

SUSTAINABILITY PLAN

Fairbanks North Star Borough



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EXECUTIVE SUMMARY

Sustainability is generally described as meeting the needs of the present without compromising the ability of future generations to meet their needs. Sustainability requires humans simultaneously think short-term and long-term. Unfortunately, acting sustainably can be difficult because humans tend to focus on short-term costs and benefits while ignoring unforeseen consequences.

In October 2017 the Assembly established the [Sustainability Commission](#) to "provide leadership to ensure a secure and sustainable community development that maximizes public health, safety, self-reliance and welfare within the powers of the borough; and to lead a public process to identify sustainability goals for the borough and select metrics for monitoring progress toward meeting those goals. The Commission is tasked with making recommendations to the mayor and assembly regarding how to support or improve those efforts and annually report to the mayor and assembly at the end of January on the progress made for the previous year."¹

As a first step, the Commission hosted two town hall meetings in the spring of 2018. After consideration of public comments, the Commission agreed to focus on food security, energy security, and waste reduction. Draft goals and indicators were developed in August 2018 in cooperation with local experts, government officials and Drs. Robert Orttung (George Washington University) and James Powell (University of Alaska Southeast). After review and revision by the Commission, the draft goals and indicators were shared and discussed with the public in the fall of 2018.

In this plan we present community-generated goals with a suite of indicators to track progress toward maximizing current and future public health, safety, self-reliance and welfare. For food security the Commission recommends increasing the agricultural workforce, food stocks, food production and access to local fruits and vegetables. We recommend reducing household and FNSB energy consumption. We urge the expansion of renewable energy and rapid reduction of CO₂-equivalent emissions. The Commission also recommends diverting waste from the landfill and identified an overarching waste reduction goal for the community. In pursuit of these goals we provide the Mayor and Assembly with general recommendations. In the future the Commission could explore particular issues and develop specific strategies and actions for the Mayor, Assembly, and Commission to pursue.

Background

Sustainability is generally described as meeting the needs of the present without compromising the ability of future generations to meet their needs. Sustainability requires humans simultaneously think short-term and long-term. Unfortunately, acting sustainably can be difficult because humans tend to focus on short-term costs and benefits while ignoring unforeseen consequences. What needs do we have in the Borough? Are essential needs for human health and wellbeing being met in the most sustainable manner possible? Could the Borough Sustainability Commission, Mayor, and Assembly remove barriers, increase communications, or do other things that would help residents meet essential needs without compromising the needs of future generations? While the Borough has limited powers, it can be effective in

¹ Fairbanks North Star Borough Code. 2017. Chapter 4.92. Sustainability Commission. Accessed on October 13, 2018 at <https://bit.ly/2NGLNVo>.

various ways including communications with residents and elected officials in city, state, national, tribal and international governments.

In October 2017 the Assembly revised the purpose of the Recycling Commission and renamed it the Sustainability Commission. The Commission's purpose is to "provide leadership to ensure a secure and sustainable community development that maximizes public health, safety, self-reliance and welfare within the powers of the borough; and to lead a public process to identify sustainability goals for the borough and select metrics for monitoring progress toward meeting those goals. The Commission is tasked with making recommendations to the mayor and assembly regarding how to support or improve those efforts and annually report to the mayor and assembly at the end of January on the progress made for the previous year."²

As a first step, the Commission hosted two town hall meetings in the spring of 2018 to discuss aspects of sustainability. Almost 20 people attended a meeting in North Pole in January, and around 25 in Fairbanks in April. A broad range of topics were shared and discussed. After consideration of oral and written public comments, the Commission agreed to focus on three issues of sustainability: food security, energy security, and waste reduction.

In May 2018 the Commission agreed to partner with Drs. Robert Orttung (George Washington University) and James Powell (University of Alaska Southeast). These two gentlemen have experience working with arctic communities to identify and pursue sustainability goals. With their help, draft goals and indicators were developed in August 2018. These items were formed after Drs. Orttung and Powell interviewed local experts and practitioners; had detailed discussions with government officials; and completed research. After review and revision by the Commission in September and early October 2018, draft goals and indicators were shared and discussed with over 60 members of the public on October 10, 2018. After reviewing comments, the plan was modified and recommendations were added. The updated draft was then made available to the public in early November with comments accepted during the Commission's November meeting.

In this plan, finalized in December 2018, the Commission presents community-generated goals and indicators to track progress. This plan reflects comments, questions and observations received from the public and Borough staff in 2018 (see Appendix A). The geographic focus of this plan is the Borough however recommendations or concerns may go beyond Borough boundaries. For example, some food sold in the Borough and considered vital to food security is grown in Interior Alaska but outside the Borough. For food security the Commission recommends increasing the agricultural workforce, food stocks, food production and access to local fruits and vegetables. We recommend reducing household and Borough energy consumption. We encourage the rapid reduction of CO₂-equivalent (CO₂e) emissions and increased use of renewable energy. The Commission also recommends an overarching waste reduction goal. It's worth noting the sustainability goals also align with goals, strategies and actions within the following Borough plans: Comprehensive Plan, Comprehensive Economic Development Strategy, and Hazard Mitigation Plan (see Appendix B).

This plan is brief, broad, and subject to change. It is not intended to replace exploration of limiting factors associated with detailed aspects of sustainability. In the future the Commission could explore particular issues and propose specific strategies and/or actions for the Mayor,

² Fairbanks North Star Borough Code. 2017.

Assembly, and the Commission. In pursuit of these goals we provide the Mayor and Assembly with general recommendations they and/or the Commission could undertake. Each January the Commission will report progress using simplified dashboards. Dashboards will graphically illustrate goals and status of indicators.

Goals & Indicators

The goals and indicators are the heart of the plan. Whereas the goals set benchmarks toward addressing the issues, the indicators represent specific, measurable actions that can track progress toward meeting those goals.

There can be many indicators that progress is being made toward a goal but the Commission proposes just a few that are obtained at no or little cost, and are reasonable representations of the status of achieving the goal. The Commission used a set of guiding questions to consider and dismiss potential indicators. In this section we present goals we believe should be pursued. For each goal we propose indicators with a metric and the most current measurement year, if available. Each year, the Commission will provide an annual progress report to the Mayor and Assembly as required by Borough code. A dashboard will show whether each indicator remained the same or moved in a positive or negative direction. For more details on indicators see Appendix C.

ISSUE: FOOD SECURITY

Definition

Food security means having access to enough food at all times to meet the nutritional needs for physical health.³

Problem Statement

Alaskans food culture has changed. We have become less healthy and drastically less independent. In 1955 Alaskans produced roughly half of their food,⁴ now roughly 95% is imported⁵ with an estimated 90% coming through the Port of Anchorage.⁶ In the event of supply disruption, it's estimated that grocery store stocks would be empty in three to ten days.⁷ The Federal Emergency Management Agency (FEMA) recommends individuals have a 14-day supply in the event of a disaster.⁸ Another important aspect of food security is disruption to an individual's access to nutritious food for health and wellness. The percentage of Borough

³ Maiser, M.L., (2017). Redefining Food Security in a Community Context: An Exploration of Community Food Security Indicators and Social Worker Roles in Community Food Strategies. *Journal of Community Practice*, 25:2, 213-234, DOI: 10.1080/10705422.2017.1308897.

⁴ Stevenson, K.T., et al. 2014. Sustainable Agriculture for Alaska and the Circumpolar North: Part I. Development and Status of Northern Agriculture and Food Security. *Arctic*, Vol. 67, No. 3, 271– 295. Accessed on October 13, 2018 at <https://bit.ly/2QRBHmV>.

⁵ University of Alaska Fairbanks Cooperative Extension Service. 2006. The agricultural industry in Alaska: A changing and growing industry — Identification of issues and challenges. Fairbanks, Alaska: University of Alaska Fairbanks.

⁶ University of Alaska Anchorage and Municipality of Anchorage. 2011. Alaska's Lifeline: Cargo Distribution Patterns from the Port of Anchorage to Southcentral, Northern, Western and Southeast Alaska. Accessed on October 13, 2018 at <https://bit.ly/2yfr1aQ>.

⁷ Stevenson, K.T., et al. 2014.

⁸ Federal Emergency Management Agency. 2004. Food and Water in an Emergency. Accessed on October 13, 2018 at <https://bit.ly/2aM6ySa>.

residents facing this situation, deemed food insecure, was 9% in 2013.⁹ Access to local foods, especially fruits and vegetables, reduces food insecurity and obesity.¹⁰ Alaskan adults who are obese has steadily increased over the past two decades reaching 31.1% in 2016.¹¹ The Organization for Economic Co-operation and Development suggested obesity is the largest threat to public health in the Western world, along with smoking.¹²

Food Security Goals & Indicators

FS Goal 1: Increase the Agricultural Workforce

The State of Alaska’s Economic Strategy Roadmap¹³ and a report by Meter and Goldenberg¹⁴ identified workforce development as a priority to increase food production and reduce food imports from 95 to 90%.¹⁵ Public comments and Commissioners suggest increasing the number of agricultural workers as a high-priority goal in the Borough. Monitoring the number of people employed in the primary food production aspect of local agriculture and the number of farmer-training and food education programs or classes might help track progress toward this goal.

Indicator	Baseline
Number of people employed in the primary food production aspect of local agriculture per year	? (2018)
Number of farmer-training programs per year	1 (2018)
Number of food education programs or classes in schools per year	8 (2018)

Note: The number of people employed in local agriculture per year is an indicator that is essential to measuring progress; however, no entity currently knows this number or tracks it. The Commission hopes an entity will collect and track this information in the future.

FS Goal 2: Increase Food Stocks

In 2018 the Alaska Legislature’s House Resources Food Security Subcommittee identified food supply disruption as a threat to Alaskans.¹⁶ Commissioners have heard from the public that the potential disruption of the food supply chain is a concern. It's possible many residents do not maintain a personal food cache as recommended by FEMA. Several years ago, the Parnell Administration explored establishment of an emergency food cache in Fairbanks. A food cache is a dry space with non-perishable food items and drinking water. The Commission recommends

⁹ Alaska Department of Health and Social Services. Alaska's Behavioral Risk Factors Surveillance System-Query Module - Food Security. Accessed on October 13, 2018 at <https://bit.ly/2pTpvqj>.

¹⁰ Alaska Department of Health and Social Services. 2013. Alaska Obesity Facts: Local Foods. Accessed on October 13, 2018 at <https://bit.ly/2OZDxEM>.

¹¹ Alaska Department of Health and Social Services. Alaska Health Indicator Report. Accessed on October 13, 2018 at <https://bit.ly/2OM5hcH>.

¹² Sassi, F. 2010. Obesity and the Economics of Prevention: Fit Not Fat. In association with the Organisation for Economic Co-operation and Development, Cheltenham, U.K. and Northampton, Mass. Accessed on October 13, 2018 at <https://bit.ly/1L4Wfx1>.

¹³ Alaska Division of Economic Development. 2017. Economic Strategy Roadmap. Accessed on October 13, 2018 at <https://bit.ly/2A8AdPw>.

¹⁴ Meter and Goldenberg. 2018. Potential Infrastructure Investments for Alaska-Grown Food. Accessed on October 13, 2018 at <https://bit.ly/2CeGr1B>.

¹⁵ Stevenson, K.T., et al. 2014.

¹⁶ Alaska State Legislature. 2018. House Resources Food Security Subcommittee Planning Outline. Accessed on October 13, 2018 at <https://bit.ly/2A90AVj>.

increasing food stocks should be a goal. The percentage of households with a 14-day emergency food cache and the number of community food caches seem essential indicators for measuring progress toward this goal. The former will require an entity to survey or undergo some other form of assessment to derive a baseline number.

Indicator	Baseline
Percentage of households with a 14-day emergency food cache	? (2018)
Number of community food caches	0 (2018)
Number of days' food available on grocery store shelves	7-10 days (2018)

Note: the Fairbanks Community Food Bank is designed to serve Borough residents in the event of a supply disruption but has not been provided an adequate volume of non-perishable food for a community food cache.¹⁷

FS Goal 3: Increase Food Production & Sales

Another way to increase resilience to food supply chain disruption is through increased production, harvest, storage, processing, and distribution of local foods. In 2018, 22 farms inside the Borough and 17 outside (but in the Interior) produced a variety of fruits, vegetables, honey, eggs, meat and dairy products.¹⁸ Barriers exist to growing more food locally and moving those products into grocery stores. Meter and Goldenberg (2018) recommendations to the State Legislature on food security includes creating infrastructure, such as cold storage and warehouse space, to house food stocks outside the growing season. Cold storage, marketing and sales coordination are believed to be barriers to increasing local foods in grocery stores.¹⁹ Currently most sales are direct via Farmer’s Markets, purchase at the gate, or “U-pick.” To make progress on this goal, Commissioners believe: 1) the number of food-producing farms needs to increase; 2) the community needs cold storage, food-processing and a distribution facility; and 3) the number of restaurants, distributors and stores buying locally-grown food needs to increase substantially. The last indicator is not routinely measured but the Commission believes the number of restaurants, distributors and stores buying Golden Heart Grown is essential to increasing local food production.

Indicator	Baseline
Number of farms producing food each year	39 (2018)
Number of cold storage facilities for local food producers	0 (2018)
Number of community food processing and distribution facilities	0 (2018)
Number of restaurants, distributors and stores buying Golden Heart Grown each year	? (2018)

¹⁷ Personal communication on November 6, 2018 with Samantha Kirstein, Community Development Director, Fairbanks Community Food Bank.

¹⁸ Fairbanks Economic Development Corporation. 2018. Interior Grown Agriculture Directory.

¹⁹ Fairbanks Soil and Water Conservation District. 2018. Food Security in Interior Alaska: Increasing Production of Interior Farmers.

FS Goal 4: Increase Access to Local Fruits and Vegetables

A daily diet of less than five fruits or vegetables can contribute to poor health and obesity. Approximately 10% of residents do not have consistent access to an adequate amount of fruits and vegetables without assistance.²⁰ Personal and community gardens as well as Farmers' Markets can provide locally-grown fruits and vegetables for residents, especially those that are food insecure. These foods can be consumed fresh or frozen for later use. A 2018 assessment in Fairbanks found that Supplemental Nutrition Assistance Program (SNAP) recipients could purchase fresh produce from a participating Farmer's Market at a lower price than comparable items at a major retail grocery store.²¹ To achieve this food security goal, the Commission believes the number of personal and community gardens should increase and the percentage of people consuming five fruits or vegetables per day needs to increase. To our knowledge, the number of personal gardens is not currently counted by any entity. However, if a survey is done to estimate the percentage of households with emergency food caches the survey should elicit the percentage of households with personal gardens.

Indicator	Baseline
Number of community gardens per year	9 (2018)
Percentage of residents consuming at least five fruits or vegetables per day	21.3% (2015)

ISSUE: ENERGY SECURITY

Definition

Energy security means the ability of residential and community energy systems to function optimally, reliably, and sustainably.^{22,23}

Problem Statement

The average annual energy cost for a home in the Borough is over twice the national average.²⁴ A contributing factor is the number of heating degree days (HDD) in the Borough compared to the rest of the US. According to the Energy Information Administration, "heating degree days are a measure of how much colder than a building interior (65°F) the outside air temperature was on a given day or during a period of days. For example, a day with a mean temperature of 40°F has 25 HDD. Two such cold days in a row have a total of 50 HDD for the two-day period." When HDD are added up over an entire year, they reflect the total heating requirement the weather imposed that year. By dividing annual heating energy usage by annual HDD, the impact of warmer or colder years can be accounted for in evaluating changes in energy consumption.

²⁰ Alaska Department of Health and Social Services. 2010. Obesity Facts: Fruit and Vegetable Intake in Alaska. Accessed on October 13, 2018 at <https://bit.ly/2Cemecc>.

²¹ Personal communication on October 10, 2018 with Sydney Vaught, Breadline, Inc.

²² Azzuni, A. and C. Breyer (2017). Definitions and Dimensions of Energy Security: A Literature Review. Wiley Online Library, <https://bit.ly/2oqWXnm>, accessed on August 28, 2018.

²³ The Commission added "reliably" to the definition.

²⁴ Alaska Housing Finance Corporation. 2017. Annual Housing Assessment. Accessed on October 14, 2018 at <https://bit.ly/2NDf5cA>.

Fairbanks typically experiences 13,666 HDD per year.²⁵ Compounding this problem, nearly half of homes were built prior to 1980 and likely need weatherization.²⁶

Obtaining energy from fossil fuels can impact human health and wellbeing directly through air pollution or indirectly via global warming. Non-renewable, non-local energy sources can also be vulnerable to disruption. Heating with wood increases self-reliance but impacts to human health can be difficult to avoid, minimize or mitigate. Renewable, clean energy from geothermal, hydro, solar and wind sources is considered the most secure and sustainable energy option. However challenges prevent complete community-wide integration. An additional problem for residents is above-average energy costs impact household buying power and contribute to food insecurity. Ultimately, the greater the energy efficiency of a structure, the less energy will be needed.

Energy Security Goals & Indicators

ES Goal 1: Reduce Household Energy Consumption

Household energy consumption is one of the most important aspects of life in the interior. A homeowner can be less reliant on others by reducing consumption. In 2017, the average annual energy cost per home in the Borough was \$5,292. In fact, the percentage of Borough households paying more than 30% of their annual salary on rent/mortgage, heat and electricity in 2017 was 36% - the highest in Alaska.²⁷ The good news is the average Borough home could become more energy efficient. Weatherization programs between 2008 and 2011 helped homeowners in North Pole reduce their energy consumption an average of 27% saving an average \$2,500, but the highest energy reduction was 71% for an annual cost savings of \$16,000. The average home age retrofitted during that period was 28.4 years.²⁸ Given the cost burden and/or pollution associated with energy consumption, the Commission believes reducing household energy consumption should be a goal. Monitoring progress could be done by tracking average annual energy usage in million British thermal units (MMBTUs) per home and the percentage of homes built prior to 1980 needing weatherization both tracked by the Alaska Housing Finance Corporation.

Indicator	Baseline
Average annual energy usage, in MMBTUs, per home	238 (2017)
Percentage of residential structures built prior to 1980 needing weatherization	40% (2017)

²⁵ The Alaska Climate Research Center. Accessed on December 12, 2018 at <http://akclimate.org/Climate/Normals>.

²⁶ Alaska Housing Finance Corporation. 2017.

²⁷ Alaska Housing Finance Corporation. 2017. Note: A household spending more than 30% of total household income on housing costs, including rent, utilities, and energy is deemed "cost burdened."

²⁸ Home Energy Rebate Program Outcomes. 2012. Cold Climate Housing Research Center report for Alaska Housing Finance Corporation. Accessed on October 14, 2018 at <https://bit.ly/2Py849R>.

ES Goal 2: Reduce Borough Operational Energy Consumption

The Borough owns and operates dozens of facilities that total approximately 3.1 million square feet.²⁹ In Fiscal Year 2018 over \$9,771,000 was spent on utilities for school district and other buildings.³⁰ A large percentage of the buildings are in need of repair.³¹ Two ballot measures in October 2018 to fund repairs and replacement of facilities failed. Assuming older facilities generally consume more energy for heating and lighting, the Commission strongly encourages assessing, monitoring and reducing operational energy consumption in Borough facilities and tracking the number of buildings with a renewable energy system.

It's important to note that schools and non-school buildings have very different energy requirements. While schools shut down in the summer months, and provide mainly classroom space, other Borough facilities operate year round and house energy-intensive systems, such as pools and ice rinks. Due to this, a disparity in energy intensity per square foot is expected. Nonetheless, improvement in energy efficiency is possible for all building types and services.

To account for the addition of new facilities and removal of old facilities, the overall Energy Use Index (EUI) is used as an indicator. The EUI is calculated by dividing total Borough energy consumption by the total square footage of operational facilities. This metric can be standardized to annual HDD to account for the impacts of warmer and colder years. Reducing heat energy and electricity usage will reduce Borough expenses and CO₂e emissions.

Indicator	Baseline
Heat EUI (BTU/sqft)/HDD – School District Buildings	3.90 (2018)
Heat EUI (BTU/sqft)/HDD – Other Borough Facilities	5.47 (2018)
Electricity EUI (kWh/sqft) – School District Buildings	7.44 (2018)
Electricity EUI (kWh/sqft) – Other Borough Facilities	12.19 (2018)

ES Goal 3: Reduce CO₂e Emissions

In October 2018, the Intergovernmental Panel on Climate Change stated, “Climate change represents an urgent and potentially irreversible threat to human societies and the planet.”³² Their latest report makes it clear humans have very little time to halt catastrophic global warming and the growing impacts witnessed in Fairbanks, the State of Alaska, the United States and the world. Emissions from burning fossil fuels is the primary contributor to unprecedented climate warming.³³ The impacts of warming are particularly acute in the arctic and subarctic.^{34,35}

²⁹ Fairbanks North Star Borough Dept. of Public Works. 2017. FY2017 FNSB Energy Presentation to the Assembly.

³⁰ Fairbanks North Star Borough Dept. of Public Works. 2018. FY2018 FNSB Energy Presentation to the Assembly.

³¹ Fairbanks North Star Borough. 2018. Sandbox Group 2.0 Presentation by Mayor Karl Kassel. Accessed on October 14, 2018 at <https://bit.ly/2RL0rOK>.

³² Intergovernmental Panel on Climate Change. 2018. IPCC Special Report on Global Warming of 1.5°C - Frequently Asked Questions. Accessed on November 3, 2018 at <https://bit.ly/2RKmzc7>.

³³ Environmental Protection Agency. 2016. Sources of greenhouse gas emissions. Accessed on October 27, 2018 at <https://bit.ly/2ecDrVc>.

³⁴ Arctic Climate Impact Assessment. 2004. Impacts of a warming arctic. Cambridge University Press. Accessed on October 27, 2018 at <http://www.acia.uaf.edu>.

Fairbanks climate has warmed dramatically in the past several decades.³⁶ Permafrost throughout the Interior including under roads and homes is melting.³⁷ Because of warmer air in the atmosphere, summer precipitation is trending upward.³⁸ At the 2018 annual meeting of Golden Valley Electric Association (GVEA), the executive director stated, “Warmer, wetter summers have contributed to tree growth, so there is more vegetation to fall into power lines and cause outages.”³⁹

While climate change is created by greenhouse gas emissions around the globe, US per capita emissions ranks near the top.⁴⁰ An assessment in 2007 estimated each Borough resident contributed 38.6 metric tons of CO₂e emissions per year.⁴¹ In 2017, former Borough Mayor Karl Kassel joined 406 US Mayors in pledging action to address climate change, and “create a 21st Century clean energy economy.”⁴² Given the severe immediate and long-term threat posed by these emissions, the Commission advocates rapidly increasing the amount of renewable energy created in the Borough and decreasing per capita CO₂e emissions. Residential renewable also helps residents be more self-reliant. We also believe it’s very important that GVEA, the main distributor of electricity for residents, strive to exceed the carbon reduction goal to reduce CO₂e emissions (26% of 2012 emissions by 2030) established in 2019.⁴³

Indicator	Baseline
Number of members in GVEA Sustainable Natural Alternative Power Programs (SNAP & SNAP Plus)	240 (2018)
Number of metric tons of CO ₂ e emissions per MWh per year by GVEA	0.87 (2017)
Percentage of GVEA energy by kWh from renewables on an annual basis	10% (2017)
Number of total tons of CO ₂ e emissions from all sources per Borough resident per year	38.6 (2007)
Number of buildings with a renewable energy system – School District Buildings	2 (FY2018)
Number of buildings with a renewable energy system – Other Borough Buildings	1 (FY2018)

³⁵ Vikhamar-Schuler, D. et al. 2016. Changes in Winter Warming Events in the Nordic Arctic Region. American Meteorological Society. Accessed on October 27, 2018 at <https://bit.ly/2Axyle1>

³⁶ Wendler, G. and M. Shulski. 2009. A Century of Climate Change for Fairbanks, Alaska. Arctic. Vol. 62, No. 3, 295-300. Accessed on October 27, 2018 at <https://bit.ly/2RgMqaD>.

³⁷ United Nations Environment Programme. 2012. Policy Implications of Warming Permafrost. Accessed on October 27, 2018 at <https://bit.ly/2CI6lFY>.

³⁸ Wendler, G. et al. 2017. On the Precipitation and Precipitation Change in Alaska. Atmosphere. Vol. 8, Issue 12, 253. Accessed on October 27, 2018 at <https://bit.ly/2Reblvs>.

³⁹ Golden Valley Electric Association. 2017. Minutes of the May 4, 2017 Annual Members’ Meeting. Accessed on October 21, 2018 at <https://bit.ly/2q6cN7C>.

⁴⁰ The World Bank. 2018. CO₂ Emissions in 2014 (metric tons per capita). Accessed on October 27, 2018 at <https://bit.ly/2Pnl54C>.

⁴¹ Alaska Center for Energy and Power. 2008. Fairbanks North Star Borough Baseline Greenhouse Gas Emissions Inventory Base Year 2007. Accessed on October 14, 2018 at <https://bit.ly/2yjr0IX>.

⁴² Climate Mayors Paris Climate Pledge, accessed on November 9, 2018 at <https://bit.ly/2OADUu0>

⁴³ GVEA Carbon Reduction Goal Policy adopted by the GVEA Board of Directors on January 21, 2019. <https://bit.ly/2Mx16Bk>

ISSUE: WASTE REDUCTION

Definition

Waste reduction is an action taken to reduce solid waste toxicity or disposal, including 1) manufacturers' redesign and management of products and packaging to extend product life, and facilitating repair; 2) consumers' reduced purchase and consumption of products that become wastes; and 3) manufacturers' and consumers' reuse of products.⁴⁴ Reuse includes the collection of used products for recycling or composting.

Problem Statement

Collecting, hauling, burying and maintaining wastes in landfills is expensive but essential for aesthetics and human health. Landfills are potentially harmful to the environment, and must be monitored for at least 30 years after closure. Despite limited reserves of food, an estimated 30-40% end up in the landfill.⁴⁵ Last year, an estimated 23.5 million pounds of food and 20.5 million pounds of plastics was buried in the landfill^{46,47,48} About 25% of landfill waste was likely paper and cardboard⁴⁹ – resources with predicted steady demand in the recyclables market.⁵⁰

Waste Reduction Goals & Indicators

WR Goal 1: Divert 10% of Waste by Weight from the Landfill by 2028

The Borough has been diverting waste from the landfill for several years. Because of the distance to market, volume generated, China's waste import restrictions, and other factors, recycling is not currently profitable, but neither is burying waste. Nonetheless, recycling, like soccer fields, is a Borough service that residents clearly desire. A 2012 telephone survey revealed that 60.3% of respondents were willing to pay a fee to support Borough recycling.⁵¹ In the same survey, when asked, "On a scale of one to ten, with ten being completely supportive, how supportive would you be of the Borough providing additional recycling for plastic, glass, paper and cardboard?" the average response was 8.7 out of 10. A more recent survey of residents in January 2018 found that among various programs that respondents would reduce or eliminate only 6.9% identified recycling.⁵²

The commission receives regular updates from the FNSB Recycling Manager on the Central Recycling Facility's (CRF's) operations. Unfortunately, at this time the CRF lacks the necessary horizontal baler to process materials cost effectively. Standard Office Paper is consistently the highest-valued paper material. Old Newspaper is generally below Cardboard and above Mixed

⁴⁴ Solid Waste Association of North America. 2018. Definition of Terms. Accessed on October 13, 2018 at <https://bit.ly/2RN7iXW>.

⁴⁵ US Department of Agriculture. US Food Waste Challenge. Accessed on October 13, 2018 at <https://bit.ly/2xO6E3w>.

⁴⁶ Figures derived using FY2018 Solid Waste Division Report municipal solid waste tonnage (78,092) and EPA estimates of 15.1% food and 13.1% plastics waste.

⁴⁷ Fairbanks North Star Borough. 2018. Fiscal Year 2018 Solid Waste Division Report. Accessed on October 27, 2018 at <https://bit.ly/2yBg8iE>.

⁴⁸ Environmental Protection Agency. 2018. National Overview: Facts and Figures on Materials, Wastes and Recycling. Accessed on October 27, 2018 at <https://bit.ly/2OSGveZ>

⁴⁹ Environmental Protection Agency. 2018.

⁵⁰ Powell, J. 2018. 2018 Recycling Market Update. Accessed on October 27, 2018 at <https://bit.ly/2DatKqb>.

⁵¹ Information Insights. 2012. Community Support Survey for the Fairbanks North Star Borough Recycling Commission. Accessed on October 26, 2018 at <https://bit.ly/2RkttUC>.

⁵² Hays Research Group LLC. 2018. Fairbanks North Star Borough Resident Survey. Accessed on October 29, 2018 at <https://bit.ly/2CQbMrR>.

Paper, which is the least valued material. A company in Alaska converts collected paper products into new materials like structural insulation. Borough residents also value donating and collecting used items at transfer stations. The collection and conversion of food wastes to compost to aid food production is also desirable. Reducing consumption and waste, increasing recycling, and reusing products are all laudable goals. Commissioners believe how much waste is being diverted from the landfill, how many pounds of paper recycled per year by the CRF, pounds of waste generated per resident per day, and the number of students participating in recycling education activities are very good indicators to track overall progress and revenue generation. Furthermore, the Commission supports the current strategic recycling plan for the Central Recycling Facility.⁵³

Indicator	Baseline
Percentage of municipal solid waste diverted from the landfill per fiscal year	0.7% (FY2018)
Pounds of office paper baled and recycled as office paper, rather than as mixed paper, by the CRF per fiscal year	0 (FY2018)
Pounds of waste generated per resident per day (national average is 4.75lbs per day)	5.75 (FY2018)
Number of students participating in recycling education programs or classes in the FNSB school district	? (2018-19)

PUBLIC ENGAGEMENT

In compliance with the Open Meetings Act, each meeting of the Sustainability Commission is announced one week in advance and an agenda is provided. The Commission began discussing development of a sustainability plan in November 2017. Public engagement in development of the plan was a key desire for Commissioners; however, with no budget or dedicated staff, Commissioners were dependent upon staff from the Mayor’s office and the Public Works Division for assistance. Commissioners express their gratitude for the efforts staff made during development of this plan.

In scoping issues of sustainability, the Commission engaged the public in two town hall meetings in early 2018 - one at the North Pole Library and one at the Cold Climate Housing Research Center (CCHRC) in Fairbanks. Approximately 15 people attended the meeting in North Pole with around 25 attending the meeting at CCHRC. The public was asked to provide thoughts on air and water quality, energy, food and waste. The following paragraphs summarize input received at both meetings.

In North Pole comments primarily focused on air quality regulations and ability to use wood as an economical, renewable energy source. Conversations also focused on the desire to continue having a reuse area at the North Pole transfer station and concerns that the borough was replacing buildings unnecessarily. Additional comments referred to the desire for 1) incentives

⁵³ Fairbanks North Star Borough Recycling Strategic Plan. Accessed on November 30, 2018 at <https://bit.ly/2E8XUdz>.

for residential solar and independent power generators and home weatherization; 2) education in schools and the community; 3) recycling options in North Pole and longer open periods at the CRF including on Sundays; 4) protection from groundwater contamination; 5) diverting wastewater from power plants to heat greenhouses; and 6) new homes be constructed at a high energy efficiency standard.

At CCHRC in April there was greater diversity of interests from residents. Air quality comments largely focused on improving both indoor and outdoor air quality. Comments regarding water quality focused on education and ways to reduce impacts to drinking water. Energy discussions emphasized transition from fossil fuels to renewable energy while reducing energy demands through audits, education, incentives and regulations. Residents expressed concern about availability of food and addressing the issue through a suite of measures including local agriculture, borough infrastructure, education and legislative economic measures. Waste management comments ranged from the desire to expand borough recycling, education, food composting and explore other reuse ideas.

After consideration of public input, the Commission agreed to focus on food security, energy security, and waste reduction. Commissioners felt issues of air and water quality were receiving adequate attention by other Borough or State groups. Having narrowed their focus, the Commission released a draft version of the sustainability plan in early September 2018 and accepted public comments in September and early October. An open house and summit to explore the plan was held at the Noel Wien Library in early October 2018. Over 60 people attended and discussed the draft goals and indicators with subject matter experts and Commissioners. Several local experts provided short presentations as well. Commissioners took notes and attendees were encouraged to leave written comments. A press release in the Fairbanks Daily News Miner summarized the meeting and welcomed further comments from the public.

More than two dozen people provided written comments. Input received in October were categorized under four themes: general, food security, energy security, and waste reduction. We provide brief summaries below.

General

Comments were supportive except one. Responses ranged from support for development of the plan and making progress in the three key areas. Some asked if the Commission or other groups would delve further into issues like climate change, food waste, renewable energy, etc., and develop specific recommendations.

Food Security

Public input on food security ranged from specific recommendations like setting aside Borough land for agriculture to general observations that our food culture must change. People spoke to the need to increase cold storage for local farmers. Others identified the need to increase individual and community gardens to address food insecurity. Input also touched on the desire to divert food waste from the landfill to create compost and improve food production. Some spoke of the need for grocery stores to have more food stocks in the event of supply disruption.

Energy Security

Comments from the public regarding energy security focused mainly on reducing CO₂e emissions and increasing independence through renewable energy. Mass transit and community planning were suggested as ways to reduce transportation emissions. Building more efficient homes and weatherizing existing homes were offered as ways to reduce residential and Borough facility heating demand and CO₂e emissions. There was desire for more education, outreach, and workforce development to prepare for the energy challenges that lie ahead.

Waste Reduction

There were expressions of interest in reducing, reusing, and recycling. People discussing food security and waste reduction mentioned the need to reduce food waste and also divert that waste into compost. People expressed concerns about plastics and glass not being recycled and the absence of recycling bins in North Pole. A number of people believed that a landfill diversion rate of 25% by 2025 was too optimistic and also suggested different definitions for waste reduction.

Every comment was read, cataloged, then read again and considered as the plan was being finalized. The final plan reflects some, but not all suggestions provided by our reviewers. Written comments and summaries of oral comments regarding the draft plan are available in Appendix A. Specific actions recommended by the public and reflected in Appendix A are valuable and should not be forgotten.

SUGGESTED IMPLEMENTATION OPTIONS

The sustainability goals and indicators described above were generated from a “learning network” of public meetings, interviews, and information from local experts. The goals and indicators are intended to help inform the public and local decision makers about some of the key sustainability issues facing residents of the Borough. They can be also be used to provide information in decision-making.

Our intention is to present several options for implementation of the goals and indicators. Implementation is a critical part of the process and is a way to enhance learning and adaptive governance. The suggestions below are organized into three pathways – policy, public, and management and staff.

Policy

One option for implementing the goals and indicators is that they could be used at annual policy meetings such as Assembly retreats and other goal-setting opportunities, and they could also be taken into account in budgeting (operating and capital improvement projects processes). Comprehensive plans could integrate sustainability goals or include indicators and goals as an appendix or as a separate plan.

Public

Communicating with the public could be enhanced with “dashboards.” A dashboard visually displays the current status of an issue using an easily-readable description, trend information, and the condition. Dashboards for a single indicator, or suite of sustainability indicators, could

be developed as part of a Web page. Dashboards are commonly used to help communicate condition and status of sustainability goals and indicators. Goals and indicators can also be used in public meetings to clearly communicate progress on sustainability issues.

Management and Staff

The goals and indicators that have been developed are technical enough to be meaningful, yet intuitive enough for the “middle user” (staff and managers). They could be useful tools to enhance a broader picture for staff decisions. As a larger suite of indicators become available and provide more comprehensive information about different issues, they could provide a mechanism for discovering linkages between programs to find better holistic solutions.

Options for Implementation

Policy	<ul style="list-style-type: none"> • Assembly Retreats - goal-setting opportunities • Comprehensive Planning - goals and objectives • Operating and Capital Budgets - metrics for issues
Public	<ul style="list-style-type: none"> • Web site - dashboards • Public Meetings - use for clear communication on progress on sustainability issues
Management and Staff	<ul style="list-style-type: none"> • Enhancing holistic information for staff decisions • Linkage between programs

CONCLUSION

The mission of the Sustainability Commission includes a variety of focus areas. Through public engagement, Commissioners whittled down the priority list to these three focus areas as a starting point. This Sustainability Plan is a living document that will be reviewed, updated, and revised by the commission on a regular basis.

The Commission is thankful for the opportunity to discuss sustainability with Borough residents in 2018. We appreciate those that took the time to share their opinions. Perhaps more important than the words in this plan are the relationships and commitments among people to work together for a more sustainable future.

APPENDICES

Appendix A - Definitions

CO₂e means “carbon dioxide equivalent” which is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO₂e signifies the amount of CO₂ which would have the equivalent global warming impact.⁵⁴

Food Stocks means the quantities of food, both perishable and non-perishable, stored in homes, retail, and wholesale grocers, and dedicated warm- and cold-storage facilities.

Golden Heart Grown is a label to recognize and encourage agriculture products grown in Interior Alaska in the marketplace.

Heating Degree Days (HDD) is a measure of how cold the temperature was on a given day or during a period of days. For example, a day with a mean temperature of 40°F has 25 HDD. Two such cold days in a row have a total of 50 HDD for the two-day period.⁵⁵

Local means the Fairbanks North Star Borough and surrounding areas, including all of Interior Alaska.

⁵⁴ <https://ecometrica.com/assets/GHGs-CO2-CO2e-and-Carbon-What-Do-These-Mean-v2.1.pdf>

⁵⁵ https://www.eia.gov/energyexplained/index.php?page=about_degree_days

Appendix B – Catalog of Public Input

General Comments

Issue	Comment
Goals	<p>Excellent goals in all three areas, with a clear rationale for why these three areas are primary for the community. The goals themselves are clear and well-defined. - JW</p> <p>I like the sustainability commission’s decision to focus on energy, food, and waste. These are extremely important issues to address in Fairbanks. There is also alot known about each of these topics so they are “low-hanging fruit” where the sustainability commission can demonstrate strong early successes in its efforts. Both the energy and waste topics contribute to efforts that the borough is already making—building on strengths rather than spreading the commission’s efforts thinly over many new topics. There are several other sustainability topics that may be at least as important as the current topics but will be more difficult to solve and may require additional advance planning and public input—issues like air quality and climate change. I would suggest that the sustainability commission begin thinking about issues like these—not as a replacement for the current focus but as part of a long-term framework for future work. However, this would probably add more work than the Sustainability Commission can handle effectively. I would suggest three activities: 1. Appoint a diverse working group from the community that would draft a set of outcomes that Fairbanks citizens would identify as potential sustainability goals. These would be outcomes (for example, less air pollution and lower home heating costs) rather than processes (deciding whether or not to regulate wood burning). These outcomes could be vetted and prioritized in community surveys and meetings.2. Identify a set of community groups that is knowledgeable about and interested in each of these sustainability outcomes. Gathering critical background information on these sustainability outcomes is a big job. The Sustainability Commission could draw on these groups to help assemble useful background information for developing sustainability plans, rather than attempting to do all the work itself.3. Develop a long-term sustainability vision and plan for Fairbanks: What would sustainable Fairbanks look like in 5, 20, and 50 years? What steps are needed to move toward that vision? This would integrate activities 1 and 2 into a sustainability plan in which various activities could be phased and prioritized. - TC</p>
Indicators – Baseline Data	<p>The two missing pieces for me are a sense of what baseline data we can produce and what that means in comparison with what we need to achieve. We could call those two pieces one “data” piece. - JW</p>
Strategies & Actions	<p>Then there is the big question of how to achieve the specific needs/goals. For example, if we could determine the actual amount of paper being dumped and set a specific goal of increasing the amount we recycle per year, then the inherent question is how we achieve that goal. The plan to fill in those missing pieces are clearly the direction the plan is moving, right? - JW</p> <p>Brittany—these comments are submitted on behalf of the Community Planning Department: This plan has effectively identified key community issues, quantified through data. Performance indicators are a great way to track progress, and many indicators already have a baseline, which is good. Some GIS analysis (e.g., to identify food swamps and food deserts) would be beneficial to further illustrate the issues and current data. While this plan identifies goals and indicators, it does not include strategies and actions to impact the indicators and reach those goals. Further, though it acknowledges that the Sustainability Commission lacks staff, it also fails to identify potential community partners and other responsible parties, to perhaps include the Economic Development Commission, Planning Commission, UAF Cooperative Extension and agriculture programs, etc. Strategies and actions are an essential part of the planning process. Further, planning and zoning tools could be used to implement many of the goals identified in this plan. The Community Planning department has expertise in planning processes and would be happy to assist in crafting an implementable plan. Thank you for the opportunity to comment. – MK, FNSB Long Range Planner</p>
Glossary	<p>I quickly scanned through the draft Sustainability Plan (pretty cool!). My only comment is about the use of a bunch of acronyms that many lay people in the general public may not know. Below is a list of the ones I noted. DB CSA, SNAP (used in two different places for two different things – access to fruits/veggies and reduce CO2) AK-IBIS MMBTUs, BEES, CCHRCCO2, MMt, CO2e, PM2.5</p>
Overall	<p>This is absolutely fantastic! I have harped for years about the importance of Fairbanks being more self supportive, buying local, eating organically grown food. This is a win, win, situation all the way around. We would be leaving less of a footprint on earth by reducing energy consumption, diverting waste in the landfills, and eating good healthy food!! highly suggest we all get behind and support the Sustainability Plan! - PS</p> <p>Hi Brittany, I am concerned that you are allowing John Davies, who has not had a stellar run with "recycling" be at the helm, or even allowed to be involved in your Food Sustainability theory. He has wasted so much of FNSB taxpayers money, while the group that ran it prior was doing an ok job at it. Furthermore, I am concerned that you are lumping pm2.5 with trash, with food, with energy. What basically you appear to be doing, is a backdoor "let's control everything" theory. The people that arrived here prior insanity (FNSB) struggled, but survived without starving to death, or freezing to death, (unless they were inebriated, which still occurs.) Who decided FNSB (who doesn't do such a great job at maintaining anything) be allowed to give any input to food security. It appears to be just "a reason to have more employees". There's my public input. For what it is worth, I feel that if people want to</p>

	join together for anything sustainable, they should do it, and not have FNSB have their hands in it. You guys are relieved of holding my hand, thanks. KM
Overall	This summit got a lot of folks in the same room to share great ideas. I believe we came up with some good goals and identified barriers to those goals. - SM
	Some of these topics do require ample discussion. It almost feels rushed regardless of the topics being on the agenda since the beginning of the year. I am curious to know more from the “expert” analysts on these subjects and why those goals and indicators were suggested. If you had addressed these topics, it still feels like some have more questions than answers which at this point probably shouldn’t be. BB
	Learned a lot. Let’s go forward. I am scared after hearing the latest special report from the IPCC sixth assessment released October 6, 2018 in Korea. GS
	These all relate to each other [energy, food and waste]. Consider how food waste can be utilized into compost and possibly even alternative energy practices. Gardening and edible spaces seemed to interest a lot of the attendees. Thank you! BB
	Unsure on what to comment. Very glad this summit is a thing to become involved in. GB
	Perhaps we could develop an analysis of the number of people the FNSB region could sustainably support in a good quality lifestyle? FW
	need for renewable energy - more mass transit concern for food security air quality - my family would move to town except for the air pollution - DP
	Good summit. Thanks for bringing it together. If possible at at future summits it would be good to have guest speakers give presentations in a separate room. Difficult to hear speakers while other conversations going on in same room. Otherwise I liked the format of letting group get together to discuss topics. JH
	perhaps the farming community should be contacted for some of these food issues lots of experience available - JS
	Brittany, Hope this email finds you well. I have attached the agenda packet with my highlighted comments (mostly related to the draft Sustainability plan). I will be there for the first 15-20 minutes of the meeting tonight to introduce myself and provide any further detail on my thoughts. Just in case it wasn’t obvious from my comments, I think what you all have done with the Draft Sustainability Plan is amazing. You are committed to accountability and input from the public and that is inspiring. You are doing your best to put together a vision for the future sustainability of Fairbanks (no easy task). I hope that you can take my comments with that thought in mind - I am not criticizing you or the commission, simply trying to provide feedback from my experience in the planning field. Thanks again for all you do - TC, Green Star of Interior Alaska
	Brittany, Brett, Thank you for allowing me to sit in on your edits to the draft sustainability plan. I think the Commission is moving in the right direction with the plan, and I am happy to support that in any way I can. Please find attached some additional comments on the Waste Reduction section after listening to the meeting tonight. Let me know if a word document copy of the original plan is available and I can transfer these changes in proper "tracked changes" style. All the best - TC, Green Star of Interior Alaska
Green Star sincerely appreciates the chance to provide feedback on the effort of the Commission and the residents of Fairbanks. Countless hours of work has been completed on this document before I started at Green Star (or even moved to Fairbanks!), and I recognize that. Thank you for doing such a good job of tracking and including public comments! It is refreshing to see! – TC, Green Star of Interior Alaska	

Food Security Comments

Issue	Comment
Change Food Culture	One of major barriers to food security here is our current food culture. See Meter and Goldenberg 2018 Report to State of Alaska - JDA
	Resources for farmers: Cohesion between farmers and customers (residents, restaurants), Food processing facility(ies) (would be costly), Self-pick farms – Notes from Summit
Increase Food Storage	And we need to find ways to encourage/require our retail suppliers to hold more products in stock to insure against supply disruptions. This second step I consider to be the most important and the quickest way to move towards food security. - KH
Increase Food Storage	Resources for farmers;-Cohesion between farmers and customers (residents, restaurants)-Food processing facility(ies) (would be costly)-Self-pick farms - Notes from Summit
	Retail grocery stores should be “encouraged” to keep more of both perishable and non-perishable foods on hand (more storage). Perhaps tax incentives. if we want “security” against supply disruption, the retailers are the most logical place for extra food to be stored. KH
	Enhanced food storage would increase food security - especially days of supply of available food. Storage could be by individuals or private sector - enhanced could be quality of stored food and/or length of time food could be stored - thus we would take better advantage of increased food production and we might reduce food waste. FW
Increase	Increase residential gardening via solar-assisted greenhouses can help-warming soil during sunny May and Sept

Food Production - Gardening	<p>days for ex. We have raised beds with hoops such that visqueen can be placed over at night. - RJ</p> <p>Gardening seemed to be an interest to quite a few that I spoke to. The theme I noticed was education or the lack thereof. I had a young man ask me about how we also hope to help the rural villages with the issue of access. I think the majority of the people I spoke to believe that community involvement has to be there in order to pursue any changes. - Notes from Summit</p> <p>I really like the idea of community garden boxes in public areas. Perhaps asking Volunteers in Policing could help protect them from any vandalism. if it works in Palmer, Fairbanks can do it too :) - CS</p> <p>Re: food security, a couple of food averages that should be fleshed out a bit more (for Fairbanks) is how much home gardening produces and how many days of food storage exist in homes. The 3 days of store food inventory assumes people have nothing in reserve at home so tend to be more dramatic than perhaps warranted. A community web survey might be feasible as a senior thesis topic at UAF NRM. - TP</p>
Increase Access to Local Foods	<p>One farmer mentioned that sustainability farming is great in theory but not necessarily what you get in return especially with outside factors and forces. - Summary of food nutrition table comments by BB</p>
Increase Food Production - Compost	<p>Encourage use of biomass from Fbks wastewater treatment plant as soil amendment [used in many communities worldwide]. We did research project at UAF maybe 35 yrs ago. - RJ</p>
Increase Local Food Production	<p>[Use shipping containers] to house vertical hydroponic gardens growing vegetables. Using ground source heat pumps and above ground solar panels and solar voltaic panels could be used to power and heat/cool the units. (A similar setup was used to heat a geodesic domed home in Healy that one National awards.) - AG</p> <p>I worked hard to help establish Co-op Market but am disappointed 5 years in that they are still languishing at 4% sales being local food, where local means AK (although 28% local meat, which is a small part of their inventory and easy to keep frozen). A producer's co-op is forming in Palmer (Bogard Food Hub) that offers promise to lower input costs for producers. - TP</p> <p>Farmer training programs—"Incubator farms" (i.e. Callypso, APU)- Notes from Summit</p> <p>This news article made me think back on some ideas I've had for our food safety in Fairbanks. Does anyone remember Victory Gardens? https://en.wikipedia.org/wiki/Victory_garden Of course I came along long after the original idea but I remember growing up on our farm in VA and it was still carried on by my parents and neighbors. We literally raised tons of varying vegetables. We also had community canneries. https://www.youtube.com/watch?v=J2HUK1nTIE0 What a wonderful idea that would be for Fairbanks. Fresh wholesome foods canned right here. Although not as varied as VA we can raise some tremendous crops specific to our region. We give away hundreds of pounds of garden produce every year. It always came easy to me, I guess because I grew up doing it. http://www.virginialiving.com/featu.../gone-but-not-forgotten/ Of course there are some that will have no interest in this process and for those maybe a partnership with our military community to store large quantities of MRE's. Not as good as great canned foods but still life sustaining. We would just be looking at getting over the hump in an emergency. Just my thoughts. Anyone else have ideas. Sorry I'm always thinking! ST</p>
Increase Food Production – Tariffs & Subsidies	<p>We should have serious conversations about tariffs on imports and subsidies on local production to increase competitiveness of local products - KH</p> <p>Borough could set land aside for group plats for farming. Could provide a training/certification that translates to reduced land costs or property taxes. - Notes from Summit</p> <p>Co-op land and equipment for farming - Notes from Summit</p>
Address Food Insecurity & Food Waste	<p>I just came across the News Miner article regarding the FNSB Sustainability Plan, and I wanted to reach out to you since we might be able to work with you to address food waste and food security on the UAF campus. I have recently been in touch with Heidi Shepard, the Assistant Director of Student Leadership and Involvement, who directed me to Christi Kemper with the Sustainability Office at UAF. However, we haven't yet been able to build up student involvement. I would love to have the support of the FNSB Sustainability Commission to work towards starting a Campus Kitchen program at UAF and to help build momentum around food waste and food security initiatives on campus. - AP</p> <p>Consider a community-run chicken farm. Cycle vegetable waste from stores and kitchen to feed the hens and use the eggs for the food bank or other breakfast/lunch programs. This would create eggs, soup chicken for shelters, etc. Work for handicap or unemployed. Reduce food waste. Potential methane production for fuel and/or compost for local/school gardens. KH</p>
General	<p>I served as an AmeriCorps VISTA in Fairbanks in 2015-2016 with Bread Line Stone Soup and focused on food security research and initiatives in the Fairbanks area. I consider Fairbanks a second home, and I am thrilled to see the Sustainability Commission coming forward with a plan to address some of the sustainability concerns in the area. Thank you so much for your work on these important issues. I look forward to seeing this plan come together and put into action. AP</p>
Salmon	<p>Yes on Prop #1. Salmon is our most sustainable protein source. Tanana River supports many of the most important spawning grounds for salmon-(History) The state killed the "Coastal Management Plan." - Notes from Summit</p>

Energy Comments

Issue	Comment
Reduce Transportation Emissions	Encourage more non-motorized xport. I estimate in my 21 yrs of not driving to work [ran/biked/skied], I saved the equiv of 2 yrs worth of home heating oil and resulting GG emissions. - RJ
	Cut down on idling vehicles and provide more headbolt heaters - Notes from Summit
	Develop and implement zoning measures to encourage alternatives to reduce emissions - TG
	I would like to see more efficient buses, both city buses and school buses. CB
Reduce Residential Heating Demand	I noticed that energy use in the built environment is not currently represented. Decisions regarding land-use planning impact energy use given that detached single family homes require more energy to run than more efficient multi family units; suburban auto-based infrastructure results in greater fossil-fuel based travel emissions. I could imagine that the sustainability commission could advise planning and zoning and transportation decisions to encourage denser, more efficient land-use. TG
	Encourage smaller homes for new construction and mothballing parts of existing homes in winter R - 20 walls in a 600 ft^2 house will use less energy than a 2500 ft ^2 R 40 home. - RJ
	Develop and implement zoning measures to encourage alternatives to reduce heating demand and emissions - TG
	residential energy efficiency has a direct bearing on energy security, and should be the number one item on anyone's list to save money. It is the simplest and quickest method to reduce cost of energy, the cheapest unit of energy being the one you DO NOT USE. And, no matter what source of energy you use to light, power, and heat your home, the savings stay with the building for as long as it stands, since those negawatts (unused energy previously wasted) never cost anything. - summary of energy table comments - Notes from Summit
	new bill recently passed to allow energy upgrades to be paid as part of your monthly utility bill (passed to help with natural gas hook-up expenses, but the language should also allow electrical upgrades as well, and MAYBE energy retrofits). GVEA might be able to do something with this, as it would cost them nothing- Notes from Summit
	currently any improvement on ones home yields an automatic increase in property tax assessment. Perhaps it would be in the interest of the borough to give tax credits for energy efficiency upgrades, building retrofits, and even new homes built to 6 star or better standards. This ties into the air quality issue; making buildings energy efficient reduces the amount of fuel used by that building no matter what kind of fuel it is; heating oil, gas, electric, wood, etc. a complete energy retrofit on a 3-4 star home could bring it up to 5-6 stars, and reduce its energy consumption by 50% and more. - Notes from Summit
Reduce Electricity Demand & CO ₂ e emissions	Carbon tax - RJ
	If any community in US should be allowed to use fossil fuels it should be those in interior AK in the winter. - RJ
	Take another look at small nuclear – no one wants to talk about this. - RJ
	Develop and implement zoning measures to encourage alternatives to reduce emissions - TG
	We must shift from coal to (? other). We should be on the leading edge of “renewables” instead of bringing up the back of the pack. New power generation should be non-petroleum/coal and any new generation w/gas should be placed outside the “non-attainment zone.” KH
	lighting efficiency can save hundreds of dollars per year. replacing incandescent, florescent and CFL bulbs with LEDs can reduce costs up by 80%.- Notes from Summit
Reduce FNSB Operational Energy Demand and CO ₂ e emissions	I don't believe the FNSB can afford to maintain all its existing bldgs. We need to make some hard decisions after prioritizing. Fewer facilities means less energy and less C emissions. - RJ
	Retrofit borough buildings, e.g., weatherization, lighting upgrades, etc. - unknown source - Notes from Summit
	lighting efficiency can save hundreds of dollars per year. replacing incandescent, florescent and CFL bulbs with LEDs can reduce costs up by 80%.- Notes from Summit
Goals & Indicators	Energy Goal 1 seems abit contradictory - if energy cost less, people would tend to use and waste more - reducing cost of renewable energy would be helpful in that it could then displace oil and coal. FW
Education & Outreach	Bruno at CCHRC suggested a 2-4 minute video posted on youtube showing how much money can be saved with home energy efficiency measures one can do cheaply and quickly. He will be meeting with AHFC next week and broach the subject with them (AHFC underwrote the Northern Center retrofit video in 2008) - Notes from Summit
	The new mayor of North Pole, Mike Welch, was at our table and he wants to spread the word in NP with quarterly town hall meetings. That could also work at the borough level.- Notes from Summit
	Perhaps a weekly column in the DNM written by one or more of our resident experts in the field (there are dozens of them) would be a good way to get the word out. I have lunch with a dozen of them each Monday

	and will put that idea out there to them. - Notes from Summit
	Bruno also came by and shared something he saw in Chicago where government buildings had their energy usage/efficiency posted in a visible place, analogous to health inspection scores. I have the ability to produce these numbers and hope this can be an ongoing discussion. - BL
Workforce Development	workforce development for retrofits and green building can produce jobs while lowering energy costs- Notes from Summit

Waste Reduction Comments

Issue	Comment
General	I've done my best to make some suggestions for additions and changes to the actual language contained in the Waste Reduction Issue section to accompany my general comments on the PDF – many of them may have been discussed already. I have also deleted some language I felt like was unnecessary or unrelated. In some instances I have made suggestions for edits, leaving the original language, knowing the commission should complete them in conjunction with their subject matter experts. I think my suggestions increase the breadth of the Waste Reduction section to better match the other Issue Areas. – TC, Green Star of Interior Alaska
Decrease Food Waste	Don't throw away food - so much waste. Even some at our Raven lunches. Can there be a way to allow more excess supermarket and restaurant food to be recovered even if only for animal feed? - RJ
	Centralized composting facility in Fairbanks (expanding to include curbside pickup). Barrier: No space at the Central Recycling Facility. Solution: Identify new space. Barrier: Residents do not know how to compost. Solution: Education.- Notes from Summit
Decrease Plastic Waste	deposit required on plastic bottles that can be recycled. Allow folks to bring their own bottles to refill at supermarkets [this used to be allowed here- realize there is a sanitation concern.] - RJ
Recycle Glass	So I wonder how we could implement glass recycling. I have the impression that this is a huge percentage of the landfill waste. - JW
	Barrier: There is no feasible market for glass shipped from Fairbanks. Solution: Use the glass locally for road fill or landfill cover. Alternatively, you could find a location to stockpile the glass until the market improves. Barrier: There was a comment that in testing UAF's glass pulverizer, staff did not think that it crushed the glass to a satisfactorily small grain and would be unwilling to use it for road fill. Solution: Buy higher quality equipment. - Notes from Summit
	In a separate conversation with Bob at the Solid Waste table, he said he could not see any reason why the landfill could not replace the sand/gravel they use with crushed glass. He mentioned that the Kenai landfill uses their loaders to crush the glass on site and then push it on top of the day's garbage, reducing the need for specific equipment. - Notes from Summit
	I also found out that glass bottles can be recycled in Anchorage, and will be making room in the truck for them the next trip south. - CS
Recycle plastics	Or how could we expand our plastics recycling beyond the #1 and #2 containers, another area for big reductions if my own experience is any guide. - JW
Closed Loop Waste Management	These two questions make me wonder if we could have a FNSB recycling plant, one that would actually process and sell/use the solid wastes we recycle, rather than ship them out of state. That just raises questions, and it isn't backed up by data to persuade the borough to fund such a plant and employ the people to run it. Again, this paragraph may just suggest my own limitations I'm bringing to the discussion. - JW
	Making pellets from paper and plastic recycling for energy recovery - Notes from Summit
Definition of Waste Reduction	Waste is all material that is destined for the landfill. - Notes from Summit
	Waste reduction (ie. reducing materials brought to the landfill) means reducing our use of new materials, reusing what we can, and/or recycling the materials once their useful life has past, prior to producing energy or disposing them. - Notes from Summit
	Waste reduction or minimization refers to reduction, reuse, and/or environmentally-sound recycling methods prior to energy recovery, treatment, or disposal of wastes. - Notes from Summit
Problem Statement	We should make the stats listed in the problem statement the same format. Either all %s or all in millions of pounds (so that they can be directly compared. - Notes from Summit
	Why are we not including stats on the other recyclable materials, like aluminum, steel and electronics? Especially considering that aluminum is one of the most valuable and reliable recyclable markets. - Notes from Summit
Goal	To reach this goal, we need to divert 3% waste per year, an increase of 300% in the first year from the current 1% we do. Our table thought this was an impossible goal. It needs to be more realistic. We want a goal that can be achieved, to build momentum for future goals. We don't want people to think that the Borough just sets lofty goals with no real plan to achieve them. This will not build support for this plan. - Notes from

	<p>Summit</p> <p>Is this measured by weight or by volume? This timeline is too short. DIVERT 10% OF WASTE BY VOLUME FROM THE LANDFILL BY 2028. Talking to Sean, he said this was a more realistic goal and he believes that the CRF can handle that increase in recyclables with a horizontal baler and more storage space. - Notes from Summit</p> <p>In our group we discussed that 10% waste diversion by 2025 is a much more reasonable and achievable target goal. We also think some terminology in the definition should be simplified to be more generally accessible, e.g., "source reduction," "affirmative procurement," and "equipment modification." TC will send an email with detailed notes. :-) AM</p>
Recycling Bins at Transfer Sites	<p>Barrier: Requires staffing, which requires money. Solution: Start small. Pilot bins at one or two busy transfer sites, monitoring closely to gauge results on a wider scale. Barrier: Hard to staff in the winter. Solution: Include warming huts in the budget for staff. Barrier: Contamination will likely be high. Solution: In concert with pilot program, ramp up education campaign to instruct residents what is and isn't recyclable. Staff could also help reduce contamination. - Notes from Summit</p>
Banning Electronics at Transfer Sites	<p>Barrier: Public backlash. Solution: Reduce fee structure. - Notes from Summit</p>
Improvements to CRF	<p>Horizontal baler; Hours that are more accommodating to work schedules of residents (after 5:00 pm); Paved driveway to allow larger vehicles to access front door; More space to store bales waiting for shipment, ability to stack bales within current space; Reduce commercial fee structure to better incentivize commercial business recycling - Notes from Summit</p>
Curbside Recycling pickup for City of Fairbanks	<p>Barrier: High potential for contamination. Solution: Aggressively educate. Have ability to separate contaminants at the CRF. Barrier: Cost of new trucks, staff and bins. Barrier: No incentive for residents to participate, or penalty for not. Solution: Consider incentive or penalty structure. - Notes from Summit</p>
Expanding Recycling in North Pole	<p>Barrier: Cost, Apathy. Solution: Early education to train the next generation of residents. - Notes from Summit</p>
Establish Wood Donation Station at Transfer Sites	<p>Is there any way to separate out wood/burnables at collection sites and the wood be utilized to burn for heat or power. This would be a way to use construction and tree and shrub clearing waste. I am thinking of a central furnace to provide heat w/power to a nearby facility or district. (I have seen this in Sweden.) RM</p>

Appendix C – Alignment with Borough Priorities

The sustainability goals described in this plan align with goals, strategies, and actions within the Comprehensive Plan,⁵⁶ Comprehensive Economic Development Strategy⁵⁷ (CEDS), and Hazard Mitigation Plan.⁵⁸

Comprehensive Plan

Community & Human Resources

GOAL 1: To have services and facilities that enrich the quality of life for all residents

Strategy 1: Provide for delivery of the essential human services for residents

Action E: Encourage local food production

- Support the Tanana Valley Farmers Market and other local agricultural markets
- Create community gardens on selected public or private land to provide agricultural opportunities to densely populated areas
- Encourage agricultural education programs at the local schools

Action F: Provide suitable facilities for solid waste collection and disposal to meet present and future needs

Economic Development

GOAL 1: To strengthen and expand the existing economy

Strategy 4: Emphasize development and expansion of mining, local manufacturing, agriculture, tourism, conventions, hospitality and forest-related businesses

Action B: Promote agriculture by:

- Supporting non-profit and volunteer organizations that promote agricultural development within the borough
- Promoting and enhancing agricultural administration, processing, and distribution within the borough
- Support maintenance and further development of the University of Alaska’s agricultural programs
- Maintaining and developing agricultural programs at the local schools
- Support the building of storage facilities for agricultural products when we are assured that there is a need for them
- Supporting the expansion of Tanana Valley Farmers Market and other local agricultural markets

Transportation & Infrastructure

GOAL 2: To have sufficient public utilities and infrastructure to meet existing and future demands

Strategy 6: Develop appropriate infrastructures that support all land use categories

Action B: Support development of infrastructure for agricultural activities

Strategy 8: Encourage energy-efficient utility patterns

Action A: Recognize and encourage solar access to residential and commercial structures

⁵⁶ Fairbanks North Star Borough Comprehensive Plan. 2005. Accessed on September 6, 2018 at <https://bit.ly/2oNgDBO>.

⁵⁷ Fairbanks North Star Borough Comprehensive Economic Development Strategy. 2016. Accessed on September 6, 2018 at <https://bit.ly/2NmAXYD>.

⁵⁸ Fairbanks North Star Borough Hazard Mitigation Plan. 2014. Accessed on September 24, 2018 at <https://bit.ly/2zqvFUp>.

Action C: Encourage the development and use of alternative energy sources including solar and wind energy

Environment

GOAL 2: To promote responsible stewardship of the borough ecosystem

Strategy 2: Maintain favorable air and water quality in the community

Strategy 3: Encourage the recycling of resources and reduction of waste

Action A: Expand recycling efforts

- Encourage a long-term recycling plan, including investigating the feasibility of a centralized recycling facility
- Encourage inbound carriers to provide reasonable freight rates to move recycled material
- Promote maximum recycling of solid waste disposal from industrial land use
- Create incentives that encourage comprehensive recycling by all sectors of the economy
- Provide incentives for the development of businesses that reduce, reuse, recycle, or transform waste into products for resale
- Investigate the cost effectiveness of recycling at the transfer stations
- Support efforts to educate the public about reducing, recycling, and reusing

Action B: Encourage a litter-free community

- Create a comprehensive litter control program, including borough waterways
- Enforce existing litter control regulations
- Improve the abandoned vehicle program
- Expand the clean-up day program

Comprehensive Economic Development Strategy

Lower & Stabilize Energy Costs by Expanding the Energy Portfolio with a Focus on Local Resources

OBJECTIVE: Bring affordable, sustainable natural gas to the borough

OBJECTIVE: Support geothermal energy production in and around the Interior region

OBJECTIVE: Find ways to recover and use waste heat to heat buildings and greenhouses in the borough

OBJECTIVE: Support University of Alaska Fairbanks research to find new ways to provide affordable clean energy in the borough and surrounding regions

Develop Regional Cooperative Market Program to Create Larger Market for Goods & Services Produced in the Borough

OBJECTIVE: Coordinate industry cluster strategies and projects to promote export of borough products and technologies, particularly in areas of energy micro-grids, mining and unique agricultural products

OBJECTIVE: Position the Interior as an energy research and development hub

Enhance the Economic Viability of Agriculture both for Local Consumption & as an Export Sector

OBJECTIVE: Support new product research to find agricultural niches for the borough

OBJECTIVE: Explore the feasibility of community systems for greenhouse heating, fertilizer production and value-added processing to increase economic feasibility of agriculture

OBJECTIVE: Conduct local and external marketing to encourage local consumption of borough food products as well as promoting external markets for export commodities

Economic Foundations – Physical Infrastructure

OBJECTIVE: Expand solid waste recycling capacity to improve the sustainability of the solid waste disposal system

OBJECTIVE: Create a Centralized Waste Recycling Facility

Hazardous Mitigation Plan

OBJECTIVE: Ensure food security during extended events

Action: Create opportunities and develop regulations to allow for more local agricultural production.

Action: Work with local grocers, transportation companies, and other partners to develop alternate plans for delivering foodstuffs.

Appendix D – Indicator References

Food Security

FS Goal 1: Increase the Agricultural Workforce

Indicator	Source
Number of people employed in the primary food production aspect of local agriculture per year	To be determined (TBD)
Number of farmer-training programs per year	Calypso Farm & Ecology Center: www.calypsofarm.org
Number of food education programs or classes in schools per year	Fairbanks North Star Borough School District

FS Goal 2: Increase Food Stocks

Indicator	Source
Percentage of households with a 14-day emergency food cache	TBD
Number of community food caches	TBD
Number of days' food available on grocery store shelves	State of Alaska Emergency Management

FS Goal 3: Increase Food Production & Sales

Indicator	Source
Number of farms producing food per year	Fairbanks Economic Development Corporation (FEDC)
Number of cold storage facilities for local food producers	TBD
Number of community food processing and distribution facilities	TBD
Number of restaurants, distributors and stores buying Golden Heart Grown per year	TBD

FS Goal 4: Increase Access to Fruits & Vegetables

Indicator	Source
Number of community gardens per year	Interior Alaska Food Network (IAFN) https://interioralaskafood.wordpress.com/

Percentage of residents consuming at least 5 fruits or vegetables per day	Alaska Department of Health and Social Services' Behavioral Risk Factor Surveillance System: https://bit.ly/2J1QBE4
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Energy Security

ES Goal 1: Reduce Household Energy Consumption

Indicator	Source
Average annual energy usage, in MMBTUs, per home	Alaska Housing Finance Corporation: https://bit.ly/2q12hyd
Percentage of residential structures built prior to 1980 needing weatherization	

ES Goal 2: Reduce Borough Operational Energy Consumption

Indicator	Source
Heat EUI (BTU/sqft)/HDD – School District Buildings	Fairbanks North Star Borough Public Works Division
Heat EUI (BTU/sqft)/HDD – Other Borough Facilities	
Electricity EUI (kWh/sqft) – School District Buildings	
Electricity EUI (kWh/sqft) – Other Borough Facilities	

ES Goal 3: Reduce CO₂e Emissions

Indicator	Source
Number of members in GVEA Sustainable Natural Alternative Power Programs (SNAP & SNAP Plus)	Golden Valley Electric Association: https://bit.ly/2P3r17m
Number of metric tons of CO ₂ e emissions per MWh per year by GVEA	Golden Valley Electric Association
Percentage of GVEA energy from renewables on an annual basis	
Number of tons of CO ₂ e emissions from all sources per Borough resident per year	Alaska Center for Energy and Power: https://bit.ly/2yjr0IX
Number of buildings with a renewable energy system – School District Buildings	Fairbanks North Star Borough School District Facilities Management Department

Number of buildings with a renewable energy system – Other	Fairbanks North Star Borough Public Works Division
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Waste Reduction

WR Goal 1: Divert 10% of Waste by Weight from the Landfill by 2028

Indicator	Source
Percentage of municipal solid waste diverted from the landfill per year	Fairbanks North Star Borough: https://bit.ly/2Ag4xrp
Pounds of office paper baled and recycled as office paper, rather than as mixed paper, by the CRF per year	
Pounds of waste generated per resident per day	
Number of students participating in recycling education programs or classes in the FNSB school district	Fairbanks North Star Borough School District



Appendix E – Recycling Efforts in the FNSB

FAIRBANKS NORTH STAR BOROUGH

SOLID WASTE DIVISION

455 SANDURI STREET • FAIRBANKS, ALASKA 99701 • (907) 459-1482 FAX (907) 459-1017

Recycling Efforts in the FNSB

(Public Works & Community)

1. Public Works Historic Recycling Programs:

Note: Public Works obtained control over Solid Waste in 1992.

- a) **Scrap Metal** – 18+ years – junk automobiles, appliances, and miscellaneous metal baled and shipped to Seattle. Long-term sustainable program
- b) **Cardboard** – Ended May 31, 1998; baled cardboard was shipped to Seattle.
- c) **Waste Paper** – Began June 1, 1998, as EAFB paper fuel pellets program. EAFB pelletizer building fire January 2007 ended the program.
- d) **Vehicle Batteries** – 18+ years – Recycled via contractor. Long-term sustainable program
- e) **Antifreeze** – 15 years – Recycled in-house or via contractor. Long-term sustainable program
- f) **Aluminum** – 18+ years – Aluminum cans and miscellaneous aluminum baled and shipped to Seattle. Long-term sustainable program
- g) **Used Oil Recovery Program** – Oil-fired spaced heaters used until 2001
- h) **Flammable Liquids/Fuels** – 15+ years – Shipped to lower 48 and used as a waste-to-energy fuel. Long-term sustainable program
- i) **Used Oil Energy Recovery Program** – Seven years – Energy recovered heats Landfill buildings. Long-term sustainable program
- j) **Transfer Site Reuse Areas** - 14 years – Five Main Transfer Sites – Covered areas for reuse activities.

2. Public Works Current Recycling Programs:

- a) See attachment or <http://co.fairbanks.ak.us/SolidWaste/>

3. Public Works Facilities/Projects:

- a) **1978 Harris Baler** – 21 year-old baler removed in 1999.
- b) **1996 Recycling/Household Hazardous Waste Facility** – Collection, consolidation, and recycling of hazardous waste.
- c) **1998 Waste Paper Conveyor** – Used to load waste paper for the Waste Paper Program.
- d) **2003 Main Building Used Oil Energy Recovery Project** – Installed waste oil boilers and storage tanks that provide WTE heat for the Main Landfill Building.
- e) **2005 Mactec Recycling Plan and Analysis Report** - <http://co.fairbanks.ak.us/PWorks/Recycling/>
- f) **2007 Recycling/Household Hazardous Waste Facility Expansion** – Expanded building and installed additional waste oil boiler and storage tanks that provide WTE heat for this facility.

- g) **2010 Phase I Closure Project** – Installs leachate recirculation loop.
- h) **2012 Green Energy Facility** – Solid Waste electricity generation from methane combustion. (Attachment)

4. Community Recycling:

- a) **Interior Alaska Green Star** – *Recycling Options in Fairbanks.* (Attachment) or <http://co.fairbanks.ak.us/SolidWaste>
- b) **Northern Alaska Environmental Center** – *Re-Using and Recycling in Fairbanks.* (Attachment) or <http://co.fairbanks.ak.us/SolidWaste>

5. Community Task Forces/Recycling Commissions:

- a) **1995 Recycling Commission** – Involved with historic recycling programs, ended in 1999.
- b) **2006 Task Force** – Borough Mayor created task force. <http://co.fairbanks.ak.us/Boards/>
- c) **2008 Task Force** – Borough Mayor created task force. <http://co.fairbanks.ak.us/Boards/>
- d) **2009 Recycling Commission** – Ordinance No. 2009-39

Attachments: FNSB Current Recycling Programs
Green Energy Facility Photo
South Cushman Landfill – Site Plan
Interior Alaska Green Star – Recycling Options in Fairbanks
Northern Alaska Environmental Center – Re-Using and Recycling in Fairbanks

*Prepared By:
Bob Jordan, Solid Waste Manager
RE: Recycling Commission Meeting 1/3/10*