Exploring Narratives of Energy Reliability in Iqaluit, Nunavut

Kaylia Little
University of Waterloo

Abstract: Reliability is an important feature of energy infrastructure. In Nunavut, reliability is impacted by the remote, isolated, and independent nature of the energy infrastructure. For Iqaluit, community members view energy reliability through numerous lenses, contexts, and narratives. Perceptions of reliability are examined from the perspective of relative reliability and the contrasting perspective of unreliability. This article explores these narratives to better understand how Iqalummiut view reliability. Respondents were drawn from recent and long-term residents of Iqaluit. Furthermore, this article begins a discussion about how this might be important for both the present and future of the city's energy infrastructure.

Keywords: Arctic energy; energy transitions; energy history; Canadian Arctic; community energy; renewable energy; reliability

Résumé : La fiabilité est une caractéristique importante des infrastructures énergétiques. Au Nunavut, la fiabilité est influencée par la nature éloignée, isolée et indépendante des infrastructures énergétiques. À Iqaluit, les membres de la communauté perçoivent la fiabilité énergétique à travers de nombreux prismes, contextes et récits. Les perceptions de la fiabilité sont examinées du point de vue de la fiabilité relative et du point de vue contrasté de la non-fiabilité. Cet article explore ces récits afin de mieux comprendre comment les Iqalummiut perçoivent la fiabilité. Les personnes interrogées sont des résidents récents et de longue date d'Iqaluit. De plus, cet article ouvre une discussion sur l'importance que cela pourrait avoir pour le présent et l'avenir des infrastructures énergétiques de la ville.

Mots clés : Énergie arctique ; transitions énergétiques ; histoire de l'énergie ; Arctique canadien ; énergie communautaire ; énergies renouvelables ; fiabilité

Introduction

Arriving in Iqaluit, Nunavut, in mid-April, my first discussion about reliable infrastructure occurred when I called for a taxi, and the call dropped because the cellular service cut out. The cold Arctic wind whipped around my face and hands as I tried redialing the phone number for Caribou Tuktu Cabs. After my second attempt, I was able to get through to the taxi operator and arrange for a car to pick up my travel mate and me despite not being able to fully understand the operator through the crackling call. This moment served as an immediate reminder of the limits to the reliability of transportation and telecommunication infrastructure in Iqaluit. Despite the arrival of a full flight from Ottawa, the only transportation option for visitors was not readily available. Although I was able to use my prior knowledge of Iqaluit to immediately call for a taxi, first-time travellers to Iqaluit may not know the transportation norms or use a cell phone carrier that has limited coverage in the North.

Although during my interviews, many participants expressed satisfaction with the reliability of electricity in Iqaluit, their statements often highlighted anecdotes about frequent short outages. This juxtaposition of reliability claims with stories of power outages raises important questions, such as: who determines reliability? And how do people conceive, perceive, and explain reliability? In this article, I will explore the perspectives of a selected number of Iqalummiut on reliability, from positive to negative and from present to future. In this paper, the term Iqalummiut refers to residents of Iqaluit, while the term Nunavummiut refers to inhabitants of Nunavut (Government of Canada 2020). This article does not intend to be an exhaustive study of community perceptions; rather, it is a preliminary exploration of how energy reliability is defined based on the conversations I had in Iqaluit.

The Government of Canada defines reliability as "the ability to meet the electricity needs of end-use customers, even when unexpected equipment failures or other conditions reduce the amount of available power supply" (Government of Canada 2020). Canada has an Electric Reliability Framework organized by the Canada Energy Regulator and Natural Resources Canada. Because Nunavut is not connected to the North American power grid, the North American Electric Reliability Corporation standards do not apply to its generation operations.

Qulliq Energy Corporation (QEC), a Nunavut Crown corporation and the sole provider of electricity in Nunavut, incorporates reliability into its mission, vision, and values, indicating that it is a crucial aspect of its operations (Qulliq Energy Corporation; n.d.). QEC's mission is to provide "safe, reliable and efficient electricity and plan long-term affordable energy for Nunavummiut." This aligns with the United Nations' Sustainable Development Goal 7: "ensure access to affordable, reliable, sustainable, and modern energy for all" (United Nations 2015). Reliability is a vital component of energy infrastructure both globally and locally in Iqaluit.

Iqaluit is the capital city of Canada's newest territory, Nunavut. Nunavut was founded as a separate territory from the Northwest Territories in 1999, with 2024 marking twenty-five years since its creation. Nunavut has a population of 36,858 people, and Iqaluit is its largest and only city with 7,429 people (Government of Canada 2022). According to the 2021 census, 84 percent of Nunavut's population was Inuit (Government of Canada 2022).

Nunavut comprises 25 communities spread across a large and varied geographic area. None of the communities are connected by road, and electricity transmission lines throughout the territory are nonexistent. As such, all communities are fly-in, fly-out only and rely on their own microgrid to generate energy (Nunavut Tunngavik Incorporated 2020). Some intercommunity travel can be done during the winter via skidoo, but this is dependent on the weather, and it is, anyway, limited by the long distances between communities. In a 2020 report, Nunavut Tunngavik Incorporated (NTI) revealed the large infrastructure gap between Nunavummiut and the rest of Canada. NTI legally represents Nunavut Inuit in treaty negotiations, upholds treaty rights, and ensures that the Nunavut Land Claims Agreement is fully implemented by the Government of Canada and the Government of Nunavut. According to NTI's research, Nunavummiut pay more for travel, electricity, water, and many other essential infrastructures despite being heavily subsidized by the government (Nunavut Tunngavik Incorporated 2020).

Much like 80 percent of Arctic communities globally that rely on diesel for electricity and heating needs, Nunavut is 99 percent dependent on diesel (Witt, Stefansson and Valfells 2019; Okalik et al. 2020). All diesel for Nunavut is imported during the summer when the sea ice has melted and large ships can enter the Arctic waters to refuel the fuel tank farms. This is not only expensive and built upon subsidies, it also requires the transportation of fuel over large geographic areas, with the danger of spills or leaks. New and emerging

energy technologies (such as tidal, wave, and modular nuclear reactors) and the infrastructure that accompanies them are often not tested or developed in northern and Arctic regions.

Position and Methods

I hold multiple identities that place me as an outsider in Iqaluit. I am a southern white settler woman within the higher education system. The North has been heavily influenced by southern policies. As a Canadian born in southern Canada, specifically Vancouver, British Columbia, I have spent the majority of my life far from the northern 90% of the country. I have had the immense privilege to travel, work, and study across various locations in Canada. This mobility is not something that many people experience or have access to. As a southerner, I can come and go in the north, but I am a guest in these homelands. As a settler, I inherently benefit from the inequities established and perpetuated by the settler colonial state of Canada.

I had the privilege of living in Iqaluit in 2021, where I worked with the Government of Nunavut and experienced a COVID-19 community lockdown. This lockdown period limited my ability to build relationships in Iqaluit. Due to the housing shortage in Nunavut, my stay in Iqaluit was cut short. I returned in 2024 to conduct semi-structured interviews with a qualitative approach over the course of two weeks. The interview locations varied from the Nunavut Research Institute's office space to participants' work offices, to Black Heart Café, a popular local coffee shop. Participant recruitment occurred through three main methods: 1) posts on the popular Facebook group "Iqaluit Public Service Announcements"; 2) recruitment posters in high-traffic areas (grocery stores and office lobbies); 3) email referrals and word-of-mouth.

I am approaching the topic of energy infrastructure from a narrative perspective. Although Lovell (2022) describes narratives as a "selective account" with inclusion and exclusion based on personal views, I present them as a helpful tool for understanding how certain people within a community view the world they live in. Esterberg (2002) states that narratives are one of the ways social knowledge is produced and reproduced as we try to make sense of our place in this world. By paying attention to the language used to describe experiences, we can better understand the meaning behind what is shared (Esterberg 2002). I will explore common narratives and themes in the sections that follow.

In total, fourteen interviews were conducted with sixteen participants. Due to the nature of my recruitment, many participants have a personal or professional interest in energy. The first participants I interviewed were southern transplants, and using the snowball sampling method led to a higher proportion of southern respondents. Future participants were drawn from the original respondents' circles, which tended to consist of other southerners. My identity as a southerner reinforced an uneven balance in participant recruitment due to a legacy of negative research experience among Inuit community members. This resulted in the majority of participants being other southerners who have lived in Nunavut for as little as two and a half years to more than four decades.

As other southern PhD researchers such as Held (2020) have demonstrated, research collaboration with Inuit community members and organizations can be especially difficult when attempting to make contact via email. Often attempts are not responded to, or responses may take months. Due to the time and funding constraints of a PhD program, researchers may be faced with the question of continuing research without initial community input or abandoning the project. Once in Iqaluit, people were more than willing to connect with me in person despite not replying to my email attempts.

Despite my attempts to address the high number of southern individuals by requesting Inuit participation on materials and asking participants to specifically share study information with any Inuit friends, acquaintances, and colleagues, this study only contains three self-identified Inuk participants. Another path I took to try and mitigate this problem was reaching out to Inuit organizations. Although Inuit organizations cannot speak on behalf of all Inuit, it was my hope that some additional perspectives could be gathered. My sample includes two respondents who work for Inuit organizations, but it is important to note that the respondents themselves are white individuals.

Energy Landscape

> "I mean it enables everything, we live in a society that's completely integrated to a power grid." (Professional in an Inuit organization, April 24, 2024)

Energy infrastructure is largely invisible; you do not typically think of the process of power generation when flicking on a light switch. As Star stated in 1999, "[it] is by definition invisible, part of the background for other kinds of

work." Much of modern life is upheld, supported, and enabled by electricity (Lolum et al.; 2021). Life in Iqaluit is no different—it is enabled by electricity.

Most homes in Iqaluit are heated through individual diesel boiler systems that heat glycol baseboard heaters in homes and apartments. Some residents supplement this with wood stoves, as switching to electrical heating is considered too expensive. Home heating is separate from a house's main energy source, and thus, residents may consider its reliability as a separate concern. A glance at QEC's social media pages demonstrates the frequency of power outages across Nunavut. While writing this section, both Kinngait and Arviat experienced power outages; these were posted on QEC's Facebook page. But what do Iqalummiut think of their energy infrastructure? And what is their understanding of reliability? During my stay in Iqaluit in April 2024, we experienced a short power outage. I only noticed because the clock on the stove was blinking. My experience suggests that power outages are frequent and short, as explored later in this article.

Anthropologists have been interested in infrastructure for several decades (see Star 1999). More recently, there have been efforts to focus on energy anthropology as a specific subfield. A major theme adopted from the anthropology of infrastructure is power and the role of the state in energy systems. As Lolum et al. (2021) explain in the introduction to their edited volume, energy is central to much global economic interest and geopolitical power struggles as well as essential for modernist narratives. Energy anthropology places itself within the energy transition debate, reminding us that energy transitions are not apolitical or benign, nor do they imply a transition to more just politics (Loloum et al. 2021).

There is a growing body of literature about off-grid and diesel-reliant communities across Canada (Hoicka, Savic and Campney 2021; Mercer et al. 2020; Pinto and Gates 2022; Rezaei and Dowlatabadi 2015). Diesel generation creates negative local environmental and health impacts, such as noise and air pollution, as well as regional and global environmental impacts like diesel spills and high greenhouse gas emissions (McDonald and Pearce 2012; Mercer et al. 2020). The Canadian Federal government has begun seeking to replace diesel with alternative energy options in the coming years through the "Indigenous Off-Diesel Initiative" (Government of Canada 2021). Alternative energy options vary by community and location, but common options include wind, solar, and hydro.

Natural Resources Canada held calls for projects under the Clean Energy for Rural and Remote Communities' BioHeat, Demonstration and Deployment Program until February 2019 (Government of Canada 2019). More recently, the Minister of Northern Affairs announced that the Hamlet of Gjoa Haven in Nunavut would receive funding through the Northern Responsible Energy Approach for Community Heat and Electricity Program (Northern REACHE) for solar panels on the local arena (Government of Canada 2021). Outside of the federal government, organizations such as Indigenous Clean Energy and the Pembina Institute have dedicated programming for alternative energy in Indigenous communities across Canada. Indigenous Clean Energy in particular focuses on Indigenous-led capacity building and projects to enable the clean energy transition across Canada. This sampling of programs and initiatives demonstrates a federal interest in an energy transition in Nunavut.

"It's Pretty Reliable"

> "The aim of an electricity grid is to maintain a reliable level of voltage while users 'draw' current from it." (Abram 2022, 743)

One word that kept coming up in my interviews was "reliable." When participants were asked what they liked about power and heat in Iqaluit, the concept of reliability was often mentioned. With its size, services, and demographic distribution, Iqaluit is a unique community in Nunavut. Since it is the territory's capital and home to numerous territorial and federal government offices, it has more reliable energy infrastructure. As an environment professional said, "I guess maybe that comfort too, in knowing, like, I mean, the capital city, all the newest stuff is here" (19 April 2024). I will first explore the positive aspects of participants' conceptions of reliability.

A participant who is a mother and community member remarked, "We're thousands of kilometres from the nearest city, so I think the fact that they were able to even establish the power company and heat up the whole city is kinda neat" (27 April 2024). She has lived in Iqaluit for 23 years after relocating from southern Canada. This statement acknowledges both the complexity of modern power generation and the geographical constraints of Iqaluit.

One environmental professional stated,

> Generally, I would say like, I've never had any issues or any reason to dislike the way energy is generated in this city. Because I've always found it to be very reliable. Yeah, the power goes out every once in a

> while, but not very often at all, I would argue, in the grand scheme of things. So, given the harsh environments, like it's, it's pretty secure, in my opinion (19 April 2024).

Similar to the statement by the participant in the previous paragraph, this environmental professional contextualizes their expectation of reliability within the context of Iqaluit. They specifically note that energy generation is reliable, implying that transmission infrastructure may not be as reliable. This is confirmed in QEC's 2022–2023 Annual Report, in which it states that during the winter, technicians spend the majority of their time travelling around communities to repair power lines and poles damaged by winter weather. The respondent acknowledged that the Arctic environment can be difficult for infrastructure and that contextually, they feel as though their energy infrastructure is secure.

A public sector employee made a direct comparison to southern Canada by saying, "I have no personal issues. Well, electrical power will always go out every so often. That's just a part of it; you get it in the South, you get it up here" (26 April 2024). This statement was in response to a question about recent or personal anecdotes they might have had with power. They first acknowledged that they didn't have any personal issues with the power system while also explaining the reality of power outages. As a southerner who has lived in Nunavut for over 20 years, they were able to directly compare their experience in Iqaluit with their experience in the South.

Some respondents made comparisons between Iqaluit and other communities in Nunavut. An Inuk community member stated, "It's a little more reliable than some of the communities [...] It's not exactly reliable, but in comparison with other communities, it is" (26 April 2024). These facts are further expressed by a professional in an Inuit enterprise:

> It is pretty reliable. I'll give that to the utility for sure. I mean, they have a very hard job to be able to maintain isolated diesel power systems in 25 communities across a very large geographic area. So, given all that, it is pretty reliable, so I would say that's probably the best part of it right now. We certainly don't go you know, days without power, some of the smaller Hamlet's do, but we don't and a lot of that is sort of attributed to the fact that [...] the headquarters [...] of the utilities in Baker Lake, technically, but a lot of them are here so technicians are readily available [...] if the power does go out. (24 April 2024)

Due to the labour limitations and geographical size of Nunavut, it is not financially possible to employ technicians in every hamlet. Instead, they are concentrated in Iqaluit and flown out to other communities as needed. Participants hypothesized that there is a concentration of skilled labour in Iqaluit that perhaps demonstrates a unique access to reliability in Nunavut. This narrative is contrasted with QEC's 2022–2023 Annual Report, which, based on reliability measures that track outage frequency and duration, lists Iqaluit as having more outages than other communities. Additionally, CBC News reported that from September to December 2024, Iqaluit experienced more than 15 power outages, as announced on QEC's social media (CBC News 2025).

A professional in an Inuit enterprise expressed the following:

> Reliability, because I think there is, and that's the reason a lot of people still support diesel for electricity generation and for meeting home heating needs. Because it's worked, it's worked for the last 50, 60, 70 years, however long people have been using it, and they know how it's going to work (24 April 2024).

In this statement, we see a link drawn between reliability and familiarity. One of Star's (1999) characteristics of infrastructure is that members have familiarity with it. In the case of Iqalummiut, this familiarity is demonstrated through an awareness of the energy system based on diesel-generating facilities. Familiarity may also reinforce a sense of reliability with the current energy system, which may, in turn, lead residents to be more satisfied with diesel electricity and heating and less inclined to explore other and newer technologies.

A climate change professional explained:

> I think the best thing probably is just the overall familiarity that everybody has with energy generated from diesel. Like when everybody's using it, from your power plants to people running their cabins, then there's no issue with running events or knowing that there's gonna be a backup or people knowing what the contingencies are (19 April 2024).

Not only is there an established historical familiarity, there is also familiarity gained from day-to-day interactions with diesel energy. This familiarity is helpful for making residents feel like their energy is reliable, but as I will explore later, it may be hindering when discussing energy transitions. Previous research had identified a "reluctance acceptance of diesel energy" in Iqaluit and

across Nunavut (McDonald and Pearce 2013). This acceptance was theorized to be in part due to the necessity of energy to maintain heat during Arctic winter conditions.

The duration of power outages is another factor in Iqalummiut perceptions of reliability. For example, a health professional mentioned, "Well, I know we often have electricity cuts, but they don't last very long. At least since I've been living here, they have never been more than a few hours in a day. It doesn't impede our lifestyle too much" (20 April 2024). The first part of the statement acknowledges the frequency of power outages, the second part describes the nature of the outages, and in the third part, the participant concludes that power outages do not significantly impact life. While the previous statement was made by a health professional, it is important to note that it is not indicative of the impact of power outages on the entire field of health in Iqaluit and represents only one individual's opinion. An infrastructure professional echoed this sentiment by saying, "The other day the power went out [...] and I didn't even notice" (20 April 2024). The outage this respondent is referencing was confirmed by a post in a Facebook group by the official QEC account, which stated the following:

> IQALUIT: Power restored after a brief partial-community outage affecting customers in Apex, Happy Valley, Tundra Valley and Ridge and Road to Nowhere areas. The outage was caused by issues with the generators and any black smoke is just due to the engines restarting. Crews are monitoring the situation. Thank you for your patience." (18 April 2024).

QEC does not state the length of the power outage. A different perspective on this same power outage will be explored in the next section.

Power outages may sometimes bring infrastructure into daily life planning, but in other cases, the infrastructure continues in unnoticeable ways. As Appel (2019) wrote, one reason things go unnoticed is because they happen so frequently. This may be the case with power outages in Iqaluit. The frequency of outages contributes to the normalization and unnoticing of these outages. An environmental professional explains, "From a reliability perspective, that's where my opinion comes in. It doesn't concern me if the power goes out because it doesn't happen that frequently. And when it has gone out, I haven't allowed that to impact me in a negative way" (19 April 2024). They consider power outages to be infrequent and not significantly impacting their life. This quote

implies that individuals may develop coping mechanisms to reduce the impact of power outages on their lives. QEC designates two types of power outages. The first are planned power outages that are required for maintenance work and system upgrades (Qulliq Energy Corporation 2023). The second are unplanned power outages that occur due to weather, accidents, or unexpected equipment failure (Qulliq Energy Corporation 2023).

Another component of reliability is the clarity, frequency, and transparency of QEC's communication about power outages. For example, a public sector professional stated: "I would say QEC's communication is also pretty good. Even when the power cuts out unexpectedly, they're pretty quick to get on Facebook and say, 'Hey, we know there's an issue, we're working on it'" (27 April 2024). This is also true of planned power outages when maintenance is required. In this sense, power outages and energy as a whole may not have a negative association for many of the participants, as shown in this section.

"It Kinda Slaps You in the Face"

In contrast to previous narratives surrounding the reliability of power in Iqaluit, this section will explore the opposing narrative. These narratives frame electricity as unreliable and unpredictable. For example, a public sector professional who moved to Iqaluit two and a half years ago stated, "I was tracking it at some point to try and graph it to see just how many times it went out in the past year, but I think I lost track of it. But it's definitely more present here than anywhere else I've lived" (27 April 2024). Not only were the power outages more frequent than where they lived in southern Canada, but it was noticeable enough for this participant to begin tracking them for their own knowledge.

Di Nunzio notes that malfunctions and breakdowns of infrastructure make us see past visions of infrastructure as inert (2018). Infrastructure, including energy infrastructure, is made visible through breakdowns (Di Nunzio 2018; Star 1999). This is expressed by a teacher and resident of Iqaluit, who shares that their awareness of energy comes from the frequent power outages: "You kinda don't have a choice; it kinda slaps you in the face, especially when we have outages" (18 April 2024). Not only is energy infrastructure made visible through its outages and breakdowns, but it also occupies a larger space in the collective consciousness of community members. They continued: "But it's disconcerting because it happens, there's no announcement, it just happens, it just... yeah, it is a slap in the face literally 'cause it just comes from out of

nowhere. It could be any reason the power goes out" (18 April 2024). They expressed how not only are power outages frequent, they are also unpredictable. The unpredictability of power outages is noted as particularly concerning, as it may limit a person's ability to plan or negatively impact work or other daily activities. Furthermore, the quote speaks to a lack of knowledge or transparency regarding the cause of an outage. They expand on this by saying: "It could be somebody slammed into a pole, or a lot of times we don't know, but people hypothesize that somebody went in and sabotaged it because the protected area where some of the equipment exists is not as protected as it should be or could be" (18 April 2024). This lack of transparency by QEC creates space for speculation and suspicion.

While showing me an image of the power plant engulfed in smoke, an Inuk community member stated, "Here it is, on the date of April 18. That was our last power outage. So, it was evening, and I was driving my daughter over to skating. So essentially, this is what our power plant does during a power outage. Yeah. It's, yeah, it's so high, the level of smoke that ends up coming out" (26 April 2024). I was in Iqaluit during the outage referred to in this quote, but did not have a view of the smoking power plant. However, it was shared on Facebook. My only indication that there was a power outage was the flashing light of the oven clock. Community members are quick to share knowledge about energy outages or concerns about power. An environmental professional shared: "It's like all over Facebook. It's like there's a fire at the power plant" (19 April 2024). For community members, it may be concerning and alarming to see the power plant up in smoke, even when it does not affect the power output and is a common side effect of starting and stopping a diesel engine.

A mother and a community member stated that they would be more concerned if they had less control over their heating: "Certainly, if we didn't have the wood stove, I would be a lot more worried about if the power wasn't reliable, like pipes freezing and whatnot in the winter months" (27 April 2024). As a homeowner, they chose to install a wood stove for heating and primarily use it for heat, which not only reduces their diesel bill since they are not using their boiler but also increases their feelings of safety and control. This quote also highlights a potential risk of heating failure in the winter: frozen pipes, a topic brought up by several community members. Of the Iqalummiut I met who have woodstoves, they have all shifted from relying on their diesel boilers for heat to exclusively using their woodstoves for heat. Because there are no

natural wood sources in Iqaluit, community members utilize scrap wood from construction sites and wooden pallets from shipping activities.

A professional in an Inuit organization stated: "Generally, if the heat goes out, like the furnace goes out, the pipes will start to freeze, like the whole house will freeze" (24 April 2024). This highlights a key factor in the climate considerations that need to be accounted for in Iqaluit and how it may impact infrastructure and system failures. If Iqalummiut are unable to heat their homes during the winter, it can result in damage that may make a home unlivable. Due to the extreme cold during Arctic winters, unheated homes can be at risk of freezing, leading to frozen water pipes and the associated damage caused by bursting pipes when the ice expands. This can result in water damage and very expensive repairs.

"Where we're going in the Future"

Discussions about the future with participants demonstrate how, as Loloum, Abram and Ortar (2021) explain, energy infrastructure plans or projects can produce hopes for the future. My interviews with Iqalummiut allowed me to better understand their perceptions of the future and how energy infrastructure may impact their lives. They expressed concerns about climate change, industry changes, and caution regarding new technologies. Climate change is affecting the world and people's perceptions about the infrastructure that makes modern society work, such as energy. In the Arctic, climate change is warming the region four times faster than the global average, often in ways that are more visible to residents (Rantanen et al. 2022). Joniak-Lüthi (2019) explains infrastructure as a temporal event embedded in its own place and time. Furthermore, infrastructure can be seen as a "complex web of multiple temporalities" (Joniak-Lüthi 2019, 5). This concept of multiple temporalities can be helpful in understanding how QEC sees energy infrastructure, as I will discuss below.

Two of the energy professionals I spoke with expressed concern about the possibility of the current energy system's reliability being reduced in the future if business as usual continues. For example, one professional in an Inuit enterprise expressed that QEC's prioritization of "safe, reliable power for Nunavummiut" (24 April 2024) limits their organization's ability to plan for the future. They stated, "That's not looking at the whole picture, that is not looking at what could happen in the future. That's not doing any risk mitigation towards where we're going in the future. It's just, 'How do I put this fire out right now?'

And that's a major problem" (24 April 2024). This reactionary model of energy management does not focus on future planning and strategizing. This sentiment is echoed by a health professional, who said, "Our problem is our government only reacts" (20 April 2024). This may leave communities vulnerable if they are not actively planning for the mitigation and adaptation of climate change impacts, and demonstrates how QEC is navigating the multiple temporalities of the energy infrastructure. On one hand, there is aging infrastructure that needs consistent maintenance, which is costly both in terms of labour and materials. On the other hand, there are emergencies that pull money and time away from maintenance. Finally, there is not enough time or resources to consider the future of the energy infrastructure.

The effects of climate change were mentioned by a renewable energy professional: "Yeah, diesel is reliable, but we had a weird sealift season last year, and diesel shipments, the resupply shipments to communities, came in late" (19 April 2024). Since all diesel is shipped into Nunavut once a year, any disruptions to the shipping season may have negative consequences. They continued, "There were communities that were like a week away from running out of fuel. There were communities that ran out of aviation fuel" (19 April 2024). In the community of Gjoa Haven, the 2023 aviation fuel shortage limited all air travel to medical evacuations, demonstrating the spillover impacts of shipping delays (Taylor 2023). Due to the increasing importance of Arctic shipping caused by climate change, there has been some development in understanding how supply chains function in the Canadian Arctic (Taarup-Esbensen and Gudmestad 2022). Barriers such as inconsistent ice prediction, limited icebreaker capacity, limited search and rescue ability, and harsh weather events are still barriers to increased shipping traffic in Arctic waters (Taarup-Esbensen and Gudmestad 2022).

A mother and community member brought up environmental concerns in the following way: "I think there's the environmental aspect of the burning of oil, but even getting it here, it's getting shipped up on these big tankers and stored. There's always the risk of something happening to those fuel tanks. And so, I think that if alternative sources were used, it could minimize those potential risks" (27 April 2024). Pinto and Gates (2022) emphasized this point due to the fact that the Arctic is warming faster than the rest of the world, making shipping more dangerous and unpredictable.

Concerns about the reliability of renewable energy were expressed by some participants. For example, a professional at an Inuit organization stated,

"In the meantime, that leaves you with renewables, which are not as reliable. I think you just can't... they're not as reliable" (24 April 2024). The perceived unreliability of renewables is not unique to Iqalummiut; a general concern with renewable energy sources is that they are intermittent and thus not as reliable. An Inuk community member explained in more detail why solar might be less reliable in Iqaluit: "A good portion of the discussions have their own solar panels because it's most cost-effective. But at the same time, being in the north, it's not always reliable in regards to the amount of sunlight we get during the winter season" (26 April 2024). Solar power generation is not currently feasible during half the year when there is minimal sunlight in Iqaluit. However, during the summer months, when there are extended daylight hours, solar can be very effective and, in some cases, replace the need for other energy sources.

QEC's outline of its approach to renewable energy makes up two pages of the 70-page 2022–2023 Annual Report. QEC's renewable energy plans are hosted by the Alternative Energy section, which aims to: "reduce the territory's reliance on diesel fuel and decrease greenhouse gas emissions, while further working toward energy independence for Nunavummiut." (QEC 2023, 25). QEC echoes what some respondents shared as concerns regarding renewable energy technologies, that some are intermittent and therefore not reliable (2023). This is presented as QEC's main barrier to energy transition, in addition to capital costs. In the 2022–2023 Annual Report, QEC explores a selection of "on-demand" alternative energy sources, including geothermal, micro modular reactors, and district heating systems.

A renewable energy professional states: "Like, again, like, as communities are growing, we have tank farms of a finite size. And so that only gets you so much energy for the year. So it's like, do you build more tank farms? Or do you just build more renewable energy?" (19 April 2024). The questions posed are genuine and important considerations for the future of not only Iqaluit but also for Nunavut as a territory. This is a key feature of infrastructure that Star (1999) outlined: infrastructure does not grow as it is built upon an installed base. This is true of the energy infrastructure in Iqaluit and all of Nunavut. The current energy infrastructure is built upon a diesel base, and in an era of energy transitions, Iqaluit is constrained by this diesel base.

However, globally, there is a shift in focus towards renewable energy, which brings new concerns (Hassan et al. 2024). As highlighted by a renewable energy professional, who raised concerns about the global energy generation shift: "At some point, I still think, like, nobody's gonna be making diesel generators like

this in the future. I think there's a risk to keeping stuck on this technology that's kind of on its way out" (19 April 2024). This point was echoed by a professional in an Inuit enterprise, who explained:

> And even accessing a diesel generator. I mean, the lead time was 18 months. Yeah, we couldn't get one for 18 months, and even then, it's probably gonna get pushed out another few months. And it's expensive. And a lot of it, like when you talk to sort of other players in the market, nobody's looking for them anymore. So what are we going to do? If we keep relying on these things? And suddenly people don't make them anymore? (24 April 2024).

This brings up an important consideration for future energy infrastructure planning. If new diesel generators become increasingly difficult to source, then diesel-dependent communities may be forced to work with alternative energy sources. In addition to the physical infrastructure, a renewable energy professional expressed concerns about the human labour infrastructure: "If people are not being trained on them anymore because nobody down south is using them, there's just not that critical mass anymore. We're gonna get stuck, and we're gonna get left behind" (19 April 2024). The reliance on the south for both training and infrastructure leaves Iqaluit vulnerable to changes in global energy trends.

In March 2025, newly elected Canadian Prime Minister Mark Carney brought international and national focus to not only the Arctic, but also to Iqaluit. For his first official domestic trip since taking office, the Prime Minister travelled to Iqaluit to make an announcement about "Canada's Security and Sovereignty." This announcement shared the federal government's latest investments, including $94 million designated for the upgrading of power plants in Cambridge Bay, Gjoa Haven, Igloolik, and Iqaluit. An additional $20 million was announced for Nunavut Nukkiksautiit Corporation for the first development phase of a hydroelectric power plant for Iqaluit. Although the majority of the announcement focused on military and defence spending, the inclusion of funding for an Inuit-owned renewable energy project offers insight into future directions federal investment in Nunavut may take.

Conclusion

> "Qulliq energy it could lead but they're stuck in some ways." (Member of the Hunters and Trappers Association, 23 April 2024)

QEC regularly reports on quantitative indicators of reliability such as the System Average Interruption Frequency Index and the System Average Interruption Duration Index. These measures provide community averages for power outage frequency and duration in order to determine reliability over the course of a year. What these measures may overlook are community members' perspectives and perceptions of energy reliability and how this impacts their lives. Although this research is not an exhaustive study of all Iqalummiut outlooks, it offers a starting point for deeper community discussions about energy reliability in Nunavut.

The Iqalummiut I spoke to who had positive perceptions about Iqaluit's energy reliability often acknowledged the complexity of the local climate and environment. Their understanding of the challenges of the Arctic environment contributes to their positive perceptions of the energy system in Iqaluit. Whether they have been residents for two years or over two decades, participants offered balanced opinions about the current energy system. Looking to QEC's 2022–2023 Annual Report, there is evidence that Iqalummiut have a more positive outlook on the city's energy reliability than quantitative analysis demonstrates. According to the indexes used by QEC, Iqaluit experienced more frequent and longer power outages than other communities in 2022 and 2023. Respondents in this research weighed factors such as duration, frequency, and communication from QEC as elements framing their narrative about energy reliability.

On the other hand, some participants shared concerns about energy reliability and its impact on their lives. These Iqalummiut noted similar factors as their more positive counterparts, identifying features such as frequency and lack of communication from QEC influencing their perceptions. An additional factor that was mentioned in these conversations was the unpredictability of power outages. This uncertainty may amplify opinions of energy unreliability and reinforces the narrative that not only is Iqaluit's electricity unreliable, it also is unpredictable. Furthermore, when participants are unable to find an official announcement from QEC about a power outage, they may turn to speculation and catastrophizing. A gap in communication from QEC may have a longer-lasting effect on perceptions for some community members than the outage itself. While some respondents expressed satisfaction with QEC's messaging, others found it continued to be insufficient. Perhaps this represents individuals' personal risk perceptions and aversion. Some Iqalummiut demonstrate high levels of risk tolerance, and others experience low to medium levels of risk tolerance, which, in turn, affects their perceptions of energy reliability.

The inclusion of future considerations for energy reliability came about naturally from conversations I had with Iqalummiut. Energy systems are not stagnant and require constant maintenance, upgrading, and repair—often placing present challenges in parallel with future concerns. Furthermore, climate change and its impacts are on community members' minds as they witness changes around them. For example, the impact of an unpredictable shipping season poses a real threat that has already had real-life effects, as described by participants. As climate change continues to impact Iqaluit, energy reliability may shift in a real sense due to increased unpredictability from unusual weather. Furthermore, communities such as Iqaluit may see a shift in the narratives surrounding infrastructure like energy as annual warming changes individuals' use and perceptions of energy.

The financial and labour challenges faced by QEC should not be minimized, and can help contextualize what some may consider slow progress. Although not explored in detail in this article, the infrastructure gap between Nunavut and the rest of Canada is real and restrictive. In terms of power, this is highlighted by the fact that Nunavut is not connected to the North American grid. Nunavut Tunngavik Incorporated's 2020 Report explores the infrastructure gap in detail and demonstrates the gaps in Nunavut's energy infrastructure. Nunavummiut pay more for power, and there is overall less capacity, therefore limiting economic expansion of energy-intensive industries (Nunavut Tunngavik Incorporated 2020). Furthermore, Federal investment often does not account for the increased costs associated with building infrastructure in the North; this is due to the shipping of supplies and the need for labourers. However, international directions and trends may push QEC to transition more quickly than anticipated, as explored in the last section of this article.

Overall, this contribution explored narratives of the reliability of the energy system in Iqaluit, Nunavut, Canada. The first perspectives examined were of the reliability of diesel electricity and heat generation. Many participants stated that they considered energy reliable in Iqaluit, even though they contradicted this with experiences of power outages. The second narrative explored perceptions of unreliability. Participants expressed concerns about unreliability due to frequent power outages, unpredictability, and the potential negative consequences if heating or power fails. The final section explored narratives about the future and the impacts of climate change on the reliability of diesel energy in Iqaluit. This section addressed the real and perceived threats to energy security in Arctic communities. Overall, the Iqalummiut I spoke with balanced

expectations about reliability with their understanding of the complexities of energy systems in an Arctic environment.

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Kaylia Little
University of Waterloo
kaylia.little@uwaterloo.ca

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