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Critical energy justice in US natural gas infrastructuring

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ABSTRACT

We employ infrastructuring as a verb to highlight contested processes of infrastructure expansion to extract, store, transport, and transform natural gas (into liquefied natural gas, LNG). As faculty members and students embedded in mid-Atlantic universities in the United States (US), we conducted participatory action research to record nearby infrastructuring for Dominion Energy's Cove Point LNG Export Terminal and Atlantic Coast Pipeline. We documented how frontline and impacted populations seized opportunities when infrastructuring was visible to challenge and erode the excessive economic and political power of Dominion, one of the US's largest energy providers, who sought to maintain regulatory privilege through lobbying, campaign contributions, and delegitimization of public health and environmental risks. Extending Tsing's concept of frictions (i.e., engagement in difference-based encounters), we highlight (1) coalition-building among unlikely allies (collective encounters), and (2) conflictive interactions between proand anti-gas stakeholders (oppositional encounters). Impacted populations collaborated with proximate and distant allies to publicize and legally challenge distributional, regulatory, racial and other forms of injustice from gas infrastructuring. Our critical energy justice (CEJ) framework helps to identity and defend interconnected components of justice under threat due to profit-oriented global gas infrastructuring based upon reckless disregard for climate science and public health.

1. Introduction

Natural gas, once considered a throwaway byproduct of oil exploration, has displaced coal to become the dominant energy source in the United States (US). In this paper, we show how the expansion of gas infrastructure generates friction and social conflict, drawing on case studies from the mid-Atlantic region. Within this region, firms are establishing contested routes and hubs to take advantage of shale gas markets. The conflictive infrastructure projects we analyze transport Marcellus gas, which is natural gas extracted by hydraulic fracturing in the Marcellus geological formation found predominately in the states of New York, Pennsylvania, Ohio, and West Virginia, to domestic markets in Virginia and North Carolina and international markets in Japan and India.

The expansion of natural gas is transforming the mid-Atlantic region. Considered 'Coal Country' until recently, the region now hosts gas facilities owned and operated by a series of consolidated energy giants, such as Dominion Energy and Duke Energy, with records of pollution in communities of color [1,2]. In the midst of industry efforts to promote gas as clean, safe, and sustainable, citizens are disturbed by what they perceive as procedural injustices ignoring public health and safety risks, ecological impacts, and climate disruption associated with natural gas infrastructure [3–7]. Concerned populations are mobilizing in opposition to Dominion Energy, the focus of this research,[1] who started planning the 600-mile interstate Atlantic Coast Pipeline (ACP) in 2013 (Fig. 1).[2] In the same year, Dominion proposed expansion of its Cove Point terminal in Lusby, Maryland to ship Liquefied Natural Gas (LNG) loaded on to tankers in the Chesapeake Bay to export markets.

Focusing on two projects, one now completed and the other in planning stages, we describe frictions observed during participatory action research as members of regional environmental coalitions. Building off Tsing [8], who describes frictions as engagement in difference-based encounters, we use frictions as a metaphor for (1) coalition-building among unlikely allies (collective encounters), and (2) for conflictive interactions between pro- and anti-gas stakeholders during the embedding of new gas infrastructure (oppositional encounters). We

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[1] Dominion Energy, a Fortune 500 company with total assets over $75 billion dollars, is one of the US's largest energy providers and transporters with over 26,000 megawatts of generation and 15,000 miles of natural gas transmission, gathering, and storage pipelines.

[2] With 45% of holdings, Dominion is the main owner of the ACP alongside Duke Energy (40%), Piedmont (10%), and Southern Company (5%).

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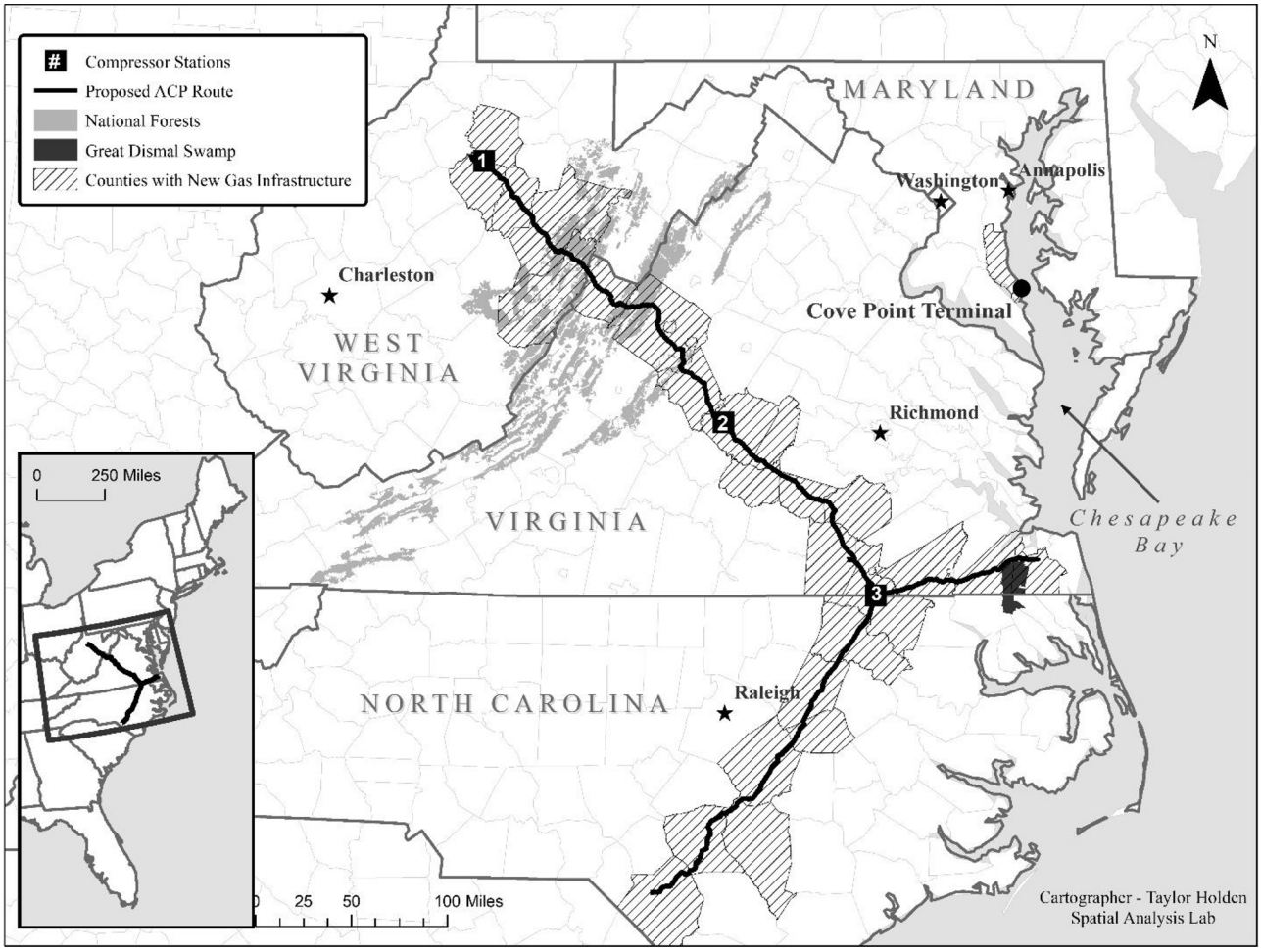

Fig. 1. Mid-Atlantic Case Studies.

employ *infrastructuring* as a verb[3] to highlight the process of contested gas expansion as infrastructures for extracting, storing, transporting, and transforming gas (into LNG) unfold across time and space to enable US corporate access to global destinations and realize market value. We suggest collective and oppositional frictions contribute to energy justice by publicizing risks for impacted populations created by their exclusion during regulatory processes. We propose a framework for *critical energy justice* (CEJ) premised on recognition of interconnections between types and locations of injustice. We suggesting that without understanding and acting on these connections, long-distance gas infrastructuring permits powerful companies like Dominion to pit different groups and places against each other to their detriment, while also causing harm to ecosystems, species diversity, and even future generations.

Section 2 explains our participatory research methods as faculty members and students from Virginian universities supplied by Dominion, who sought to understand our own embeddedness in energy assemblages. Section 3 presents our critical energy justice framework and links injustices to frictions during oil and gas (O&G) infrastructuring. Section 4 reviews relevant literatures, including regulatory and political contexts and multi-faceted risks. Section 5 analyzes two illustrative cases of sites of compound frictions. The conclusion highlights our findings, discusses limitations to our results, and points to the relevance of our work for international O&G infrastructuring.

2. Research methods

In this section, we present our methods and discuss our positionality as researchers conducting participatory action research (PAR).[4] While PAR methods are wide-ranging and vary by participants and discipline, a common element is an experiential orientation to knowledge-making and to social change in which researchers utilize lived experience to inform their work. Community-based PAR encourages long-term collaboration leading to more holistic understandings of problems and solutions through exchanges of technical and frontline perspectives [10,11]. PAR scholars benefit from an evolving relationship between practice and academic theorizing [12]. PAR can prepare students through active learning pedagogy to solve difficult human-environment challenges.

Our case analysis focuses on midstream infrastructure (i.e., for gas treatment or liquefaction, transportation, and storage) as distinct from upstream extractive infrastructure or downstream petrochemical manufacturing infrastructure. While hydraulic fracturing, or fracking, has been extensively researched [i.e., 13–15] social conflicts surrounding mid-stream gas infrastructuring receives insufficient scholarly attention and mid-Atlantic processes are rarely covered [but see 16,17].

Our research seeks to highlight oft-ignored frontline experiences

[3] See also [9].

[4] Energy infrastructure is a focus of field investigations in the Department of Geography at the University of Richmond, where Finley-Brook teaches. In fall of 2015, a group of Finley-Brook's students conducted interviews with commissioners who approved the Cove Point project and with local opponents. Jaromin, a student researcher, analyzes lawsuits and other procedural frictions in pipelines. Williams teaches at Virginia Commonwealth University and Sheppard is faculty emerita at Norfolk State.