

ENERGY MANAGEMENT STRATEGY

2030

DRAFT

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EXECUTIVE SUMMARY

Housing NWT's Energy Management Strategy 2030 (Strategy) sets out our vision, goals, and objectives for the future while staying true to our values.

Our Strategy's Vision:

By 2030, Housing NWT will have a sustainable housing portfolio that is less dependent on fossil fuels, and contributes to the economic, social, and environmental wellbeing of the Northwest Territories and its residents.

This Strategy builds on previous work and commitments made by the Government of the Northwest Territories (GNWT), including the NWT's 2030 Climate Change Strategic Framework and the GNWT's 2030 Energy Strategy, released in 2018.

Our goals are to reduce our energy consumption, increase the use of renewable energy for space heating, and reduce greenhouse gas emissions.

To support these goals, Housing NWT's Strategy will focus on four Strategic Objectives



Reduce the energy use intensity of our portfolio by 15% below 2016 levels



Increase the use of renewable energy for space heating to 40% by 2030



Increase capacity to manage and maintain energy solutions



Increase partnership opportunities in energy projects

These Strategic Objectives will be translated into measurable actions in Housing NWT's three-year Energy Blueprint. A series of these Energy Blueprints will guide us toward our 2030 energy targets.

As renewable technology is developing quickly, new opportunities will continue to present themselves as we progress through our Strategy to 2030. Similarly, as our government partners re-evaluate their climate goals, so should we. To remain flexible, Housing NWT will take an adaptive approach to its Strategic Objectives, re-evaluating them as part of the development of our subsequent three-year Energy Blueprints.

To ensure full transparency, Housing NWT will report annually on progress under this Strategy.

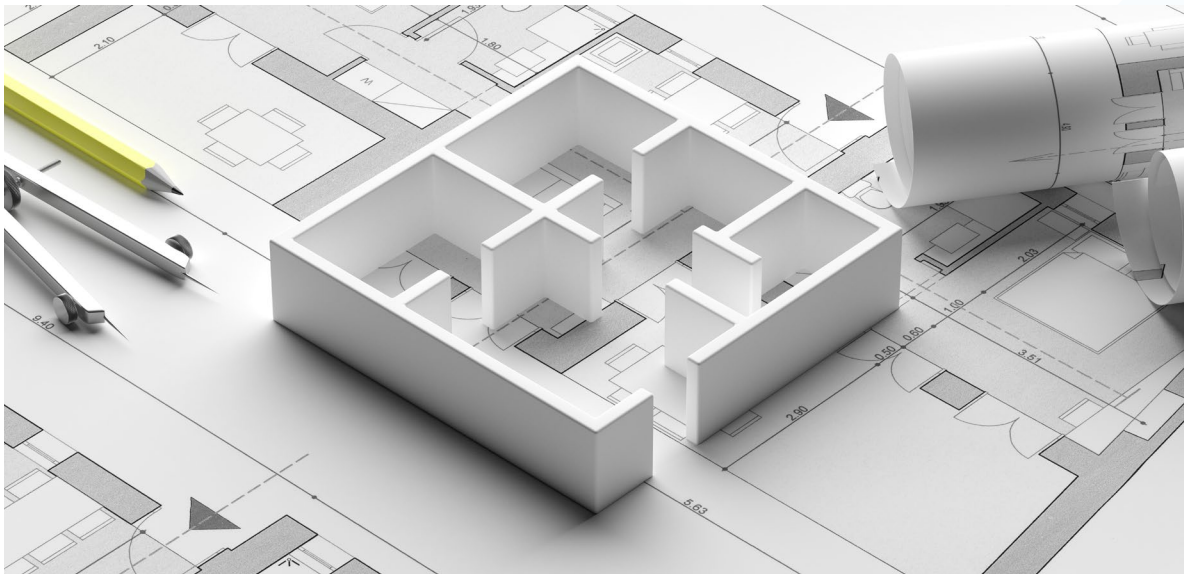
WHAT IS THIS STRATEGY ABOUT?

Our climate is changing. In fact, the Northwest Territories is estimated to be warming at three times the global rate. These rapid changes have already caused significant impacts on our natural environment affecting the health and safety of our communities, the plants and animals Northerners have depended on for generations, and the demands put on our infrastructure. In addition to climate change, global events continue to put further pressure on our operations. These pressures include rising costs, labour and energy shortages, and limited material availability.

The challenges that we face require everyone, Housing NWT included, to cooperate and coordinate on solutions to tackle climate change and its impacts. This is why we are committed to doing our part to help meet the targets which have been set both in the Territory and globally to reduce our greenhouse gas (GHG) emissions by increasing the energy efficiency of our housing units and increasing the use of renewable energy for space heating.

This Strategy sets out our vision, goals, and objectives for the future while staying true to our values.

It will guide our decision-making process and focus our effort on our desired outcomes. It will be used to evaluate potential initiatives and prioritize those which will have the highest impact at the best value.



Housing NWT's Values



Client-focus



Reconciliation



Collaboration



Accountability



Innovation



Sustainability

WHERE ARE WE STARTING?

Housing NWT's mission is to increase the well-being of individuals and communities by providing fair access to quality housing support for people most in need.

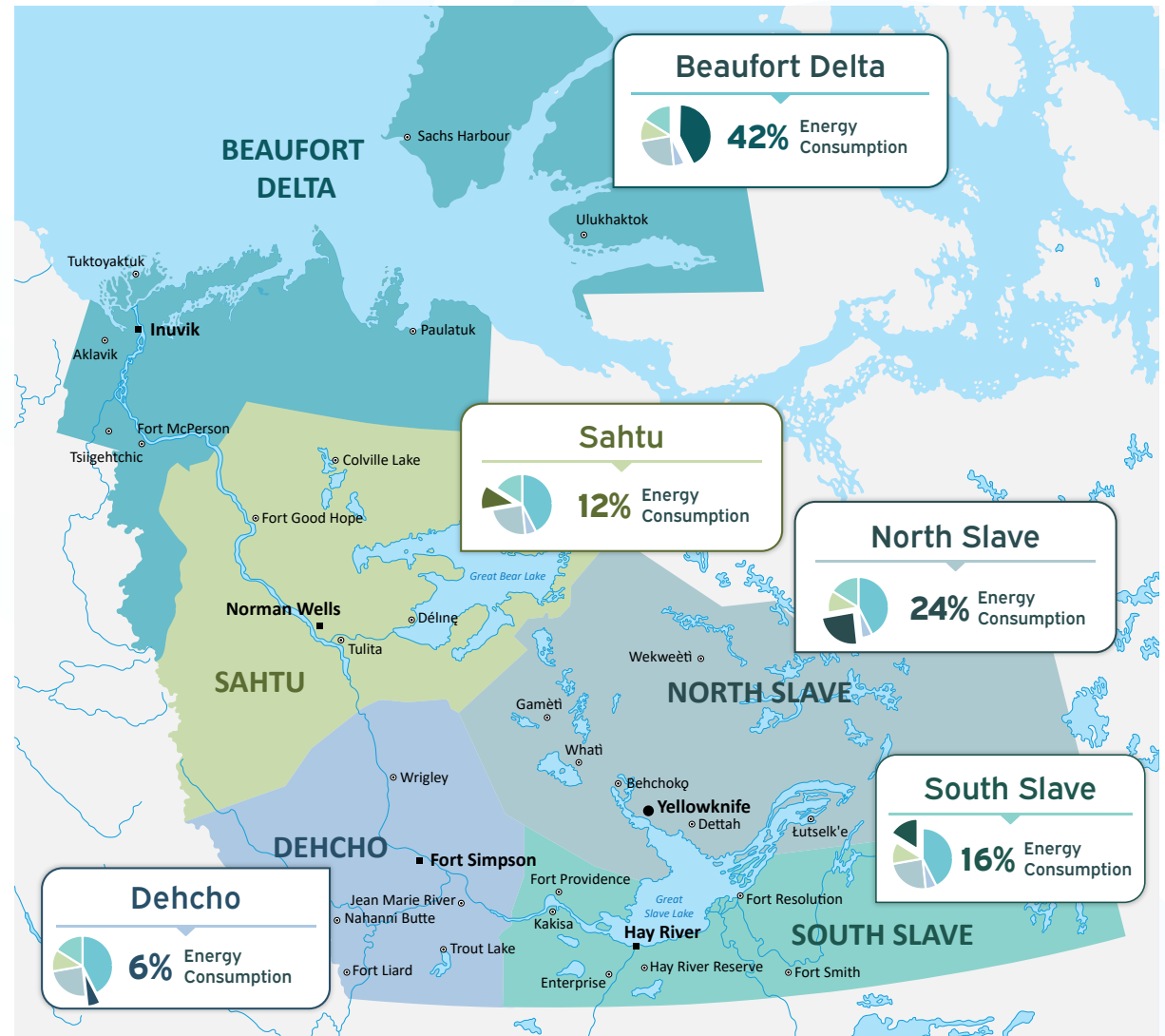
In advancing this mission, Housing NWT owns and maintains approximately 2,700 housing units throughout the NWT, with our staff and Local Housing Organizations (LHOs) working to deliver housing programs and services to the residents of these communities.

Today, most of the housing units owned by Housing NWT are heated using fossil fuels and many of the communities we serve rely on diesel generators for electricity production. Not only do these factors contribute to climate change, noise, and air pollution, but they are also expensive and directly impact the operating cost of public housing.

In developing this Strategy, an in-depth assessment of the energy consumption and emissions of our entire housing portfolio was completed. Following the overarching government direction provided by the GNWT's 2030 Energy Strategy, our baseline was set to 2016. As we look toward 2030, understanding where we are today and where we were in 2016 will help guide us towards where we need to be in the future. The Table and Figures within this section provide information from 2016 (baseline) and 2020 (the latest complete data set). Subsequent years will be shared through our commitment to reporting.

Figure 1 provides an overview of each district's energy consumption as a percentage of our total portfolio energy consumption from our 2016 baseline.

Figure 1: Percent of Total Energy Consumption in 2016 by District



Note: Percentages have been rounded for ease of reading.

WHERE ARE WE STARTING?

Table 1: Baseline Energy Consumption and GHG Emissions Against Latest Data

A high level overview of the energy sources consumed throughout our portfolio for 2016 and 2020 as well as the total associated GHG emissions.

	Oil	Gas	Propane	Electricity	Total Consumption	Total GHG	EUI
Year	Litres	Cubic Feet	Litres	kWh	ekWh	tCO _{2-eq}	kWh/m ²
2016	5,615,000	23,140,000	351,100	11,990,000	81,000,000	22,453	451
2020	6,213,000	22,470,000	365,200	9,640,000	84,930,000	23,808	487

Note: Data includes residential units owned by Housing NWT and excludes warehouses and vehicle fleets. Total GHG emissions include scope 1 and 2 emissions from space heating and the electricity that Housing NWT funds.

Table 1 and **Figure 2 & 3**, show an overall increase in energy use between 2016 and 2020. A combination of factors led to this increase, including a difference in the number of heating degree days (HDD) between 2016 and 2020 (e.g., Yellowknife recorded 7,584 HDD in 2016 and 8,487 HDD in 2020, representing an increased heating load of about 12%), an increase in portfolio size (seen mainly in the area of market housing), and the general aging of infrastructure (i.e., as our units and their systems age, efficiency reduces, envelopes have a bit more leakage, etc.).

kWh	A kilowatt-hour (kWh) is a unit of energy, it is the accumulated amount of power used over time. A kilowatt-hour is 1,000 watts used for one hour. As an example, a 100-watt light bulb operating for ten hours would use one kilowatt-hour.
ekWh	Equivalent kilowatt-hours (ekWh) is a standard unit of energy consumption used to compare energy sources with different fuel types.
tCO_{2-eq}	Carbon dioxide equivalent (CO _{2-eq}) is a unit based on the Global Warming Potential (GWP) of different GHGs. Different GHGs stay in the atmosphere for different amounts of time and absorb energy at different rates. A gas's GWP allows us to take these effects into account and easily compare the possible global warming effects of a given gas. The tCO _{2-eq} unit measures the environmental impact of one tonne of these GHGs in comparison to the impact of one tonne of carbon dioxide (CO ₂).
EUI	The measurement of Energy Use Intensity (EUI) provides the ratio of total building energy consumption relative to the total floor area. It is often expressed in the units kWh/m ² . Calculating the EUI allows us to easily compare the energy use of our portfolio independent of our portfolio's growth.
kWh/m²	Kilowatt-hour per meter squared (kWh/m ²) is also referred to as the Energy Use Intensity (EUI), where the unit is the amount of all energy sources in Kilowatt Hours expressed as a function of building area in square metres per year. It provides a standard way of comparing energy uses between various types of buildings or structures.
HDD	Heating degree days (HDD) is a measure of how cold (below 18°C) the outdoor temperature was at a location for a period of time. It is used to quantify the demand for energy needed to heat a building.

WHERE ARE WE STARTING?

Figure 2: Portfolio Energy Use Intensity (kWh/m²)

This graph shows the average energy use per square metre for 2016 and 2020 as well as our 2030 target (i.e., strategic objective #1)

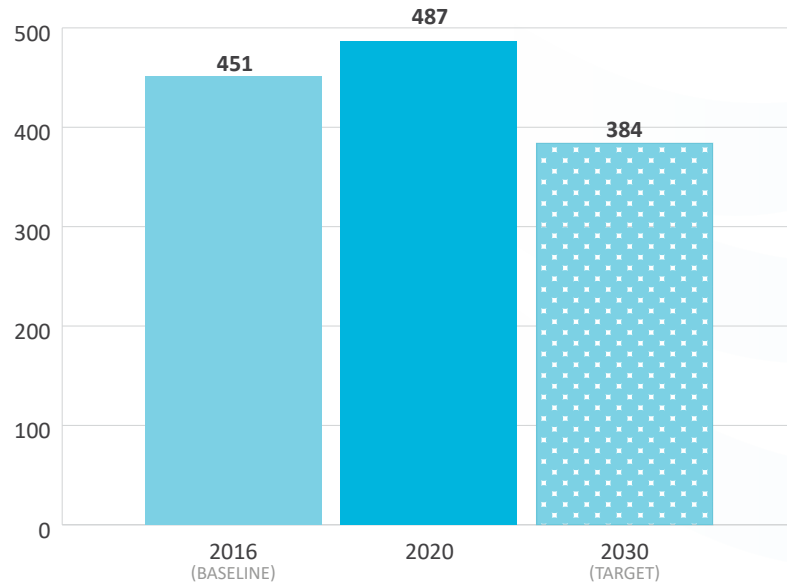
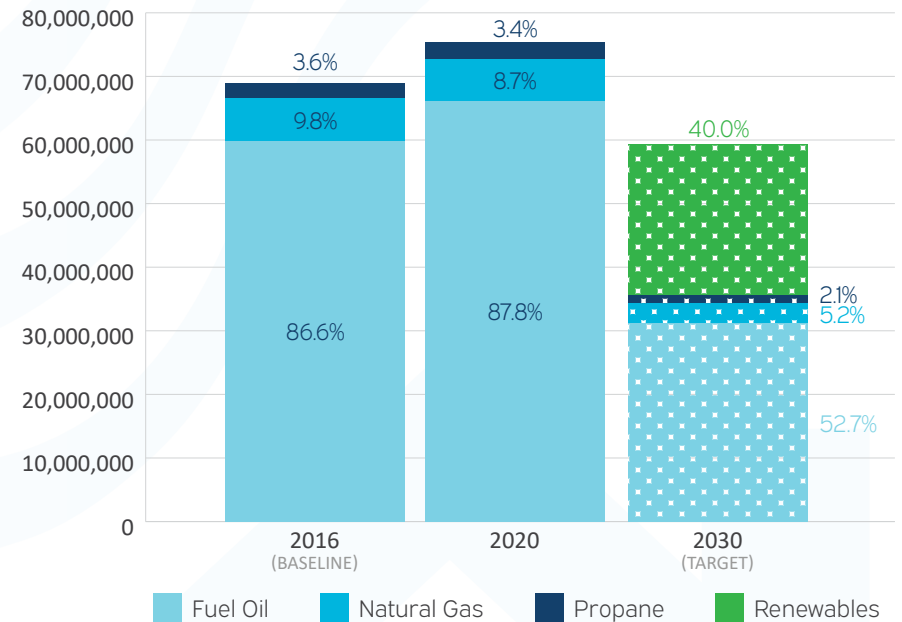


Figure 3: Portfolio Space Heating Breakdown (ekWh)

This graph shows the current heating sources of our portfolio and highlights our 2030 renewable energy target (i.e., strategic objective #2).

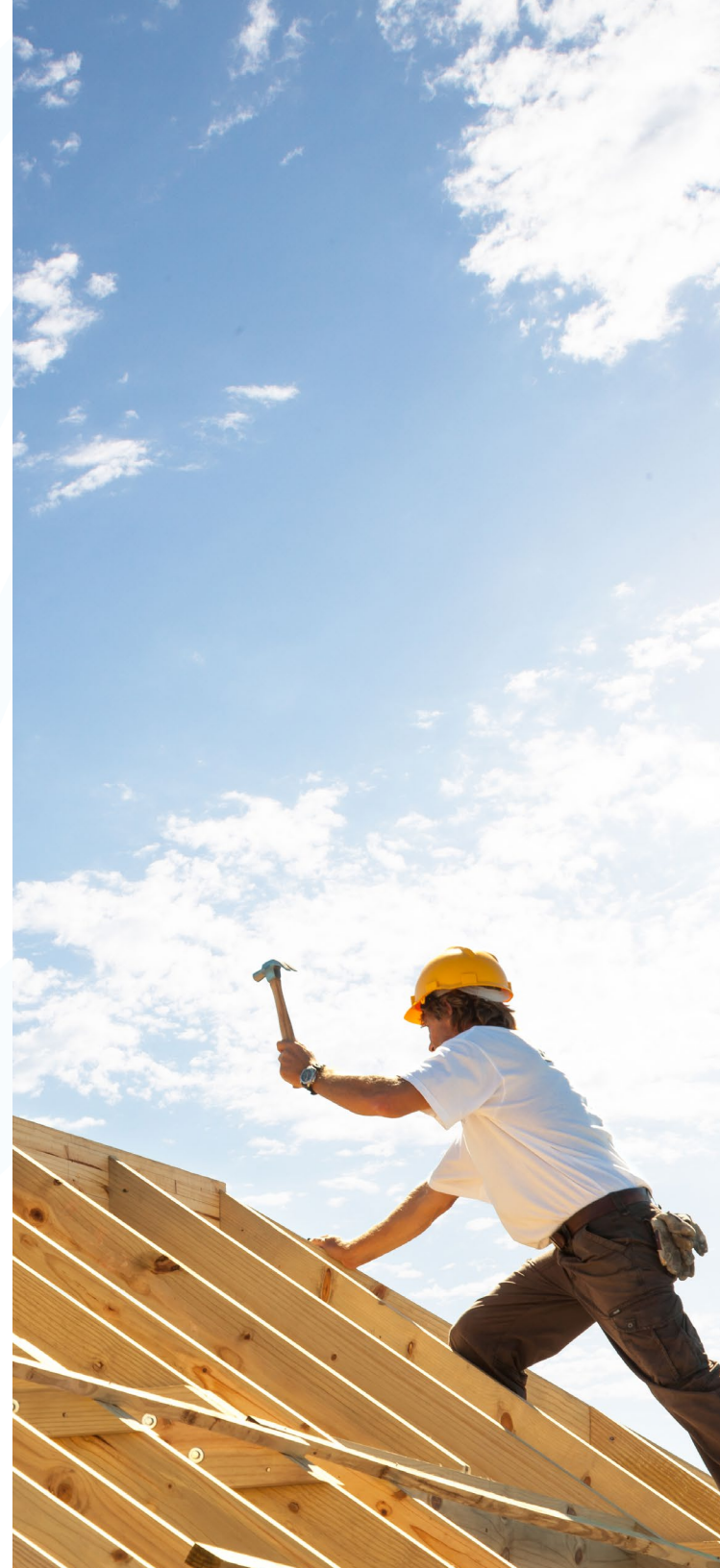


Through this assessment we also completed a GHG emission inventory of our portfolio. Our emissions in 2016 and 2020 were 22,453 tCO_{2-eq} and 23,808 tCO_{2-eq} respectively. Our emissions are directly tied to our energy consumption and fuel use for space heating. As such, they increased for similar reasons. As we take action to reduce our energy consumption and increase the use of renewable energy for space heating, our GHG emissions will reduce. We will continue to track and report on these reductions.

WHERE ARE WE STARTING?

To bring any strategy to fruition, more than just the data needs to be considered. The current local and global context also present opportunities and challenges to consider. As it stands, there is a public appetite for meaningful action to increase energy efficiency and reduce GHG emissions, and technology is adapting quickly to allow us to reach goals we wouldn't have thought possible in the past. In addition to this, many of our partners, including NWT communities, Indigenous governments, the Federal government, and other GNWT departments, want to collaborate on energy projects, providing many opportunities for Housing NWT to create energy partnerships and further reduce GHG emissions. The North is a unique place. Its climate and the distribution of communities can make it challenging for some projects to succeed and it's oftentimes difficult to find enough people with the suitable expertise to support these projects into the future.

Housing NWT is motivated and focused to reach our vision, and our upcoming Energy Blueprint will translate these objectives into measurable actions.



WHERE DO WE WANT TO BE?

To provide focus in its efforts to tackle the challenges of climate change and rising costs, Housing NWT has established its vision for its Strategy:

By 2030, Housing NWT will have a sustainable housing portfolio that is less dependent on fossil fuels, and contributes to the economic, social, and environmental wellbeing of the Northwest Territories and its residents.

Our goals are to reduce our energy consumption, increase the use of renewable energy for space heating, and reduce greenhouse gas emissions.

To achieve this Goal, Housing NWT has adopted four Strategic Objectives:



Reduce the energy use intensity of our portfolio by 15% below 2016 levels



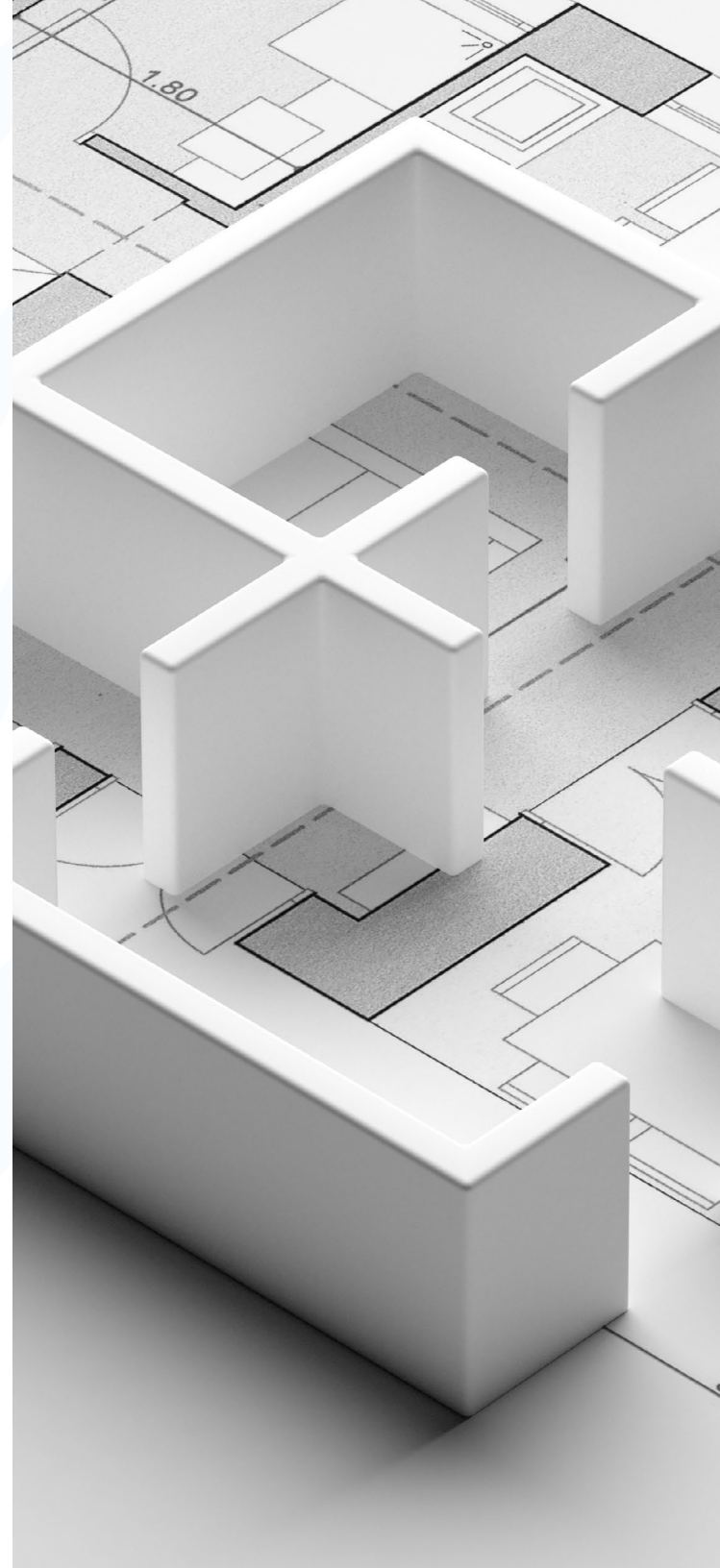
Increase the use of renewable energy for space heating to 40% by 2030



Increase capacity to manage and maintain energy solutions



Increase partnership opportunities in energy projects



WHERE DO WE WANT TO BE?

While specific actions will be further detailed in the three-year Energy Blueprint, the technical assessment completed in support of the Strategy confirms that these Strategic Objectives can be achieved through varied methods such as:



Energy retrofits;



Implementing renewable energy for space heating;



Knowledge sharing;



Monitoring effectiveness; and



Modernization of the portfolio through replacement.

In addition to these current methods, Housing NWT remains committed to on-going evaluation of other possible alternative technologies as they become available.



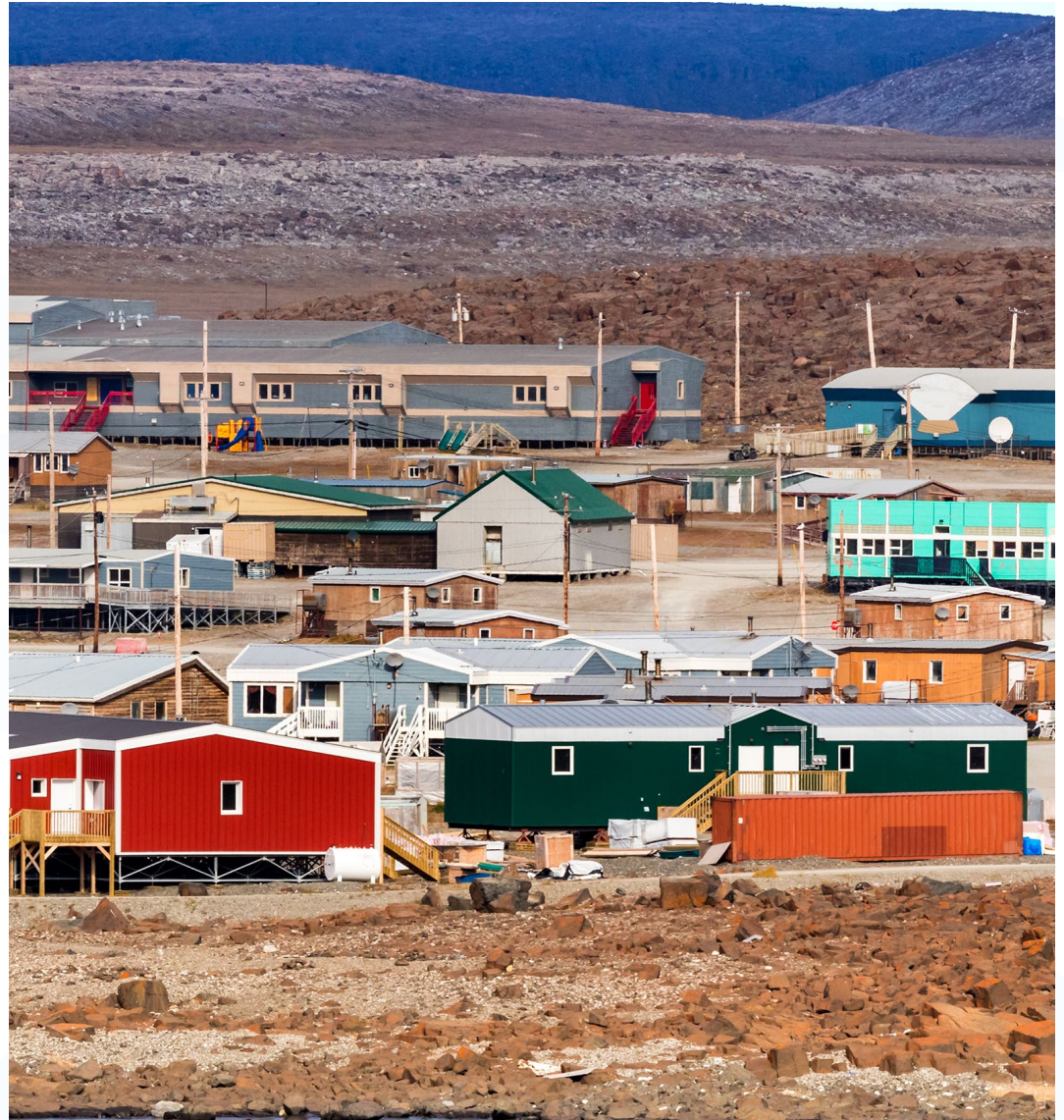
PARTNERSHIPS (ENGAGEMENT IN PROGRESS)

The success of this Strategy is rooted in partnerships. To support its development, we visited communities and engaged partners and stakeholders throughout the Territory, touring an array of Housing NWT's buildings during the Summer and Fall of 2022. In addition, we facilitated a series of workshops to elicit feedback from our partners and subject matter experts both internal and external to our organization.

But we are not done there. In January and February 2023, we will be facilitating a public engagement campaign through a call for feedback on the GNWT's online engagement portal where we will be seeking broad input on the Strategy and our Energy Blueprint. We will be sending letters to Indigenous and community governments, Members of the Legislative Assembly, and to energy champions across the NWT, seeking their feedback. All feedback will be carefully considered and added to the final Strategy and Energy Blueprint, where appropriate. The final Strategy and three-year Energy Blueprint are scheduled to be released in the spring of 2023.

To achieve our Strategic Objectives, we need partners and funding. As we move towards 2030, Housing NWT will be actively seeking funding and project partnerships to help us achieve our common objectives of increasing energy efficiency and increasing renewable energy sources, both of which will lead to reducing GHG emissions.

Housing NWT commits to continuing to work with our partners and stakeholders as we implement actions under this Strategy.



MEASURING AND REPORTING ON PROGRESS

Housing NWT recognizes that technology is developing quickly, and new opportunities will continue to present themselves as we progress to 2030 and implement this Strategy. We also recognize that public demand for action on climate change is growing, and, as a result, so are government initiatives and opportunities. In fact, there are currently several projects and initiatives underway that will impact Housing NWT's Strategy and Strategic Objectives. Keeping an eye on the changing landscape will ensure that we remain flexible, pragmatic, and effective in the implementation of our Strategy.

As we advance through to 2030, Housing NWT will report annually on our progress. To ensure objectivity and relevancy, the annual reporting will focus on:

- The total energy use in our portfolio normalized to a common energy unit (i.e., ekWh);
- The average energy use intensity of our portfolio (i.e., kWh);
- The total fossil fuel energy use in our portfolio, normalized to a common energy unit (i.e., ekWh);
- The percent breakdown of the energy source used for heating; and
- The total GHG emissions from our portfolio (i.e., tCO_{2-eq});

To remain flexible, Housing NWT will take an adaptive approach, re-evaluating this Strategy's Objectives every three years alongside each subsequent Energy Blueprint.



GLOSSARY

Baseline

A baseline is a reasonable and defined starting point which is used for the purpose of comparison. For tracking and monitoring purposes, Housing NWT has aligned on a baseline year of 2016.

Energy Use Intensity (EUI)

The measurement of Energy Use Intensity (EUI) provides the ratio of total building energy consumption relative to the total floor area. It is often expressed in the units kWh/m². Calculating the EUI allows us to easily compare the energy use of our portfolio independent of our portfolio's growth.

ekWh

Equivalent kilowatt-hours (ekWh) is a standard unit of energy consumption used to compare energy sources with different fuel types.

Greenhouse Gas (GHG)

A greenhouse gas is any gas that has the property of absorbing infrared radiation emitted from Earth's surface and reradiating it back to Earth's surface. Carbon dioxide, methane, and water vapour are some of the most significant greenhouse gasses, though surface-level ozone, nitrous oxides and fluorinated gasses also trap infrared radiation.

Greenhouse Gas Emissions

Climate change is caused by the increase in concentrations of greenhouse gases (GHGs) in the atmosphere. These increases in concentration are primarily due to GHG emissions which are largely the result of human activities such as the use of fossil fuels or agriculture.

Heating Degree Days (HDD)

Heating degree days (HDD) is a measure of how cold (below 18°C) the outdoor temperature was at a location for a period of time. It is used to quantify the demand for energy needed to heat a building.

kWh

A kilowatt-hour (kWh) is a unit of energy, which represents accumulated amount of power used over time. A kilowatt-hour is 1,000 watts used for one hour. As an example, a 100-watt light bulb operating for ten hours would use one kilowatt-hour.

kWh/m²

Kilowatt-hour per meter squared (kWh/m²) is also referred to as the Energy Use Intensity (EUI), where the unit is the amount of all energy sources in Kilowatt Hours expressed as a function of building area in square metres per year. It provides a standard way of comparing energy uses between various types of buildings or structures.

tCO_{2-eq}

Carbon dioxide equivalent (CO_{2-eq}) is a unit based on the Global Warming Potential (GWP) of different GHGs. Different GHGs stay in the atmosphere for different amounts of time and absorb energy at different rates. A gas's GWP allows us to take these effects into account and easily compare the possible global warming effects of a given gas.

The tCO_{2-eq} unit measures the environmental impact of one tonne of these GHGs in comparison to the impact of one tonne of carbon dioxide (CO₂).



**INCREASING THE
WELLBEING OF INDIVIDUALS
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