HOMELESSNESS AND AFFORDABLE HOUSING IN NORTHWEST TERRITORIES: FROM THE LENS OF ENERGY

by

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Abstract

The cost of energy and homelessness are generally seen as two distinct problems. Despite extensive research on different factors leading to homelessness in Northwest Territories, little attention has been paid to know if there is a link between the cost of energy and homelessness. Agrawal (2019), in his study, hypothesized that the cost of energy is contributing to homelessness in Tłı̨chǫ region in N.W.T. Therefore, taking the lead from the Agrawal's (2019) study, this study explores the relation between the cost of energy and homelessness across N.W.T. to understand if the cost of energy leads to homelessness in N.W.T. The study also aims to know if the cost of energy is high in N.W.T., if yes, what are the reasons for it. It also aims to understand if there are existing challenges in reducing the cost of energy and what are the tried and future alternative renewable sources of energy to reduce the cost of energy in N.W.T. The literature reviewed for this research makes it clear that homelessness in N.W.T. is prevalent, especially in isolated and rural Indigenous communities. The literature has covered historical, structural and systemic discrimination. However, the focus of this research is on energy as another, more immediate and practical dimension, contributing to homelessness. The study finds that a high cost of energy can lead to homelessness in public housing if the low-income households or individuals lack financial management skills, and the decision making is not based on the priorities of whether

to spend the finances on paying the electricity bills or on the other luxuries. The study also finds that the transportation and the lack of economies of scale for small energy generation in small isolated communities are significant reasons for the high cost of energy. Challenges in reducing the cost of energy are enormous such as vast geography and remoteness of the Territories, harsh climate, non-connectivity to the North American Power grid and the delay in getting approvals for the renewable energy projects. To reduce the cost of energy, the Territorial government in concert with N.W.T. Power corporation and a not for profit agency such as Arctic Energy Alliance are investing in renewable energy sources such as solar, wind, hydro and biomass.

Key Words: Homelessness; Transportation; Indigenous; Affordable Housing; Cost of Energy

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. Introduction

According to the Northern Housing Policy Recommendations (2019), there are various challenges in the housing sector in northern lands of Canada which are unique and are confined to the northern boundaries such as lack of local skilled labour, overcrowding, shortage of suitable and affordable housing, ageing infrastructure and high costs of transportation of fuel and commodities (Falvo, 2011; Anderson and Collins, 2014; Christensen, 2016). The Northwest Territories as shown in figure 1, in Canada have been facing a problem of homelessness since the 90s'(Christensen, 2017), and the high prices of energy are one of the critical factors increasing the cost of living (Gleeson, 2018) and in some cases resulting homelessness (Agrawal, 2019).

Canadian Homelessness Research Network (CHRN) defines homelessness as the situation of an individual or family without stable, permanent, appropriate housing, or the immediate prospect, means, and ability to acquire it. It is the result of systemic or societal barriers, a lack of affordable and appropriate housing, the individual/household's financial, mental, cognitive, behavioural or physical challenges, and/or racism and discrimination (Patrick, 2014).

Canadian Homelessness Research Network further breaks down homelessness into different categories, such as:

- Unsheltered, or absolutely homeless and living on the streets or in places not intended for human habitation.
- Emergency Sheltered, including those staying in overnight shelters for people who are homeless, as well as shelters for those impacted by family violence.
- Provisionally Accommodated, referring to those whose accommodation is temporary or lacks the security of tenure.
- At the risk of Homelessness, referring to people who are not homeless, but whose current economic and/or housing situation is precarious or does not meet public health and safety standards (Patrick, 2014).

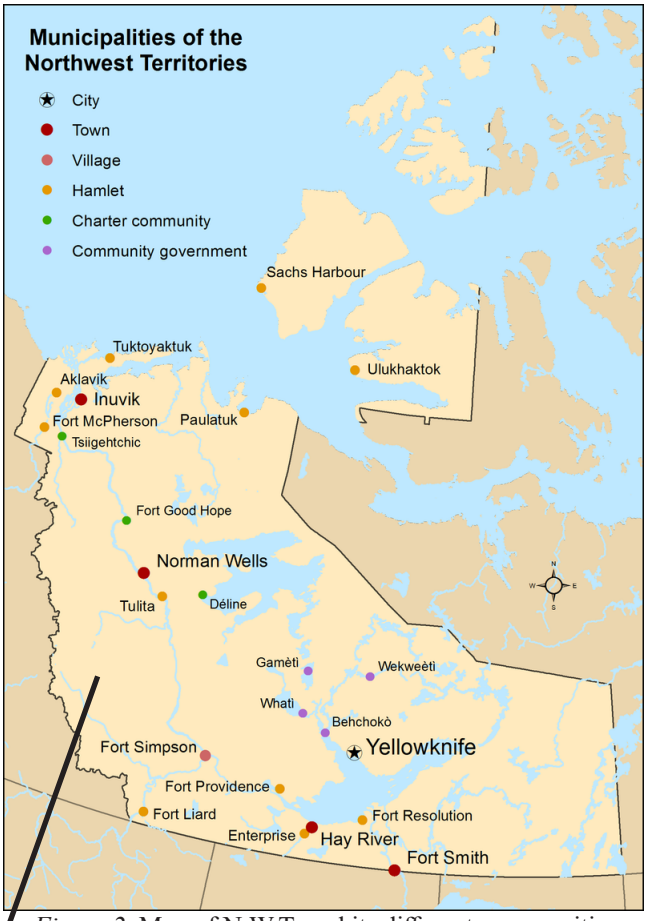

Figure 2. Map of N.W.T. and its different communities
Source: Hwy43, 2014

Figure 1. Map highlighting the N.W.T. in Canada
Source: TUBS, 2011

Several pieces of literature highlight the problem of homelessness in N.W.T. According to Christensen (2017), the homeless population is growing in Yellowknife and Inuvik, and most of them originate from smaller and isolated rural northern settlement communities. The reason for the migration from the rural to urban areas is that most of the rural communities are not developed around the sustainable economic base, unlike Yellowknife and Inuvik, which relies on non-renewable resource development. The absence of a sustainable economic base in rural communities results in a shortage of employment opportunities and dependency on public housing (Christensen, 2013). However, the availability of public housing has declined; in Behchoko alone, a significant number of people had to wait to get accommodation in public housing. The inability to get accommodation in time forces people to move from one place to another and seek shelter in abandoned homes (Mandeville, 2016).

The cost of energy is another factor which, in some cases, has resulted in homelessness in N.W.T. According to Agrawal (2019), in the Tlicho region of N.W.T, when a household is not able to pay the electricity charges, it results in the termination of the service by the power company. To keep themselves warm, people resort to other affordable and possible options such as burning wood in their homes. As a result, multiple incidents of burning down the houses, which ultimately makes people homeless. It should be noted that wood is widely used across N.W.T for home heating together with heating oil and propane (Government of the Northwest Territories, 2011).

Because the cost of electricity is one of the significant contributors to the cost of living in the north (Gleeson, 2018) and inability to pay rent/mortgage was recorded as the highest contributing factor to the loss of housing in the capital of N.W.T. (City of Yellowknife, 2018), therefore, it becomes crucial to understand and research if there is a link between the cost of energy and homelessness across N.W.T. This study limits its focus on finding the relation between the cost of energy and homelessness in public housing and not in the private housing. Therefore, to understand the relation between the cost of energy and

homelessness in N.W.T., the study attempts to answers the following questions:

1.Does the cost of energy contribute to unaffordable housing and results in homelessness in N.W.T.?
2. Is the cost of energy high in N.W.T., if so, what are the reasons for it?
3. Are there any existing challenges in reducing the cost of energy?
4. What efforts have been made in reducing the cost of energy?

For an average household in N.W.T, the utility cost (which includes electricity) is more than double the average Canadian household pays (Falvo, 2011). To worsen the situation, in 2017, Northwest Territories Power Corporation introduced the plan to increase the rates of electricity by 12.8 percent over three years (McKay, 2017). Although the increase in the rates was still visible from 2016, the N.W.T. Power Corporation increased the prices by 4 to 5 percent annually (Gleeson, 2018). N.W.T has the highest electricity rate in Canada (Gleeson, 2018; Pearce, 2020). Table 1 explicitly describes the different charges of power charged by Northwest Territories Power Corporation in different zones and seasons across N.W.T. The prices vary in different zones in different seasons. However, Fort Resolution/Fort Smith is an exception because it has a constant power charge throughout the year, regardless of season and consumption.

Research scholars in their papers emphasize the issue of homelessness in N.W.T. However, there is an absence of literature on the high cost of energy and because of which less is known about whether the cost of energy creates obstacles for affordable housing and results in homelessness in N.W.T, what are the reasons for the high price of electricity and challenges in reducing the cost of power in the region. Therefore, this study aims to explore a connection between the high cost of energy and homelessness. This study seeks to fill the literature gap from a planning perspective, which would be vital to understand if there is a relationship between the high price of energy and homelessness and affordable housing across the Northwest Territories.

Zone	Energy charge (up to 600 kWh between April 1 and September 30)	Energy charge more than 600 kWh between April 1 and September 30	Energy charge (up to 1000 kWh between October 1 and March 31st)	Energy charge (more than1000 kWh between October 1 and March 31st)
Thermal Zone	30.60 cents / kWh	68.37 cents / kWh	30.60 cents / kWh	68.37 cents / kWh
Norman Wells	30.60 cents / kWh	53.43 cents / kWh	30.60 cents / kWh	53.43 cents / kWh
Behchoko/ Dettah	30.60 cents / kWh	34.97 cents / kWh	30.60 cents / kWh	34.97 cents / kWh
Fort Resolution / Fort Smith	23.86 cents / kWh	23.86 cents / kWh	23.86 cents / kWh	23.86 cents / kWh

Table 1: Power charges of Northwest Territories Power corporation in different zone
Source: Northwest Territories Power Corporation, 2020

2. Literature review

There is no academic literature available that discusses the cost of energy in depth in N.W.T. Therefore, I have analyzed Northwest Territory government documents, Canada Energy Regulator reports and online news to elaborate how the energy is produced, what are the different sources of energy in the N.W.T., how the territory is dependent on diesel to produce electricity and the reasons for the high cost of energy and living. However, there is abundant academic literature available which discusses about homelessness in western countries and Canada, emphasizing on Indigenous people in N.W.T. I also considered a few territorial government reports and online news reports to describe the homelessness situation in N.W.T best.

The first part of the literature review focuses on describing the overall picture of energy in N.W.T. It briefly describes how much energy N.W.T. produces, generation capacity and current state of different sources of energy and how the N.W.T. is dependent on diesel to produce electricity. The second part of the literature explicitly describes the causes of homelessness in Indigenous people in western countries. Then narrow down describing the state and causes of homelessness in Indigenous people in Canada, the further discussion describes how the homelessness emerged and spread in N.W.T. and what are the reasons for it and most importantly the state and cause of homelessness in Indigenous people in N.W.T.

2.1. Cost of Energy in Northwest Territories

2.1.1. Energy Production

There are three mains sources of energy in the N.W.T, namely natural gas, diesel fuel and hydro resources. In 2010, total electricity production was 722,675 MWh. Hydroelectricity contributed around 32 percent of the whole electricity generation, and eight communities were provided hydroelectricity in the Great Slave area of N.W.T. Electricity produced through Natural Gas comprises 18 percent of the total production and is provided to the communities of Norman well and Inuvik. Whereas, diesel-powered electricity

provided in 23 communities across N.W.T. contributed to around 50 percent of the total generation. Industries consumed 85 percent of the electricity produced by the diesel, and utilities consumed the rest (Government of the Northwest Territories, 2011). Canada Energy Regulator observed that in 2017, the total electricity generation in N.W.T. was 0.7 Terawatt hours (TW.h), which is roughly more than 700,000 MW and approximately similar to 2010 production. CER reported that electricity generation through petroleum increased to 57 percent, and it also saw an increase in hydroelectricity to 39 percent. Natural gas, along with solar (<1 percent) produced electricity, were minimal as they together produced only 2 percent, and wind produced the remaining 2 percent (Canada Energy Regulator, 2019).

2.1.2. Sources of energy in N.W.T.

According to the Standing Senate Committee on Energy, the Environment and Natural resources (2015), the electricity system in territories of Canada is obsolete, underperforming and is highly dependent on diesel-generated electricity. Many small communities that are dependent on diesel experience high costs of energy, and one of the critical reasons is that the North American Power grid and natural gas grids do not connect with the territories.

The report also mentioned that small and isolated communities in the territories which are mostly Indigenous bear the brunt of the high cost of energy because they are off-grid or not connected with the North American electricity and natural gas grid. Although many of the communities in the north have accessibility to hydro produced electricity, still diesel is considered as a reliable option for electricity and heat because diesel generation is easy to install and maintain. It requires less upfront capital when compared to hydro. The diesel fuel can easily be transported and stored; however, the price of diesel fuel is unstable, and transportation costs makes it more expensive, and it has environmental disadvantages.

According to the Standing Senate Committee on Energy, the Environment and Natural Resources (2015), the hydro is considered more cost-effective than diesel, but its upfront cost is more than the diesel generation facility. Nine communities in N.W.T. receive energy

from two multi-community grids, i.e. the Snare and the Taltson grid, together they have the generation capacity of 55.7 MW. However, there is no connectivity between the two grids, and the hydro projects are runoff water facilities due to which they cannot hold water in summers. The report also states the condition of natural gas. Inuvik and Norman Wells in N.W.T. are the only communities in all three territories. Inuvik was the first community in N.W.T. to install the L.N.G generation facility. However, in Norman Wells, the production

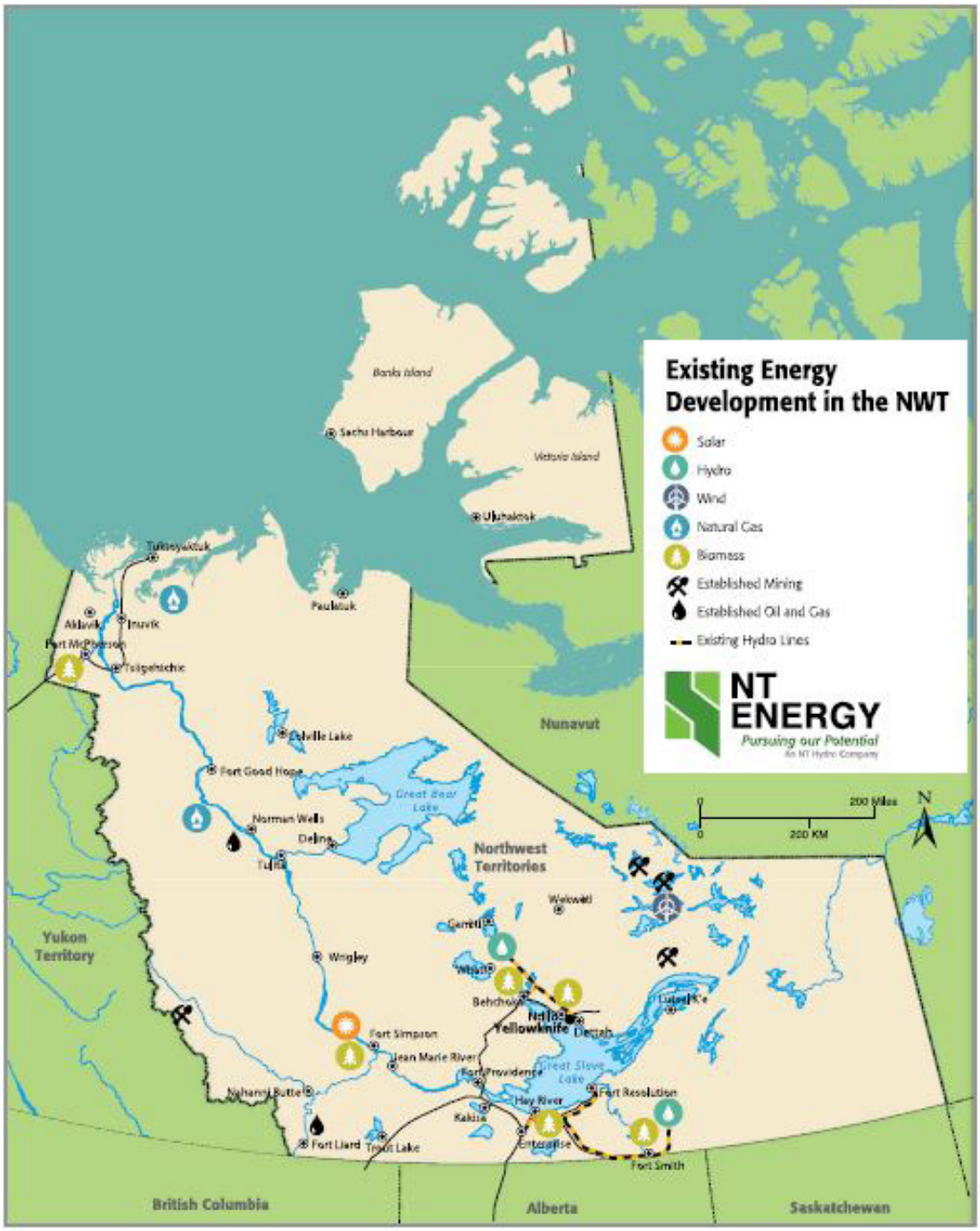

Figure 3. Map highlighting the existing different energy development in N.W.T.
Source: NT Energy, 2013

has been halted lately due to operational problems.

The standing senate committee in its report explains that wind and solar are more expensive than diesel generation, and territories do not have the ideal climate for both solar and wind. Wood pellets are another source that has recently come into use in the Territories. Heat generation through wood pellets can be more expensive than diesel; however, the biomass heating can save up to 30-50 percent in saving when compared to oil furnaces. In 2014, around 14 communities in N.W.T. received wood pellet heating.

Figure 4. A wood pellet heating facility in Behchoko, N.W.T. November 12, 2019

2.1.3. Dependency on Oil for Electricity generation

According to the Canada Energy Regulator (CER), N.W.T produces more than half of its power and heat from diesel and fuel oil, which is brought in by rail to Hay River from Alberta and further distributed in the territory via barge. In contrast, in Yukon territory, which has similar weather conditions to N.W.T, electricity is mostly produced from regional hydro resources because of which prices are low when compared to N.W.T(Canada Energy Regulator, 2019). According to CER, before 2016, in the Colville lake area, a community of 160 people was entirely dependent on the electricity produced by diesel. The Winter

roads were used to transport the diesel, and its estimated cost was $140,000 (Canada Energy Regulator, 2019). The power corporation uses 55 million litres of diesel every year to provide electricity to 38,000 people (Thomson, 2019).

2.2. Homelessness in Northwest Territories

2.2.1. Homelessness in Indigenous people in other countries

The over-representation of Indigenous people in the rural and urban homeless is not only confined to the boundaries of Canada, and it can be seen in countries like New Zealand and Australia which have a significant Indigenous population that also experiences chronic housing needs (Christensen, 2016).

According to Anderson and Collins (2014), in commonwealth countries such as Australia, New Zealand and Canada where Indigenous people are in significant numbers, the main reasons for homelessness is the culture of sharing the dwellings with the extended family and relatives which in the long term becomes a problem in maintaining houses. It further leads to eviction from the rental property because of the inability to control guests, lease conditions prohibiting sharing the space and, in some cases, domestic violence due to overcrowding. Other important reasons which lead to homelessness in Indigenous people in commonwealth countries are migration of indigenous people which can be due to socio-economic conditions (Canada), limited employment opportunities, poor housing conditions and family conflict (Australia), accessing and maintaining housing, discrimination, colonialism and relation with the state, drug and alcohol abuse, domestic violence and abuse. However, colonialism is one reason which is common across these three commonwealth countries to displace Indigenous people from their ancestral lands, forcing them into poverty and separating the children from their families (Christensen, 2016).

The people who are residing in rural Australia experience different economic, social and physical challenges. Most people experiencing homelessness in Australia are in rural and remote regions where services are less available. Homelessness is also associated with

domestic violence, abuse of drugs and alcohol and overcrowding of houses and overcrowding is considered the cause of homelessness in indigenous communities and many other problems. Homelessness in rural areas across the world is a less known fact, and that can be attributed to various reasons such as limited access to social housing, no information on the number of people in rural locations experiencing homelessness, homelessness in rural areas is less publicized, fragmented service delivery because of which people from rural area migrate to Urban areas (Zufferey and Chung, 2015).

2.2.2. Indigenous homelessness in Canada

Indigenous people represent more than 50 percent of the visible homeless population across major cities in Canada (Christensen, 2016). Anderson and Collins (2014), determined that in Canada, the number of homeless indigenous people was five times higher than the general homeless population. In Australia, the Indigenous people comprised 8.9 percent of the total homeless population.

Along with visible homelessness, different types of hidden homelessness such as overcrowding, couch surfing with relatives and friends and insecure housing tenure still haunts the indigenous communities in Canada (Christensen, 2016). Indigenous people households in N.W.T. are reported to have more than one person in a room when compared to non- Indigenous people (Falvo, 2011a).

The colonization of Indigenous lands has directly interfered with their cultural lifestyle by displacing them from their ancestral land (Christensen, 2016). Indigenous people have lost their experience of home because of the Indian Act, childcare legislation and the residential school system. Their displacement from their cultural homes and communities has caused Indigenous families to be culturally disconnected (Patrick, 2014).

According to Patrick (2014), Indigenous people are the most socially, spatially and materially deprived ethnic group in Canada. The Indigenous people were historically

deprived of their lands, oppressed by colonial rule, and neo-liberal policies, racism, and intergenerational trauma. It has caused Indigenous people to be homeless in significant numbers and inadequately housed. However, Patrick (2014), in her research, discusses that Indigenous socio-economic status and well being had improved in some areas of Canada in the last 20 years.

Structural factors such as low availability of affordable housing are significant factors for homelessness among Indigenous people. This problem is aggravated when indigenous people cannot migrate from poor conditions due to the racism faced by them in society. Also, other factors, which include government policies such as sections 28 and 29 of the Indian Act, prohibits Indigenous people from living on reserve land to obtain mortgages and take them out of the housing market (Patrick, 2014).

2.2.3. Emergence and rise of homelessness in N.W.T

Since 1990, emergency shelters in urban areas of the Northwest Territories, such as Yellowknife and Inuvik, have experienced steady growth, which shows that the homelessness in the north is on the rise. It might be the case that absolute homelessness is not predominant because couch-surfing with relatives or friends is common in the north, but it is a form of homelessness. A significant amount of money has flowed from the south to the north due to geopolitical issues and arctic environments, but the problem of homelessness in the north is paid a little attention (Young and Moses, 2014).

The problem of homelessness in N.W.T. cannot be evaluated based only on the number of people in emergency shelters; it must be seen from the lens of a social problem. For example, the rate of spousal homicide in N.W.T. is seven times the national average. There is also a consensus among the policymakers regarding the socioeconomic factors such as lack of affordable housing, social assistance benefits, and unemployment contributes to the problem of homelessness. Apart from socioeconomic factors, personal risk factors such as lack of job skills, heavy use of drugs and alcohol are also contributing to the homelessness

not only in N.W.T. but across North America (Falvo, 2011).

Indigenous unemployment in N.W.T. is relatively high when compared to non-Indigenous people living in territories. In 2017, there was an employment rate of 52.5 percent in Indigenous communities as compared to 81.3 percent in non-indigenous, and the gap of 30 percent in employment can be seen since 2006 (Mandeville, 2017). The high unemployment in Indigenous people in N.W.T. affects the ability to pay rent, especially in smaller communities (Falvo, 2011a). There are few instances when people who are living in public housing are not able to pay the rent, and they are issued eviction notices from the N.W.T. housing corporation. In 2005-06, N.W.T. housing corporation issued eviction notices to 47 households out of 2,800 housing units (Mandeville, 2016a). The high rate of unemployment makes housing unaffordable for the Indigenous people who are already experiencing overcrowding, and their housing needs major repairs. Put in simple terms, the housing situation for low-income people in N.W.T. is a little bit worse than the rest of Canada, and in smaller communities of N.W.T., it is even worse (Falvo, 2011a). According to , NWT Bureau of Statistics N.W.T. has the third-highest employment rate in Canada. N.W.T.'s employment rate in June 2019 was 66.4 percent as compared to Canada's rate of 62.5 percent. However, with 8.1 percent, the N.W.T. unemployment rate stands 4th highest in Canada.

2.2.4. Indigenous Homelessness in N.W.T

People in Northwest Territories from Indigenous communities such as Métis, Inuvik, or Dene are four times more likely to be homeless when compared to non- Indigenous persons (Falvo, 2011). Homelessness in N.W.T. is perceived as an Urban problem contained in Urban regional centres. However, many homeless people from the Indigenous groups can be traced down to small and rural settlements in N.W.T. (Christensen, 2012). The significant percentage of the homeless population in urban areas of N.W.T., such as Yellowknife, migrates from the rural areas of N.W.T. In 2018, there were 338 homeless in Yellowknife, out of which only 16 percent resided in Yellowknife, and the rest of them migrated from the other communities of N.W.T. (City of Yellowknife, 2018).

The rural communities in the north emerged because of the federal government policy of resettlement, which was introduced in the mid 20th Century after the second world war. The objective of the policy was to consolidate the nomadic population of northern Canada because the fur trade was declining, and it had a huge economic impact on the Indigenous people. Therefore, the federal government adopted an interventionist approach to centralize Indigenous people in settlements to maintain the image of the social welfare state. It was the first instance when the Indigenous people were joining the mainstream Canadian society and wage economy (Christensen, 2012). But Indigenous people had to pay the price for something they did not ask for; they were forced to change their lifestyle, and in less than a decade they were asked to leave hunting, make their own houses and to be dependent on state subsidies which included living in supportive housing sponsored by state (Falvo, 2011a). The effects of centralization and displacement can be still seen today; it made the Indigenous people vulnerable, as the resettlement policy made them dependent on the federal and territorial government for shelter, which is still inadequate. There is a huge shortage of employment opportunities in the formal sector in rural communities, and the reason behind this is that northern rural communities are isolated, and most of them were not developed around a sustainable economic base. Rural communities are still dependent upon public housing because of the high cost of construction and chronic housing shortage. According to the report of Northwest Territories Bureau of Statistics published in 2010, around 35.5 percent of households in rural settlements experienced core housing need. In some rural communities, it was around 77 percent. The core housing needs in rural settlements result from low income, population growth, high cost of construction and maintenance and dependence on social housing. Therefore, the high unemployment rate, along with the core housing need and the dearth of support services in rural settlements, leads to homelessness, which is not visible and forces people to migrate to urban centres for employment and a better lifestyle (Christensen, 2012).

The migration of rural people in N.W.T. can be best described as a rural push rather than the Urban pull. Although it is common across Canada, in N.W.T., the main reason for

migration can be traced back to history, the policy of resettlement and centralization due to which rural communities in N.W.T. became the centre for inadequate housing with few employment opportunities (Christensen, 2012). According to Christensen, 2012, four factors are responsible for rural to urban migration in N.W.T.; opportunities in northern urban centres attract people from rural settlements, chronic housing needs in the rural settlements, crumbling social relationships in rural settlements and rural settlements- urban institutional flows.

The other essential factor which prompted the migration from rural communities to urban centres in N.W.T. is the economic and social disparity, and various factors have created an economic and social disparity between the rural and urban communities in N.W.T. One of the crucial factors is the vulnerable boom and bust economy, which originated because of major resources development projects such as diamond mines and gas pipelines, creating uncertainty in the economic sector (Christensen, 2012).

The N.W.T. has the City of Yellowknife, and the town of Inuvik developed because of the northern resource development and administration is concentrated there. These two municipalities have the most employment opportunities as they are not only dependent on the territorial and federal government but also on non-renewable resource development. Yellowknife and Inuvik have diverse functional housing markets where private rental housing and private ownership dominate the housing market (Christensen, 2012).

3. Aims & Objectives

The prime objective of this study is to understand if there is a connection between the cost of energy and homelessness in Northwest Territories. The study also aims to understand if the cost of energy is high, if yes, what are the reasons for it. The study also aims to know and discuss if there are any existing challenges related to reducing the cost of electricity and are there any efforts made to reduce the cost of energy in N.W.T. This research is based upon the literature review of peered review articles, analysis of government documents, a field visit to Yellowknife and Behchokǫ̀ community, and semi-structured interviews with stakeholders described in the methodology. My interest in affordable housing and homelessness worked as a catalyst and facilitated my research.

4. Methodology

I used a qualitative methods approach to fulfil the objectives of this research. In the first phase of the research, in order to collect primary through interviews, initially, I identified four stakeholders: Arctic Energy Alliance, Northwest Territories Housing Corporation, Northwest Territories Power Corporation and Northwest Territories Government, Energy Division. I identified four stakeholders based on their roles in producing & distributing electricity and providing affordable & social housing. For the interviews, I randomly selected two interviewees from each stakeholder based on their position in the organization. During the first phase, I obtained research ethics approval from the Research Ethics Office, University of Alberta. I collected secondary data, such as government documents, peered review articles, online data, and some of the interviewees referred me to the secondary data during the interviews in the third phase. In the first phase of research, I conducted a field visit to Yellowknife and Behchokǫ̀ community in November 2019 to get the sense of the problem, to make initial contacts for the interviews and to prepare for the second phase.

In the second phase of the research, to collect secondary data, I carried out a detailed literature review of peer-reviewed articles on homelessness in western countries, Canada and Northwest Territories. I also analyzed government documents to collect secondary data on the cost of energy and renewable resources in Territories. I contacted the selected interviewees through emails for the interviews.

In the third phase, I conducted six in-depth semi-structured interviews with the interviewees from the selected stakeholders, except Northwest Territories Power Corporation. I excluded the Power corporation later in the third phase from the list of interviewees because the selected interviewees from the power corporation were not accessible or available for the interview. I also observed that most of the preselected interviewees from the remaining three stakeholders were not reachable or available for the interview. Therefore, considering the time constraint, I adopted a snowball sampling method to conduct the interviews. I then

personally conducted semi-structured interviews with six individuals, four from Northwest Territories Housing Corporation and one each from Arctic Energy Alliance and Northwest Territories Government, Energy Division. After conducting all the six interviews, I analyzed the interviews and found out that out of six interviews, four interviews were important and relevant to the research. I excluded information obtained from the remaining two interviews with the housing corporation because the information obtained from the excluded interviews did not address the research questions and were irrelevant.

I tape-recorded all the interviews, transcribed the interviews manually and analyzed them using NVivo software. I also analyzed the transcripts manually to make sure that important information is not left out or neglected. In the end, I compiled all the primary data collected through the interviews and presented them in the finding chapter.

5. Findings

During the literature review and interviews with individuals from selected stakeholders, I made many observations that directly or indirectly addressed the objectives of this research. During the interviews, while addressing the question of whether the cost of energy makes housing unaffordable and leads to homelessness in N.W.T., the interviewees mentioned that the cost of energy is high in N.W.T., and it makes the cost of living high for low-income families, thus making housing unaffordable. The high cost of energy can also result in evictions from public housing based on an individual's decision of how he/she wants to spend the financial aid or their income, and if they do not set their priorities right, it can land them into trouble and ultimately eviction. The government documents, online news reporting and interviewees highlighted that the cost of energy is high in N.W.T. I found that one critical reason was common and responsible for the high cost of energy that is the transportation cost to ship the fuel to isolated communities. The interviewees argued that there are many significant challenges in reducing the cost of energy, and the critical ones are the economic feasibility of projects associated with producing and distributing power, including both operating and maintaining costs. The other important reason is the absence of connectivity with the North American power grid. Efforts have been made in N.W.T. by the territorial government in collaboration with Northwest Territories Power Corporation and non-profit organizations to reduce the cost of energy. Electricity is produced using different renewable sources of energy such as hydro, solar and wind energy are used to produce electricity and biomass is used for heating homes directly at the community level. For the future, trust is shown by the interviewees in hydro generated power with the expansion of the Taltson hydro project and biomass heating is also considered reliable by them.

5.1. High-cost results in unaffordable housing and homelessness

The interviewees highlighted that the cost of energy and the cost of living in N.W.T. makes housing unaffordable. The cost of energy even leads to homelessness in public housing

if the individuals and families living in public housing spend their finances on luxury items instead of paying electricity bills.

One interviewee explained the role of the cost of energy, how it impacts the households and make housing unaffordable in N.W.T. (Employee of Arctic Energy Alliance, personal communication, March 4, 2020):

"For every six months to a year, we do what we call a fuel cost library, so it's a comparison of an electricity, gas, diesel-like heating fuel cost by community.....So you know diesel can be $78, vehicle gasoline can be $2.20 a litre in some places, so it's very high cost, so electricity rate is starting basically at $0.31 KW/hour, in the summertime, the rates are $0.31 no matter where, up to 600 kilowatts/hours, after that, if you use more than 600-kilowatt hours you're charged a rate depending on the community between say $0.65 and maybe $0.80 per kWh.....In the wintertime to compensate you know for your furnace fan, that threshold is 1000 kWh."

The rate of subsidized and the non-subsidized power in N.W.T. is higher than the national average electricity price of $0.13 per kWh (Agarwal, 2019). According to Pearce (2020), on average, a resident in N.W.T. pays $387 per month for 1000 kWh of energy that means a resident has to pay $4,644 annually toward electricity bills on an average. Comparing the average annual electricity bill with the different household income, the Inuit household, whose annual average income is $25,743 (Wiles, 2017), will have to pay 18 percent of their average annual income towards electricity bills in a year. The situation becomes grimmer for individuals and families on social assistance programs as they get an annual assistance of $22,163 and $45, 567 respectively, which pays for the shelter, fuel and utilities in N.W.T. (Maytree, 2019). The electricity bills will cost them 21 percent and 10 percent of their annual social assistance, respectively.

There was a consensus in the interviewees that the N.W.T. has a high cost of

living, and it leads to unaffordable housing. One interviewee explained how the cost of living impacts the household in N.W.T. (Employee of Arctic Energy Alliance, personal communication, March 4, 2020):

"People with a modest income who are homeowners often they call it core need income threshold that is the amount of money that is seen by the Bureau statistics in the Housing Corporation that you need to make for a year in order to be able to maintain your home and in some places that will be like around $120,000 so it can be really high….So and it's because you have to add on that transportation costs, you know and the energy that is included, the energy to move, whatever it is to get it to wherever it is, so it does, it really is a crucial factor, and it does impact household."

The $120,000 a year, the amount mentioned by the interviewee in order to maintain the homes in N.W.T., is an arduous task, especially for Indigenous communities. According to Wiles (2017), the Métis are the only community among all Indigenous communities in N.W.T., which has an average income of more than $50,000 and lowest being the Inuit, who has an average income of $25,743. Therefore, it is nearly impossible for the indigenous communities to reach the number of $120,000 in order to maintain their houses. The situation is even worse for the individuals and families who are on government social assistance program. The individual and families on social assistance program gets an annual income of $22,163 and $45, 567, respectively (Maytree, 2019). Therefore, it is an arduous task for Indigenous communities and individuals and families on social assistance program to maintain their homes.

In conversation with the interviewees from Housing Corporation, I found that in public housing where low-income individuals or families reside, evictions due to non-payment of electricity charges happens only if the individual or families opted to spend their finances on other luxuries. The interviewee argued that (Employee of Northwest Territories Housing Corporation, personal communication, March 2, 2020):

"If they don't pay the bills, we have to step in, and if they make that choice, then they choose to do something else with the money, then that's their choice…..In that particular case, sometimes people do get evicted…….Situation though that we have families that you know, they're there, you can see that they have a brand new truck in the driveway and they have two brand new Skidoo, brand new car……they're low income from our assessments, and maybe they're paying a couple of hundred dollars a month in rent, but they're not paying their power bill, then it makes it very difficult for Housing Corporation to support somebody that it's been doing things…….that is seen in a lot of communities, you'll see that and they, they're the ones that get cut……..So, but at the end of the day, if they chose not to pay the bills, then yes, in some cases, they will be homeless."

So, in conversation with the housing corporation, it was evident that the housing corporation works hard to prevent people from becoming homeless. Still, if the people residing in supportive housing do not have set their priorities right, about whether to pay the electricity bill or to spend finances on some other luxuries, then in some cases, they will get evicted, and that affects their tenancy. Aftermath of which is that they have to go back in the queue and again have to apply to get supportive housing.

5.2 Transportation increases the cost of energy

The cost of energy is highest in Canada (Gleeson, 2018; Pearce, 2020) and it is reliant on diesel to produce electricity, in 2017, diesel produced 57 percent of energy in N.W.T. (Canada Energy Regulator, 2019). Transportation of fuel and operational and maintenance costs of energy projects play an essential role in increasing the cost of energy in the north. According to Falvo, (2011a), the freight transportation required to barge materials to the Arctic Coast involves additional costs.

The interviewees during the interview explained that out of 33 communities in N.W.T., the majority of them are dependent on diesel to produce electricity as they were isolated far away from the resources such as hydro. One interviewee explained the

dependency on diesel (Employee of Government of Northwest Territories, Energy Division, personal communication, November 13, 2019):

"A lot of small remote communities, they aren't tied to the grid to share loads and share generation capacity…..So historically, pretty much, the only feasible solution, that cheapest solution historically was the small diesel generators here and there, and because of the remoteness too, you need a large amount of storage…….And there wasn't any significant way of storing seasons worth of fuel besides diesel, so yeah, we are very reliant on diesel."

According to Canada Energy Regulator (2019), to the south of Hay River, rail imports all the fuel, from there trucks to transport it to various communities in N.W.T. For the communities which do not have access through roads, the fuel is transported through barges operating on the Mackenzie River, Great Slave Lake and the Beaufort Sea. Some of the communities, such as Colville Lake, Wekweètì and Gamètì, are only accessible through winter roads. Therefore, all the transportation costs add to the cost of diesel, which is already volatile. One interviewee explained how the fuel is transported in N.W.T. and how it increases the cost (Employee of Northwest Territories Housing Corporation, personal communication, March 2, 2020):

"there is a train system that comes to the hay river. We have a diesel there, a lot of fuel, a lot of the fuel in the community, will go by barge……Anything that's not on a barge will be shipped by a truck……Colville lake, Wekweètì, Gamètì and Whatì are four that where winter roads are the only way you get into that community….. the ice roads are dependent on the temperature that is outside like it may or may not come up to full capacity in a season…… So if they come up in a half capacity that happened a couple of years ago in Wekweètì is one of the examples of one of the smaller communities, they have to ship in the fuel on half loads which doubled the cost or increased the cost."

The other essential factor which increases the cost of energy in N.W.T. is the economy of scale of a small energy generation facility in smaller communities. The skilled workforce required to operate the energy generation facility is almost similar in number regardless of the generating capacity of the energy project. For example, whether the project is of 5 MW or 50 MW, the workforce required to run the energy generation facility is similar. The other factor which adds to the cost of energy is that the skilled labour employed to operate the energy generation facility is highly paid. One interviewee pointed out (Employee of Government of Northwest Territories, Energy Division, personal communication, November 13, 2019):

"The cost of diesel is a big factor the other factor there is the small scale, so you don't necessarily have large generators with a small proportion of staff need to run the generator…..um whether you have 100 kW generator or at 3 MW generator, you still need approximately the same amount of staff to run in…..so cost in those small communities are really high in the range of like $2 at kW/h so this is a big cost…..not only the proportion between the generation and then number of people need it to run it, but these people are usually very specialised with high salaries…..just basically due to the other cost of living in the North they need the high salaries to make a living as well, so that's another factor um I think this be the main ones."

Therefore, the transportation cost plays a vital role in increasing the cost of energy in the N.W.T as the 33 communities in territories are located far from each other and mode of transportation, and seasonal accessibility makes the fuel unaffordable. The other main driver, which increases the cost of energy, is the economy of scale, the ratio of power generation and staff required to run the small energy project in smaller communities is disproportionate, and the staff are paid higher salaries, which makes the energy production more expensive.

5.3 Challenges in reducing the cost of energy

There are several challenges in terms of reducing the cost of energy in N.W.T. The Interviewees highlighted significant challenges in reducing the cost of energy, such as small and isolated communities, no connectivity with the North American power grid and the cost of doing business in the north. Literature also reflects, low population density and non-connectivity to the North American Power grid as the reasons for the high cost of energy. From the housing corporation perspective, some of the biggest challenges are renovations cost and delay in a payback on the projects. One of the participants pointed out that (Employee of Northwest Territories Housing Corporation, personal communication, March 2, 2020):

"one of the biggest challenges in reducing energy costs are the costs of the renovations required to implement and install energy-saving systems and materials products……So for example, for us to do an energy upgrade on one of our units will say bungalow 1200 square feet, to do insulation upgrade on the inside, with the roof and the walls, windows doors, do a full retrofit the problem is pushing 60,000 bucks, $60,000 to $80,000…..The payback on that it's pretty low, pretty long, longer than probably most of the building has left in its life."

The other challenge in reducing the cost of energy for housing corporation is the high cost of maintenance of energy-efficient appliances used to reduce the energy consumption. The high cost of maintenance which costs additionally. The interviewee argued that (Employee of Northwest Territories Housing Corporation, personal communication, March 2, 2020):

"We've tried really good systems that work very well in the south of Canada….We pull them up in Truck as an example, one that I'm involved with the Adams furnace……We put two in there fantastic on any consumption side, like it went, it cut our consumption in half

in one year….it went down to 3000, and it cut it in half. Well, I'm 3200, almost half and, but we couldn't keep it operating…..The stupid thing would keep cutting out, for our maintenance guys, our maintenance bill on that was $4,000 a year to keep it going…..So we were out of money at the end of the day…..So we had an ability to save and reduce the cost of energy, but our maintenance costs more than what the cost of the energy was…..So, it didn't work; we had to pull it out."

The other significant challenge in reducing the cost of energy is small and isolated communities in N.W.T. According to Canada Energy Regulator (2019), low population density is one of the critical reasons for the high cost of energy in the N.W.T. The remoteness of the communities increases the cost of doing work. There is a dearth of contractors in N.W.T. involved in upgrading and enhancing energy efficiency because, in smaller communities, there is no continuous work for the contractors to sustain. Therefore, when required, contractors from the other region of Canada have to fly in small and isolated communities, and that adds to the cost of doing work in small isolated communities. One of the interviewees explained that (Employee of Northwest Territories Housing Corporation, personal communication, March 2, 2020):

"We're talking about very small communities, ranging from say 300 - 400 people in the community to 3000 people in the community……But It's really not steady work for a lot of communities, a lot of contractors……. So, sometimes you have to have and focus on regional contractors going into communities……So, for regional or other northern contractors, they have to fly into these communities or drive into these communities to do the work…… They have to pay for the places to stay motels organic vegetables, meals, accommodations, transportation, that all that cost to just to get to the community."

There is an option to try renewable sources of energy as well, but due to the high cost of doing renewables projects because of harsh climatic conditions, the renewables have their challenges. One of the participants explained (Employee of Government of Northwest

Territories, Energy Division, personal communication, November 13, 2019):

"So reducing the price is very hard because just the cost of doing capital projects here to integrate renewables is really high…..so it's actually not competitive for the Power Corporation to install large solar panels because we don't have sun during the winter and the transportation and getting the trades up to build the projects is all challenging and expensive, so finding a solution actually reduces the cost right now is technically not there yet."

Another interviewee explained that even if you have planned to install energy projects, the approval time increases the cost of the project. He said (Employee of Northwest Territories Housing Corporation, personal communication, March 2, 2020):

"The approval processes are taking way too long to get moving on some of these energy projects…….And that's one of the big hurdles……Again, my experience in anywhere between seven months to a year to get approval, well, that's seven months to a year that we could have implemented and in saving energy……Instead, they're taking seven months to a year to just get approval in place. And what that's doing also is now causing the project to cost more."

The other challenge in reducing the cost of energy is the non-connectivity with the North American Power Grid. According to Canada Energy Regulator (2018), one of the main reasons for the high cost of energy in N.W.T is unlike other Canadian provinces; N.W.T. is not connected to the North American electricity grid because of which it does not have access to diverse and lower costs of energy sources. The absence of connectivity with the American Power grid poses a challenge to reduce the cost of energy in N.W.T. as it limits the ability to sell the surplus energy harnessed during summer from various sources such as solar. An interviewee explained, if connected to North American Power grid, it would be an option for them so that they can harness the energy in summers and send it back to the grid (Employee of Government of Northwest Territories, Energy Division, personal communication, November 13, 2019):

"Add to the technical challenges to where if you want to overproduce your solar in the summer you still need batteries, so that adds to the challenge, transmission lines help to sort of distribute those excesses and yeah exactly if we were connected to the North American grid that would open up some options as well."

However, there is a hurdle in terms of capital for N.W.T. to get connected to the North American Power grid. The capital cost of inter grid connectivity and connectivity to the continental grid is estimated at around $1.2 billion, and N.W.T. has a limited funding from the federal government of $800 million annually (Standing Senate Committee on Energy, the Environment and Natural resources, 2015). The interviewees were optimistic that establishing the connectivity with the North American Power grid could reduce the cost of energy. However, they explained their reasons why, at present, it is not connected. One of the participants explained that (Employee of Government of Northwest Territories, Energy Division, personal communication, November 13, 2019):

"We looked at the connection with the North American grid, the distance is very far right now, but if you expand the Taltson River system, then you might have a business case to connect."

The other interview pointed out the reasons for the non-connectivity with the North American Power Grid (Employee of Northwest Territories Housing Corporation, personal communication, March 2, 2020):

"You know, there's politics, there's land, there are land agreements, we have indigenous land that they would have to cross you'd have to go through those communities and go through the environmental assessments……And so we have to respect the rights of all the owners of the land what we do…..I'm sure there's a lot of reasons why, but I know what it is and I know that it's something that talks about around the high-level cables for a long time, because if we could get connected, then perhaps we could reduce our requirement for big infrastructure, right."

Therefore, I can attribute various reasons to the challenges in reducing the cost of energy, which I found out during the interviews. The housing corporation tried energy-efficient appliances to reduce the consumption of energy to save on energy. However, the renovation and maintenance cost of energy-efficient appliances puts an additional cost, thus failing the idea to save energy using energy-efficient appliances. Small and isolated communities have their challenges in reducing the cost of energy. Due to a lack of contractors in N.W.T. specialized in upgrading and enhancing energy efficiency, the contractors from the other parts of Canada have to fly into remote communities of N.W.T., and that adds to the cost of doing work in small isolated communities. The N.W.T. is trying renewables, but due to harsh climatic conditions, the cost of doing a renewable project such as solar is not a feasible solution. The delay in getting approval for the energy projects also poses a challenge to reduce the cost of energy. There is also the absence of inter grid connectivity and connectivity with the American Power grid, due to the reasons such as lack of capital, distance and politics. The absence of connectivity with the American Power grid deprives N.W.T. to have access to a cheaper source of electricity. It also limits their ability to sell surplus in summertime harnessed from other sources such as solar.

5.4 Tried and Future alternative sources of energy

In conversation with the interviewees, hydroelectricity, solar, and biomass heating are the present alternative sources of energy being used in N.W.T. There are very few communities such as Yellowknife, which are dependent on hydro generated electricity and biomass heating is confined at the community level. Apart from that, there is solar energy; however, electricity produced through solar is minimal. The interviewees talked a lot about solar projects, especially one in Colville lake funded by the Government of Northwest Territories and EcoENERGY for Aboriginal and Northern Communities. One of the interviewees describing the effectiveness of solar projects explained that (Employee of Northwest Territories Housing Corporation, personal communication, March 2, 2020):

"In Colville lake, that's the community that they're really trying to develop……And we're trying to pilot some of these things with the power Corp, and I know they have a big solar thing solar array there, and the indication that I'm hearing is that it's doing well in the summertime obviously in the wintertime in the snow in the dark, you know, but, but in the summertime, it's supposed to be doing very well to help offset the requirement for diesel, which is great."

However, solar is not seen as a reliable source of energy across N.W.T, and there are many reasons such as long duration of winters with very few hours of daylight, the problem of storing the energy, cost of batteries and overall cost efficiency of the project. One of the interviewees describing the issues related to solar projects argued that (Employee of Government of Northwest Territories, Energy Division, personal communication, November 13, 2019):

"We can only put approximately 20 percent of the average loads in solar capacity, so if the average load in the year is 100 kW to maintain the grid stability, we can't really put up more panels on it than 20 kW…..So if you work as the power production of that 20 kW, you are only really displacing about 2 percent of the annual energy produced with diesel….once you start adding batteries to increase the threshold then the batteries comes at the cost, and it becomes more expensive than that displaced cost diesel."

The interviewees showed their trust in the biomass to reduce the cost of energy as most of the communities are not in the proximity of the hydro projects, and biomass was perceived by them as a reliable source of heating in the small and isolated communities. One of the interviewees explained that (Employee of Northwest Territories Housing Corporation, personal communication, March 2, 2020):

"Biomass has been fairly big, to a point where there's now a local, when I say local, but a northern company looking at getting in and creating their own biomass pellets in a Hay

river enterprise area, so they must see something that is a business opportunity……but so what do I think that there is a promising future. I think that it needs some more work.."

During interviews, the participants showed their confidence in hydro projects to reduce the cost of energy, especially if the expansion of the Taltson Hydro project takes place. One of the participants during the interview said that (Employee of Government of Northwest Territories, Energy Division, personal communication, November 13, 2019):

"If the Taltson expansion project happens and we connect a lot of mines to it, then it would have a transformational and change on the electricity system at least for the grid-connected communities because then you get the economies of scale your actual cost of energy would go down."

Therefore, in the conversation with the participants, it is clear that hydro, solar and biomass are being tried in the N.W.T. by the Territorial government in partnership with Northwest Territories Power Corporation and non-profit organizations to reduce the cost of energy. Hydro and biomass energy are more promising than the solar. However, solar energy has its limitations because of climatic conditions, overall cost efficiency of the solar project, and expensive batteries to store energy. Hydropower can reduce the cost of energy, especially with the expansion of the Taltson hydro project and biomass for heating purpose have started gaining roots at the local level, and it can reduce the energy consumption.

6. Conclusion

There has been extensive research on homelessness in N.W.T. There have been several reasons identified for homelessness in N.W.T., such as lack of local skilled labour, overcrowding, shortage of suitable and affordable housing, ageing infrastructure and high costs of transportation of fuel and commodities (Falvo, 2011; Anderson and Collins, 2014; Christensen, 2016). Despite extensive research on homelessness in N.W.T., limited attention has been paid to study if there is a link between the cost of energy and homelessness in N.W.T. Agrawal (2019), in his study assumed if there is a connection between the cost of energy and homelessness in Tlicho region. Therefore, this paper takes the lead from the study of Agrawal (2019) and examines if the cost of energy contributes to unaffordable housing and leads to homelessness across N.W.T. The study in pursuit of finding a connection between the cost of energy and unaffordable housing and homelessness in N.W.T. also tries to understand if the cost of energy is high in N.W.T, if so, what are the reasons for it.. The study also aims to know if there are any existing challenges in reducing the cost of energy and what efforts have been made to reduce the cost of energy in N.W.T.

The research found out that there is a connection between the cost of energy and unaffordable housing, and it does lead to homelessness in the N.W.T. The cost of energy leads to homelessness in public housing in N.W.T if low-income households or individuals lack financial management skills and decision making is not based on the priorities about whether to spend the finances on paying the electricity bills or on the other luxuries. In that case, it leads to eviction from public housing, ultimately making low-income families and individuals homeless. The cost of energy also causes the problem of unaffordable housing. The median income of different indigenous communities' households in N.W.T. is not more than $57,000 (Wiles, 2017). On an average, a resident in N.W.T. has to pay $4,644 annually to pay their electricity bills (Pearce 2020). Therefore, the Metis household, which has the highest median income of $56,502 among the indigenous communities have to pay 8.2 percent of their annual income towards the electricity. The Inuit community, which has the lowest median

income of $25,743 have to spend 18 percent of their annual income on electricity bills. The situation is also worse for the individuals and families who are on social assistance program as they have to pay annually 21 percent and 10 percent respectively towards electricity charges. Therefore, the cost of energy does create the problem of affordable housing as the household has to spend a significant portion of their annual income on energy.

The study also explains that the transportation of fuel and the economy of scale of small energy projects in small isolated communities adds to the cost of energy. The transportation cost to ship the fuel across N.W.T in which barges and trucks ship the fuel into isolated communities adds to the cost of energy. The other important factor which increases the cost of energy is the lack of economies of scale for small energy generation in small isolated communities. The skilled workforce required to operate the energy generation facility is almost the same in all the energy generation facilities regardless of the generation capacity of the facility, and they are highly paid, which adds on to the cost of energy.
Reducing the cost of energy in N.W.T. is an arduous task as there are several challenges to reduce the cost of energy. The small isolated communities, geography, and harsh climate conditions of N.W.T. results in the high cost of doing energy projects in N.W.T. The investment in renewable sources of energy is an option to reduce the cost. However, the delay in getting approvals adds on to the cost of such projects. Even if the investment is made in renewables and a lot of energy is produced through renewable resources there is lack of infrastructure to distribute that energy within the territories and even to the other parts of Canada because there is no inter grid connectivity in N.W.T. and not even with North American power grid where they can sell the surplus. The biggest hindrance in getting inter grid connectivity and connectivity to the continental grid is the cost of the project, which is around $1.2 billion, and N.W.T. has limited funding of $800 million annually capped by the federal government (Standing Senate Committee on Energy, the Environment and Natural resources, 2015).

The territorial government is making efforts along with the Northwest Territories Power Corporation and non-profit organizations to reduce the cost of energy. N.W.T. is trying several renewables, such as solar, hydro, and biomass heating. Solar in some communities like Colville lake has shown promise. In other parts of N.W.T., solar does not seem to have a promising future because it is operational only in summers because of climatic conditions and cost of batteries to store the energy increases the cost of solar projects and is less cost-effective than the diesel-generated electricity (Standing Senate Committee on Energy, the Environment and Natural resources, 2015). Hydroelectricity is considered a reliable resource, but due to the absence of inter grid connectivity, it is not accessible to remote communities living far away from hydro resources. If the expansion of the Taltson project takes place, it can help in reducing the cost of energy, but inter grid connectivity will be essential to make the most out of it. The communities at the local level produces biomass heating, and it is considered a viable option at present and in the future. However, it is more expensive than diesel-generated electricity, and there is a question of supply of raw material, that biomass heating requires.

There are limitations to the study; in the initial stage, I decided to interview two individuals from four identified stakeholders. However, later in the research, due to time constraints and accessibility issues, interviewees from N.W.T Power Corporation could not be included in the study. I have interviewed individuals employed in the Northwest Territories Government, Northwest Territories Housing and Power corporation. This study acknowledges that it is important to understand if there is a connection between the cost of energy and homelessness in private households as well, but due to time constraints, I could not focus on the private household.

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Appendix 1: List of questions for interviews

1. Can you tell us about your self, what is your role in the organization?

2. What you think are the reasons for the high prices of energy in the territories?

3. From where diesel is imported, and how is it transported across N.W.T? How it affects the cost of diesel?

4. Is N.W.T more dependent on oil (Diesel) to produce electricity? If yes, why?

5. Has the dependency increased in the last few years?

6. If yes, is it because of production from natural gas has decreased?

7. Why has the production of electricity from natural gas decreased?

8. Is there any plan or discussion to phase out diesel produced electricity?

9. Do you think the high cost of energy is a crucial factor in increasing the cost of living in N.W.T?

10. How the high cost of energy impact households across N.W.T?

11. How often you experience that a household (both private and subsidized) is unable to pay the power bill, and as a result, his power connection has been disabled?

12. When the power is disabled, how the households keep their dwellings warm?

13. When a person living in supportive housing is unable to pay the power charges, what options does he has after that? Does he have to leave the house?

14. Do you think if a person living in supportive housing is unable to pay the power bills and then evicting him will make him homeless?

15. What are the challenges in reducing the cost of energy?

16. Is the low population density creating an obstacle in decreasing the cost of energy? If yes, how?

17. Is the existing infrastructure to provide power obsolete?

18. Is there a need to invest in infrastructure to decrease the cost of power?

19. What is the reason N.W.T is not connected with North American Power Grid?

20. Has the demand for power increased in the last few years?

21. Does Northwest Territories have the capacity to fulfil the demand for power? If yes, what

are those resources?

22. What are the present alternative renewable sources of energy tried across N.W.T?

23. How far have they been successful in generating electricity? If they have failed, why so?

24. Do you think there is another alternative renewable source of energy whose potential is not valued so far?

25. Do you think they have a promising future in N.W.T, and are they considered as a part of a long-term strategic plan?

26. What, according to you, are viable alternative renewable sources of energy which should be tried in the future and why you think that?

27. What are some of the challenges to achieve the desired production of power from future alternative renewable sources of energy?

28. What, according to you, can be done to reduce the high cost of energy?