clean Energy Transmission Working Group. https://www.mass.gov/doc/clean-energy-transmission-working-group-final-report/download, 2023. (Accessed 26 July 2024).
[47] Iberdrola, NECEC: Connecting Canada and the United States to supply renewable energy to New England, Iberdrola (n.d.). https://www.iberdrola.com/about-us/what-we-do/smart-grids/necec-project-canada-united-states-and-new-england (accessed November 2, 2023).
[48] D. Gelles, A Fight Over America's Energy Future Erupts on the Canadian Border, N. Y. Times. https://www.nytimes.com/2022/05/06/climate/hydro-quebec-maine-clean-energy.html, 2022. (Accessed 25 October 2022).
[49] N. Komendantova, A. Battaglini, Beyond decide-announce-defend (DAD) and not-in-my-backyard (NIMBY) models? Addressing the social and public acceptance of electric transmission lines in Germany, Energy Res. Soc. Sci. 22 (2016) 224–231, https://doi.org/10.1016/j.erss.2016.10.001.
[50] NH Department of Environmental Services, The New Hampshire Climate Action pan: A Plan for New Hampshire's Energy, Environmental, and Economic Development Future, New Hampshire Climate Change Policy Task Force, 2009.
[51] MA Department of Energy Resources, Request for Proposals for Long-term Contracts for Clean Energy Projects, 2017.

[52] Northeast Utilities, NSTAR Electric, Hydro-Quebec TransEnergie, Working Group Report addendum: Southern (NH) terminal location analysis, 2009.
[53] S. Tierney, P. Darling, The Proposed Northern Pass Transmission Project: Assessing its impacts on New Hampshire, 2017, p. 34.
[54] New Hampshire Public Radio, C. Jensen, Eversouce says total burial of northern pass too expensive; feds say it's feasible. https://www.nhpr.org/north-country/2015-08-06/eversouce-says-total-burial-of-northern-pass-too-expensive-feds-say-its-feasible, 2015. (Accessed 14 January 2024).
[55] Authorizing Energy Infrastructure Development and Designating Energy Infrastructure Corridors and Requiring the Department of Transportation to Adopt an Updated and Revised Utility Accommodation Manual, 2016.
[56] Agreement between Champlain VT, LLC and the Conservation Law Foundation. https://www.clf.org/wp-content/uploads/2015/07/2015-05-29-Agreement-Between-TDI-NE-and-CLF-FINAL1.pdf, 2015. (Accessed 16 July 2024).
[57] E. Howland, DOE Picks National Grid, Berkshire Hathaway, Grid United Transmission Projects in First Capacity Buys, Util. Dive. https://www.utilitydive.com/news/doe-national-grid-berkshire-grid-united-transmission-facilitation/698137/, 2023. (Accessed 10 November 2023).
[58] P. Tracy, National grid pulls plug on twin states energy project disappointing sununu, InDepthNH.Org. https://indepthnh.org/2024/03/04/national-grid-pulls-plug-on-twin-states-energy-project-disappointing-sununu/, 2024. (Accessed 16 July 2024).
[59] B. Plumer, The U.S. urgently needs a bigger grid. Here's a fast solution., N. Y. Times. https://www.nytimes.com/2024/04/09/climate/electric-grid-more-power.html, 2024. (Accessed 9 April 2024).