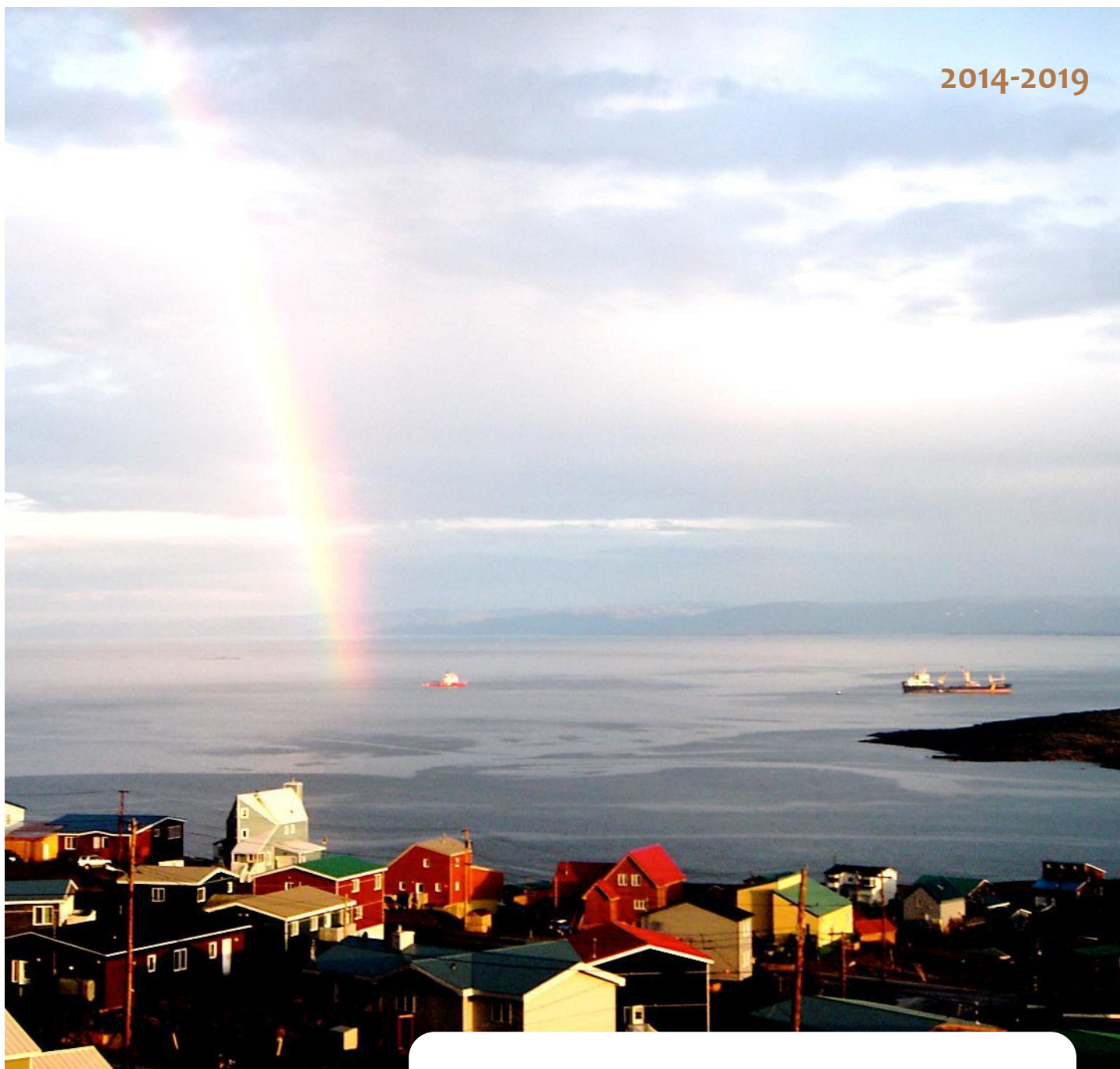


2014-2019



Iqaluit Sustainable Community Plan

Part one

Overview



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Sustainable Iqaluit

Moving towards a better long-term future

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Our apologies to anyone mistakenly left off this list – your contribution is valuable and appreciated.

INTRODUCTION to Part One of the Sustainable Community Plan

The Iqaluit **Sustainable Community Plan** is made up of two parts:



Part One is Iqaluit's **Overview**.

The priority of the Overview is to clarify our community's past and current context and lay out Iqaluit's direction for a sustainable future.

Part Two is Iqaluit's **Action Plan**.

The priority of the Action Plan is to lay out in detail the actions we will take to move us towards a better long-term future.

We recommend readers look at both documents for a comprehensive look at our community's sustainability plan.

Both are available from City Hall and can be downloaded at www.sustainableiqaluit.com.

*For clarity when reading this document, the use of "we" refers to our community as a whole.
The use of "City of Iqaluit" or "City" refers specifically to the municipal government.*

In **this Overview**, there are six sections.

Section 1 – Sustainability in Iqaluit looks at the definition of sustainability and why we need a Sustainable Community Plan.

Section 2 – Our Context looks at our history, our strengths and challenges, and climate change.

Section 3 – Our Planning Process looks at how the community has developed this plan.

Section 4 – Our Sustainability Framework looks at the structure of this plan, how we can use it, how it connects with other plans, and our long-term vision.

Section 5 – Implementing and Monitoring looks at how we will keep track of our success.

Section 6 – What is in Part Two of the Sustainable Community Plan? reveals the details of taking actions that move us towards a better long-term future.

SECTION 1 - Sustainability in Iqaluit

What is sustainability?

Sustainability is about collectively taking actions to move Iqaluit towards a better long-term future.

For our community, sustainability involves

- respecting *Inuit Qaujimajatuqangit*
- making good decisions, which move us towards our long-term vision of sustainability
- ensuring that today's decisions do not compromise the ability of future generations to meet their own needs.

Why have a Sustainable Community Plan?

This Sustainable Community Plan is a long-term plan for Iqaluit. It looks beyond our current situation, to consider our community's vision for the next 50 years. This is valuable because it allows us to consider our long-term future in a holistic way, and then determine incremental steps that help us to achieve this vision.

Iqaluit's Sustainable Community Plan has been a local initiative. It has been strongly influenced by *Inuit Qaujimajatuqangit*. As a community, we will be able to use this plan to look at the choices that we will make to ensure that they are aligned with our community's vision. The Plan will also help groups, businesses, organizations and individuals align their actions, projects and priorities with our long-term community vision. It will assist the City of Iqaluit, including our Mayor, Councillors and City staff, in making good decisions that support the community's long-term vision. It will help them to consider the cumulative impacts of their decisions and make sure we are on track to reach our vision for the future.

This Plan will help us build a better future together, by giving us an opportunity to think long-term, look at the whole, and see the connections. Only by working together and seeing our connections will we be able to achieve our vision for a healthy, happy, connected, and prosperous community.



SECTION 2 - Our Context

Iqaluit – then and now

Our past history and our present situation set the context for what we need to do to achieve our long-term vision for a sustainable community.

History is a collection of stories and perspectives. The information presented in this section was drawn from a variety of sources, including reports by the Qikiqtani Truth Commission¹, oral histories², in addition to academic publications in historical geography³ and military history⁴.

Our early history

Archaeological evidence shows that both the Dorset and Thule Inuit cultures established camps in this area. Dorset culture existed from approximately **500 BC – 1500 AD** (lasting 2000 years) as a coastal culture who lived primarily by hunting sea mammals. These people had permanent houses built of snow and turf, heated with soapstone oil lamps. Around **1000-1600 AD**, Thule Inuit migrated from Alaska across the Arctic, displacing Dorset Inuit. Thule hunted large sea animals (as large as bowhead whales) and therefore were able to store sufficient food to occupy permanent villages built from stone, whalebones and turf. When a climatic change (“a little ice age”) between **1650 and 1850** forced the whales southwards, it led the Thule to become more nomadic in the search for food. Thule culture declined after about 1600 AD from a combination of deteriorating climatic conditions and the introduction of diseases from contact with Europeans.

Expeditions to the Canadian Arctic brought many changes and increased contact between Inuit and non-Inuit people. Recorded history tells how Sir Martin Frobisher was the first European explorer to travel into the bay in **1576** while searching for the Northwest Passage to Asia. Other adventurers, whalers and missionaries were frequenting the area throughout the **18th and 19th centuries**. As a result of this contact, the Inuit ancestral way of life was drastically transformed by changes. Inuit were introduced to diseases including influenza and measles.

In **1914** The Hudson's Bay Company opened a trading post at Ward Inlet. In the **1930s**, fur prices crashed; many southern traders withdrew. This led to hard times for Inuit as game had been over-hunted and southern commodities had become scarce. When trapping declined, many Inuit turned to the Hudson's Bay Company trading post for wage employment and modern goods.

Our recent history

It is worth noting that the circumstances of Inuit families and social groups during the past 60 years have changed considerably from those experienced previously. With communities developing and influences being brought from modern life in the south, Inuit family and social dynamics have been irreversibly affected. This has caused immense grief, pain and frustration, evident in ongoing tensions and stresses about responsibilities and expectations in many facets of life. These factors caused challenging social impacts that we are working through to this day.

In recalling the **1940s**, Iqaluit Elders have recounted that this town was founded first by the Americans and then by the Canadian government⁵. The United States Army Air Forces constructed the “Crystal Two” military base in 1942-43 to facilitate the transport of fighter aircraft from the United States to Great Britain. This was selected as the ideal site to build an airstrip long enough to handle large aircraft transporting war materials from the United States to its European allies. During the time of Crystal Two's operation, the military built two runways, a hospital, living quarters, a canteen, workshops, garages, offices and a church. According to some stories, the military recruited Inuit from surrounding hunting camps to act as guides or help with construction, while other stories talk about how the government discouraged Inuit from congregating around communities, and that the military operations used minimal use of Inuit labour. Similarly, there are differing stories about what happened afterwards. By some accounts, former hunters were discouraged from returning to their traditional way of life. Other accounts say that the military was explicit about non-fraternization between government personnel and Inuit, and say that the influx of Inuit into Frobisher Bay was increasingly driven by the availability of government services.

From 1950, a series of new rules and regulations were introduced into the Eastern Arctic by the Canadian government. The upper base radar station was built in 1952-53. This huge project brought tons of supplies and hundreds of construction workers, military personnel, and administrative staff into the community, including several hundred Inuit from surrounding areas who were attracted by opportunities to work at the airport and radar stations. Frobisher Bay (later renamed Iqaluit) evolved into a primary supply centre for the Eastern Arctic. The Canadian government built a small community in the area now known as Apex (Niaqunngut) where the HBC had relocated in 1955. Apex became the main centre of local life with a public school, nursing station, community centre, and fire hall. The settlement grew rapidly, as construction escalated on the eastern section of the Distant Early Warning Line ("DEW Line"). In 1957 the settlement's population was approximately 1,200 of whom 489 were Inuit. During the 1950s, Inuit sled dogs were increasingly disappearing, dying from disease, or killed.

In the 1960s, the Canadian government established permanent services at Frobisher Bay. This brought doctors, teachers, administrators, clerks and support staff to the area. The presence of an excellent airfield and existing infrastructure turned Frobisher Bay into the government administrative centre for the Eastern Canadian Arctic, as well as the communication and transportation hub for Baffin Island. The population grew rapidly in response; in large numbers Inuit families began to settle permanently in Iqaluit and the community of Apex. Many Inuit came to the area seeking employment in military and other government activities, and the settlement became the largest on Baffin Island. In June 1964, the first elections were held to form a community council.

In the 1970s, Iqaluit continued to develop politically, physically and socially. By 1970, Frobisher Bay was officially recognized as a settlement and four years later as a village. In the early 1970s, the founding of the Gordon Robertson Educational Centre (now Inuksuk High School) marked a major change for Iqalummiut. Not only did it confirm the government's commitment to the community as an administrative centre, it marked the beginning of the end of the residential school system for Inuit youth from Baffin Island. In 1976, the Inuit Tapirisat of Canada proposed the creation of the Nunavut Territory.

By 1980 Frobisher Bay's first Mayor had been elected, and Frobisher Bay was officially designated as a town. In 1987, Frobisher Bay officially became "Iqaluit", reverting to the original Inuktitut name meaning "plenty of fish." The **1990s** saw the creation of Nunavut, with Iqaluit as its capital. In November 1992, Inuit of Nunavut ratified the Nunavut Land Claims Agreement. In May 1993, the Nunavut Land Claims Agreement (NCLA) was signed in Iqaluit by the Government of Canada, the Government of the Northwest Territories, and the Tungavik Federation of Nunavut (now Nunavut Tunngavik Inc.). It was the largest Aboriginal land claim settlement in Canadian history. In December 1995, Nunavummiut voted to make Iqaluit their future capital, and on April 1, 1999 the new Territory of Nunavut officially came into being with Iqaluit as its capital. On April 19, **2001** Iqaluit received its Order of Official Status as a City, making it the newest, smallest capital city in Canada.

Iqaluit today

Currently, Iqaluit's population is richly diverse. Within the community, there is a mixture of long-term residents (including Inuit originally from Iqaluit, Inuit moving from elsewhere in the territory, and non-Inuit) and short-term residents (including transient workers in government and industry, college students, researchers, and others.) The majority of our residents have moved to Iqaluit during their lifetime for work, education, or for family reasons. According to the 2011 Household Survey (StatsCan), we are made up of 59 percent Inuit and 41 percent Qallunaat (non-Inuit) residents.

There are many Inuit sub-communities within Iqaluit; it is common to label oneself or others as being from another community (e.g. Pangnirtung, Igloolik, Pond Inlet or Arctic Bay), even after living many years in Iqaluit. A large number of Inuit in Iqaluit maintain elements of a traditional lifestyle, and the harvesting of fish, wildlife, and berries are an important aspect of everyday life. Like other communities throughout Nunavut, Inuit in Iqaluit live by modern culture and values. Unlike other Nunavut communities, in Iqaluit daily life takes place in both English and Inuktitut, with English being the default working language.

There are also groups of people in Iqaluit who are proud of their Newfoundlander, francophone, Filipino and South Asian heritages. Non-Inuit residents were either raised locally or moved here from many places in Canada and

abroad. This is a broad and very diverse group, made up of both long-term and short-term residents, who celebrate their culture and develop strong community spirit.

The rich cultural diversity within our community is further reflected by Uiviut (the local francophone population). In 2011, there were approximately 320 residents who speak French as their first language. To support them, there is a French school (K to Grade 12), French daycare and preschool, a Francophone Centre, a French radio station, and a Francophone business development centre. This group holds special recognition through the Official Languages Act, as one of Nunavut's three official languages (Inuit languages, English and French).

The social and political structure of Iqaluit has undergone significant changes with the creation of Nunavut. Today, Iqaluit has most of the amenities of a capital city, including a legislative assembly, municipal, territorial, and federal government offices, a hospital, college campuses, correctional facilities, a courthouse, a museum, a visitor centre, research facilities, shelters, hotels, restaurants, and an airport. As Nunavut's capital, Iqaluit currently plays a major role as the territorial centre of business, transportation, administration and services related to health, education and broadcasting. Beyond the city centre and residential areas lie parks and undeveloped land, where both traditional and contemporary recreational activities occur.

Our community is struggling to cope with acute social issues on a major scale. We are fighting an uphill battle against mental illness, addiction, abuse, suicide, low educational achievement, unemployment, housing shortages, cultural erosion, and disengagement.

The cultural, educational, political and socio-economic changes are occurring against a backdrop of increasing pressure for exploitation of mineral and other natural resources. This has the potential to bring increased wealth to Iqalumiut, but also carries the potential to threaten the resources essential to continuing cultural and traditional Inuit practices.

According to projections in the 2010 *General Plan*, our municipality has a population of approximately 8,000⁶ in 2013. Based on projected growth rates, our population is expected to grow to approximately 13,050 by 2030. As such, Iqaluit will experience a significant increase in demand for housing, energy, water, the treatment of wastewater, and management of solid waste. This projected growth will pose considerable financial, social, cultural and environmental challenges since the community is already stretched in its infrastructure and resources. Climate change will additionally stress our systems.

Our Sustainable Community Plan comes at an important point in our development as the Capital City of our young territory.



Our challenges and strengths

The following is a synopsis of some of the main challenges and strengths that were identified in Sustainable Iqaluit's community engagement.

Challenges

As Iqaluit grows as a city and as a gateway to the North, we face many challenges.

1. **We feel disconnected as a community.** We need to find new ways of connecting with each other, new ways of communicating, and new ways of embracing everyone in our community. We need to counter the growing sense of isolation and disconnection from others.
2. We continue to experience **rapid social change** that is **deeply rooted in our recent colonial history**. There are major pressures and urgent needs that must be addressed in our community on all fronts, which sets a challenging context for sustainability planning.
3. **We have an infrastructure shortfall.** Our existing infrastructure requires upgrades, we have infrastructure gaps and new infrastructure needs, and it is essential our infrastructure can adapt to climate change. Our growth impacts our water, energy, waste, roads, housing and more. Increased infrastructure will need increased investment. It is a challenge to keep up now; how will we do it in the future?
4. **It takes financial resources to become sustainable.** The City of Iqaluit, like all municipalities across Canada, has limited opportunities to generate additional revenues to accomplish the long list of needs. Without additional revenues, the City is restricted in its ability to maintain or increase programs and infrastructure. The City has two main sources of revenue: funding from the territorial and federal governments, and property taxes (approximately 1,500 taxed properties).

Strengths

As Iqaluit grows as a community and as a Capital City, our community recognizes that we have many strengths.

1. **People are at the heart of our community.** Thanks to our committed and caring residents, our community is a vibrant place to live, grow, learn, and give. Everyone plays a role in enhancing our community: children, youth, adults, and Elders. Our community is multicultural but rooted in Inuit culture. We all benefit from the efforts and enthusiasm of our long-term, short-term and transient residents. The power of individuals makes our community a better place for everyone. Our community is made up of approximately 8,000 individuals (see endnote 6) who all have something to give, and who all make our community what it is today and will move us toward our vision for the future.
2. **Our community has an abundance of dedicated, service-providing organizations and businesses.** The *What We Have: Our community assets* document captures the organizations operating in Iqaluit; these include Iqaluit-headquartered territorial organizations and our locally-focused organizations. We are proud to have so many committed organizations serving our community, and appreciate and recognize the efforts of all the volunteers and employees of these organizations for the ways they improve our community every day. Too, private businesses make our community more sustainable through the goods and services they provide. Private enterprise also contributes to our sustainability through increasing capital investment in our community. These organizations and businesses make our community better, and move us towards a more sustainable long-term future.
3. **Our infrastructure keeps our community running on a daily basis.** Our facilities, roads, and other public infrastructure are often overlooked in our daily lives; if it functions, we take it for granted. Although we have some clear challenges with our infrastructure, we recognize that on the whole, it is an asset that supports us in our day-to-day lives.

Climate change connections

Why is climate change addressed in this plan? This Sustainable Community Plan looks ahead 50 years to what we want our community to be. Like our Sustainable Community Plan, climate change projections also think long-term, see the connections, and look at the whole. Iqaluit's climate is changing, and with these changes come many impacts for our community; we must consider climate change in our future planning. Climate change has the potential to impact Iqaluit in a number of areas including buildings, roads, water supply, wastewater treatment and waste disposal. Additional impacts on the community, including emergency response, economic development, access to the land and sea and traditional hunting practices will all require adaptation to the impacts of climate change as well⁷. Our future planning would be incomplete without taking into account climate change projections.

Understanding climate change is important for Iqalumiut because it will affect and impact us throughout our lives, our family's lives, and the lives of our future generations.

"Climate change is not just about bureaucrats scurrying around. It is about families, parents, children, and the lives we lead in our communities in the broader environment. We have to regain this perspective..."

- Sheila Watt-Cloutier⁸

Iqaluit's climate is indeed changing and there are many recent examples of how this is affecting our daily lives. In the past five years, Iqalumiut have experienced some unprecedented weather. The hottest day in Iqaluit's history⁹ was recorded on July 21, 2008 with a temperature of 26.8°C, when Iqalumiut cooled down by swimming in Apex River and stripping down to shorts, halter tops and sandals. On January 4, 2011 the temperature rose to 1.2°C, breaking highest-temperature records¹⁰ for the month of January, and these high temperatures resulted in ice rain and icy roads, forcing schools and offices to close. In September 2012 Iqaluit experienced record rains, with monthly rainfall totaling 150mm (almost 100mm more than normal); this is the greatest amount ever recorded in September, and making it the second wettest month¹¹ in over 65 years.

Climate change actions for the City of Iqaluit

Learning about and understanding climate change in Iqaluit is the first step to taking action. The next step contains two ways we can prepare for and respond to climate change:

- 1) Reduce further climate change by taking **mitigation** actions that reduce greenhouse gas emissions or increase the earth's ability to absorb these emissions naturally; and
- 2) Plan for changes by taking **adaptation** actions to prepare for expected changes in the climate.

Mitigation (reducing further climate change) and **adaptation (planning for future changes)** can take different forms of action, including awareness and education, policy changes, and amendments to standard community practices. Throughout this Sustainable Community Plan, actions have been built in to each theme in order to identify and specify how we will manage our changing climate of the future.

Climate change planning is a continuous process; therefore options identified for the City of Iqaluit today will need to be reviewed and possibly revised as we encounter future climate conditions, and as new information and technologies become available. These are important steps to reduce our vulnerability and to move us towards a better long-term future.

For more information about climate change in Iqaluit, see [Appendix A](#) in this document. Additionally, the Iqaluit Sustainability Action Plan includes discussions about climate change in each theme. Alternatively, the General Plan (2010), The City of Iqaluit's Climate Change Impacts, Infrastructure Risks & Adaptive Capacity Project (2007), and The Iqaluit Climate Change Adaptation Project (2010) all focus on municipal climate change actions. Also refer to the Nunavut Climate Change website for more information (www.climatechangenunavut.ca).

SECTION 3 - Our Planning Process

This is a *community* plan. With the perspectives of the citizens, organizations and governments working in Iqaluit, this Sustainable Community Plan has been developed to serve Iqaluit's long-term future. It is a high-level, integrated community plan (municipal and non-municipal) that will guide our decisions and priorities, based on our 50 year vision for the future. In the coming years, we will use these ideas to guide us as we will build the kind of Iqaluit we want for ourselves, our children, our grandchildren and great-grandchildren.

Timeline

The City of Iqaluit has been working on sustainability for a number of years. The following dates mark important steps in our journey to sustainability to date.

2006	The City of Iqaluit commits to long-term sustainability planning.
2007	The City of Iqaluit completes initial conversations and interviews with Councilors and community members about sustainability.
2009	The City of Iqaluit hires a full-time Sustainability Coordinator.
2010	The City of Iqaluit is awarded funding by the Federation of Canadian Municipalities' Green Municipal Fund to develop our Sustainable Community Plan.
2011	The City of Iqaluit launches Sustainable Iqaluit, beginning with a review of our current reality.
2011-2013	Sustainable Iqaluit connects and engages with community members to contribute to the development of the plan.
2014	Iqaluit City Council adopts our first Sustainable Community Plan.



A community process

As a community process, this Sustainable Community Plan was developed over a two year period (2011-2013). The Sustainable Iqaluit process was guided by several goals:

Co-create the plan Iqalumiut are involved at every stage of this plan, in discussions, coming up with ideas, reviewing content, verifying documents and participating in public engagement. Through creative, meaningful, ongoing community engagement, we co-create a plan that includes input from all parts of our community and that is much bigger than the sum of its parts.	Build on existing assets Iqaluit already has many outstanding people, organizations, initiatives, plans, and processes that encourage sustainable practices. The sustainability planning process celebrates and engages existing organizations, networks, and activities to build on this important work.
Think long-term The Iqaluit Sustainable Community Plan looks 50 years ahead. This allows us to think beyond the current systems and constraints. It also allows us to consider trends and issues that will affect Iqaluit in the long-term.	Look at the whole and see the connections Iqalumiut recognize that all aspects of our community are interconnected. They are interconnected within the City and within larger regional, national and international systems. This plan attempts to “look at the whole” through its development and implementation.
Adapt and continually improve The Sustainable Community Plan recognizes the need for ongoing monitoring, reporting, and communication so we all learn from our experiences, successes and set-backs. This helps us to adapt to new conditions during the planning process itself, and also during implementation.	Make it meaningful and manageable Tackle the bigger issues by taking meaningful action in manageable chunks. Infuse the plan with value and meaning, and especially respect and reflect <i>Inuit Qaujimajatuqangit</i>.



A local approach

To create this plan, Sustainable Iqaluit relied on cooperative work with existing community groups, and focused on active listening based on relationships and responsive action.

We started conversations with local residents about our community's future. This included more than 200 meetings with local residents and groups, and more than 60 meetings with municipal staff. During these conversations, Iqalumiut urged us to review previous studies and to reuse previous consultations, so that we don't repeat the past.

We agreed and took action. We collected over 300 documents, and read 150 studies and reports written about Iqaluit over the past 10 years. We analyzed over 30 of these reports and summarized our findings in two easy-to-read documents: ***What We Heard – A summary of past voices*** and ***What We Have – Our community assets*** are available for download at www.sustainableiqaluit.com.

We knew that reviewing documents cannot replace face-to-face connections, so we launched a community Storytelling Activity with over 65 people participating, created a Community Exhibit attended by over 300 people, facilitated Working Groups on specific topics with nearly 70 residents participating, and hosted a Long-term Inuit residents meeting with 25 people contributing. These conversations were documented in the ***What We Feel – Sharing Our Stories*** document available for download at www.sustainableigluait.com.

Municipal sessions were undertaken to allow members of City of Iqaluit staff and City Council to have an opportunity to test and edit the tools and communications material, before they were taken to the public. We invited City staff to participate in the Storytelling Activity, and held workshops with the Mayor and City Council.

Community sessions took place in several stages in 2012. We held the community Storytelling Activity from March-June. We held a four-day, drop-in Community Exhibit in May. We held eight Working Groups in May-June that dove into specific topics and themes. We held a meeting in Inuktitut and invited our long-term Inuit residents to share their ideas in November. At every opportunity, we have initiated animated interactions that take people out of meeting rooms and into the community. We focused on positive experiences in informal settings. These activities were held to allow the opportunity for people to express their thoughts and feelings individually and together as a community.

To help spread the word, we used a variety of communication methods: we developed a trilingual website (Inuktitut, English, French) www.sustainablelqaluit.com; assembled an email list of over 500 direct contacts that we used to share updates and information; created a poster campaign; delivered presentations about Sustainable Iqaluit; and conducted television, radio, and newspaper interviews with local media.

About the Community Exhibit:

The Community Exhibit was a fun, four day, drop-in event. Over 300 participants came and lingered at the exhibit. People discussed, drew, wrote, played, shared old photographs and stories, watched locally produced videos, drank tea, ate bannock and cookies, signed up for Working Groups, and took information home with them.



To support a rigorous and meaningful planning process, Sustainable Iqaluit created three documents to use as tools (available for download at www.sustainableiqaluit.com):

What We Heard – A summary of past voices (2012)

1

Iqalumiut have a great deal to say about our community. In the past they have contributed many ideas about issues that matter to them, relating to sustainability for numerous studies, consultations and reports. We determined we would build on past work, not repeat it. In this document, we summarized over 30 documents published 2004-2011, in order to share “what we heard” and reflect it back to Iqalumiut for verification. We selected these documents for their breadth and depth, and their significance to our community’s long-term future. This summary of past voices became a tool to help us reflect upon and clarify ideas.

What We Have – Our community assets (2012)

2

Our local people, organizations, and infrastructure all make Iqaluit a better place to live. We made a list of community assets to get everyone on the same page about what we have today. We gathered information to make it as complete and comprehensive as possible. Knowing what we have is essential to appreciating our abundance and recognizing our gaps.

What We Feel – Sharing our stories (2013)

3

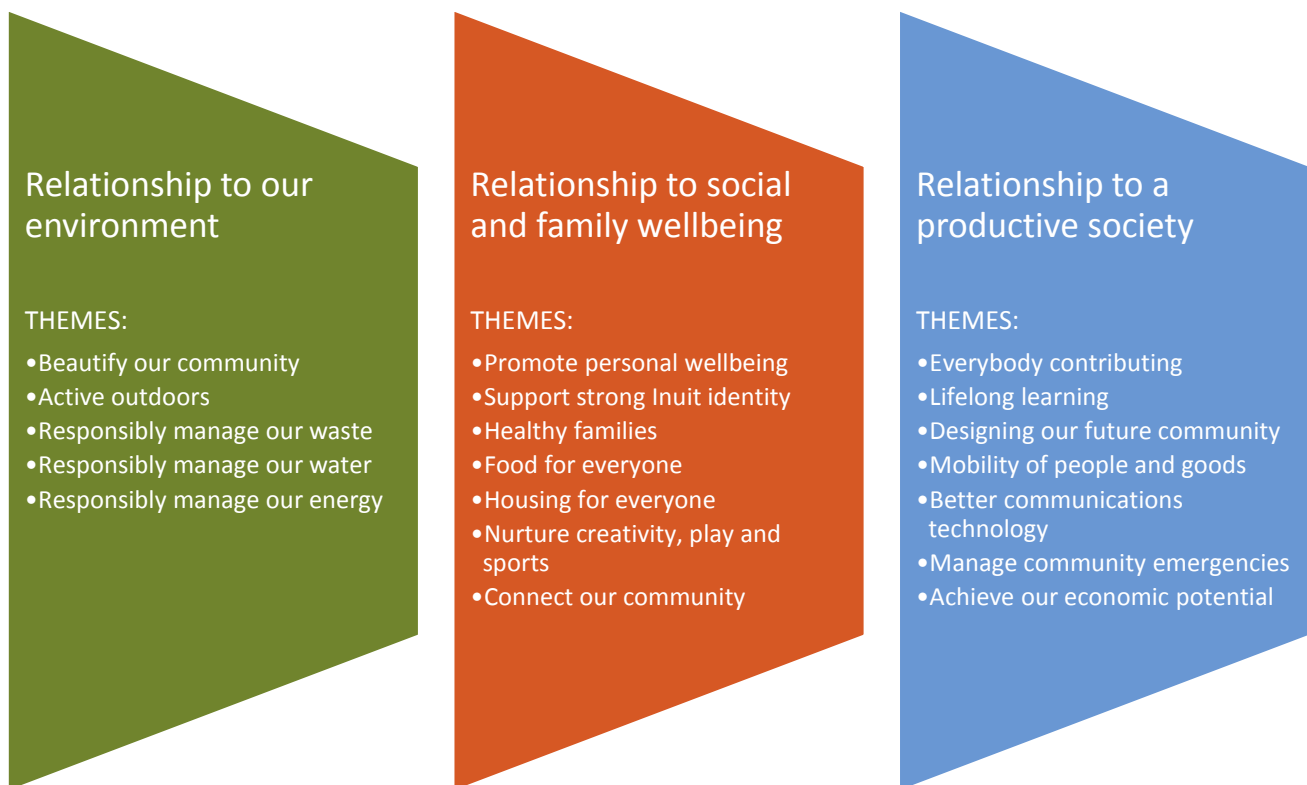
We asked locals to share their feelings about our community. We asked Iqalumiut to tell us what they like today, and what they would change in the future. Through a **Storytelling activity**, we collected community stories and impressions. We combined these with input from the **Community Exhibit**, the **Working Groups**, the **Long-Term Inuit Residents Meeting**, and **individual and small group meetings** to create this document, which reflects residents’ feelings about our community’s realities, hopes and opportunities.

SECTION 4 – Our Sustainability Framework

Based on relationships

Starting with preliminary conversations with residents, we heard loud and clear that our community is based on relationships. We operate through our relations every day. Where we go, who we are, and what we do – these all connect us to each other. Therefore, it is appropriate that our Sustainable Community Plan reflects and reinforces these relationships.

This plan is unique to Iqaluit. It is organized by three relationships, which are further divided into themes.



This relational framework has emerged from conversations with Inuit leaders and community members. It respects *Inuit Qaujimajatuqangit* and it relates to current, everyday life of all Iqalumiut. These relationships correspond to the three “pillars” of sustainability (environment, socio-cultural, economic) that are typically used in sustainable community plans in the South.

These relationships best convey our unique local environmental, social and economic realities. Highlighting the importance of our relationships – between ourselves and the land, between ourselves and each other, and between ourselves and our purpose in life – this framework provides greater scope for making and deepening our community connections.

This relationship-based approach reflects the true nature of our sustainable future. It is a bridge between the past and the future that connects all residents, new and old, and it is the foundation of the plan.

Our plan structure

The following diagram shows the structure of our Sustainable Community Plan.



Our community vision and relationships are at the top of the plan. Based on our community engagement, we have developed an overall long-term vision for community sustainability that answers the question: “Where do we want to be in 50 years?” This broad vision interacts with three sustainability relationships. These relationships describe the specific focus area of Sustainable Iqaluit that honours and reflects overlapping connections within our community: our relationship to the environment, to family and social wellbeing, and to a productive society.

Each relationship has several themes. These themes allow us to organize and describe important parts of our relationships. Within our three relationships are many themes (see previous page.) This includes sections on where we are now, and where we want to be in 50 years.

Each theme has several goals. Goals provide guidance and intention, to move Iqaluit from our current reality to a more sustainable future by influencing our ideas for activities, programs, and/or projects.

Every goal has actions. Actions are specific initiatives that move Iqaluit towards achieving its goals. To become a listed action, an organization or individual must be identified as an action lead and commit to taking action. The action lead accepts responsibility and accountability for implementing the action. Action leads also hold responsibility for reporting on their progress, so that it is included in the Annual Progress Report.

How to use this Sustainable Community Plan

Our plan can be used in many ways by residents, businesses, not-for-profit organizations, government agencies and the City of Iqaluit. We can collectively use this plan to help align our actions to move Iqaluit closer to our vision of sustainability.

The **City of Iqaluit** will use the plan to guide decision making and incorporate sustainability in the work of the municipality. The City of Iqaluit will use this document to:

- support alignment of existing municipal policies, programs, and plans with the community's long-term vision;
- broaden and deepen connections with community partners;
- tap into new resources, including funding, opportunities, and potential collaborations;
- monitor our progress and report on our accomplishments; and
- celebrate success together as we achieve our goals.

There are many **businesses and service organizations** including government agencies, not-for-profit organizations, associations, schools and other groups that play a role in our community's sustainable wellbeing. Together organizations and government agencies can use this plan to:

- broaden and deepen connections with others taking action in our community;
- better coordinate efforts and align collective interests within our long-term vision;
- keep a focus on our long-term future when making decisions; and
- enhance communication across and through the community.

Individuals are at the core of our community, and the glue that binds it together. The actions of individuals do matter when residents focus making our community better every day. Iqalummiut can use this plan to:

- work together to improve the quality of life in our community;
- renew our hope and determination to individually and collectively pursue actions (small or large) that will make a difference in the long run;
- promote and share with each other our vision of a more sustainable future; and
- contribute to a better long-term future.

We can use this Sustainable Community Plan to move us closer to the future we want for ourselves and for future generations. Iqalummiut are resourceful and caring, proud and resilient. We can all use this plan to make our community even stronger and to ensure that we are moving towards our long-term vision for sustainability.



How this Sustainable Community Plan connects with other plans

This plan interconnects with and builds on other plans at the City of Iqaluit, and many plans at the local, territorial and federal level.

This **Sustainable Community Plan** (2014) describes a long-range vision, goals, strategies and prioritized actions for the City and community leaders. This plan is unique in that it looks 50 years into the future and considers all aspects of our community. www.sustainableiqaluit.com

The documents listed below are often referenced within this plan. These documents provide detailed information on specific aspects of our community. They have been used substantially in the process of developing the plan.

PLANS AND DOCUMENTS: CITY OF IQALUIT

The **General Plan** (2010) contains Council's policies for managing the physical development and land-uses of Iqaluit in a 20-year scope. It incorporates sustainability by highlighting any social, economic and environmental concerns in the physical development of the City. It also provides comprehensive long-term strategic direction for Iqaluit's development, and is updated every 5 years.
http://www.city.iqaluit.nu.ca/i18n/english/GP_ZBL.html

The **Core Area & Capital District Redevelopment Plan** (2004) details information on design themes and strategies for redevelopment of the City's central area.
<http://www.city.iqaluit.nu.ca/i18n/english/pdf/Core%20Area%20Redevelopment%20Plan.pdf>

The Municipality's **Five-year Capital Plan** (in progress) identifies the City's priority short-term infrastructure projects, how they will be funded and plans when they will be completed.

The **Iqaluit Solid Waste Management Plan** (in progress) identifies and outlines the City's planned solid waste infrastructure program.

The **Iqaluit Community Economic Development Plan** (in progress) focuses on local economic development and improving the quality of life within the community. It incorporates sustainability, recognizing the connections between the economy, the environment, society and culture. The plan is currently in development.

The **Recreation Master Plan** (2011) outlines policy actions to improve quality of life for Iqaluit residents through parks and recreation services. It identifies needs, provides direction, and establishes priorities for recreation facilities and services that are tied into the Capital planning process.
http://www.city.iqaluit.nu.ca/i18n/english/tender_docs/aquatics/IACRFP4_IqaluitRecMasterPlan.pdf

The **Piqutivut: Building our Capital** (2011) report looks at our needs for municipal facilities, including a new Recreation Facility, Aquatic Center, City Hall and Emergency and Protective Services Center.
<http://www.city.iqaluit.nu.ca/i18n/english/pdf/PiqutivutFinalReport.pdf>

Iqaluit's Community Action Plan Project (2008) outlines measures to reduce greenhouse gas emissions, and includes a full inventory of Iqaluit's emissions in 2006. <http://bit.ly/Xgp44V>

OTHER PLANS AND DOCUMENTS: LOCAL, TERRITORIAL AND FEDERAL

The Makimaniq Poverty Reduction Plan: A shared approach to poverty reduction (2012) prepared by the Nunavut Anti-Poverty Secretariat, prepared by GN/NTI.

http://www.makiliqta.ca/uploads/The%20Makimaniq%20Plan_FINAL_ENG_20.12.11.pdf

The Nunavut Suicide Prevention Strategy and Action Plan (2011) prepared by the Government of Nunavut, Nunavut Tunngavik Inc., Embrace Life Council, and Royal Canadian Mounted Police.

<http://www.tunngavik.com/files/2011/09/nsps-action-plan-eng4.pdf>

Igluliuqatigiilauqta: Let's Build a Home Together, Framework for the GN Long-Term Comprehensive Housing and Homelessness Strategy (2012) prepared by Nunavut Housing Corporation. <http://bit.ly/Xnlu6Q>

The GN Long-term Comprehensive Housing and Homelessness Strategy (2013) prepared by the Nunavut Housing Corporation. <http://bit.ly/11KsWQQ>

2010-2011 Annual Report on the State of Inuit Culture and Society, prepared by Nunavut Tunngavik Inc.

<http://www.tunngavik.com/files/2012/11/2010-11-SICS-Annual-Report-Eng.pdf>

Nunavut Economic Outlook (2010), prepared by the Nunavut Economic Forum

<http://www.nunavuteconomicforum.ca/public/files/library/NEO%202010%20Outlook%20%20Report.pdf>

Upagiatavut - Setting the Course, Impacts and Adaptation in Nunavut (2013) prepared by the Government of Nunavut. http://env.gov.nu.ca/sites/default/files/3154-315_climate_english_sm.pdf



A long-term vision for Iqaluit

A long-term vision for Iqaluit talks about the future and describes our dreams for what we would like for our children, grandchildren and great-grandchildren.

Our long-term vision for Iqaluit in the next 50 years is:

We are a prosperous, healthy,
and connected community who
**respects and cares for our land,
respects and cares for each other,
respects and cares for ourselves.**



This means that, in 50 years...

... We want to be a community that honours and values our environment.

We want a healthy environment, with opportunities to enjoy clean water and air, and possibilities to harvest and hunt close to town. We want to protect our access to the land and water, preserve our relationship to nature, and cherish our physical and spiritual connection to nature.

... We want to be a community that honours and values many forms of connection.

We want to forge deep connections between ourselves and others. We care that Iqaluit is a liveable city, designed around people. It is a place where everyone can be at home. We share our diversity, our rich traditions, and our rewarding healthy relationships with each other. Our vibrant leadership is grounded in deep listening, openness, honesty and trust. We are also playful, joyful, united, and we thrive in having fun together.

As Iqalummiut, we respect Elders and give them a place of prominence in our community. We want to be a close, generous, and connected community. We value the significance and wisdom that our Elders' experiences bring to current-day situations, and we seek them out to be involved in problem-solving for the future. We also want them to help guide the way for our families and young people, helping us to be responsible and respect ourselves, other people, and our environment. Together we make Iqaluit into a safe and happy community for kids, youth, adults and Elders.

Together, we share our collective knowledge and history in Inuktitut, English and French, and Inuit societal values help to shape our collective identity.

... We want to be an engaged community that honours and values all kinds of involvement.

We want to be an engaged community, with strong leadership, accountability and good planning. We want good communication and good access to services and information. We want to be actively involved in helping our community develop with teamwork and cooperation, through work, family life, and volunteering. We want our residents to have good self-esteem, a sense of belonging, strong social networks, and many opportunities to learn skills that help encourage engagement and involvement.

... We want to be a community that honours and values healthy ways of coping.

We want everyone to participate in healthy living, with strong self-reliance, endurance, and adaptability. We want to improve our quality of life, encourage community wellness, assist those who are disadvantaged, and help people - particularly our youth – to reach their full potential. We want to continually adapt to overcome challenges, survive troubles, and be honest about our situation while remaining patient, resourceful and hopeful.

We will work towards this vision through the goals and the actions outlined in
Part Two - Action Plan.

SECTION 5 – Implementing and Monitoring

Implementing this Sustainable Community Plan will create a gradual shift in the way we plan, design, construct and live in our community. This will move us towards a better long-term future.

This is a five year plan. During these 5 years, we will regularly return to this plan for guidance and planning purposes.

The actions listed in the Action Plan give direction about the short-term actions we will take. The Action Plan also provides a platform to review our progress. Every year we will report on our progress. If needed, sections of the Action Plan will be updated with new information or with new actions.

There are three primary components to monitoring our progress:

I. Annual Progress Report

On an annual basis, the Sustainability Coordinator of the City of Iqaluit will issue a progress report. The progress report will include three main components:

- a) Progress statements on the actions for the **last year**. These include City of Iqaluit actions by municipal leaders, and community actions by community leaders.
- b) The **updated list of actions**.
- c) Data on **indicators**, where available. This work will be done in cooperation with the City of Iqaluit's Economic Development Committee.

II. Five Year Review of the Sustainable Community Plan

The complete Sustainable Community Plan will undergo a comprehensive review every five years.

III. Celebrate Success

Celebrating success and letting people know about progress will energize us and will drive us to continue working hard in implementing the plan.



The problem of indicators

What are indicators?

Indicators are snapshots of information that highlight what is happening in a larger system at a certain time. They commonly rely on a select set of data (statistics) that is used to indicate the direction of a critical aspect of our community, economy, or environment: forward or backward, increasing or decreasing, improving or deteriorating, or staying the same. Indicators interpret data to monitor our progress by historically comparing the same data over time, or by combining different data to highlight a specific point in time. To provide manageable, valid, and useful interpretations of our direction, indicators involve data that is **specific to Iqaluit, reliable, repeatedly collected, complete, and public**.

What is the problem of indicators for Iqaluit?

In developing this plan, we have realized that there is a real problem with setting relevant and reliable indicators for Iqaluit. As we know, there is plenty of data about Nunavut that has been collected. All the time, there are researchers and consultants inquiring about our environment, society, and economy. Despite this wealth of information, we have discovered much of this data cannot be used as an indicator for our sustainable progress for a variety of core reasons:

- 1) **It not specific to Iqaluit** – the data may have been collected for all of Nunavut, and we cannot accurately extract the data just for Iqaluit (as in the percentage of smokers 12 and over, where only the collated figure for Nunavut's 10 largest communities is available). It's very difficult to accurately use this information to provide information only about Iqaluit.
- 2) **It is unreliable** – we know there is some data that is inaccurate for our community, too limited (as in the statistically-limited data on housing in Iqaluit), or flawed (when data is based on mistaken assumptions).
- 3) **It is not repeatedly collected** – there is a significant amount of research that is one-time-only basis, which often suits the purpose for which it was collected (as in the Inuit Health Survey). However for our purposes, if it is not collected repeatedly, we cannot use it for monitoring our progress over time. To be valid and useful indicators for monitoring our sustainability, we need to refer to data collected on a regular basis that allows us to compare.
- 4) **It is incomplete** – the data is provided only in part so an incomplete picture is presented, or the data requires considerable explanation to deliver an accurate description (as in the rates of health care visits that include visits to the Public Health Clinic in Iqaluit, that do not include visits to the Qikiqtani General Hospital).
- 5) **It is confidential** – the data may not be made publicly available, because of its sensitive nature (as in rates of syphilis), out of respect for our small and tight-knit population (as in rates of suicide or attempted suicide), or because it would compromise the efforts of operations or service providers (as in RCMP data on drug dealers or bootleggers).

So how are we going to measure progress in our community?

In the absence of relevant and reliable indicators for Iqaluit, we have taken a qualitative approach to considering indicators. Of the hundreds of documents we have read and the hundreds of people we have spoken with, we collected a vast array of statistical information that has influenced this plan at every stage of its development, but that cannot be used with integrity to develop indicators.

We hope that in the next five years we will have more **specific to Iqaluit, reliable, repeatedly collected, complete, and public** data that we can transform into baseline indicators to track our progress. *If you know of any data that we may have missed that could form part of a good solid indicator, please get in touch as we would be very happy to know about it.*

In the meantime, the data below has been used (and referenced) throughout this plan. Together, it paints a comprehensive picture of how Iqaluit is doing. It provides us with a clear sense of the direction that we need to take to make our sustainability vision a reality, which has been articulated in discussions of where we are now, and where we want to be, as well as the goals and actions to get us there.

- We collected [environmental data](#) including tonnage of garbage going into landfill or diverted from landfill, amount of water consumed, amount of energy consumed, and total litres of fuel consumed.
- We collected [public safety data](#) including the number of domestic conflicts, criminal violation rates, the homicide rate, and firefighter call-out response numbers.
- We collected [mental wellness data](#) including the number of suicides, rates of substance abuse, and use of Mental Health Services.
- We collected [family health data](#) including waiting list for daycare spots, low birth weights, teenage pregnancy rates, the youth crime rate, severe illnesses, transmittable diseases, life expectancy at birth, tuberculosis rates, alcohol use, and tobacco and cannabis offence rates.
- We collected [housing data](#) including rates of homelessness, rates of shelter usage, waiting list for public housing, and housing affordability.
- We collected [food security data](#) including household food insecurity, and rates of usage of food bank/soup kitchen.
- We collected [education data](#) including percentage of graduates from high school, percentage of graduates from post-secondary education, literacy rate, public school attendance, and truancy rate.
- We collected [economic data](#) including the percentage of low-income families, the number of children living in poverty, income distribution, the number of people on social assistance, and the unemployment rate.
- We collected [language and culture data](#) including data on the usage of Inuktitut, data on the usage of French, data on cultural programming, and data on use of Inuit Qaujimajatuqangit in the workplace.
- We collected [community participation data](#) including the number of sports/leisure groups, the number of people recycling/goods being recycled, the number of people volunteering, and the number of people participating in political discussion.

To conclude, this plan is meant to act as a snapshot that tells the story of the challenges we face and the successes we have achieved. The data we collected helped to inform us about our sustainability. In five years, there will need to be a similar effort, in order to produce a new picture that indicates what has changed.

In the meantime, we will monitor our progress through managing our actions, and report on these actions in our Annual Progress Report.

SECTION 6 – What is in Part Two of the Sustainable Community Plan?

The **Sustainable Community Plan** is made up of two parts.

Part One:

The document you are currently reading is the **Overview**. It looks at what sustainability is, and how it relates to our community. It talks about our context and shares our long-term vision.

Part Two:

The **Action Plan** is an in-depth look at our relationships to our environment, to social and family wellbeing, and to a productive society. It looks at each individual theme specifically and includes the following information:

- Where we are now: what we have, our strengths, and our challenges
- Climate change
- Where we want to be
- Our actions towards a better future: municipal leaders and community leaders
- Linkages to other themes, and to other documents

These documents are available for pick up at Iqaluit City Hall and municipal office building #2425, for download at www.sustainableiqaluit.com, or via Robyn Campbell (Sustainability Coordinator) at r.campbell@city.iqaluit.nu.ca or 979-6363 extension 232.



Appendix A – More information about climate change in Iqaluit

Three kinds of information are presented:

1. Elder observations about climate change in Iqaluit
2. Understanding climate change terminology
3. Key scientific data on climate change in Iqaluit

1. Elder observations about climate change in Iqaluit

These observations were sourced from Iqaluit Elder observations in 2002, and were published in [*Inuit Qaujimajatuqangit of Climate Change in Nunavut: A sample of Inuit experiences of recent climate and environmental changes in Pangnirtung and Iqaluit*](#). Although these comments were made over ten years ago, the discussion remains valid. Some of these Elders have passed away. We honour and share their knowledge and wisdom about the changes they have experienced.

1.1 Sea ice

“(Sea ice) has really changed, big time. I recall (in my youth) that the ice never used to go out until July. Then the ice would soon reform within a matter of two months. It used to get cold quite early even before November. I recall that we would have ice, really thick ice by November. Usually, but the first week of November, the ice was unuseable and we could go places. There would be quite a bit of snow on the ground, prior to the ice freezing over. Now, these days, the ice does not form until December and I think that we are all aware that the ice is forming later each year, those of us who grew up in Iqaluit” (Johnny Nowdlak, March, 2002).

“Sometimes the ice would not melt away until late summer, other years it would melt a little earlier, always within the time frame identified by the elders. It used to melt off in July and sometimes in late July here in Iqaluit when we first came here. Other years sometimes it reached into August. I recall one year where it did just that. The ice left in August that year, but nowadays, these last few years, the ice is no longer staying to June even. These days now some families are bringing their boats as the ice now stays only for a short time and then leaves” (Henry Boaz, March, 2002).

1.2 Snow

“Most of the areas that we use for our travel are not as useable and due to the lack of snow, they are not really navigable. It has really affected some of the hunters as the lack of snow is hindering the harvesters. Although we would want to go hunting inland, it was getting tiresome waiting for the snow to arrive so that we could use our snow machines to go hunting with. It was quite an unnerving experience especially since this is so unusual to not have snow on the ground for weeks at a time” (Mosesee Tiglik, March, 2002).

“The snow is really hard now. Although it would not seem to be hard, it would still be all drift snow. And, the snow crystals you would expect to find under this snow, pukajaaq there seems to be no more occurrences anymore. Perhaps this is due to the wind. Although we find some crystals, they are not the same. Generally, you find them in areas where there is some wind, but also some protection. There is hardly any more pukajak snow” (Simeonie Kownirq, March 2002).

“I have noticed the changes and especially this last year. It has not really snowed at all this year. In that I mean a real snowstorm and we have yet to experience a blizzard this winter. There are reports of blizzards on the radio, but that is only “natiruviaq”, a small blizzard, not a real one” (Mosesee Joamie, February, 2002)

1.3 Weather

“It is getting more unpredictable as to what will happen; because the signs are misleading the Inuit who are used to weather that follows these signs” (Sytukie Joamie, March, 2002).

“...perhaps 1975, there was a lightning storm that I experienced for the first time further down the bay...nowadays, there are lightning storms every summer down the bay” (Sytukie Joamie, March, 2002).

"We now get these really rainy days that are just like the southern showers that we experience down south. These rains stem from heavy, deep, dark clouds that hold a lot of rain and it is just as strong as down south. We never used to get those kinds of storms, where there was so much rain that everything is covered with water. These storms also produce the occasional thunder and lightning storm" (Johnny Nowdlak, March, 2002).

"...in the winter, you used to see the ice fog that would form when it got really cold, past -40C. That is what does not occur as much. It used to be common from January and February. Whenever the wind dies down, the cold would produce ice fog. It never gets that cold in Iqaluit anymore, not for the long stretches that it used to" (Johnny Nowdlak, March, 2002).

1.4 Aniuvat (permanent snow patches)

"It is a lot warmer now and these aniuvat are long gone prior to summer. They used to remain all summer, but they melt now and you can see where the old aniuvat used to be, because those sites are bare of vegetation and they are lighter than the surrounding area. They melt completely now" (Johnny Nowdlak, March, 2002).

1.5 Seasons

"We are experiencing very short springs where the snow melts right away. This affects our ability to hunt in the spring with snowmobiles. Before, we used to be able to snowmobile on the land and ice until late spring around late June. Nowadays, the ice is always melting and we cannot go camping for as long as we want" (Elaiya Mike, March, 2002).

"It is very obvious that spring is a lot earlier than before. The month of April is one where I can cite an example of the changes, perhaps by many other Inuit. The month is generally used for the Toonik Time spring festivities. It was towards the end of the month when the festivities were held prior to the new century, but these last few years, due to earlier spring, the festivities have to be moved up by two weeks" (Jacapoosie Peter, March, 2002).

"Back then, snow would not melt until late June, but today snow melts way earlier. As a matter of fact, the ice is late and we can boat until the end of November, even me, I went boating during this period. If this were the old days, we would not need a boat at that time. As a matter of fact, these last couple years we have been boating until the end of November and even into December, Inuit were still boating around in the bay hunting seals...I guess there are drawbacks, but for the Inuit who like boating, it is right up their alley. It is beneficial to them. But the people who do not have boats are affected in that they cannot go hunting until the ice forms" (Situkie Joamie, March, 2002).

1.6 Lakes and rivers

"The ice thickness has changed. I do not go out as much as before, so I can only tell you what I have heard from those who are still fishing in the winter. From their words, the ice is way thinner than the normal levels. When we used to fish the lakes or food, when we were chipping away at the ice, sometimes it would be over our heads. That is how thick it was. Luckily, no one ever drowned in one of the holes. It used to be really thick in those days when all we had were hand chippers. As well, when we lived in a camp near Kimmirut, the ice used to be really thick. Up there, the Inuit living in the shadows apparently required steps to climb out of the holes they were chipping for their nets. That is how thick they were" (Henry Boaz, March, 2002).

"The lakes and rivers are starting to get mushy earlier and they become impassable in only a few days. Even before the traditional time of ice melting, the ice is getting dangerous to traverse. The lakes have thinner ice and does not hang around. These days the ice melts earlier and becomes crystallized way earlier where you cannot stand on it" (Elaiya Mike, March, 2002).

"(Lakes) seem to be freezing later and every year as the weather seems to be stuck on fall for a long time. That is what I know because when the time has reached the traditional freezing period, the lakes would freeze. These last few years the lakes have not frozen at the usual time because the weather has not been normal" (Simeonie Kownirq, March, 2002).

“The ice formation timing has changed dramatically. Nowadays, in what would traditionally have been early winter, there was still no frost on the ground of water bodies (bodies of water). It was not until later on that we were able to see the water freezing over in the creeks and rivers. Usually, the ice forms immediately in the fall in the shallow creeks and lakes, but they did not freeze over until close to the new year” (Mosessee Tiglik, March, 2002).

1.7 Wind

“The weather seems to be a little less sure, but all I can say is that the weather always changes and is unpredictable year to year, because some days, some seasons and years do not behave exactly as the years before them” (Henry Boas, March, 2002).

“...the upcoming wind is harder to predict and the fact that the winds are now not as steady in their direction is noticeable, such as the fact that the winds are now very shifty and continually move” (Sytukie Joamie, March, 2002).

“...every time I go along on a trip, I am scared of the wind because I do not know from when it will come now” (Jimmy Koomarjuk, March, 2002).

“Nowadays we are getting wind from everywhere. The winds are shifty and constantly changing their point of origin. The weather signs point towards a clear calm day, but the winds suddenly whips up and that is how it seems to operate in this day and age” (Elaiya Mike, March, 2002).

2. Understanding climate change terminology

2.1 Weather consists of the short-term changes in the atmosphere. In Iqaluit, our weather can change from minute-to-minute, hour-to-hour, and day-to-day.

2.2 Climate represents the long-term average (e.g. 30 years) of the weather patterns that affect our area. A way to distinguish the difference between weather and climate can be made with an example of an upcoming winter. The climate of the winter season in a particular region can be estimated based on the previous winters and can be perceived as generally very cold (or mild or wet), while the weather is any single atmospheric condition that will occur during that winter (such as blizzard or snow storm).

2.3 Climate change indicates significant changes in the mean (i.e. average) climate or in its variability over a given time period, typically several decades. Generally, it is expressed as the difference between the mean climate of a certain period in the future and the mean climate of the recent past (e.g. 1961-1990).

2.4 Climate change projections help us prepare for the coming changes in our environment by using models to estimate future climate impacts. No model is perfect.

3. Key scientific data on climate change in Iqaluit

Here are some key facts about what scientists predict Iqalumiut can expect in the future. This information has been verified by Canadian scientists who have specific expertise in Arctic climate change research. We are grateful to these scientists for their review, edits, and comments in the development of this section. Thanks also to ArcticNet IRIS for coordination.

3.1 INCREASE IN TEMPERATURE

Thanks to Carl Barrette at ArcticNet and Marko Markovic at Ouranos for their input on this section.

Past data shows that surface air temperatures have increased on the order of 1°C per decade between 1966 and 2003¹². Scientists are projecting that winter warming in the future will range from about 3°C up to about 9°C, with the greatest warming projected to occur specifically around southern Baffin Island and Hudson Bay¹³. These results can be in the order of those published in other studies showing pan-Arctic projected warming of about +1°C to +5°C for year 2055¹⁴. Recent reports by scientists, hunters, and elders also suggest significant local warming trends across Nunavut in the last half century¹⁵. These changes in temperature influence the length and onset of different seasons, particularly traditional Inuit seasons, which are closely tied to traditional land use activities. Temperature changes may have also caused changes in Nunavut's weather, such as an increased frequency of storms and more variable and unpredictable winds¹⁶. Climate warming impacts the freeze up and breakup of sea ice and permafrost thawing. Climate warming also influences ground thawing which ultimately affects soil and infrastructure stability¹⁷.

3.2 CHANGE IN SEA, RIVER, AND LAKE ICE

Thanks to Don Forbes from Natural Resources Canada, David Barber from the University of Manitoba, and Scott Hatcher at Memorial University for their input on this section.

Although this section discusses sea ice and river and lake ice, these kinds of ice are not highly interrelated¹⁸. Past data show the extent of sea ice has decreased every year since 1978, and the number of ice-free days on lakes, rivers and the ocean is increasing throughout the Arctic. In terms of sea ice, new data analysis indicates an increase of 1.05 to 1.58 days/year in the ice-free season since 1969 in the upper part of Frobisher Bay (depending on the ice data used)¹⁹. There seems to be a consistent delay in freeze-up but more variable results for advance in break-up. Some sources say shore-fast ice is melting faster, creating large areas of open water earlier in summer²⁰. Also there is evidence to suggest that the ice is thinner and ice thickness correlates to warmer winter temperatures. Ice pile-up is more likely to occur with thinner ice, though because of the ice-foot, pile-up hazards in Iqaluit seem to be primarily during freeze-up, yet there is also the anomaly of very thick multiyear ice entering the bay in the summer of 2012. While this sort of thing is very difficult to predict, it is an example of the more extreme conditions anticipated with climate change. One of the more striking changes in the Arctic has been the decrease in summer sea ice. Satellite data shows that the extent of Arctic sea ice has decreased each decade since 1978, the first year that satellite data was available²¹. In terms of river and lake ice, earlier breakup and later freeze-up of rivers and lakes across much of the Arctic have lengthened the ice-free season by 1 to 3 weeks. The trend toward earlier breakup and later freeze-up of rivers and lakes is very likely to continue, consistent with increasing temperature. Breakup flooding is likely to be less severe²². Increased runoff from major arctic rivers and increased precipitation over the Arctic Ocean are likely to decrease its salinity²³.

3.3 CHANGE IN PERMAFROST

Thanks to Anne-Marie LeBlanc from Natural Resources Canada for her input on this section.

Past data shows that permafrost temperatures in most of the Arctic and subarctic have increased by several tenths of a degree to as much as 2°C to 3°C (depending on location) since the early 1970s and permafrost thawing has accompanied the warming²⁴. In Iqaluit, the permafrost temperature in bedrock at a depth of 5 metres increased by 2°C per decade between 1993 and 2005²⁵. Permafrost is very sensitive to long-term warming temperatures and studies show that even small increases in temperature will cause soils to lose their strength²⁶. A warmer climate will increase the thickness of the active layer (the near ground surface layer that freezes and thaws each year) and reduce the underlying permafrost layer causing ground instability, especially in areas where the ground is ice-rich, which will damage roads, buildings and pipelines. Since most arctic infrastructure relies on the properties of frozen ground for stability, changes in active layer and in the permafrost layer are the most pronounced climate change impact for northern regions. Although historical data on the performance and maintenance of Iqaluit's infrastructure is very limited, increases in the thickness of the active layer have been observed, affecting the stability of some buildings in the area²⁷. Over the 21st century, permafrost degradation is predicted to occur over 10% to 20% of the present permafrost area, and the southern limit of permafrost is likely to move northward by several hundred kilometers²⁸. In Nunavut, the temperature of the permafrost is still very low (<-5°C) and the thickness of permafrost quite important (several hundred of meters)²¹, so it will take several decades or centuries before permafrost will completely thaw. However, permafrost degradation near the surface has already started and will likely continue.

3.4 INCREASE IN EXTREME WEATHER EVENTS

Thanks to Ron Stewart from the University of Manitoba for his input on this section.

Scientists predict that extreme weather events will continue to increase in both frequency and intensity due to changes in the climate²⁹. There is growing evidence of significant correlation between warmer temperatures and extreme weather. Studies show small changes in average temperatures can significantly increase extreme events, which may result in greater infrastructure damage. Another effect of warmer temperatures is an increase in the intensity and frequency of windstorms. Some studies indicate that even small increases in peak wind speeds will cause disproportionate increases in building damage³⁰. However, this is of course quite complicated and somewhat uncertain at this point; in the future there may also be instances in which extreme events decrease.

3.5 CHANGE IN PRECIPITATION

Thanks to Carl Barrette at ArcticNet and Marko Markovic at Ouranos for their input on this section.

The amount, type and patterns of precipitation are changing. Past data indicates that annual precipitation in the Arctic has increased by about 2% per decade since 1966³¹. Arctic precipitation has increased by approximately 8% in the last 100 years, and more increases are predicted³². However, the amount of precipitation falling as snow has declined, and snow cover extent, especially in the spring, has decreased in the Arctic³³. Climate models project an increase in precipitation in the form of heavier rains and snowfalls, which may expose infrastructure to conditions it was not designed to endure³⁴. Heavier and more intense rainfall could cause runoff that exceeds the capacity of existing stormwater channels and ditches, which could lead to localized flooding. More intense rainfall and snow accumulation may affect slope stability and increase the probability of slides. Also if pooling of water occurs on the ground, this can lead to increased depth of thaw and local thaw subsidence ice-rich soils. It is also worth considering that a wetter climate would support an increase in the mosquito population, with associated health implications. Precipitation increases are projected to be greatest in autumn and winter, and the areas of greatest increase (around +10% to +20% for horizon 2050, and up to 30% by the end of the 21st century) generally correspond with the areas of greatest warming (Baffin Island)³⁵.

3.6 CHANGE IN POLLUTION

Thanks to Martin Pilote from Environment Canada for his input on this section.

Pollutants present in the Arctic originate from local sources, such as power plants, mining, industrial activities and private use, or pollutants are transported to the Arctic via long-range atmospheric transport and global ocean circulation³⁶. Northerners are exposed to a plethora of toxic substances that are carried from southern to northern latitudes by oceanic and atmospheric transport, and biomagnified in Arctic and Subarctic food webs³⁷. As the Inuit traditional diet comprises large amounts of tissues from marine mammals, fish and terrestrial wild game, Inuit are more exposed to metals, such as mercury, and persistent organic pollutants (POPs) than populations living in southern regions³⁸. The impacts of climate change on atmospheric and ocean pathways, temperature, precipitation regime, sea ice and ice shelves extent are well understood³⁹ but their impacts on transport and deposition of pollutants are less apparent. However, in recent years it is becoming increasingly clear that climate changes can significantly affect pollution pathways⁴⁰, and that human being, climate changes and pollution interact closely⁴¹. Further, biogeochemical cycle of pollutants, metals and POPs react in different way to global change and how they enter into the food chain and affect the human health⁴². Temperature changes directly affect which pollutants are deposited where, how they migrate, and thereby how the animals accumulate it⁴³. On the other hand, more extensive melting of multi-year sea ice and ice shelves can result in large pulse releases of pollutants that were captured in the ice over multiple years or decades⁴⁴. In order to address the impacts of pollutants in a changing environment on the Arctic community, an extended Inuit Health Survey was realized in 2008 during the International Polar Year (IPY) and data was collected from participants in the Nunavut region⁴⁵. Results are still not available at this time; however they will represent an important contribution to describing the health status of the population⁴⁶.

3.7 INCREASE IN ULTRAVIOLET (UV) RADIATION

Thanks to Reinhard Pienitz from Université de Laval for his input on this section.

Ultraviolet-induced deterioration has been observed in the Arctic and, due to significant atmospheric ozone depletion, it is expected to increase throughout the 21st century⁴⁷. Increased exposure to harmful ultraviolet radiation will negatively affect people, animals, plants, buildings and infrastructure. UV radiation effects on human health include skin cancer, corneal damage, immune suppression, sunburn, and snow blindness. Adverse effects of

UV radiation on arctic plants and animals in terrestrial and aquatic ecosystems can indirectly affect humans. The synergistic effects of UV radiation, climate change, and pollution can be more intense than the effects of any one of these stresses acting alone. Snow and ice cover shield many arctic ecosystems from UV radiation for much of the year. Climate changes are likely to alter snow cover and extent in the Arctic⁴⁸. Reduced snow and ice cover will increase the UV radiation levels experienced by organisms that would otherwise be shielded by snow or ice cover⁴⁹.

3.8 CHANGE IN SEA LEVEL

Thanks to Tom James and Donald Forbes from Natural Resources Canada for their input on this section.

Globally, by the year 2100, sea level is projected to rise by at least 20 cm, and possibly more than a metre. Locally, relative sea-level rise is affected by the regional characteristics of ocean processes and the vertical movements of the Earth's crust⁵⁰. The impacts of sea-level change certainly depend on the nature of the shoreline, but sea-level rise itself is not sensitive to the nature of the shoreline. The range of probable sea-level change for Iqaluit from 2010-2100 is projected to be 0-70 cm⁵¹, based on the vertical motions estimated from paleo-sea-level (not based on the tide gauge). These values refer to mean (i.e. the average) sea level, but because of the 12 metre tidal range in Iqaluit, it is the change of high water that is most relevant to flooding hazards. We have no evidence to indicate a recent expansion of the tidal range in Frobisher Bay, but it is worth noting that the tidal range may be sensitive to changes in basin topography, which can result from sea-level rise⁵². The tidal record for Iqaluit is limited, but shows little evidence of storm surges and the potential for tidal amplification appears minor. However, flooding can occur in extreme high tides, which may be amplified by minor surges. There appears to be a low risk of flooding for critical municipal infrastructure such as the pumping stations and sewage lagoon, but buildings close to the shoreline, in particular the sheds, sea cans, and other infrastructure supporting the subsistence economy, as well as low streets (e.g. leading to the breakwater) are at risk of flooding even today with no sea-level rise (Hatcher thesis, forthcoming). Any rise in local sea level would exacerbate this hazard.

ENDNOTES:

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