YELLOWKNIFE FOOD INFRASTRUCTURE REPORT

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PREPARED BY THE LAURIER CENTRE FOR SUSTAINABLE FOOD SYSTEMS FOR THE CITY OF YELLOWKNIFE

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To access this report online, food hub 101 webinars and the Yellowknife Food Asset Map visit: www.yellowknife.ca/foodies

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EXECUTIVE SUMMARY

The City of Yellowknife has a thriving local food scene and a history of community action. In 2015, The Yellowknife Food Charter was established, a document that outlines the vision for a local food system that is rooted in community, healthy diets, sustainable practices, and food justice (YKFM, 2015). The charter, and the ongoing efforts of local food advocates, continue to imagine and create a local food system that embodies this vision. In 2019, the City of Yellowknife adopted its first Food and Agriculture Strategy (GROW). The GROW strategy, which is inspired by the Food Charter, provides a roadmap to grow and support activities along the local food supply chain (City of Yellowknife, 2019a). Between February and July, 2021, the City of Yellowknife and researchers at the Laurier Centre for Sustainable Food Systems, engaged local food actors, including producers, small business owners, restaurateurs, consumers, government and community organizations to identify key infrastructure assets, needs and opportunities and challenges in Yellowknife's food system, to determine what supports are needed to grow the local food industry within the city and to assess whether a food hub could address these needs.

Community voices, gathered from over 100 interviews, survey responses, webinar participation and the development of an online food asset map, identified what is needed to support local food production, distribution, and access as well as solutions for addressing issues and building a more resilient and vibrant local food economy. Food system issues included the need for better organizational and convening capacity, collective purchases to lower individual production costs, and need for more local producers and produce flowing into the market, more opportunities to build commercial scale food businesses, and better access to local food for low-income families. Community members also provided insight and ideas about how many of the broader issues can be addressed. These solutions form the basis of a food hub plan for Yellowknife.

Although a food hub initiative may be successful in Yellowknife more conversations are needed to determine the model as well as governance and operational structures. Considerations for different models are highlighted in the literature review and northern food hub case studies sections of this report. A webinar with two of the case studies, Alaska Food

Hub (Homer, AK) and Cloverbelt Local Food Co-op (Dryden, ON) gave community members an opportunity to ask questions and better understand how a food hub can benefit their own community. A recording of this webinar can be found on the City of Yellowknife, Foodie website.

Recommendations at the end of this report provide a pathway forward for how a food hub can build on the Yellowknife Food Charter's vision. The report recommends the following:

1. Establish a food council to convene and coordinate the various food actors and support communication between members and to the public. Through this council, provide added support to coordinate resources between organizations to improve local access for low- income families.

2. Emphasize food production locally by identifying potential garden space in public and private areas, and setting aside community garden space for individuals who are interested in starting to grow food commercially.

3. Emphasize sale and distribution regionally by developing an online marketplace with regular distribution times and locations in Yellowknife.

4. Coordinate existing commercial kitchen spaces through an online booking system to improve access. In the future consider developing a commercial kitchen business incubator hub.

This report outlines recommendations to be carried out at the grassroots level with the support of government and private actors. These actions should be taken alongside the on-going work of the City of Yellowknife to implement their food and agriculture strategy (GROW). Further to this, there is an explicit need within the community for financial and human resources to ensure the recommendations have the resources to be completed and to guarantee the long-term viability and sustainability of a food hub. Finally, this report is only one part of the analysis necessary to better understand and address key issues facing Yellowknife's local food system. Further work including economic and policy analyses are also critical to identify new ways to support Yellowknifers to grow, harvest, sell, share and access food and uphold the vision of the Food Charter, to create "a just and sustainable food system in Yellowknife [that] is rooted in a healthy community, where everyone has access to adequate and affordable nutritious food; more food is grown and harvested locally; and food production policies and infrastructure are in place to support an economically viable, diverse, and ecologically sustainable local food system" (YKFM, 2015).

INTRODUCTION

Instances of food insecurity across the Northwest Territories, including Yellowknife, are some of the highest in Canada. In 2017-18, 21.6 percent of households were considered food insecure in the territory (Tarasuk & Mitchell, 2020). This is influenced by interconnecting factors including high living costs, unemployment and underemployment, and high costs associated with transporting market foods from the south. High arsenic levels in the soil, a legacy of the Giant Mine, also limit where food can be grown safely in Yellowknife and the surrounding area (Leblanc-Laurendeau, 2020; Sandlos & Keeling, 2016). While some remote, northern communities receive federal subsidies aimed to address high food prices, Yellowknife does not meet the requirements to benefit from such programs (Leblanc-Laurendeau, 2020).

Climate change is impacting food systems on both local and global scales. International food supply chains have revolutionized our food choices and availability. However, climate impacts such as droughts, floods, and forest fires in important agriculture production areas such as California and Mexico influence food prices and availability in local grocery stores. Within the territory increasing instances of floods and fires can cut off road access making communities vulnerable to imported food shortages. In 2015, highways 3 and 6 were temporarily closed due to forest fires (CBC News, 2015) in the area and recently in 2021, flooding again impeded travel (CBC News, 2021). The Covid-19 pandemic has further complicated food imports to the territory as transportation, labour and agriculture inputs have been interrupted, causing shortages and price increases across the country (Harris, 2020).

Locally, year over year Yellowknife is experiencing more favourable climatic growing conditions. At the same time there is a growing interest in local food production for personal and commercial purposes. Greenhouses, gardens, farms, and chicken coops are cropping up across northern communities and Yellowknife is no exception (Chen & Natcher, 2019). Further to this, many northerners living in urban centres supplement their diets with foods harvested from the land such as moose, caribou, fish, and berries. These foods are an essential part of the

local food system, livelihoods, and culture (CCA, 2014; Johnston & Andree, 2019).

Food hubs have proliferated across the north, due in part to an increased consumer interest in local food. While food hubs connect producers and consumers, they also play an essential role in building community food resilience by improving logistics and marketing of local products (Radcliff et al., 2021; Matson & Thayer, 2013). In isolated communities such as Yellowknife, food hubs can help overcome challenges related to high transportation costs and scarce access to perishable foods and they can support diverse local production. In 2019, the City of Yellowknife released a Food and Agriculture Strategy (GROW) to foster a more resilient food system. One of the strategy's goals is to identify key infrastructure needs to support and incubate local food production within the city. This research, developed in partnership with the City of Yellowknife and Wilfrid Laurier University, Centre for Sustainable Food Systems, supports this goal. Using participatory research methods, this research facilitated dialogue with community members and individuals who participate in Yellowknife's local food system to identify how infrastructure, such as a food hub, can provide opportunities and address community-defined needs to enhance the local food economy.

This report is separated into eight sections. First a literature review provides an overview of food hubs, what they are, what roles they can play in a food system, their benefits and possible governance structures. Section two highlights three case studies from food hubs in northern communities with similar characteristics to Yellowknife. Section three is a profile for Yellowknife's food system and section four describes the study's research methods. Section five provides a detailed account of findings based on interviews, surveys, and webinars with local food actors. Next, section six, provides a discussion about how a food hub model can address several of the predominant issues identified in the findings section and finally, conclusions and recommendations for action.

Figure 1: Yellowknife Farmers Market Harvesters' Table

1.0

LITERATURE REVIEW

Food systems consist of all the actors, infrastructure and resources needed to move food through the food supply chain from production to consumption (Nguyen, 2018). A food system's health depends on how well the various actors and resources can work together to provide sufficient affordable, healthy, and culturally appropriate foods to families while also using sustainable and ecologically sound practices that do not compromise the needs of future generations (Ibid.). Kloppenberg et al. (2000) identify fourteen characteristics of a sustainable food system, including ecologically sustainable, knowledgeable/communicative, proximate, economically sustaining, just/ethical, participatory, healthy, sacred, relational, diverse, culturally nourishing, seasonal/temporal, and value-oriented economies. Alternative food networks (AFNs) which include local food projects such as farmers markets, food policy councils, and community gardens among others, embody many of these characteristics and aim to balance the economic, social, and ecological needs within the food system (Kaiser et al., 2020). AFNs sit in contrast to the conventional or industrial food system and seek to address environmental, social, and economic justice concerns it is associated with (Sarmiento, 2017). Food hubs, a type of AFN, aim to connect producers and consumers to create easier, more efficient access to sustainable, local food, emphasizing collaboration instead of competition (Kaiser et al., 2020; Horst et al., 2011; Matson et al. 2012). This literature review examines what food hubs are, their benefits and challenges, models, governance structures and considerations for how to operationalize them.

Throughout the literature, definitions of food hubs have been purposefully vague to include a broader spectrum of local and regional food distribution models under the food hub umbrella and to enable innovation (Fischer et al., 2015; Blay-Palmer et al., 2013). Food hubs vary in their operational models, functions, types of products sold, scale of operation, objectives and values and infrastructure used (Psarkikdou et al., 2019). No matter how food hubs are organized, they have several common functions. They act as warehouses to improve distribution from food not addressed by large-scale grocers and wholesale food distributors (Horst et al., 2011).

They are connectors between producers and consumers within a local or regional food system, they provide a centralized space for trade, and they support marketing and distribution of local and regionally grown food to meet consumer needs and preferences (Matson et al., 2012; Matson & Thayer, 2013). Many food hubs have social and environmental mandates that are not business-driven (Fischer et al., 2015; USDA, n.d.; Hogue, n.d.; Horst et al., 2011). Food hubs also typically have a common vision, to build sustainable communities around distribution and aggregation of local food while supporting ecological and social systems that address social, economic, and environmental inequity within communities (Psarkikdou et al., 2019; Kaiser et al., 2020).

Food hub models that are rooted in sustainability and community development practices take on a holistic approach, supporting local, small- and medium-scale food production, processing, and distribution (Berti & Mulligan, 2016). Blay-Palmer et al. (2013) define food hubs as, "networks and intersections of grassroots, community-based organizations and individuals that work together to build increasingly socially just, economically robust and ecologically sound food systems that connect farmers with consumers as directly as possible" (p. 524). As food hubs aim to meet a community's unique needs and goals, each food hub model should be designed to capitalize on local assets and address resource gaps (i.e., human resources, infrastructure, policy barriers etc.) (ibid.). Ultimately the food hub model should be decided upon by community members to ensure that their needs are met.

1.1 Benefits and Challenges of Food Hubs

Food hubs can bring many benefits to communities through their ability to connect producers and consumers, aggregate sales and create efficiencies within the local food system. Food hubs help to build connections across producer and consumer groups that foster a sense of care for the producer shown through fair prices, solidarity amongst producers to sell their products under a central name, volunteer labour from both producers and consumers and an emphasis on the recirculation of cash into the local economy (Psarkikdou et al., 2019). They also simplify local food supply chains by providing a centralised point of trade, marketing, networking, capacity development and other services. This helps small producers to be more economically viable and provides streamlined interactions for medium-sized and institutional consumers (Fardkhales & Mello, 2020; Horst et al., 2011). As food hubs expand market opportunities for producers, they create jobs and increase consumer access to healthy foods. Food hubs with retail sites can also become year-round sources for the sale and purchase of local produce (Horst et al., 2011). Many of these activities are in stark contrast to how the conventional agri-food distribution system functions (Psarkikdou et al., 2019).

Food hubs encounter similar challenges that need to be addressed regardless of the model chosen. Financial sustainability is a key consideration regardless of the organization's mandate. While financial sustainability models can be built into the food hub's business model, often social and environmental mandates require additional resources that may have been covered through other means such as grants and fundraising. Often food hubs will continue to seek grant funding even once profits are generated as it is wise to build financial sustainability into the organization's business model (Matson & Thayer, 2013). The Alaska Food Hub addresses financial sustainability by placing a markup on all sales and charging a membership fee. This provides cash flow for operations that can be complemented by grants and project funding (Alaska Food Hub, n.d.a). To sustain the food hub, product supplies must also be increased. In communities where there are few producers, it is imperative that new producers be encouraged to enter the market and existing producers be encouraged and supported in their efforts to supply quality food to the hub to meet

consumer demands. A regional approach can also increase the number of producers able to participate in the hub (Barham et al., 2012). Conversely, in agriculture areas, there may be too much produce for local demand and competition among hub members can occur (Matson et al., 2015b).

In many regions, especially in North America, the seasonal availability of products is an issue. To overcome this challenge, many food hubs encourage producers to sell value-added products and alternative products that can be harvested year-round. Fish, eggs, and meat are products that can be accessed either fresh or frozen throughout the calendar year. To account for year-round sales, infrastructure such as a commercial kitchen and cooler space may be required to meet health and safety standards. Food hubs can also provide producer and consumer incentives such as discounts to continue to sell and buy through the hub in the off-season months (Matson et al., 2015b).

While food hubs have many benefits for producer and consumer groups alike, they are not a panacea for the complex issues found within a food system. When considering social and economic equity and food security, Herrington and Mix (2019) found that many market-based solutions to food insecurity fail to meet the dietary needs of many households. Some food hubs use creative solutions to address inequality in the food system. Allowing those who have traditionally been excluded from the food supply chain to earn supplementary incomes through the sale of their products regardless of the quantity of food on offer is one way to provide security for food insecure households (Fardkhales & Mello, 2020). However, market-based food hubs may not be able to bridge the needs of producers to earn a fair price for their products while addressing the economic limitations of food insecure households (Kaiser et al., 2020). Even food hubs that incorporate social mandates into their activities need to remain financially viable and provide fair pricing for both producers and consumers. There are pitfalls to working with insufficient funding, over-reliance on volunteers and tensions between conflicting mandates. Ultimately there is a need for economic independence and long-term viability (Blay-Palmer et al., 2013). Engaging with multi-stakeholder groups such as food councils can help to forge partnerships and develop alternative creative solutions to issues of food insecurity and access to healthy food for low-income residents.

1.2 Food Hub Models

Horst et al. (2011) identify three typologies of food hubs in North America. These are producer-oriented, people-oriented, and community-oriented models. These models are helpful for identifying what model types work best based on community priorities and needs. Multi-stakeholder models which address the needs of various food actor groups, are also common (Matson et al., 2015b).

Producer-oriented models are the most common and can take on many formats. Often, these food hubs take an economic development focus and are developed to address problems individual farmers have in accessing institutional and commercial buyers in local markets (Matson et al., 2015b). They can also be structured to act as brokers or intermediaries, buying local produce and reselling to consumers (Fardkhales & Mello, 2020). Some food hubs, such as the Sprout Kitchen Regional Food Hub in Quesnel, BC, provide access to equipment and consulting services to spur innovation and new businesses (Sprout Kitchen Regional Food Hub, n.d.). Within this food hub model, business operations models typically focus on one of two kinds: wholesale or direct-to-consumer distribution. Regardless of the target market, aggregation and distribution are the primary components along with other activities along the food supply chain such as packaging, branding, and labelling (Horst et al., 2011; Matson et al., 2018).

People-oriented food hub models often place an

emphasis on health and community rather than economic development and producer support. A focus is often placed on food access, especially for low-income families. People-oriented food hubs adopt a model that focuses on food access, knowledge sharing and community development. People-oriented food hubs do not necessarily have specific economic development goals or support new farmers. Instead, they aim to aggregate existing food resources in the community to support those being left out of the conventional food supply chain (Fardkhales & Mello 2020). Food Rescue Yellowknife is an example of this type of model (Food Rescue Yellowknife, 2021). Community services that people-oriented food hub models may undertake include buying local campaigns, providing food access in areas with poor food access (food deserts), food bank donations, educational programming and youth and community employment opportunities (Matson et al., 2015b).

Community-oriented food hubs emphasize how people experience and interact within the food hub's physical environment. Here urban design, land uses, design strategies and food-based programs are important to improve consumer experiences with local food as well as improve visibility, access across the food system at multiple levels. This model can incorporate both people-and producer-oriented models into its approach (Horst et al., 2011). This type of food hub model can help to support food access issues for food insecure families as it places these individuals at the centre of their mandate. In contrast, people-oriented food hub models rarely address issues such as stigma in food poverty as they operate using conventional buy-sell models to distribute produce (Psarikidou et al., 2019).

Multi-stakeholder food hubs address the needs of multiple stakeholder groups. These groups include workers, consumers, farmers and producers, community members and investors/funders (Matson et al., 2013). In the Northwest Territories, this group can also include harvesters. This type of food hub model can be complex and difficult to operate as the individual needs of the various stakeholders can be opposing at times. Here, the governance structure must be carefully selected to ensure that all stakeholders' voices are heard and power among groups is balanced. When done well, multi-stakeholder food hubs can strengthen networks and create bonds between groups who may have different needs within the food system (ibid.).

Food hubs can also have different operational models depending on the market being served. There are three models: direct-to-consumer, wholesale, and hybrid. Within these models, exist many different food hub structures. Direct-to-consumer hubs focus on the sale of produce, they involve direct contact between the producer and consumer, retail prices are charged, they include drop-off or farmgate to door service and can operate with staff and volunteers. Examples include Community Supported Agriculture (CSA) programs that involve one or multiple producers and virtual food hubs. Wholesale food hubs often target commercial consumers such as restaurants, grocery stores and institutions. Products are often aggregated from multiple producers to supply large volumes of food. Wholesale food hubs deliver products to end customers, may offer technical support for producers, focus on large quantities sold at wholesale prices and offer a large variety of products. This type of model typically requires infrastructure such as a warehouse, and washing, grading, and packing facilities. Co-operatives are a common model used for this type of food hub. Hybrid food hubs combine both retail and wholesale customer needs to expand market access for producers (Matson et al., 2015b). Food hubs that may be found under these models include boutique or artisanal food hubs, consumer-cooperative hubs or buyer clubs, destination food hubs, neighbourhood-based food hubs, online food hub networks, regional aggregation food hubs, rural town food hubs and hybrid food hubs that

incorporate a multiple activities and food hub types under one umbrella (Horst et al., 2011). Agri-food centres, such as Sprout Kitchen Regional Food Hub (see section 2.1), is also considered a hybrid food hub model.

1.3 Governance Structures

Food hubs can take on many shapes and sizes. The governance model used depends on the needs and objectives of the local community. Most commonly food hubs are governed by non-profit models and co-operatives with other hybrid models such as social enterprises that incorporate environmental and community development mandates into their for-profit models (Blay-Palmer et al., 2013). Food hubs can also take on hybrid or co-governance models that incorporate collaborative governance structures involving the public and private sectors (Johnston & Andree, 2019). Food councils often take on these types of hybrid models with the intent to share responsibilities and balance decision-making power across the various groups.

Co-operatives

A co-operative is defined as "a jointly owned and democratically controlled enterprise that supports the common economic, social, and cultural needs of its members" (Vancouver City Savings Credit Union, 2021) and "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise" (International Co-operative Alliance, 2018). This governance structure is distinguished by the ownership of the operation. Membership is voluntary, and becoming a member is equivalent to becoming a shareholder in the company. Equity is typically obtained from membership fees, sale of stock or commitments to withhold net income (Matson et al., 2015a) Several models of co-operative exist producer/marketing, consumer, worker, investment, multi-stakeholder, new generation, housing, and community service (Co-operatives First, 2021).

Generally, shareholders have a vote in electing a board of directors composed of other members, who are accountable for membership. There are different levels of co-operatives, in a primary co-operative, members have a nominal vote--this may differ between levels, however all levels are governed democratically. Surplus acquired by the enterprise is distributed to members in a manner consistent with the active contribution of each to the enterprise. The concept is of co-ownership of the enterprise members are benefitting from, so those affected have a say in how it should be administered. Members should be actively involved in decision making and policy making (ICA, 2018).

Non-Profit Organizations

Non-profit organizations are formed to achieve public good and may be informally organized or become a legally incorporated entity under the laws of the province in which they are formed while others may be formed under federal statutes. Legal incorporation is of particular importance for liability purposes. All profits generated are reinvested in the activities designed to achieve the organization's stated purpose, which often has a social issue focus (MacDonald, 2020). Non-profits are exempt from income tax and donations from outside sources are tax-deductible. However, they are still liable for employment taxes for their employees (Habib, 2018).

Unlike registered charities, non-profits do not have to operate for solely charitable purposes. Their mandates can include goals regarding social welfare, civic improvement, recreation-- any goal except for personal profit. They also do not need to follow the registration process for charities, and they have no spending requirement. Non-profits conduct themselves as business corporations would, except that they are run by a committee as opposed to an owner, have members rather than shareholders--they do not sell shares--and any

profit made by the company must be used to fund the activities of the organization as opposed to endowing its members. Members may be required to pay a fee. Non-profit food hubs have been established as both non-profit companies and subsidiary companies (Government of Canada, 2021b).

Typically, non-profits rely heavily on volunteers, while also employing a small staff. A board of directors fills the overarching regulatory role; it is frequently filled by volunteers, though this may depend heavily on the size of the operation. Non-profits can range in sizes from national groups or networks to community-level organizations (Government of Canada, 2019). They are common throughout the country, and Yellowknife hosts several including Food Rescue Yellowknife, Ecology North, Arctic Energy Alliance, and the NWT Literacy Council (Food Rescue Yellowknife, 2021; Ecology North, 2021; Arctic Energy Alliance, 2021; NWT Literacy Council, 2018). They can create and host programs, offer services, disseminate information, invest in infrastructure, and establish partnerships; an example of one is the Alaska Food Hub, which operates an online marketplace (Alaska Food Hub, n.d.).

Social Enterprises

Social Enterprises straddle the border between the public and the private sector and break new ground in the allocation and management of economic resources. Social enterprises take an entrepreneurial approach and draw on the local environment to enhance their economic and social performance (OECD, 2020). A social enterprise is an organization that applies commercial strategies to maximize improvements in human and environmental well-being, by selling goods and services that advances social, economic, or environmental causes while also generating revenue (Tandon, n.d.). Social enterprises can be structured as a for-profit or non-profit, and may take the form of a co-operative, mutual organization, a social business, or a charity organization. They are structured like commercial businesses, with a business model, a consumer base, and revenue streams. These revenue streams go back into the initiatives of the enterprise (apart from the repayment to investors), creating self-sufficiency in their operations (Habib, 2018). A fundamental difference between non-profits and social enterprises is the source of funding. Where Non-profits rely on public funding through donations, Social enterprises are businesses; they generate their own profit to keep themselves running (Habib, 2018). One characteristic typical of a social enterprise is the employment of people who are often marginalized from the workforce. This allows a wholly contributive initiative by social enterprises on creating social good. Unlike non-profits, social enterprises are not tax-exempt (ibid.).

For-Profit Companies

For-profit companies or businesses are organizations whose activities seek to create income which is distributed to its shareholders and/or owners and to cover operational costs (Matson et al., 2015b). For-profit companies are privately owned businesses, where owners are responsible for decisions regarding the company. The owner, or owners, establish a board of directors or shareholders to regulate and manage business operations. Shares of the company may be sold, and some rights are associated with owning shares; depending on the class of shareholder, (i.e., the size of the portion of the company owned) they may be given a vote in company decisions, the right to receive dividends, or the right to receive the remaining property if the business is dissolved (Government of Canada, 2016). For-profit businesses need to file taxes with their respective government tax agency (Government of Canada, 2021c). In contrast to traditional for-profit food distribution companies such as grocery stores or institutional food providers, for-profit food hubs consider both producers and consumers as clients. Thus, they strive to meet the needs of both groups- in

particular, balancing fair price for producers' products without elevating costs for consumers.

Food Councils

A food policy council is a coalition of volunteer stakeholders from all sectors of the food system, composed of multiple organizations and individuals, that seeks to improve the food system in its community by examining how said system currently operates, then providing policy recommendations, actions, and ideas, and creating projects. They connect important players from across the board and provide a setting for collaboration between these groups, big and small, uniting activists, and experts. Typically, they include producers, processors, distributors, and food waste managers, and may incorporate representatives of community or grassroots movements. Other sectors that can be of benefit to incorporate include health, anti-poverty, education, business, nutrition, etc. to some capacity. With the goal of solving broad food system issues, they take the approach of addressing policy, planning, and decisions rather than direct action or infrastructure (Community Food Strategies, 2021; National Collaborating Centre for Healthy Public Policy, 2011).

While the definition usually describes a community-level council, they can be larger, at provincial or national levels. There is a national Canadian Food Policy Advisory Council. It is described as a "multi-disciplinary group [that] has the expertise and lived experience to bring diverse social, environmental, health and economic perspectives to the table to help address food system challenges and opportunities of today and into the future" (Government of Canada, 2021a). Their role is to report to the Minister of Agriculture and Agri-Food to advise on issues, maintain ongoing discussion of food-related challenges and opportunities, share information and best practices, assess gaps in policies and data, and advise on the implementation of the national Food Policy to achieve its outcomes. This council was in-stated to support the first national food policy in Canada, launched in 2019 (Ibid.). Some examples of Canadian communities with food councils include the Toronto Food Policy Council, Calgary Food Policy Council, Vancouver Food Policy Council, Winnipeg Food Council, and the Thunder Bay and Area Food Strategy (City of Toronto, 2021; Grow Calgary, n.d.; City of Vancouver, 2021; City of Winnipeg, 2021; TAFS, 2021).

This governance structure may not fill the definition of a food hub. It can however be the host or a precursor to a food hub. Food councils play an important role by examining issues and policies, therefore keeping the legislation and action up-to-date and accurate for the community's needs.

1.4 Operationalizing a Food Hub

While food hub models often vary in governance structures, objectives, and physical infrastructure assets, they share common considerations for managing their operations. The USDA published a series of user guides to support food hubs to manage their operations (Matson et al., 2015a; Matson et al., 2015b; Feldstein & Barham, 2017; Matson et al., 2018). The guides draw on interviews, surveys, and case studies from food hubs across the United States, providing learnings, best practices and suggestions for communities looking to establish their own hubs. Financial viability, Infrastructure, human resources, health and safety and marketing are all elements to consider when operating a food hub. Feldstein and Barham (2017) discuss lessons learned from food hub closures to identify common mistakes to avoid.

Financial Viability

Financial viability is essential to any food hub operation. When starting up, access any available funding, should incorporate long-term planning to reach operational profitability to maintain a viable food hub operation. Some operations can be leveraged through partnerships and working with existing infrastructure to satisfy user needs. This can

help to reduce overall costs and make the overall operation more financially viable (Matson et al., 2015a). As a food hub becomes viable, if it is a for-profit organization it can start to return profit to stakeholders. As a non-profit, it could return those profits back to community ventures to further support social and environmental causes. For profitability to occur the hub must maintain a minimum level of sales, requiring buying from producers and consumers alike. To do this, consider diversifying products and including value-added products to keep customers interested and have products on a year-round basis. Eggs, dairy, frozen foods, meat, fish, and frozen and prepared foods could be considered, especially when fresh produce is not available (Matson et al., 2015a; Matson et al., 2018).

Infrastructure

Often infrastructure is needed to support food hub functions. Wholesale food hubs may require warehouses with washing, packing, and sorting equipment and storage facilities. Direct-to-consumer food hubs may require a retail location such as a storefront or farmer's market. Commercial kitchens, online platforms, transportation, and growing infrastructure can be essential depending on the food hub's goals (Matson et al., 2015b). Access to infrastructure should be secured over the long term to support food hub activities and the needs of producers. Partnerships with existing organizations with access to infrastructure such as food banks, community kitchens and churches can help reduce overall costs (Matson et al., 2015a).

Transportation

As transportation and logistics may be one of the largest expenditures within a food hub therefore experience and an understanding of costs in this area is critical (Matson et al., 2015a). Transportation is particularly costly and logistically complicated in the north so this could be an important avenue to seek partnerships and support from existing organizations and companies in the industry.

Human Resources

Human resources are possibly the most important aspect of a food hub. Depending on the size and operations of the food hub one or more paid, full- and part-time staff may be needed. Volunteers are common among smaller food hubs which can help reduce overhead costs, however over the long-term most positions, especially key leadership roles, should be paid. This will ensure employees have the skills needed to fulfill their roles, longer-term labour commitments can be made, and institutional knowledge and relationships maintained. In some cases, one individual can take on several roles to save costs. Positions can include office management, marketing, volunteer coordination, sales and relationship building, general labour, logistics, food safety, accounting and finance, fundraising, capacity development and outreach and executive director (Matson et al., 2015a; Matson et al., 2015b).

Health and Safety

Encourage and support producers to obtain health and safety certificates to ensure food bought and sold through the hub is safe for consumers (Matson et al., 2015a). Policies should be put in place for regulations around food safety standards as well as quality control of products for sale through the hub (Matson et al., 2015b).

Marketing

Marketing strategies depend greatly on target customer bases, how the food hub will function and the size of the organization. Often food hubs aim to promote buying local, which is most effective through relationship marketing and networking. Strategies will need to be tailored to the specific needs of customers. If direct marketing to the consumer is desired, sales can be supported through an online ordering platform with specific pickup locations. If institutional or commercial

customers are your desired market, transportation to their facilities may be required. Social media, branded products and a website can support general marketing to a broader audience (Matson et al., 2015b). From a series of case studies of food hub closures, Feldstein and Barham (2017) conclude that most food hub closures start with internal management issues and board governance, especially regarding providing guidance and making sound management decisions. From those cases, the authors summarized six key lessons. These include, develop a detailed business plan, establish a strong financial standing, hire expert staff with a wide range of qualifications and local cultural understanding and existing relationships, focus on your strengths and build partnerships to compensate for weaknesses, know your customers and markets to best serve them and understand the food production process to ensure you have a year-round supply of products. While these are all important lessons to learn from failed food hubs, Feldstein and Barham also emphasise that data shows that food hubs can be very resilient, able to adapt, grow and shrink depending on their circumstances and that they have comparatively high survival rates. Using data from the US national food hub survey, 88 percent of food hubs survived beyond five years between 2005 and 2011.

Food hubs have the potential to support growth in the local food system, normalize sustainable practices, and balance fair prices for producers and consumers. They can support local economic development in the agri-food industry and help to address food security issues within a community. For a food hub to be successful, it must be structured on an understanding of the assets and gaps that exist within the community, the needs and interests of food stakeholders and operate within a supportive policy and regulatory environment. Community consultation is the first step to determining if a community can and wants to support this type of venture.

This literature review provides an overview of structural, governance and operational considerations to be made when establishing a food hub. This study aims to facilitate conversation to gain a better understanding of the assets and constraints in Yellowknife's food system. It seeks to identify how a food hub can help to address the unique needs of local producers, food business owners, consumers, and social organizations through community dialogue. The following sections highlight case studies, summarize community voices, and discuss how community-driven solutions can help Yellowknifers build the sustainable, equitable and vibrant food system they envisioned in the food charter.

WANT TO LEARN MORE?

The US Department of Agriculture (USDA) has a series of practical guides and lessons learned that touch on many aspects of food hub operations.

The images below include links to these resources. Additional resources are included in the references section of this document.

2.0

CASE STUDIES

The following case studies provide an overview of three food hubs based in northern communities, with a similar or smaller population and relative isolation from major urban centres. These cases outline different functions, priorities, funding sources and governance models and give insight into each food hub's successes and challenges.

2.1

Sprout Kitchen Regional Food Hub

Quesnel, British Columbia

Sprout Kitchen Regional Food Hub (SKRFH) is a new food hub established in February 2021 in the City of Quesnel, British Columbia. A member of the BC Food Hub Network, SKRFH is an incubator space that provides commercial kitchen space and support for entrepreneurs in the North Cariboo region to start and expand their businesses. SKRFH also provides shared access to processing infrastructure, testing equipment, food business advisory services, product development services, applied research opportunities, analytical services, education, and training related to food processing and food safety. The food hub holds a lease for a 2,689 sq ft building in West Quesnel (Sprout Kitchen Regional Food Hub, n.d.).

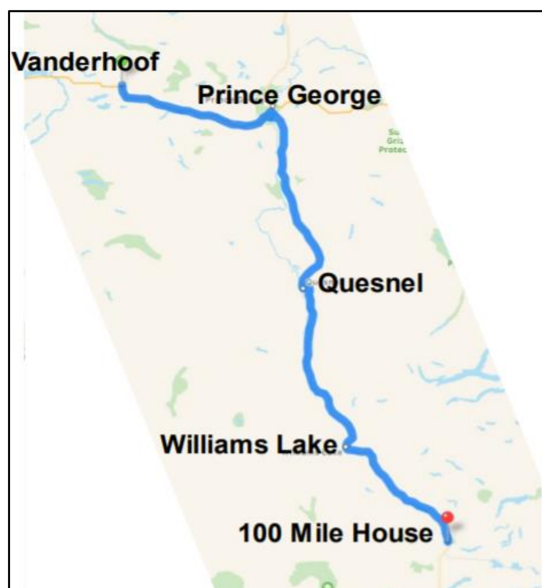
Figure 2: SKRFH building at 101 Marsh Drive, West Quesnel BC (SKRFH, n.d.)

2.0 CASE STUDIES

Community Characteristics

SKRFH is in Quesnel, British Columbia, a community of 10,000 with a service catchment area of approximately 23,000 (City of Quesnel, 2021a). The community is in the North Cariboo Regional District of BC's northern interior, on the traditional territories of the Lhtako Dene, once a major settlement for the Dakelh people (City of Quesnel, 2021b). Quesnel is 121km south of Prince George, the closest major centre, and 599km north of Vancouver on Highway 97. Primary industries in the North Cariboo district include forestry and outdoor recreation and tourism. The average household income is $59,088 (2016) and the labour force participation rate is 58.1 percent (Government of British Columbia, n.d.). While SKRFH is based in Quesnel, it services a regional corridor from 100 Mile House running north to Vanderhoof- a 250 km radius around Quesnel (Stott, Van Seters & de la Salle, 2019).

Figure 3: Map depicting the SKRFH service corridor (Stott, Van Seters & de la Salle, 2019)



According to the City of Quesnel's Regional Agri-food Centre Business Plan, agriculture in the North Cariboo Region consists primarily of cattle ranching and hay production. Value-added food processing activities are limited and only 23 percent of farms market and sell directly to consumers. Most processors are small businesses who sell directly to consumers through farmers' markets or local independent retail locations (Stott, Van Seters & de la Salle, 2019).

Regional Economic Development Approach

Given the limited number of industries in the region, economic diversification, specifically through agriculture, food processing and crop production, is a priority for the Cariboo Regional District and the City of Quesnel and is considered a viable economic development approach. The BC Ministry of Agriculture supports this vision through the BC Food Hub Network. This network is run and supported financially by the BC Ministry of Agriculture with the aim of stimulating regional economic development in the food and beverage industry. It acts as a support network for community food hubs across the province. The network consists of BC communities, government agencies, private industry, and post-secondary institutions. The network centres around the University of British Columbia's Food and Beverage Innovation Centre in Vancouver with 12 specialized regional food hubs like the SKRFH (Government of British Columbia, 2021a). The BC government defines food hubs as "shared-use food and beverage processing facilities that offer food and agriculture businesses access to commercial processing space, equipment, expertise and resources to support business development and growth" (Government of British Columbia, 2021a).

A member of the BC Food Hub Network, Sprout Kitchen is an incubator hub that provides kitchen space and support for entrepreneurs to start their own businesses. It provides shared access to processing infrastructure, testing equipment, food business advisory services, product development services, applied research opportunities, analytical services, education, and training related to food processing and food safety. The vision of SKRFH is to "foster a thriving regional agri-food sector that is a significant contributor to the local economy in the

Cariboo, Fraser Fort George and Bulkley Nechako regions", and the mission is to "be a catalyst to help food producers and processors from 100 Mile House to Vanderfhoof improve their sales and economic success" (Stott, Van Seter & de la Salle, 2019, p 12).

Agri-Food Centre Model: Meeting Local Needs

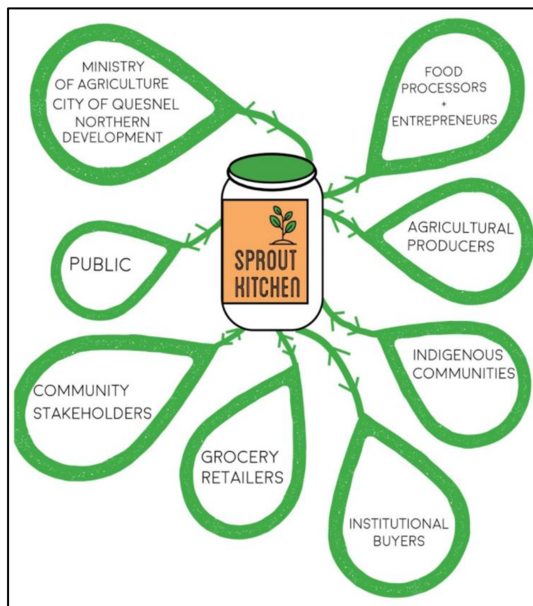
The SKRFH aims to meet several key infrastructure and service gaps identified in the Business Plan. These gaps include sufficient commercial kitchens and food cold storage facilities, abattoirs, fibre mills and food distributors suitable for the needs of smaller producers. Surveys of local stakeholders further identified a need for the following services: training, education, and information; networking and mentoring; marketing support; product development support; access to land, facilities and equipment and brokerage and distribution support (Stott, Van Seters & de la Salle, 2019).

Based on this understanding of local community needs, the agri-food centre model was chosen. "Agri-food centres are designed to support local food producers/processors and are typically customized to take advantage of regional assets and unique aspects of the local food and agriculture economy" (Stott, Van Seters & de la Salle, 2019, p 4). Not only is this model championed by the BC food hub network, but there are also numerous examples of this type of food hub in the surrounding region that could provide information, support, and a better understanding of the types of services requested by communities with similar needs.

To date SKRFH connects local food processors and producers to support growth in the local food market, it provides the space and tools needed for new businesses to create and innovate products on a commercial scale and it has training opportunities and consulting services. The food hub offers workshops, individual consultations for marketing and packaging, label printing and packaging sales, shipping and receiving support, access to a distribution and sales network and lab testing for food products. The newly installed commercial kitchen has five working stations, communal equipment such as a gas range stove, convection oven, mixers, dishwashing station, freezer and cold storage space and additional space for members to install specialized equipment for product development (SKRFH, n.d.). Access to equipment, resources and consulting services are available on a fee per use basis. Rental agreements are flexible to ensure members only pay for the equipment and services they need. In the future Sprout Kitchen aims to develop additional benefits such as a co-packing service, membership to a northern BC grocery marketing alliance, a regional distribution route, regional food events and a collaborative funding program through the Community Futures program (SKRFH, 2021a).

Figure 4: SKRFH Kitchen (SKRFH, n.d.)

Figure 5: Sprout Kitchen distribution model (SKRFH, 2021)



The Sprout Kitchen distribution model identifies the varied stakeholders who may benefit from SKRHF services.

Key regional stakeholders include local businesses and organizations such as the North Cariboo Agricultural Marketing Society, Growing North Cariboo Society, as well as FARMED who leads a regional Agriculture Working Group to help identify priority activities such as development of the Quesnel Agriculture Centre Feasibility Study that led to the establishment of Sprout Kitchen (Stott, Van Seters & de la Salle, 2019; North Cariboo Agriculture Marketing Association, n.d.).

Funding for the SKRFH currently comes from grants and financial support from the City of Quesnel, BC Government, and the Northern Development Initiative Trust (SKRFH, 2021a) however in the long-term, the organization has developed a pay for service model that will provide multiple revenue streams and ensure individual businesses only pay for the services they use. This notwithstanding, the business plan suggests in the first year of operations, the business will incur losses of approximately $68,000 and that grants may continue to be a necessary source of funding to offset losses for the first 4 years (Stott, Van Seters & de la Salle, 2019).

Governance Model

The Business Plan outlines four potential governance models for this type of food hub: private/for-profit, cooperative, social enterprise non-profit and publicly owned Stott, Van Seters & de la Salle, 2019). The SKRFH adopted a non-profit model in partnership with the local municipal government. The Non-profit governance model has an Executive Director and is governed by a volunteer board of directors (Stott, Van Seters & de la Salle, 2019; personal communication, Sprout Kitchen Project Coordinator, April 2021).

Successes and Challenges

While the SKRFH is newly established, the idea for it has been percolating for five years. It was not until funding became available that the food hub became a reality. The City of Quesnel leadership noted that there was economic development potential, and a strong local food movement and existing farmers' market was evidence that the community was ready to support this project (personal communication, Sprout Kitchen Program Coordinator, April 2021).

Since it opened its doors in 2020, Sprout Kitchen has enabled growth in the number of food businesses in the community. It has helped local entrepreneurs save money by providing access to a workspace that would otherwise have to be built solely at the expense of the individual businesses. As Sprout Kitchen is still in its early stages, membership recruitment is a challenge which has been further hampered by delays in getting the kitchen fully operational. The organization's non-profit governance model and partnership with the local municipal government has contributed to a slow and cumbersome decision-making process (personal communication, Sprout Kitchen Program Coordinator, April 2021).

Because the SKRFH is in its very early stages, it is uncertain whether the model will be sustainable over the long term. Currently they are recruiting

members to build their network of users and use a space rental and fee for consultation services model to cover costs. Funding also comes from grant funding from the BC Ministry of Agriculture and Northern Development Initiative Trust as well as community in-kind support. While there is no data to be shared from SKRFH the Business Plan suggests that the food hub would work at a loss for the first five years of operation (Stott, Van Seters & de la Salle, 2019).

In 2019, sales in BC's food and beverage industry reached $10.5 billion for the year and employed 35,700 people (Government of British Columbia, 2021a). Small and medium businesses such as those working out of food hubs across the BC Food Hub Network contribute to this success.

Contact information

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2.2

CLOVERBELT LOCAL FOOD CO-OP

Dryden, Ontario

Established in Dryden, Northern Ontario in 2014, Cloverbelt Local Food Co-op (CLFC) is a regional on-line cooperative farmers' market where members organize virtually to buy and sell local food products. The co-op also engages in activities that build relationships between farmers and consumers, increases access to local food and promotes educational activities about the benefits of eating local. Further to this, the CLFC promotes sustainable growing practices, fair prices, and healthy diets (Nelson et al, 2019; Seethechange.ca, n.d.). CLFC closed its doors in 2019 but has left a legacy in the region with smaller distribution hubs regrouping to restart the initiative.

Figure 6: Cloverbelt Local Food Co-op Logo (CBLFC Facebook page, n.d.)

2.0 CASE STUDIES

Community Characteristics

Dryden is the geopolitical hub for Cloverbelt is in the Great Lakes Region on the Trans-Canada highway, mid-way between the Ontario-Manitoba border and nearest major centre, Thunder Bay (350km to either destination). The population of Dryden is approximately 7,500. While most of the population is between 45-64 years (2,147), there is also a significant number of youths between the ages of 5-19 years (1,510) and 64 percent of the population is 15 years and older in the labour force based on the 2016 Canadian Census. Average household income in the community was $81,381 and 87 percent of the population aged 25 to 64 years had a high school certificate or equivalent or a higher form of education (City of Dryden, 2017). As Cloverbelt grew it served other regional communities as shown in Figure XX).

Building a Regional Food System

The CLFC was born out of a desire for Northern Ontario residents to access locally grown, sustainable food. The CLFC started with 85 members in Dryden, and quickly grew to 1,200 members with over 130 producers in nine communities across North Western Ontario (see Figure 1) (Streutker, Levkoe & Nelson, 2017). The CLFC was established to address issues of dwindling market opportunities for local farmers, few opportunities to come together as a community to sell products and limited access to seasonal markets. The goal of the CLFC was to increase access to local food and connect communities through a local distribution network (Nelson, 2021).

To draw in members who are geographically dispersed across long distances, CLFC adopted a regional co-op model centred on an on-line marketplace. This approach included a virtual market with localized distribution and pick up locations. The regional model of the food hub enabled smaller communities' access to local foods and expanded the reach of producers to sell beyond their nearest communities. The feasibility study undertaken by the Ontario Soil and Crop Improvement Association (OSCIA) suggested that 20 producers (in the region) and 100 consumers could sustain such a market, a number that was surpassed within the first year of operation (Streutker, Levkoe & Nelson, 2017). CLFC has three types of suppliers: producers, processors, and distributors. Producers sell raw products they have either produced or harvested and processors create value-added products. This gives consumers access to uniquely northern products such as morel and chanterelle mushrooms and blueberries as well as artisan foods such as local honey, baked goods, and

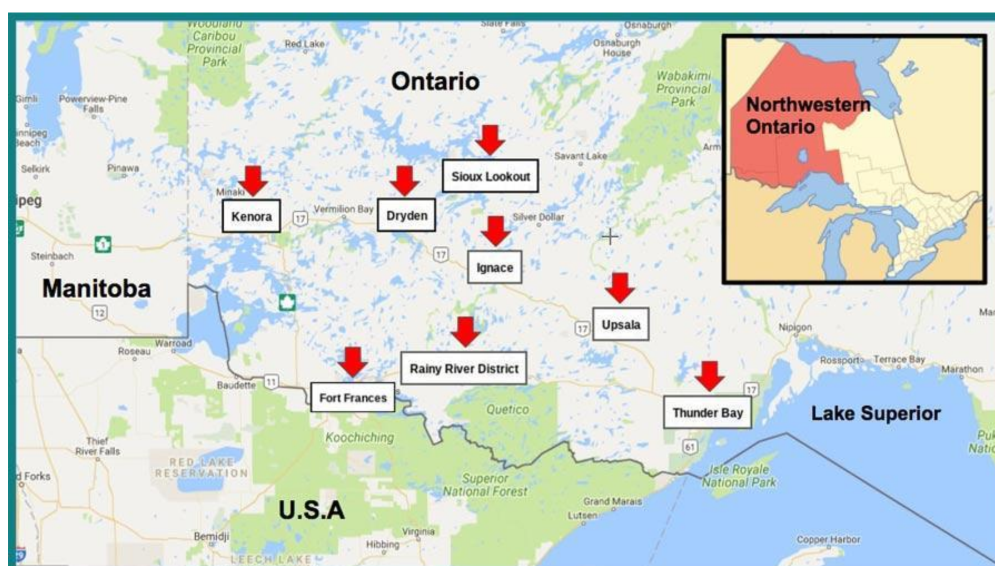

Figure 7: Map of Cloverbelt Food Hub Locations (Steutker, Levoke & Nelson, 2017)

gelato. A local grass-fed buffalo farm also sold products that would otherwise only be for purchase in larger urban markets (Nelson, Stroink & Kerk, 2015; personal communication, April 2021, Connie Nelson, past CLFC Co-op member). Distributors such as the Upsala General Store make products accessible in one place (Streutker, Levkoe & Nelson, 2017).

CLFC organized sales on a weekly schedule for Dryden and then set up a web-based schedule for other community deliveries. Consumers can pay online or with cash or cheque on-site. Product distribution is heavily dependent on volunteer support. Producers deliver their products to the main distribution hub in Dryden each week, and volunteers prepare boxes and transport orders to the satellite hubs in other communities (Nelson, Stroink & Kerk, 2015; LCSFS, 2019).

Figure 8: CLFC Greenhouse (Streutker, Levoke & Nelson, 2017)

In addition to the online market, CLFC also runs a community greenhouse with 18 raised garden beds. This space provides a public building to promote sustainable agriculture and local food in the region and helps to extend the growing season, an important consideration when growing food in a northern climate. Half of the greenhouse space is available for local businesses and the other half is available for community groups that are looking to enhance their own social entrepreneurship activities. The greenhouse also helped facilitate education programs which helped get youth interested in local food and food production (Nelson et al, 2019). The education program has helped to engage youth in the local community, providing volunteer opportunities such as helping to sort weekly food boxes on distribution days (Nelson, Stroink & Kerk, 2015).

Governance Model

The CLFC describes itself as a "regional on-line co-operative". Under this model, all co-op members are owners, and they have a voice in the mandate and operations of the organization. An annual general meeting is held each year to receive member input, with each member receiving one vote. Memberships cost $25 for consumers and $50 for producers for a lifetime term with additional 10% of each purchase and 5% of sales collected for CLFC overhead (Nelson, Stroink & Kerk, 2015; seethechange.ca, n.d.). To be an active member, consumers are required to place a minimum of two orders each year and producers must have products for sale at least once (Streutker, Evoke & Nelson, 2017). As a non-profit, charitable organization CLFC also has a volunteer board of directors, elected annually, by members. The board plays a crucial role in overseeing CLFC operations, approving new products, monitoring sales and, if necessary, removing members. Day- to-day operations are undertaken by full- and part-time staff, interns, and volunteers (Streutker, Levoke & Nelson, 2017; Nelson, 2021). The CLFC provides a platform for producers and consumers to buy and sell local food and it engages in activities that build relationships between producer and consumer members with the goal of increasing awareness and knowledge about the benefits of local food (Nelson, 2021).

2.0 CASE STUDIES

Successes and Challenges

Since its start in 2013, CLFC has made a great contribution to the local food movement in northern Ontario. In addition to managing an online buy-sell platform and organizing 9 community hubs and six pick up locations where customers could access local products, CLFC also ran a community greenhouse, operated a school education program, developed a regional food map, held training workshops for producers, hosted community events and raised awareness about local food options and helped create jobs and expand markets for businesses (CLFC, 2019; Nelson et al, 2019; Nelson, 2021).

An important CLFC contribution has been to reorganize the local food system, moving from a competitive to a collaborative dynamic. This has opened opportunities for consumers to access local food and expanded markets into new communities that were previously out of reach for some food businesses. Because producers and consumers were well connected through the on-line platform, producers became more flexible in response to consumer feedback. Producers in turn were able to offer the products they have in stock on the online marketplace, updating their lists on a weekly basis. This allows producers to account for seasonal changes in product availability week over week and reserve products for other sources such as the numerous farmers' markets that occur seasonally across the region. It also provides opportunities for individuals starting secondary businesses so they can augment their employment or other income sources (Streutker, Levkoe & Nelson, 2017; Nelson et al, 2019). In CLFC's first year of operation (2013), members' sales exceeded CAD$150,000 and increased sales to CAD $305,000 in 2016. Also, many member businesses were profiled in local newspapers giving them exposure to new potential customers (Nelson, Stroink & Kerk, 2015; Streutker, Levoke & Nelson, 2017).

In addition to providing local communities with access to regional food, CLFC also forged partnerships with the Kitchenuhamykoosib Inninuwug (KI) First Nation, a remote, fly-in community 435km north of Dryden. This partnership ran a pilot project to help local artists and harvesters sell their products at the on-line cooperative store in Dryden (Nelson, Stroink & Kerk, 2015). While there were many challenges to making this partnership sustainable, transportation logistics and costs as well as keeping inventory in stock, if successful, it could be a model for expanding throughout the region.

For CLFC, transportation of food to regional distribution points was the most complex challenge. Inclement weather and having sufficient product to cover the cost of travel were two key factors to consider. Alternatives such as partnering with companies with complementary distribution chains, in this case, a Kenora-based brewery, were sought to reduce costs to the co-op (seethechange.ca, n.d.). Access to external funding to employ staff was also a concern, especially in the first years of the co-op. A Marketing Coordinator position was funded through the provincial Local Food Fund, making sufficient funds to sustainably employ staff was a long-term goal of the co-op (Nelson, Stroink & Kerk, 2015). Although 5 percent of producers' profits went to CLFC's budget, overhead and transportation costs remained high (Streutker, Levoke & Nelson, 2017).

From a producer standpoint, access to bank loans for agriculture activities on what is considered by lenders to be 'marginal' land as well as regulatory quotas and policies both posed a problem, especially for small-scale operations. Because most of the agriculture in Ontario happens in the south, under different conditions and to larger markets, policies and regulations reflect this reality. For CLFC and local agriculture businesses to thrive, access to the proper resources and flexible regulations must be in place and work to benefit local producers (Nelson, Stroink & Kerk, 2015).

Figure 9: Vegetables sold at CLFC (Streutker, Levoke & Nelson, 2017)

Closing the Co-op

Financial insolvency had members ultimately vote to dissolve the co-op in September 2019. In a letter to its members, CLFC cited the following challenges to sustaining the organization (CLFC, 2019):

1.) **Declining customer engagement** in 2018 which led to a decline in products offered by local producers which further drove down consumer engagement. Some members stated that a lack of convenience was a factor in not purchasing food regularly through the co-op.

2.) **New regulations** brought in by the Government of Ontario and the North-western Health Unit brought more stringent limitations to producers and resulted in the closing of the sole egg grading station in the region. As eggs and poultry were considered an anchor product the loss of local, farm fresh eggs to the product list led to a reduction in orders.

3.) **Website changes** caused confusion and contributed to decline.

4.) **Volunteer capacity** The CLFC noted that while the board of directors had 7 positions, only 5 were filled and these were of long-standing volunteers who did not have all the skills necessary to support the co-op's needs.

5.) **Financial management** Inadequate financial record keeping, and yearly auditing was not done for several years. Without the necessary funds to recruit a staff member capable of rectifying this issue it was no longer possible to apply for further funding support.

Despite these challenges, CLFC has left an indelible mark on the region. It has brought awareness to the importance of local food, acted as a springboard for new food businesses, and connected local communities across the region. Despite its dissolution in 2019, volunteer groups within the various communities are active in attempting to re-establish a new food hub model that will continue to serve the broader community and provide people with access to local food (personal communication, March 2021, Connie Nelson CLFC past co-op member).

Contact Information

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2.3

ALASKA FOOD HUB

Homer, Alaska

The Alaska Food Hub (AFH) is based in Homer, Alaska. Established in 2015, by local non-profit Cook Inletkeeper, AFH is an online buy-sell platform that functions as an "online farmers' market". This regional hub has weekly delivery points in four communities, including one remote community accessible only by boat/plane, to help growers, fishers, and other food businesses to broaden their customer base and provide smaller communities with access to local food. The hub functions on a sliding scale customer model to support hub management and coordination.

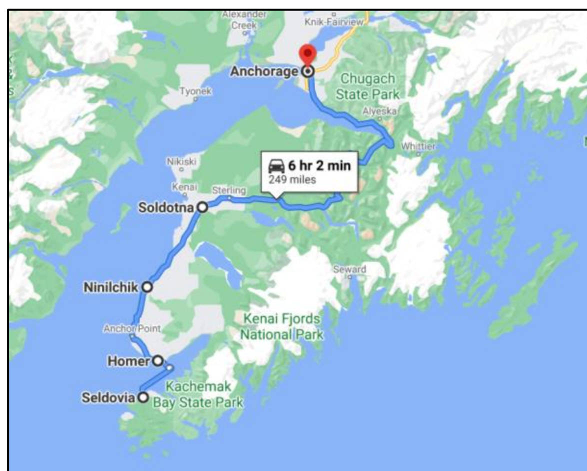
Figure 10: Alaska Food Hub Logo (Alaska Food Hub, n.d.)

2.0 CASE STUDIES

Community Characteristics

The AFH is based in Homer, Alaska, and services four communities in the Lower Kenai Peninsula and has run trials operating as the City of Anchorage to the south (AFH, n.d.b.). The Kenai Peninsula in south-central Alaska. In 2018 the population was approximately 58,000 and median household income was USD$66,684 (DataUSA, n.d.). The City of Homer had an estimated 5,313 residents in 2017 with an economy centred on fishing and other marine activities and outdoor recreation and tourism (City of Homer, n.d.a.). The surrounding area as well as seasonal residents and workers add approximately 4,000 additional people bringing the population using local services to around 9,000 (personal communication, AFH Director, Robbi Mixon June 9, 2021).

Figure 11: Map of AFH Community food hub locations (Google maps, 2021)



The Approach

The AFH was established in 2015 with a grant from the US Government to start a local food promotion program that aimed to increase access to local food and expand markets for producers and processors through an online food hub. The goal of this program was to "improve and stabilize local food systems by increasing marketing opportunities for local producers and expanding access to and purchasing of local foods on the Lower Kenai Peninsula" (AFH, 2021a, 2021b). The primary goals of the AFH are to connect producers and consumers, ensure food is accessible to all income levels, support high quality and sustainably produced food, maintain a local production and distribution network, and support a food system that respects the integrity of the surrounding environment (AFH, 2021b).

This online model enables the food hub to service a farther-reaching area year-round. It connects communities, helps preserve farmland, invigorates local economies, and decreases the carbon footprint of food consumed by families in the region (AFH, n.d.b.). The AFH policy manual encourages producers to disclose their growing and harvesting practices to increase transparency and informed purchasing and requires that vendors produce, process, or harvest their products personally and do not purchase items for resale through the marketplace. AFH provides guidelines for what constitutes a value-added product and requires that as many ingredients as possible be produced by the vendor. AFH has specific guidelines for vendors informed by state regulations on cottage food and prepared foods (AFH, 2021b).

The AFH has adopted a weekly order cycle which allows consumers to select their desired products and drop-off locations. The system is cashless, and customers are charged once their orders have been received. This system ensures that farmers are paid promptly for their products and consumers are only charged for the products they receive in the case the whole order cannot be filled (AFH, n.d.b.). The online marketplace is complemented by a distribution network. Vendors transport products to two predetermined locations each week and AFH volunteers and staff pack orders and transport products to regional pick-up locations (AFH, 2021b).

In addition to the online marketplace, AFH also hosts training and capacity building events for producers. These events help ensure that producers are informed about local policies and regulations

and gain important skills to help grow their businesses. Recent topics included, scaling up production, and a local food leader certification course. Free courses and webinars are often offered in partnership with other organizations and promoted through the website. Through the website, producers also have access to resources, funding opportunities, conferences, and other opportunities to network with other producers and the industry (AFH, n.d.c.).

Covering the Costs Equitably

AFH has developed several funding streams to ensure the organization's costs are covered. These include membership subscriptions and mark-ups on products. Both producers and customers purchase yearly memberships. Memberships for producers cost USD$40 and for customers it works on a sliding scale ranging from USD$1-100. The amount paid to join is decided by individual customer-members to make the memberships accessible to all. Membership fees help to offset food hub operation and overhead costs such as staff salaries, web marketplace fees and advertising.

Product mark-ups are set at 18% for seafood and meat and 25% for all other items sold. As a non-profit, the mark-up margin is re-evaluated annually based on the overall volume of products sold and the breakeven point for covering costs while continuously aiming to provide a fair pricing scheme for vendors. As a benefit to institutions and those purchasing in bulk, a 10% discount is applied to all orders over USD$150. AFH also relies on in-kind support and volunteers to reduce costs and access needed skills. Other funding to support AFH comes from donations and grant funding as well as merchandise sales (AFH, 2021b; AFH n.d.a.).

Governance Model

AFH is administered by a parent organization, Cook Inletkeeper. It started in 2015 through a 2-year grant from the USDA Local Foods Promotion Program and was officially launched in 2016. Originally the Kenai Peninsula Food Hub, when the program expanded to include Anchorage, a new name was needed and in 2018 the Alaska Food Hub was rebranded (AFH, 2021b). As AFH is a program, not an organization, it is managed by an advisory board instead of a board of directors. This advisory board consists of farmers, fishers and crafters who participate in the program. The board manages business, advertising and other organizational infrastructure as needed. Staff are employed by Cook Inletkeeper and work under the instruction of the advisory board and of the Cook Inletkeeper board of directors (AFH, 2021b).

Figure 12: Food sold at AFH (Alaska Food Hub, 2021)

Success and Challenges

Between 2016 and 2020, AFH grew its customer base from 498 to 1,815 with a 33% increase in growth between 2019 and 2020. Approximately half of customers lived in Homer, 30% were in Soldotna and the remaining 19% lived in Seldovia, Anchorage and Ninlchik. Of these members, 42% placed at least one order in the year which translated to sales (AFH, 2021a). In 2020 most customer members paid USD$20 for a membership fee (89 people) while a further 47 paid USD$40 and 2 individuals paid $250. Between 2016- 2019, customer memberships earned approximately USD$2,000 annually for AFH however in 2020, memberships brought in USD$5,807 in revenue. In 2020, there were 47 vendor members accounting for USD$1,840 in

revenue. In 2020, memberships, sales, donations, and other income sources equated to USD$159,510 in total revenues for AFH (AFH, 2021a). One possible reason for the dramatic increase in membership and sales between 2019-2020 is that AFH has been able to provide a safe and reliable source of healthy food during the Covid-19 pandemic. New protocols for ensuring safe, no-contact drop off and pick up of food orders was implemented early on to ensure health and safety and prevent spread of the Coronavirus (AFH, 2021b).

As of 2018, small producers known in the US as the 'cottage food industry', can sell food to the AFH. A business is considered part of the cottage food industry when its sales generate less than USD$25,000 annually. These businesses can make products deemed low risk at home and are not subject to the strict health and safety protocols required by a larger food business. With the variance given to AFH for allowing online sale of cottage foods, AFH can expand their product offerings and provide a platform, marketing and customer base to individuals looking to supplement their incomes or start up new ventures on a small scale (AFH, 2021b). In 2020, cottage food industry foods brought in approximately USD$8,000 in profits (personal communication, AFH director, Robbi Mixon June 9, 2021). To make local food more accessible to low-income residents, AFH is seeking to gain authorization to accept Government food subsidies through the SNAP program. They also operate one of their sites out of the Homer Food Pantry, helping to make it easier for members to donate. AFFH is one of several food hubs and online businesses aiming to make their products accessible in this way (AFH, 2021b).

AFH has grown exponentially over the years, however some challenges remain. There is still a need for more customers and more vendors to drive profits and enable AFH to reach a self-sustaining level based on their mark-up cost on products. Customer to hub challenges include a need to turn registered, non-purchasing members into regular buyers. The low cost for membership means that little is lost if an individual decides not to make an order. Also, while many customers continue to purchase their products through the hub, some choose to avoid mark-up costs and purchase products directly from vendors. While building direct connections between producer and consumer is important, the loss in revenue for the food hub is problematic. Vendor to hub challenges include retention of vendors over the long-term, vendor perspectives of the food hub's markup scheme, the need for vendors to follow strict quality control and policies and adhere to health and safety guidelines, and a need to increase the type and quantity of products available to customers (AFH, 2021a).

Contact Information

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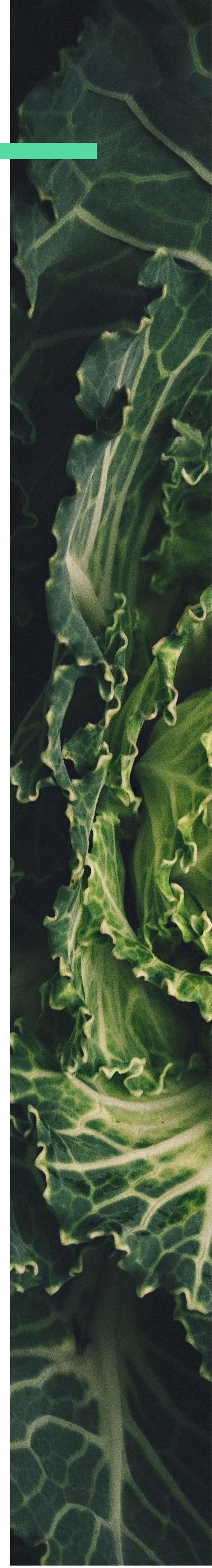


3.0

YELLOWKNIFE FOOD SYSTEM

Yellowknife is the capital city of the Northwest Territories. In 2020, the city had the largest population in the region, at 21,896; almost half of the territory's population (45,161) (NWT Bureau of Statistics, n.d.a.). In 2018, the average family income in Yellowknife was CAD$136,757 (NWT Bureau of Statistics, n.d.b). Despite having relatively high incomes compared to the rest of the territory, 16.7 percent of people in Yellowknife still experienced food insecurity as they worried either sometimes or often about having enough money to purchase food (NWT Bureau of Statistics, n.d.c.). The city was first established as a mining town but has since grown into an urban centre with varied employment opportunities, leisure activities and a vibrant tourism industry. While commercial food production is a new phenomenon for the city, home and community gardens have long been common, especially prior to road and regular air transport (City of Yellowknife, 2019a).

A profile of Yellowknife's food system was developed through conversations with local food actors, government officials and businesses during this study. The Northwest Territories, including Yellowknife, is in a nascent stage of growing its agriculture and local food industry. While food production is relatively new, Yellowknife's local food system is diverse and vibrant. Most of the food grown in the city is done by backyard and hobbyist gardeners who grow food for personal consumption and to share with friends and neighbours. A portion of this food is also accessed by low-income families through local food donation programs (YCGC, n.d.). Currently there are three small-scale commercial producers who grow for the Yellowknife market. Other sources of 'local' produce sold in Yellowknife are sourced primarily from the South Slave region around Hay River. Commercial growers in this area supply fresh produce such as leafy greens, eggs and potatoes to Yellowknife restaurants, grocery stores and, in the past, to the Farmers Market. Most of the farmers in the South Slave region sell wholesale produce into the local market through restaurants and grocery stores. In contrast, producers in Yellowknife predominately sell at retail prices directly to consumers. Local food can be purchased at a limited number of locations across the city; the farmers market being the primary source. Local food is also sold at three

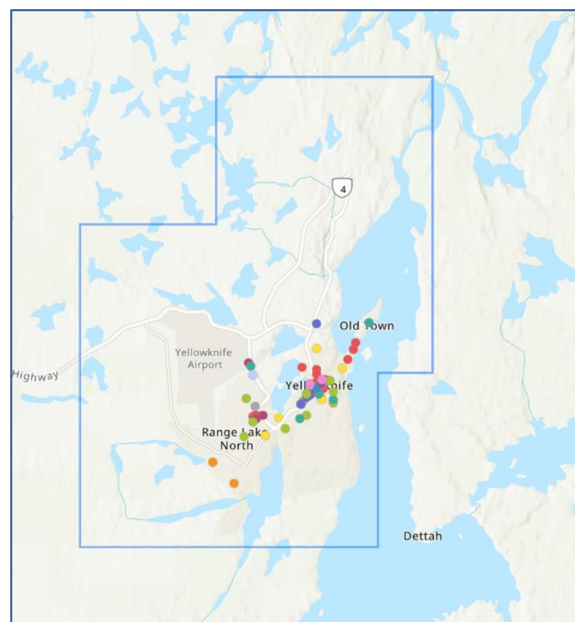
restaurants and occasionally at the Co-op and Independent grocery stores. Finally, two of Yellowknife's producers run Community Supported Agriculture (CSA) vegetable box subscriptions for a combined total of approximately 25 households.

In addition to the sources above, Yellowknife's food system also includes wild foods such as fish, meat, berries, and plants harvested from the surrounding environment, also known as traditional or country foods. These foods make up part of Indigenous Peoples' traditional diets and are enjoyed by many people across the community. Most country foods are accessed through family and friends or by participating in harvesting and hunting activities. Some country foods, such as caribou and moose are not sold, while other products including berries, fish and plants can be purchased in season. However, fresh fish is often difficult to find for sale despite its abundance across the territory.

The climate and short growing season pose a challenge in Yellowknife, limiting production for local farms and gardens. Food can be grown outdoors between late-June and late-September with an extended season by several weeks on either end with the aid of tunnel covers and greenhouses. Yellowknife has a mean annual temperature of -4C, with approximately 123 frost free days throughout the summer months. The city is situated in a plant hardiness zone of 0b (City of Yellowknife, 2019a). This means that many plants will not grow to maturity without mechanisms such as tunnels and greenhouses, to extend the growing season.

Agriculture is a new industry in the NWT and as a result it is experiencing growing pains. In Yellowknife, commercial fruit and vegetable production is hampered by high costs of inputs, unclear processes for acquiring authorizations for commercial growing and processing and the struggle to provide sufficient local food to influence customer habits to integrate local food into their diets. Many of these issues were identified in the City's 2019 GROW Strategy and are being addressed through the implementation plan.

Figure 13: Map of Municipal Boundaries of the City of Yellowknife, NT (Yellowknife food asset map, n.d.)



4.0

RESEARCH STUDY

Since 2016, Wilfrid Laurier University (Laurier) has played an active role in the development of a more sustainable food system in Yellowknife through partnerships with Ecology North, the Yellowknife Food Charter Coalition, and the Yellowknife Farmers Market (YKFM). This work has supported a broad network of individuals and organizations that have been working to build local policy based on the Yellowknife Food Charter and to drive action on food security (Johnston & Williams, 2017). This community-led research has been supported through Laurier's SSHRC Partnership Grant "Food: Locally Embedded, Globally Engaged" (FLEdGE) which aims to foster food systems that are socially just, ecologically regenerative, economically localized and that engage citizens. Some of the actions FLEdGE researchers have supported in Yellowknife include planning and implementing food-related initiatives across the city, including the popular Fall Harvest Fair, Community Supported Agriculture Supper Clubs, community consultation as part of the Food Policy for Canada and an evaluation of the Yellowknife Farmers Market (Radcliffe et al., 2021). More recently, Laurier has supported the establishment of the Territorial Agri-Food Association and local food production, climate change adaptation and action plans in communities across NWT (Spring et al. 2020). The City of Yellowknife approached Laurier researchers to form a partnership to assist in implementing the Yellowknife GROW Strategy, specifically to address Section 4., *"Support and participate in exploring the viability of a Yellowknife commercial food incubator and community food hub"* (City of Yellowknife, 2019, p 26).

This study was designed in the spirit of Participatory Action Research (PAR) and focused on a community-centred approach. PAR is a research methodology that incorporates elements of education, research, and action with a distinct focus on changing power dynamics between and within groups, individuals' relationships to knowledge and creates social transformation (Wright, 2021). Action is an essential element of PAR, whereby community members engage in processes of decision-making, planning and implementing activities to reach a specified goal or outcome (Guy et al., 2020). This research focuses heavily on the planning and decision-making portions of the PAR process described above. Due to the challenges of remote work due to COVID-19, the PAR process was limited to webinars, semi-structured interviews, and a public survey to gather community voices and foster dialog.

Through these channels, community food actors shared their experiences and knowledge about Yellowknife's local food system, its strengths, limitations, and challenges as well as suggestions for making the food system more resilient. This knowledge was placed within a problem-solution framework that focused on how a food hub can support the local food system to prosper. Recommendations for action were provided directly by community members and all aspects of this final report have been shared with interested participants to ensure the findings and recommendation reflect their vision for a sustainable food system.

Webinars

To engage the community and spur conversations about local food infrastructure needs, four webinars were planned monthly between March and June. A virtual webinar format as opposed to in-person gathering were used to comply with COVID-19 health regulations. Webinars were open to all members of the public and were advertised through the City of Yellowknife social media and on the City's Yellowknife foodies webpage, through direct emailing to food and environmental stakeholder groups and through word of mouth. The first webinar, held on March 27, 2021 had 50 participants. This webinar introduced the research to the group and outlined the various ways to participate. For the second webinar, held on April 24, 2021 speakers shared their experiences in managing their own local food hubs in Homer, Alaska and Dryden, Ontario. There were 48 people in attendance for webinar two. Webinar three, meant to present a local food asset map on May 27, 2021 was cancelled due to low registration numbers however the map was later shared in webinar four and over social media, through the City of Yellowknife Foodie website and directly via email to past webinar and study participants to ensure accuracy of information and inclusion of missing community food assets. The final webinar, held on June 24, 2021 shared the study's preliminary findings, encouraged conversation and discussion about next steps and sought community feedback. There were 20 participants in attendance at this webinar. All webinars were recorded and posted on the City of Yellowknife's Foodie website to be accessed by the public.

Asset Map

An asset map, an on-line tool representing actors, infrastructure, programs, and spaces that support local food production, distribution, procurement, and access, was developed to provide Yellowknife residents an understanding of the food-based infrastructure and services found in the community and, to a lesser degree, across the territory. The map was adapted from a regional food system map for the territories developed by the Aboriginal Institute for Community Based Research (AICBR). The AICBR, which has since closed its doors, was a non-profit organization promoting and facilitating research in Canada's three territories on topics related to food security and food sovereignty, healthy lifestyles, youth engagement and mental health, and climate change adaptation.

Working documents were shared with researchers collaborating on this report to provide a foundation for the development of the Yellowknife map, and on the basis that it would be possible to share added data with them to help maintain the NWT portion of the pre-existing data map. The AICBR map can be accessed here: AIBCR Food Systems Map. With AICBR data used as a starting point, an in-depth Yellowknife version was developed which serves to represent the assets in a useful format at the community level. Additional data was gathered through an online search of food-related businesses and organizations in Yellowknife. Additional information was collected by reaching out to identified assets and circulating an email with a Google form asking stakeholders to fill in knowledge gaps.

Assets cover a range of types and purposes:

community gardens, funding, educational programs, government departments, NGOs, events, policies, certifications, restaurants, small businesses, farms, etc. Each was associated with a physical location--if no address was available, a generic coordinate was used--and displayed as a point on the map created with ArcGIS online software. The online map is publicly accessible through the ArcGIS website. By selecting the marker for an asset on the map, anyone can see the included relevant information about its role in the local food economy, its address/coordinates (if applicable), and contact information to learn more. Access the Yellowknife Food Asset Map

Interviews

Interviews were the primary source of data collection for this study. Using a snowball approach for recruitment, a total of 25 people participated in semi-structured interviews ranging from 45 minutes to 1.5 hours in length. Participants were identified based on their experiences and connections to local food and were categorized into 4 distinct groups: producers (9) including 2 producers from outside Yellowknife, food business owners (3), territorial and municipal government (3), non-profit organizations with food- access based programming (10). Structured questions focused on participants' experiences in the local food system, the resources they currently use and the barriers they face in producing, processing, selling, and accessing local food. See Appendix B for the Interview Question Guide.

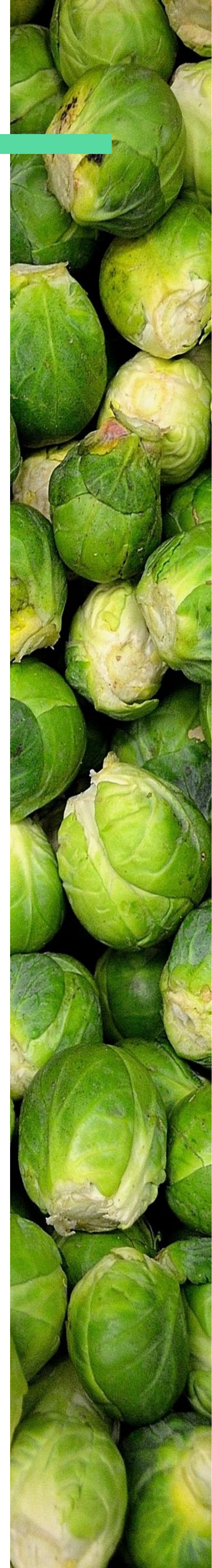
Survey

A public survey was launched through advertisements in the Farmers' Market newsletter, through City of Yellowknife social media and Yellowknife Foodie webpage between May and June 2021. The purpose of this survey was to engage a broader portion of the public who were not identified to take part in interviews but who still wanted to share their experiences and thoughts about local food assets in Yellowknife. A total of 56 individuals took part in the survey providing anonymous responses to six questions. See Appendix B for a detailed list of the survey questions.

Study Limitations

Because of COVID-19 health and travel restrictions, community-based elements of the research took place in a virtual environment. This posed several complications for the researchers and participants. The first two webinars garnered comparatively large audiences of 50 people and 48 people respectively however the third webinar was cancelled due to low registration numbers (only 7 people registered). This may be due in part to a local COVID-19 outbreak that sent many families into self-isolation for a 14-day period as well as the need to address other demands and community commitments. The objective of the third webinar was to share a local food infrastructure asset map with the community and get feedback. Instead, the map was shared during webinar four and through social media (Facebook and Twitter), the City's foodie website and through direct emails to community stakeholders with a specific request to review and share comments and ideas over a two-week period.

Originally this study also intended to run two focus groups in conjunction with webinars two and three. However, while participants were highly engaged during the webinar portion of webinar two, engagement and interest was very low for the first focus group. The research team thus decided that the focus groups format would not be used, and emphasis would be on collecting community voices through a larger number of interviews and through the public survey.



5.0

COMMUNITY VOICES

5.1 Assets

Food assets in Yellowknife were identified from the Yellowknife food assets map (Figure 14). To date there are 159 assets included on the map, most of which are located within the city proper. Assets were categorized by type and role. Asset types are research, funding, programs, networks, events/ campaigns, and infrastructure/ organizations. Research includes organizations and institutions who undertake research on food and food-related issues. Funding refers to all organizations that provide financial support, including grants, subsidies and low-interest loans for producers and food programming. Services are on-demand services or tools that are passively available, including utilities/transport services; services are usually shorter-term and are not part of wider, ongoing programming. Networks are individuals connected around a common interest, including associations. Events/campaigns could be single or regularly occurring (i.e., yearly) such as music festivals and community dinners. Infrastructure/organizations are physical spaces like a farm or community kitchen, organizations/departments etc; often they refer to organizations who run food-based programming.

5.0 COMMUNITY VOICES

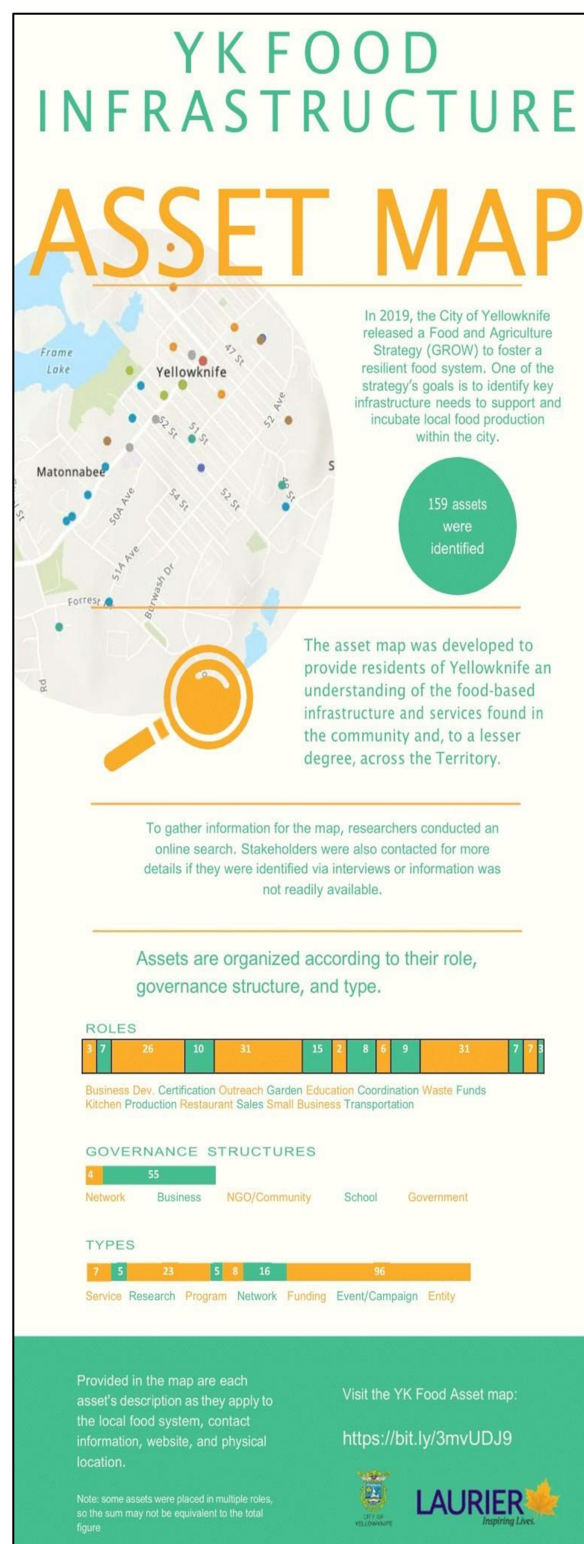
The most predominant type of asset was infrastructure/organizations (N=96) followed by programs (N=23) and to a lesser extent, events, and campaigns (N=16). There were also eight funding initiatives, seven service providers and five networks and research programs each. In the case where an asset had more than one type (i.e., an organization that ran a program) they were double counted. Table 1 provides an overview of assets by type.

Table 1: Breakdown of Assets in the Yellowknife Food System by Asset Type

Asset Type	Number of Assets
Service	7
Research	5
Program	23
Network	5
Funding	8
Event/campaign	16
Infrastructure/ Organization	96

Assets were also categorized by their role, identifying what benefit each asset brings to the community. There were 14 categories identified here including business development, certification, outreach, community gardens, education, coordination/policy/network, food waste, funding, kitchen space, (food) production/harvesting, restaurant, sales, small business/catering, and transportation. The largest number of assets based on their role, were education and restaurants, with 31 individual assets each. This was followed by 26 outreach initiatives and 10 coordination/policy/networks. A total of 10 community gardens were identified, and six commercial or community kitchen spaces. There were also seven producers and harvesters who sold their locally grown or harvested food in the city. Two organizations dealt with food waste and three provided transportation services.

Figure 14: Yellowknife Food Infrastructure Asset Map Infographic



5.0 COMMUNITY VOICES

Table 2: Breakdown of Assets in the Yellowknife Food System by Asset Role

Asset Role	Number of Assets
Business development	3
Certification	7
Outreach	26
Community garden	10
Education	31
Coordination/policy/network	15
Food waste	2
Funding	8
Kitchen space	6
Production/harvesting	9
Restaurant	31
Sales	7
Small business/catering	7
Transportation	3

5.2 Infrastructure Gaps

The following food infrastructure and resources gaps were identified through community interviews and surveys undertaken for this research. There are two categories of infrastructure, production inputs needed for vegetable production and infrastructure needed to process, market, and sell all types of local food. This section provides information on all the identified infrastructure and input deficits, they have been separated into two categories: production inputs and infrastructure for processing and sale.

However, as production inputs have been identified as actionable items in the City's GROW strategy, they will not be included within the discussion of how a food hub model can address these gaps. For more information on production inputs and their connection to the GROW strategy see Appendix A.

In addition to the above infrastructure gaps, other resources that were identified as essential for

Food Infrastructure

- Commercial kitchen access
- Online marketplace
- Year-round, indoor market
- Infrastructure for traditional foods

Production Inputs

- Greenhouses
- Soil and compost
- Land
- Water

producing local food included access to compost, soil testing, reduced rates on water and electricity for commercial growers. Extension and expert gardening services, capacity building sessions and clearly defined "made in NWT" or "made in Yellowknife" branding were also identified as important assets by survey respondents.

Commercial Kitchen Space

There is a demand for commercial kitchen use in Yellowknife, however there are many barriers to accessing them. There were 6 individuals who indicated in the survey that a commercial kitchen space for small businesses would be beneficial for the local food movement. The reasons participants noted that they do not use available commercial kitchens include cost, that they are only available for non-profit activities (school kitchens), and the inconvenience of not being able to store ingredients and products. One community member stated that *"...people are pretty desperate for commercial kitchens ... for prepared food... that's what they need, they're not making salads or whatever"*. Another noted that most commercial kitchens are not adequate for the needs of most small businesses. *"I think the kitchens that are here right now are mostly for potluck type things, and you know big gatherings like that, not necessarily to get products to market."* Another community member noted that some of the larger kitchens such as those at schools are available only to non-profit groups, not business owners.

5.0 COMMUNITY VOICES

A commercial kitchen can assist both growers and processors to obtain the proper food vendor licenses they require to grow from hobbies and side businesses to full time enterprises. It would be preferable to identify an existing kitchen and renovate it to suit the needs of the group. Considering the costs involved in remodelling and running a specialized kitchen, it was suggested that a more economical option could be to develop a centralized reservation system for individuals looking to access kitchen space across the city.

"I think one central thing everybody wants…is a shared kitchen space, but that costs, just like hundreds and hundreds of thousands of dollars right, whereas if … you got access to eight or nine church kitchens during the week right and had more of an organizational Structure than a physical location"

Connected to kitchen space, participants noted that there is no community cold storage or freezer space for small businesses to use to give their products a longer shelf life or purchase ingredients in bulk to lower overhead costs. Furthermore, there are currently no services available to start-up businesses looking to bring their products to market. For individuals who want to do product testing, labelling and other activities involved in developing a commercial food product, they must currently travel to Edmonton. The distance and cost of this process makes it difficult for many to move their products from a hobby to a viable business.

Online Marketplace

Restaurateurs were one interest group keen on accessing local food from an online platform. Several restaurants in town provide local food on their menus whenever possible, but the only products that have a relatively stable supply are fish and leafy greens. Presently, these products are sourced directly from fishers and producers. There is a desire amongst restaurateurs to increase the amount of local food served in their establishments but there are few producers able to meet restaurant demand.

"Local growers are competing with companies like Gordon food services, and you know Cisco and all these people who have the super slick online ordering systems where you know [if] I'm a restaurant … I've got one hour to do my ordering. You know I want to go on my website, click the little box that says potatoes and I know that I'm going to get exactly this much and it's going to fit with the menu that I planned."

Year-Round, Indoor Market

Community members involved in food retail spoke about the desire for a space that promotes community, sustainability, and local food on a year-round basis. From the survey responses, 12 individuals suggested that a year-round market, either online, indoor or both would be an asset for the community. A total of 9 of these responses advocated for a year-round, indoor space. Currently, the Yellowknife Farmers Market fills this role in part. As an outdoor, seasonal market, it is an essential part of the community's local food scene and provides an important venue for people to congregate and purchase local produce and processed foods such as jams and pickles as well as prepared dishes, arts, and crafts. It also plays an important role for supporting businesses as they are starting out. *"…I think the important thing is to remember the farmers market doesn't just represent producers…it's meant to be more like a kind of a retail incubator.* " However, community members noted limitations to the current farmers market model such as its location (outdoors), seasonality, low quantities and high prices for local produce that make access to local food limited to those with high incomes.

5.0 COMMUNITY VOICES

At the same time, community members discussed the problem of the lack of retail space in the downtown core, especially for restaurants and cafes. Several community members discussed the issue of un/underutilized and vacant buildings in the downtown core, the lack of ground level commercial space available and the high costs of rent, electricity, and water. It was suggested by one interviewee that this may be due to some compounding factors including the lack of retail space within existing and newer buildings, problems with absentee landlords and the increasing price of construction and renovation materials because of the pandemic.

"It is a little bit unfortunate, it's very hard to find space in this town."

"There's a lot of properties that need to be redeveloped or updated and they're vacant and they could be quite easily repurposed into something more like conducive to small business.... there's no business case for them (landlords) to be creative as landlords and repurpose their spaces and do the kind of things that you would expect a dynamic kind of property market to force people to do."

"It's just the exorbitant cost of new construction now"

Survey responses identified a need for initiatives that market small local businesses so people "know what options are out there" and "more options than the Tuesday farmers market to find local [produce]". An indoor, year-round market could complement the existing farmers market, providing support to those interested in growing their business to a full-time venture and would alleviate the problem of insufficient and unaffordable retail space for restaurant-type food vendors.

"I think it would also be a real boost for the city to have something nice, you know, like whether it's rentable commercial space or whether it's you know some sort of like a public space where people can [meet]... there's retail space within that public space that's part of the food hub."

Infrastructure for Traditional Foods

Traditional foods such as caribou, moose, fish, and berries are a unique aspect of the NWT food system and an important part of many local diets. Because moose, caribou and most other wild game cannot be sold, it is typically obtained through gifts from family and friend connections or by going out on the land and harvesting. When discussing how a food hub or local food infrastructure might support sharing country food in a more formal way, one community member noted that there were barriers to this such as hesitancy to declare meat and difficulty with access as transportation, even within the city, can be a challenge for some. Northern Fancy Meats, a local butcher shop, was identified as a business that provides butchering services for hunters. This study did not identify any facilities in the city where individuals could prepare and package their own meat.

Two traditional foods that can be sold are fish and berries/plants. Both survey respondents and interviewees identified fish as an abundant local food that is "difficult to get" for the entire population. Individuals identified two companies, Fish on the Bay and NWT Fish as well as several individual fishers as the primary sources for fish. The inconsistent supply and uncertainty about where the fresh fish could be purchased in the city on any given day was a common theme.

"It is difficult to get access to fresh fish [local, not frozen] ... many fishers do value added stuff but there is still a need to access fresh fish."

"[A grocery store] does sell NWT fish but it's not consistent. You can't walk in there on any given day and find whitefish. Sometimes they have it as a treat but, [only] if the fish cart guy is around it's such a confusing system..."

The issue of accessing a stable fish supply is likewise a problem for restaurants who have traditionally relied on individual relationships with fishers to supply them with the quantities they need on a weekly basis. One survey respondent suggested a larger wharf for fish sales would be a good idea and another suggested that an indoor market should include a fish counter for local sales. Limited discussions touched on access to berries and other foraged plants, however three survey respondents and a community member noted that a “you-pick” berry patch or areas designated to grow local wild berries would help increase access to these foods.

Greenhouses

A community greenhouse was discussed by interviewees and identified as a key resource gap from 11 survey responses. Three participants identified the Inuvik, NWT greenhouse as a model that should be considered. One participant further commented that the greenhouse could be used for community and commercial use.

“...greenhouses, the necessity of greenhouses because the growing season here is so short and whether that be heated greenhouses, and some do exist here and have great production...”

"...there's greenhouses but then there's also just the large amount of cold frames that are just needed in order to feel like you can get any kind of production going and be organized about it and not just have you know just your peas carrots potatoes kind of crops in the back garden right."

Private greenhouses and large cold frames were also identified as an infrastructure need in the community. Several participants spoke about the difficulty of obtaining permits from the city to build greenhouse structures on their properties. They emphasized that due to the unpredictable climate and short growing season, greenhouse structures are essential for both commercial and backyard hobby gardeners in the community.

Soil and Compost

Compost was also an important topic of conversation amongst both interviewees and survey respondents. While some more experienced backyard gardeners make their own compost, because of the lack of topsoil in Yellowknife, others, both hobbyist gardeners and commercial growers, have historically relied on accessing municipal compost to develop their garden beds.

“We have some soil here that is not contaminated but it's poor so it's really a poor one that we have to put more nutrients in it to work it ...I have money to buy soil but imagine how crazy it is to buy the soil from Canadian Tire packaged in plastic."

A total of three survey respondents mentioned that access to quality soil or compost was needed. Two further respondents discussed the need for better access to soil testing for arsenic.

Land

Land that is appropriate for commercial production within Yellowknife’s city limits is in limited supply and expensive. One community member shared that, *“...it's seven times more expensive here and to buy a land of two hectares and to do a production of veggies and be affordable and get profit at the end, it is just impossible."* Another community member discussed the problem of accessing affordable land with needed services such as water, “*Kam Lake is where you can get the square footage*

to do a farm, now the next issue is water access ... if you put a water pipe to it now your taxes double or triple and the land value costs ... infrastructure is incredibly expensive here." While a recent update to the city's zoning bylaws may help to make it easier to acquire adequate commercial production land, this will likely not impact overall costs of acquiring land or business operations.

> *"It's access to [land] that is also suitable for commercial growing, so for example, certain areas of Yellowknife don't have piped water and utilities so that's an extra cost. It's much more expensive to do the truck water [and] much more inconvenient."*

Community and backyard gardens are the most common form of food production in Yellowknife. Because of a growing interest in gardening in Yellowknife, community garden plots are currently in high demand. The Yellowknife Community Garden Collective has approximately 120 members. Individuals can rent a half plot, or they are partnered up to share a full plot for the summer. Through this system, members give/receive mentorship and to ensure the gardens are cared for. Other organizations who coordinate community garden plots identified in this study include the NWT Literacy Council and Ecology North.

One community member attributed the growing interest in backyard gardening to the establishment of community garden plots saying, *"the birth of the community gardens would probably be part of that"*, referring to increased interest in gardening. The increase in popularity of gardening as a hobby has resulted in a shortage of community managed garden beds. Survey responses suggested that there was a waiting list to access community garden beds. Five respondents identified more garden plots as an infrastructure need in the community. One survey respondent suggested that one way to address the high price of land could be to allocate a portion of community garden space for commercial grower(s) who are looking to start an urban market garden. This land could be used at a reduced cost and could have other requirements like the current YKCGC harvest donations of 25 percent of members' harvests.

Water

Water was also identified as a resource that needed to be addressed. Access to affordable water sources was identified by five survey respondents as a need to support more commercial production. While water is accessible in principle, currently land where agriculture is permitted is not serviced with water and sewage, meaning it must have municipal water trucked to the property on a regular basis.

> *"Kam Lake is where you can get the square footage to do a farm now the next issue is water access and I'm just, but if you put a water pipe to it now your taxes double or triple and the land value costs ... infrastructure is incredibly expensive here."*

> *"It comes down to like there needs to be land to do it, there needs to be spaces, where it's affordable power is a barrier, access to water is a barrier."*

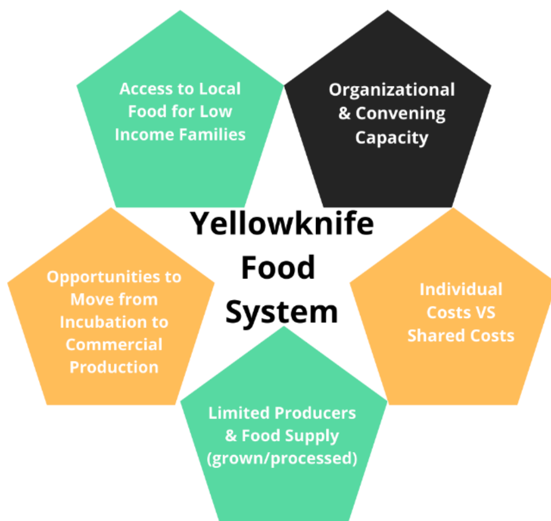
6.0

DISCUSSION

Community-Identified Needs and Solutions in Yellowknife's Food System

Conversations with local food actors and community survey results identified five needs or limitations in Yellowknife's food system. Figure 1 portrays these needs which include, 1.) better organizational and convening capacity across all food actors; 2.) access to shared and bulk purchasing to reduce costs for individuals; 3.) limited producers and food supply (both grown and processed) in the city; 4.) access to resources and infrastructure to move businesses from the incubation stage to commercial production; and 5.) better access to healthy, fresh local food for low-income families. When discussing needs and barriers in Yellowknife's food system, in many instances community members offered solutions. Figure 2 addresses the food system needs with community identified solutions that could be realized through a food hub.

Figure 15: Community Identified Needs in Yellowknife's Food System



Food Councils: Addressing organizational and convening capacity constraints

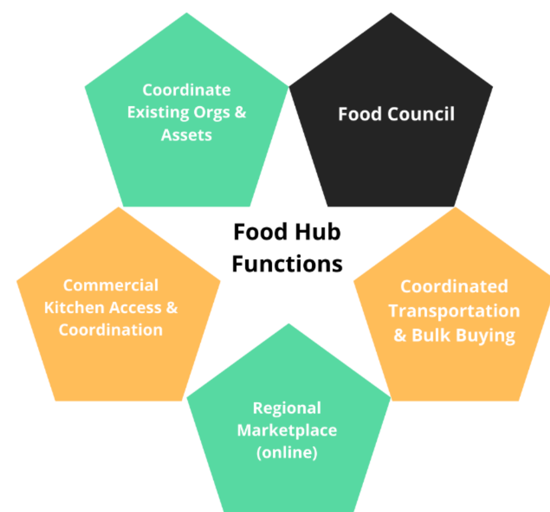
Along with the City of Yellowknife and the Territorial government (GNWT) there are five key civil society organizations identified in this research that support Yellowknife's local food movement. The various actors administer funding, provide education, training, and economic development opportunities, facilitate food access, and provide a platform for activities along the food supply chain. These organizations include Yellowknife Farmers Market, the Yellowknife Garden Collective, Food Rescue Yellowknife and Ecology North. The Yellowknife Chamber of Commerce and the Territorial Agri-Food Association also have mandates to support local food businesses, promote economic development in the city and region and provide a voice for the diversity of food-related businesses in Yellowknife and across the territory. These organizations, along with community members and private businesses make up a mosaic of support that drives the local food system.

Conversations with food actors revealed that while there is occasional collaboration between actors, joint initiatives have been short-lived due to insufficient capacity to sustain them. Similarly, there was no mention of groups collaborating for funding or sharing resources in any way. Both organizations and food vendors have stated they have limited capacity to take on new projects and expand production without better coordination of resources. There is a clear need for better organization amongst all food actors who participate in Yellowknife's food system, in the city and around the region. A food council was suggested as a potential solution to the issue of limited capacity by bringing food actors together around a table to share information and resources and prioritize activities that build the local food economy.

"It's an organizational problem... I feel like for agricultural groups, [there are] small groups of people... there's no central organizing body so they can advocate for themselves...."

Food councils have been established in communities across North America and beyond to bring food actors together in the spirit of collaboration to address complex issues within a food system. In 2015, when the Yellowknife Food Charter was developed, it laid the foundation for a food council.

Figure 16: Community Identified Solutions Based on the Food Hub Model



At that time, stakeholders from across the city made "a commitment and intent to work in

partnership towards achieving a just and sustainable food system in Yellowknife" (YKFM, 2015). This commitment and vision have been upheld within the community since its inception. While organizations and individuals collaborate in principle, more coordination of resources, funding and objectives is necessary. Bringing these stakeholders together under the common mandate of a food council can help to coordinate efforts, identify strengths, and ensure that resources and capacity are used to their maximum potential. Food hubs and food councils are complementary, yet different in nature. A food council can act as the governance structure for a food hub, providing guidance and oversight for a food hub activity, or a food hub can act as a convenor and organizer of the food council itself.

Reducing costs with collectively sourced inputs and resources

Currently there are no formal groups or places to purchase containers, labels, and other supplies at wholesale cost. Many businesses continue to purchase their supplies at retail prices at local stores such as Canadian Tire as the cost and time needed for shipping these supplies to Yellowknife for one person are high.

"...ordering and shipping everything here as you know, is pretty hard and expensive, so I am now just going back to just getting little mason jars just from Canadian Tire and just going simpler, not as fancy."

One survey respondent suggested that a farm supply store or outlet where individuals could purchase agriculture inputs at wholesale prices would help reduce some of the costs of growing. For larger needs such as tools, a new Makers' Space will allow members to rent tools for use through their tool library program.

Growers outside of Yellowknife, especially those located in the South Slave Lake region noted that the cost of transporting their products from Hay River to Yellowknife was prohibitively high. However, coordinating transportation of goods into the city could help reduce costs for everyone.

"There must be a few hurdles to it or must be hard to actually because they don't come here [to Yellowknife Farmers Market]. Hay River farmers came ... to the farmers market three or four years ago but haven't come back since because of the transport costs."

Food hubs can assist in reducing overhead costs for individual producers and consumers by organizing bulk purchasing options for staple foods used in many value-added products (i.e., sugar, flour, salt), packaging and labelling (i.e., jars, labels, plastic bags), and foods that can be purchased directly from producers in bulk such as root vegetables. Bulk buying clubs currently exist in the city, but they are typically organized informally amongst family, friends and neighbours and are for specific products such as meat. Bulk and wholesale purchasing help to reduce overall costs for the group relative to individuals purchasing products individually at retail prices.

Another area where food hubs can help reduce costs is through coordinating transportation of goods. Food hubs such as Cloverbelt Local Food Co-op and Alaska Food Hub both organize sale and distribution of products at the regional scale. While producers are still responsible for transporting their goods to hub locations for distribution, predetermined sale and distribution cycles enable vendors in the same area to coordinate transportation thereby sharing cost and travel time. In the absence of an online market, a food hub can still provide a communication platform for individual producers to coordinate transportation needs.

6.0 DISCUSSION

Expand the number of producers and supply of local food

While Yellowknife's community and backyard garden culture are booming, few have considered scaling up their hobby to start a commercial operation. There are over 100 community garden plots across the city, all of which are used and many more private backyard gardens. There are three commercial growers who run urban market gardens within Yellowknife and outside its city limits on the Ingraham Trail. These farmers all sell their produce directly at retail prices to the farmers market and two run CSA vegetable subscription programs to approximately 25 households.

There are many barriers to commercial food production in Yellowknife including high input costs, limited soil, difficult growing conditions, and limited venues to sell products have limited urban gardeners' interest to date. From consumers' perspectives, local food was in insufficient supply, difficult to access on a regular basis and was very costly compared to imported foods found at the grocery store. Existing commercial growers noted that the high costs associated with starting and running a market garden limit more producers from entering the market. Conversely, producers in the South Salve Lake region, where there are more favourable agriculture conditions, said that the cost of transportation was too high to justify contributing produce for sale at venues such as the Yellowknife Farmers Market without having predetermined sales. Food hubs that run online marketplaces such as the Alaska Food Hub, and the Cloverbelt Local Food Co-op connect producers and consumers at a regional level. Through a weekly ordering scheme, producers have predetermined sales and can coordinate collective transportation of foods helping to reduce overall costs. Bringing in regional produce into the Yellowknife market assists local producers to better meet consumer demands, helping to support a more favourable consumer base for potential market gardeners in the future.

Fresh fish, an abundant local food, is difficult to source, due in part to restrictive regulations for processing and selling it in the territory. Accessing a stable fish supply is also a problem for restaurants who have traditionally relied on individual relationships with fishers to supply them with needed quantities on a weekly basis. Food hubs can advocate for policy changes to support growth in certain markets. The Alaska Food hub worked closely with the local state government to allow small "cottage food industry" businesses to sell on the AFH online marketplace on a regular basis. This required advocacy by Alaska Food hub to negotiate with state officials and policy makers. A food hub could champion the effort for clearer guidelines for processing and sale of local fish into the Yellowknife market. Fish can also be used as an "anchor product" for an online marketplace - a popular product that draws consumers in and can be sold year-round.

Build opportunities to move food businesses from incubation stage to commercial production with commercial kitchen space

When discussing the regional food system, Yellowknife was considered an ideal place to locate the territory's processing sector. Community members noted that Yellowknife has the largest market as well as labour force in the region. *"I think Yellowknife's role is going to be in the processing because it's the biggest market"*. Processing, it was said, is an essential part of the broader food security agenda because fresh food cannot be produced year-round. In addition, Yellowknife already has a vibrant community of small businesses and hobbyists selling preserved foods and prepared meals.

The farmers market is used as an incubation hub for people to test products and earn extra money, however the market's seasonal nature and outdoor location can limit vendors' ability to sell larger volumes of product and pursue their businesses full time. Aside from community-organized craft fairs,

there were no alternative venues to sell processed foods made with temporary food establishment permits identified in this study. To obtain a full commercial license, products must be processed, packaged, stored and in the case of hot prepared meals, served in a certified commercial kitchen. For those preparing hot meals, there is a significant financial investment to move from cooking under a temporary food establishment permit and selling at the farmers market once a week to opening a cafe or restaurant. To expand small food businesses services, support with product testing, nutrition labelling, package design and marketing are needed. Regular access to commercial kitchen space, storage space, and in some cases, access to specialized equipment is also important. Some entrepreneurs build their own infrastructure, however for most small business start-ups, financing for such infrastructure may not be within reach.

A food hub such as Sprout Kitchen Food Hub in Quesnel BC, runs a commercial kitchen and storage specifically for individuals looking to start or expand their food businesses. Such food hub models typically rent kitchen and storage space and provide wrap-around business and networking services to help entrepreneurs market and distribute their products. Where ample commercial kitchen space already exists, as in Yellowknife's case, food hubs can coordinate renting available and underutilized commercial kitchen spaces. An online platform can also provide new businesses with access to a target audience interested in local and artisan foods.

Improve access to local food for low-income families

Yellowknife families are supportive of the local food movement however, the small quantities and high prices keep it out of reach for many households. Access to local food is made available to low-income families through several avenues: community gardens, diverting food from the landfill and opportunity to sell surplus backyard produce. Many food organizations dedicate all or a portion of their mandate to increasing addressing food insecurity through improved access to food, both local and imported. Some of these organizations include the Yellowknife Food Rescue, Yellowknife Community Garden Collective, the Yellowknife Food Bank and the Yellowknife Farmers Market. These organizations all act as suppliers and distributors to individual families and other charitable organizations who use the donated food in their programming or provide hampers to households in need.

Community gardens also contribute to food security by providing households with space and support to grow their own food and sharing it with others. When discussing the issue of access to local produce, several community members pointed to the Yellowknife Community Garden Collective (YKCGC) as an effective method of making fresh local produce available. The YKCGC model further contributes to improving access to healthy, local produce as 25% of each member's harvest is donated to local charities. Other organizations who support access to local food through community garden spaces include the NWT Literacy council who provides plots and support to new Canadians and Ecology North who educate youth about how to garden in a northern climate.

The Farmers Market has also developed several initiatives to help address the issue of food access for low-income residents. Some examples include vouchers supplied to local charities to use at the farmers market and the harvesters table initiative which allows anyone with extra produce to sell it without having to purchase a table. In 2019, Food Rescue Yellowknife worked with the farmers market to collect leftover produce at the end of the market, however the small quantities and high demand for fresh vegetables limited the success of this initiative. Although efforts to make purchasing local food more accessible have had varying degrees of success, the Farmers Market does provide an innovative solution to the issue of short

supply. The Harvesters' Table initiative allows community members with backyard or community garden plots to sell their surplus produce at the market without having to formally purchase a table or sell every week. This extra income can help to offset the cost of garden inputs and other related costs and can act as an incubator for new growers.

The Yellowknife Food Rescue's mandate is to divert food from the landfill and move it to the community where it is needed. At present, most of this food is not considered local as their main providers are grocery stores, however YKFR is a registered organization with the YKCGC and has partnered with the Farmers Market to collect surplus produce from the harvesters' table. Discussions with local charities helped to emphasize the importance of accessing healthy food for meal programs and for household food hampers. One youth-based organization spoke of the need to provide youth and other groups with cooking skills and explained how being able to cook food plays a role in improving self-esteem and self-worth.

A food hub can help to further the efforts of these organizations by assisting with the coordination of food deliveries and by including an option for individuals to donate a product or funds to partner organizations if an online marketplace is developed.

7.0

CONCLUSIONS AND RECOMMENDATIONS

There are many initiatives, organizations and activists working to grow the local food movement, however there is currently no mechanism to connect growers, consumers, and charitable organizations at a scale necessary to grow the industry. A food hub, supported and informed by key stakeholder groups, could address many of the issues identified in this study. A food hub can support the local food system by advocating for policy changes to improve the processing and sale of local food, supporting small business development and innovation, addressing issues of food insecurity, and acting as a convenor for the many actors dedicated to improving the local food system.

This study was tasked with identifying key infrastructure and resource assets and deficits in Yellowknife's local food system and identifying potential ways a food hub could address some of the community's constraints within the food supply chain. There are four recommendations touching on a Yellowknife food hub's potential role that emerged from community conversations; establish a food council to organize assets and resources, take a local approach to food production, look to the region for food distribution, and coordinate existing commercial kitchen space to better support the local processing sector.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Establish a Food Council

Community members expressed overwhelming support to establish a Food Council to bring together the individuals, organizations, businesses as well as municipal and territorial governments to set targets, prioritize actions, coordinate, and share resources and strengthen communication across all actors involved in the food system. The governance structure and food actors to be engaged will require more community discussion, however the following should be considered:

1. Yellowknife has laid the foundation for a food council through the work of the Yellowknife Food Charter Coalition. The Food Charter Coalition's advocacy work is an important starting point for establishing a food council.

2. Many communities across North America have developed food policy councils, convened by municipal governments to inform policies and programming. However, in Yellowknife, a more effective strategy is to establish a council as a separate entity with the municipal government as a member at the table. The City of Yellowknife has a mandate to fulfill through the GROW strategy, a document that was informed by the community and has been endorsed by city council. Establishing a council that is community-run will provide more flexibility to undertake activities outside the GROW strategy mandate, capitalize on existing programming and access more diverse funding sources.

3. For a food council to be sustainable and effective, a formal paid position must be established either as an individual consulting role or within an existing organization. A stocktaking of all participating individuals and organizations should be done prior to establishing the council to identify members' capacities to contribute financial and in-kind support to the group to leverage existing resources. A commitment from all levels of government will likely be necessary unless other funding sources are identified.

4. In addition to municipal and territorial governments and representatives of the five organizations identified as 'key actors', (see section 8.2, organizational and convening capacity) the Yellowknives Dene First Nation, including N'Dilo and Dettah should also have a seat at this table. These communities control many of the resources outside of the city limits, and their residents travel back and forth to Yellowknife for food, shopping, entertainment and to access services and cultural events.

Local Emphasis on Food Production

Each year the impacts of climate change are more severe, bringing with it both risk and opportunity. Building a vibrant economy and resilient food system requires support for local food production as part of a broader strategy. The City's GROW strategy addresses barriers related to accessing the physical inputs needed for commercial production but creative solutions for community action are also necessary to better utilize existing resources such as land, water, and soil. Through this research, four solutions were identified by the community that could be undertaken by a food hub to support local production:

1. Take an inventory of all available potential garden plots including, church grounds and private backyards to connect interested gardeners with unused garden space.

2. Set aside a portion of community garden space for individual(s) to start commercial production. The purpose of this space should be to promote more commercial production in the city by reducing the overall risk for new growers to enter the market.

3. Establish a central location and calendar of events for all education and training opportunities for northern food production, processing, marketing, and distribution across the city.

4. Identify and maintain an online registry of all food business and food security-related funding such as grants, low-interest loans, and in-kind services available to individuals and organizations to access.

Regional Emphasis on Food Distribution

As Yellowknife continues to grow its local commercial production, a regional approach can supplement existing unmet consumer demand. Conversations with regional producers and the Territorial Agri-food Association, who represent food production and processing business across the territory, highlighted the desire to better access the Yellowknife market. Travel distances and high costs of transportation are barriers for individual growers. Establishing an online marketplace is a favourable option among growers, consumers, and restaurateurs. For producers, an online marketplace is a simple option for the marketing and sale of goods and allows individuals in a single location to coordinate transportation, saving time and transportation costs for everyone. For consumers and restaurateurs, an online marketplace is convenient and reliable and connects them with local and sustainable food.

Online marketplaces can also be accessed by businesses making value-added and prepared foods as well as fishers and artisans. These groups can sustain the market on a year-round basis when fresh produce is out of season. Options to support inclusion of traditional foods should also be further explored.

Coordinate Existing Commercial Kitchen Space

In conversations discussing the regional food system, Yellowknife was considered an ideal place to locate the territory's processing sector. Processing (i.e., canning, pickling, freezing, smoking, and dehydrating) is an important element of the food supply chain and an essential part of the broader food security agenda because fresh food cannot be produced year-round. Community members noted that the city has the largest market and labour force in the region. By building up the local processing and value-added industry, more local food can be made accessible throughout the year. Better coordination of resources such as commercial kitchens should be made a priority to support these efforts. Commercial kitchen space is crucial to this process.

In the short term, community members supported the idea of developing an online registration system to coordinate available commercial kitchen spaces across the city. This will help alleviate some immediate difficulties with accessing these resources and encourage production of more local food for commercial sale.

The development of a food business incubation hub kitchen facility should also be prioritized over the medium-term. There are no existing commercial kitchen spaces in Yellowknife that specifically support individuals to grow their food businesses. In addition to the basic elements of a commercial kitchen, food

hub kitchens or food innovation spaces provide space for specialized equipment, ability for multiple people to access the kitchen at once, storage and wrap-around business and marketing services. An existing kitchen space can be adapted for this purpose.

In sum, a Yellowknife Food Hub can take on the following roles to support the recommendations outlined in this report:

Short-term (Immediately-1 year)

1. Establish and provide administrative support for a multi-stakeholder food council. This would include, but not be limited to facilitating collaboration and coordination of resources, skills and ideas between members and establishing clear and direct communication between members and to the public.

2. Identify and coordinate existing community food assets including:
    a) Develop and maintain an online commercial kitchen booking system and work with local bylaw officers to identify kitchen spaces that are best suited for use for small businesses.
    b) Create a community calendar for all training and education opportunities related to food production, processing, distribution, and commercialization.
    c) Develop a list of funding opportunities related to food security and food business initiatives such as government grants, agriculture and small business loans, in-kind services etc.
    d) Identify and connect potential garden spaces such as church grounds and private backyards that can be made available to individuals waiting for community garden plots
    e) Maintain Yellowknife's food asset map

Medium- to long-term (1-5 years)

3. Establish an online marketplace for local and regional producers, harvesters, fishers, processors, and artisans to be coordinated with and support existing venues such as the Yellowknife Farmers Market.

4. Using existing infrastructure, develop a business incubator kitchen and storage space with wrap around business development supports, training and access to the online market space.

The amount of time and resources necessary to undertake and maintain the online marketplace and the business incubator kitchen will be significant. Depending on funding availability and human resource capacity, consider prioritizing one piece of infrastructure based on direction from the Food Council once it is established.

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APPENDIX A

Production input needs addressed by the City of Yellowknife GROW strategy (2019)

LAND	Objective 1.1 Define and integrate urban agriculture into Yellowknife land use policies and bylaws. 1.1.2: Update Zoning Bylaw #4404 (or future bylaw) to permit urban agriculture "A) Permit community agriculture in all appropriate zones (e.g., residential, commercial, institutional, and parks); B) Permit commercial agriculture in select zones (e.g., industrial and commercial zones)." Objective 2.3 Identify potential sites for future community/shared food and agriculture activities. 2.3.1: Assess potential community garden sites for future expansion.
WATER	Objective 2.1: Optimize water access 2.1.1 Where possible, provide access to water for community and school gardens. "A) Consider strategies to provide water to community agriculture activities that are outside the piped servicing area; B) Continue to provide water hook-ups within the piped servicing area" 2.1.2 Encourage rainwater collection for home use, especially in areas outside of the piped water service area. "A) consider developing a rain barrel program" 2.1.3 Advocate for the establishment of a water subsidy that will support commercial and community agricultural viability in Yellowknife, especially in areas outside the piped water service area. "A) Consider applying for long-term funding to provide a water subsidy for food and agriculture businesses; B) Consider establishing a water demand model that projects water requirements and identifies opportunities for food and agriculture business to reduce water needs as well as access water in a way that supports business viability." Objective 5.3: Advocate for sustainable, resilient, and restorative food and agriculture systems 5.3.1: Identify any areas outside local government jurisdiction that, if addressed, would enable the City and community to achieve the vision and goals of GROW. "B) Consider pursuing a water subsidy program with GNWT."

SOIL & COMPOST	Objective 2.2 Support access to soil and compost for food and agriculture. 2.2.1 Provide soil and compost for community gardens. "A) Support community garden organizations in setting up on-site composting for garden waste; B) Further assess needs and ways to make soil more easily accessible from a cost and transportation perspective" 2.2.2 Promote city composting program and how to access compost. "A) Continue to host seasonal compost sales and consider ways of reducing line-ups and wait times; B) Consider ways to increase access to soil for all residents... C) As demand for compost increases ensure Centralized Composting Program is able to meet demand; D) Consider strategies for using by- products from the fishing industry to create soil amendments for food gardens". 2.2.3 Help urban gardeners and farmers to use appropriate natural soils in community/home gardening and commercial food and agriculture. "A) Consider working with local labs to help create an easy-to-read soil test result; B) Consider partnering on and/or promoting workshops on helping people to interpret soil test results as well as how to restore low-quality and/or contaminated soils; C) Build on the existing Giant Mines Health Effect Monitoring Program to address soil testing needs in the community."
GREENHOUSES	Objective 1.3 Increase opportunities for commercial greenhouses and enclosed growing systems 1.3.1 Expand areas where commercial greenhouses and enclosed growing systems are permitted. "A) Update Zoning Bylaw (#4404, or future bylaw) to permit commercial greenhouses and enclosed growing systems in select zones (e.g., industrial, some commercial). B) Develop an integrated Commercial Greenhouse and Enclosed Growing System Design Guidelines to regulate location and size of structures...C) Permit greenhouses and enclosed growing systems in both areas services and not services with municipal water. As with other sectors, businesses may locate in areas with trucked water at a cost borne to the property owner." 1.3.2 Update Business License Bylaw (#3451) and licensing process to include commercial food and agriculture including commercial greenhouse and enclosed growing system businesses. 1.3.3 Continue to support personal greenhouses.

APPENDIX B

Survey and Interview Questions

Interviews were conducted as semi-structured, meaning that a list of questions (below) was developed to guide the conversation. Additional questions may have been asked by the researcher that are not present in this list. Survey questions were posed as stated below, no alterations were made. Both the interview and survey questions were approved by the Wilfrid Laurier University Research Ethics Board under research license (REB) #6556.

Interview questions:

1. How do you participate in Yellowknife's local food system? (give examples: producer, harvester, processor, food business owner, consumer, involved in food-based community programming, other?)
2. Please tell me about your experience participating in Yellowknife's local food system to date.
3. To date, what have been your biggest obstacles to accessing or selling/trading local food in Yellowknife?
4. If you were able, would you purchase/produce or harvest to sell more food in the Yellowknife local food system?
5. What key resources do you require to expand your business and/or purchase more local food?
6. What do you think should be the primary role of a food hub or local food infrastructure in Yellowknife?
7. In your opinion as a [producer, harvester, processor, food business owner, consumer, community organization member] is there any key infrastructure that is currently missing that is needed for a food hub to fulfill this role?
8. What is the best way for the food hub or future local food infrastructure to be run or maintained to better support you and the local food system in Yellowknife?
9. Do you have anything further you would like to share about your experience participating in Yellowknife's local food system?

Online Survey Questions:

1. Are you a Yellowknife resident? (Yes, no but I participate in the Yellowknife food system, other)
2. How do you participate in Yellowknife's local food system? (producer, harvester, processor, food business owner, consumer, involved in food-based community programming, other___)
3. Based on your answer in question 2, please share your experience in Yellowknife's local food system.
4. What key resources or infrastructure do you use to produce, purchase, or sell food in Yellowknife most often? (i.e., restaurant, store, market, commercial kitchen etc.) Please be specific.
5. Is there any infrastructure that you feel is needed to support local producers, consumers, and food business owners?
6. Are you willing to be contacted directly and participate in future webinars, focus groups and/or interviews connected to the project: Identifying Opportunities and Barriers for Local Food Infrastructure in Yellowknife, NWT? (Please include your name and contact information below (email/phone number).