



2023/24 Annual Report



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Table of abbreviations

AEA	Arctic Energy Alliance
ccASHP	Cold-climate air-source heat pump
CO₂	Carbon dioxide
ECE	Education, Culture and Employment
ECM	Electronically commutated motor
EPA	Environmental Protection Agency
EEIP	Energy Efficiency Incentive Program
GHG	Greenhouse gas
GJ	Gigajoule
GNWT	Government of the Northwest Territories
LCELF	Low Carbon Economy Leadership Fund
LED	Light-emitting diode
MWh	Megawatt-hour
NRCan	Natural Resources Canada
NWT	Northwest Territories
VFD	Variable frequency drive

Foreword

For 27 years, the Arctic Energy Alliance has been leading the North in taking action to fight climate change. And we couldn't be prouder to lead that charge.

For 2023/24, our funding from the governments of Canada and the Northwest Territories continued to stay at the levels we have seen over the past few years. This allowed us to continue with the expanded programs and special projects we have put in place thanks to our increased funding.

Although our funding for the next few years is somewhat less certain, we know that we will still be able to provide a high level of education and incentives to help people save energy, save money and reduce their carbon footprints.

Collectively, the clients we worked with this year will save 1,300 MWh of electricity annually, which is like taking two communities the size of Wekweètì off the grid. They will also reduce their carbon footprint by about 1,500 tonnes a year—equivalent to the greenhouse gases emitted by driving a passenger car 5,700,000 km.

Of course, our work is about much more than simply providing rebates and tracking savings. It's also about building relationships whenever we can so that we can do our part to help people understand how to best take action on lowering their energy bills and fighting climate change. Like when we partnered with five local governments to both develop and implement community energy plans. Or with five NWT communities to install new, efficient, code-compliant wood stoves for community members.

We think that the challenges of this year make our accomplishments all the more worthwhile. We look forward to continuing to make the NWT a cleaner, more energy efficient place to live.

Mark Heyck
Executive Director

2023/24 at a glance

This year brought unprecedented challenges to the NWT, not the least of which was the harrowing evacuation of Yellowknife due to the largest wildfires in the region's history. Natural disasters like this only underscore the critical need for services that organizations like the AEA provide, helping residents fight climate change through responsible energy practices.

Despite these challenges, AEA achieved remarkable results in 2023/24. We distributed over 3,000 rebates, reflecting robust engagement and uptake with our programs. Our clients' projects collectively saved 14,000 gigajoules (GJ) of fossil fuels and reduced greenhouse gas emissions by 1,500 tonnes annually. This is a significant increase from last year's savings of 11,000 GJ and 1,100 tonnes, with fossil fuel savings equal to 365,000 litres of heating oil.

The Energy Efficiency Incentive Program once again provided over 2,600 rebates. The Beaufort-Delta region led the way for the second consecutive year with 901 rebates, followed by the Sahtú region with 593 rebates. In fact, the Sahtú surpassed the North Slave region (501 rebates) for the first time. Rebates from this program will save the NWT 600 tonnes of greenhouse gases annually, more than any other AEA program. The Energy Rating Services Support Program also performed well, completing 177 home energy evaluations, including 140 evaluations of existing homes. Upgrades from these evaluations could save homeowners \$230,000 and reduce greenhouse gas emissions by 580 tonnes annually.

Our regional offices played a crucial role in maintaining strong community connections across the NWT. Each office participated in various community events, trade shows, and educational activities. For instance, the Sahtú office hosted an open house in Norman Wells, where community members learned about energy efficiency and conservation. The event successfully engaged the public, resulting in two attendees signing up for home energy evaluations, laying the groundwork for future rebate applications.

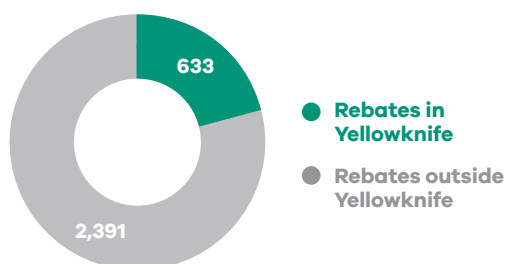
Our special projects this year included engaging with contractors, testing cold-climate air-source heat pumps, and developing educational materials for schools. The Cold-Climate Air-Source Heat Pumps project provided valuable data on their performance in Yellowknife's unique climate, aiding in informed decision-making regarding future promotions and rebates for this technology. Additionally, an energy literacy toolbox for Grade 7 students was successfully piloted in various schools across the territory.

And that's just the tip of the iceberg. The AEA touches every community in the NWT, and our team's commitment to promoting energy conservation and efficiency is stronger than ever. So read on, and see how we are partnering with communities, businesses and individual residents to build a resilient and sustainable NWT that supports everyone's wellbeing—and sets an example for the world.

Overall results¹

Programs and projects		
Number of programs		12
Number of special projects		9
Incentives		
Total incentives	Including Energy Efficiency Incentive Program (EEIP)	3,024
	Excluding EEIP	423
Total value of incentives	Including EEIP	\$2,500,000
	Excluding EEIP	\$2,100,000
Average incentive	Including EEIP	\$820
	Excluding EEIP	\$4,900
Payback*		
Total capital cost		\$10,000,000
Estimated annual savings		\$990,000
Simple payback	Before incentives	10.1 years
	After incentives	7.6 years
Energy savings		
Estimated annual electricity savings		1,300 MWh
Equivalent to taking two communities the size of Wekweètì off the grid ↗		
Rebate cost per lifetime ² kWh avoided		\$ 0.12
Estimated power demand avoided/produced ³		210 kW
Equivalent to running 170 dishwashers at the same time ↗		
Annual fossil fuel consumption avoided (oil, propane, natural gas and gasoline)*		14,000 GJ
Equivalent to 350,000 L of heating oil (2,200 barrels), or 400,000 L of gasoline (2,500 barrels)		
Greenhouse gas reduction		
Estimated annual greenhouse gases avoided		1,500 tonnes
Equivalent to greenhouse gases emitted by driving a passenger car 5,700,000 km ↗		
Rebate cost per lifetime tonne of greenhouse gases avoided		\$ 100

*Not counting fuel used for community-level electricity generation.



¹ Throughout this report, numbers greater than nine and those with decimals have been rounded to two significant digits, unless otherwise noted—except for the number of rebates provided and energy audits/evaluations completed, which are presented accurately. In some cases, numbers may not add up correctly due to rounding.

² The lifetimes of products and projects vary. For more information on assumed lifetimes see the sections on the individual programs.

³ Power demand refers to the maximum amount of electricity that is used at any given time.

Highlights

The following are just a few of the highlights from our programs and projects over the past year.

PROGRAMS

Commercial Energy Conservation and Efficiency Program

Provides building energy audits and rebates to NWT businesses to make upgrades to conserve energy and improve their energy efficiency.

- Provided 30 rebates.
- Combined, annual electricity consumption avoided by all clients' projects is about 130,000 kWh—roughly 18 percent of the electricity consumed each year in the community of Wekweètì.
- The average client project will pay for itself through energy savings in just over seven years.

Community Government Building Energy Retrofit Program

Provides building energy audits, rebates and project coordination to help community governments across the NWT better manage their energy use.

- Distributed approximately \$44,000 in rebates in four communities.
- Completed three desktop “yardstick” building energy audits in one community.
- Client project will save an estimated 13 tonnes of greenhouse gas emissions a year—equivalent to the greenhouse gases emitted by driving a passenger car 49,000 km.

Deep Home Energy Retrofit Program

Provides rebates on major home energy-efficiency upgrades, such as exterior wall insulation, windows and heating equipment.

- Completed 20 post-retrofit evaluations for clients who completed their upgrades in four communities.
- Provided 20 final rebates valued at \$110,000.
- Combined, our 20 clients with completed projects are expected to save 1,900 GJ of heating fuel a year—equivalent to saving almost 50,000 L of heating oil (320 barrels), or almost 57,000 L of gasoline (360 barrels).

Designated Income Home Winterization Program

Provides homeowners with the supplies, knowledge and other resources to winterize their homes and save on heating fuel, as well as with means to reduce the consumption of electricity and water.

- Worked with five partner communities to hire and train local liaison workers.
- Hosted educational workshops for lower-income homeowners in five communities.
- Distributed 137 energy efficiency kits to workshop participants.

Energy Efficiency Incentive Program

Provides rebates on energy-efficient appliances and other products.

- Provided 2,601 rebates.
- The Beaufort–Delta region outpaced the North Slave region in the total number of rebates for the second year in a row and the Sahtú region outpaced North Slave or the first time ever, with 901 for the Beaufort–Delta, 593 for the Sahtú, and 510 for the North Slave.
- Combined, the energy-efficient products purchased will save the NWT 600 tonnes of greenhouse gases annually—more than any other AEA program this year.

Energy Rating Service Support Program

Provides home energy evaluations and advice.

- Completed 177 home energy evaluations.
- Performed evaluations on 140 existing homes.
- Combined, all recommended upgrades could save homeowners \$230,000 and 580 tonnes of greenhouse gas emissions a year.

Non-Profit Energy Efficiency and Conservation Program

- Distributed 10 rebates valued at approximately \$190,000.
- Combined, all client projects will avoid approximately 9 tonnes of greenhouse gases and 98 GJ of fossil fuel use every year—equivalent to 2,500 L of heating oil (16 barrels), or 2,900 L of gasoline (18 barrels).
- Half the rebates distributed were for clients outside of Yellowknife.

Alternative Energy Technologies Program

Provides incentives for NWT residents, businesses and community-based organizations to adopt renewable and alternative energy systems, such as solar, wind, wood and more.

- Provided 44 rebates.
- The 44 systems that our clients installed are expected to save roughly 210 tonnes of greenhouse gases a year.
- The average system is expected to pay for itself in approximately seven years.

Biomass Energy Program

Provides northerners with accessible technical advice on existing or potential biomass projects.

- Hosted Biomass Week with 31 presentations and 260 participants, along with Burn-It-Smart workshops in four communities.
- Facilitated pellet boiler installations for three organizations.
- Completed a pre-feasibility analysis for a commercial system in Hay River.

Community Wood Stove Program

Provides homeowners with new, efficient wood stoves through partnerships with community organizations.

- Installed 61 stoves in five partner communities.
- Combined, all installed stoves will save 2,600 kg of particulate emissions and 59 tonnes of greenhouse gas emissions a year.

Electric Transportation Incentive Program

Provides rebates for electric vehicles and charging stations, e-bikes, and electric on-the-land transportation.

- First year for rebates on e-bikes and on-the-land vehicles.
- Provided 117 rebates on 18 vehicles, eight charging stations, 90 e-bikes, and one snowmobile.
- All combined, these rebates will save approximately 41 tonnes of greenhouse gases annually.



Louise (right) hands a rebate cheque to Curtis Rowe (left), general manager of Midnight Petroleum in Hay River. Midnight Petroleum purchased four e-bikes for staff to use.

COMMUNITY ENGAGEMENT

Community engagement—through all six AEA offices—allows the AEA to keep a close connection to communities throughout the NWT.

- Each office is involved in every program and project the AEA undertakes, and AEA staff attend trade shows, events and other community engagement activities in every NWT community.

SPECIAL PROJECTS

Cold-Climate Air-Source Heat Pumps (ccASHP)

Conducted field monitoring of ccASHPs in Yellowknife to evaluate their performance, energy efficiency, and GHG reduction potential. Also investigated the tie-in with an existing system and challenges unique to the North.

Community Energy Planning

Supported communities in developing energy plans and implementing energy-efficiency and renewable-energy projects, transitioning to a one-year model due to funding changes. Partnered with the Community Government of Gamètì to create a community energy plan and helped Ulukhaktok and Fort Simpson move into the implementation phase, achieving significant cost savings and GHG reductions.

Contractor Outreach

Educated contractors on energy-efficient technologies through a webinar series on heating controls, insulation, and energy-efficient building standards. Webinars were well-attended, facilitating knowledge sharing and relationship building.

Energy-Efficient Technologies

Promoted the adoption of energy-efficient technologies, focusing on automated vehicle plug-in controllers, with 101 devices installed across the NWT. Provided rebates to six clients, resulting in significant energy and cost savings, and increased awareness through promotional efforts.

New-Building Guide

Updated the AEA's new building guide to reflect best practices and current building codes for efficient construction in the NWT. Revised recommendations based on updated guidelines and feedback from contractors and AEA.

Public Relations and Marketing

Created and distributed a calendar showcasing energy projects, produced “No Idle Zone” signs and bumper stickers, maintained an active Facebook presence, and coordinated various communication efforts. The calendar increased awareness, “No Idle Zone” materials were effective, Facebook engagement grew, and consistent public presence was maintained through various communications.

School Engagement

Developed an energy literacy toolbox for Grade 7 students, piloted in various schools to educate on energy efficiency, energy conservation, and renewable energy. Successfully piloted and adapted the toolbox for broader use, with training sessions for staff and further classroom engagements planned.

Budget⁴

Source	Funding	Expenses	
		Operations	Incentives
Government of the Northwest Territories (GNWT) base & core program funding	\$3,520,000	\$2,160,000	\$752,000
Base funding for Regional Office Program, administrative staff, offices, etc.	\$1,600,000	\$1,600,000	\$0
Addressing Energy Poverty for Low Income Households	\$200,000	\$53,000	\$136,000
Alternative Energy Technologies Program	\$300,000	\$0	\$81,000
Biomass Energy Program	\$100,000	\$105,000	\$0
Commercial Energy Conservation and Efficiency Program	\$250,000	\$0	\$241,000
Community Energy Planning	\$200,000	\$140,000	\$0
Community Government Retrofits Program	\$140,000	\$3,000	\$0
Electric Transportation Incentive Program	\$230,000	\$13,000	\$193,000
Energy Efficiency Incentive Program	\$200,000	\$0	\$101,000
Energy Rating Services Support Program	\$300,000	\$247,000	\$0
GNWT Low Carbon Economy Leadership Fund supplementary project funding	\$1,761,000	\$580,000	\$1,163,000
Alternative Energy Technologies Program – LCELFF top-up	\$630,000	\$181,000	\$430,000
Commercial Energy Conservation and Efficiency Program – LCELFF top-up	\$511,000	\$142,000	\$369,000
Community Government Building Energy Retrofit Program – LCELFF top-up	\$190,000	\$145,000	\$44,000
Energy Efficiency Incentive Program – LCELFF top-up	\$430,000	\$111,000	\$319,000
GNWT Low Carbon Economy Leadership Fund new project funding	\$1,466,000	\$560,000	\$843,000
Deep Home Energy Retrofit Program	\$280,000	\$172,000	\$108,000
Designated Income Home Winterization Program	\$127,000	\$111,000	\$16,000
Non-Profit Energy Efficiency and Conservation Program	\$287,000	\$83,000	\$190,000
Community Energy Planning and Implementation	\$445,000	\$84,000	\$312,000
Community Wood Stove Program	\$327,000	\$111,000	\$216,000
GNWT – Anti-poverty funding	\$30,000	\$0	\$30,000
Designated Income Home Winterization Program	\$30,000	\$0	\$30,000
GNWT – Infrastructure funding	\$20,000	\$0	\$20,000
Electric Vehicle Incentive Program	\$20,000	\$0	\$20,000
Natural Resources Canada – Clean Energy for Rural and Remote Communities	\$27,000	\$27,000	\$0
Community Energy Planning	\$27,000	\$27,000	\$0
Membership dues	\$228,000	\$228,000	\$0
Government of the Northwest Territories	\$150,000	\$150,000	\$0
GNWT – Crown corporations	\$68,000	\$68,000	\$0
Other	\$10,000	\$10,000	\$0
Other source income	\$71,000	\$105,000	\$0
TOTAL	\$7,122,000	\$3,659,000	\$2,807,000

⁴ Numbers are rounded to the nearest thousand, and may not add up correctly due to rounding. Some programs were under or over budget, so in some cases funding was moved between programs for operations and incentives.

Introduction

About the Arctic Energy Alliance

The Arctic Energy Alliance (AEA) is a not-for-profit society, based in the Northwest Territories (NWT), that helps Northerners find ways to conserve energy, become more energy efficient, and adopt alternative and renewable sources of energy. These actions reduce the North's carbon footprint, while helping our clients save money in the process.

The AEA was formed in 1997 to consolidate the activities of several organizations with an interest in energy. The intent was to eliminate duplication and overlap between the various departments and agencies, provide a single point of contact for the public, and allow for a more coordinated approach to public education and the delivery of energy conservation services.

Over the past 27 years, the scope of our work has grown substantially. Today, we help residents, businesses, non-profit organizations, community governments and Indigenous governments throughout the NWT to lower energy costs, improve building efficiencies and comfort, reduce greenhouse gas emissions, and more. We have become the leading northern organization in bringing together communities, consumers, producers, regulators and policymakers to reduce the cost and environmental impacts of energy use in the NWT.

In fact, bringing people together is critical to how we operate. Forming partnerships is at the core of our work—whether establishing official community partnerships on an individual project, or building and strengthening relationships with vendors, contractors and clients across the territory every day.



An energy fair was one of the first events we held at our relocated Tłıchʔ Territory office, which is now in Behchokǝ.

With our main office in Yellowknife and five regional offices throughout the Northwest Territories, our team of 20 dedicated staff members reaches every community in the NWT.

Thanks to generous funding from the governments of the Northwest Territories and Canada, we offer a suite of core programs focused on energy efficiency and conservation, building evaluations, and alternative and renewable energy sources. We also conduct a broad range of shorter-term energy-related special projects devised by AEA staff.

This report highlights our programs and projects from the 2023/24 fiscal year—including their results—so readers can see the positive impacts we have made.

Charting our course

An overview of our strategic plan

The Arctic Energy Alliance's strategic plan shapes where we want to go and what we want to achieve as an organization. It defines everything we do. Understanding the core of our strategic plan—our vision, mission, goals, objectives and values—will provide context on the programs and projects we do and the results we achieve.

Our vision: our ultimate goal

NWT society will become a global leader in clean, efficient, sustainable energy practices.

Our mission: why we exist

To promote and facilitate the adoption of efficient and renewable energy practices by all members of NWT society.

Our goals: what we will achieve

1. Members of NWT society will know more about the costs and environmental impacts of their energy use.
2. Members of NWT society will want to reduce costs and environmental impacts of their energy use.

3. Members of NWT society will adopt efficient, renewable and carbon-neutral energy practices.
4. Members of NWT society will know the Arctic Energy Alliance as the best place to go when they want to adopt efficient, renewable and carbon-neutral energy practices.
5. Members of NWT society will achieve significant reductions in the costs and environmental impacts of their energy use.
6. Members of NWT society will be celebrated as leaders in efficient, renewable and carbon-neutral energy practices.

Our objectives: how we will achieve our goals

1. **Provide services that cover all energy sectors of NWT society:** To expand programs to ensure all sectors of NWT energy use are covered; ensure complete coverage outside of Yellowknife and expand coverage of industry and transportation.
2. **Learn continuously:** To increase Arctic Energy Alliance's own capacity as the "go-to place" for efficient, renewable and carbon-neutral energy practices in the NWT.
3. **Inform:** To provide top-quality information and advice on efficient, renewable and carbon-neutral energy practices accessible to all members of NWT society.

4. **Motivate and support an increasing number of clients to act:**
 - a. *Identify and remove barriers:*
To identify and work with our partners to remove barriers to the adoption of efficient, renewable and carbon-neutral energy practices.
 - b. *Analyze costs and benefits:* To enable the delivery of top-quality energy audits and pre-feasibility studies to those who are contemplating taking action in NWT society.
 - c. *Provide incentives:* To research, design and provide effective incentives (financial and other) that motivate NWT society to adopt efficient, renewable and carbon-neutral energy practices.
 - d. *Advise on policies and regulations:*
To research and advise our partners on effective policies and regulations that would motivate NWT society to adopt efficient, renewable and carbon-neutral energy practices.
 - e. *Prompt and follow-up with clients:*
To encourage NWT society to adopt efficient, renewable and carbon-neutral energy practices.
 - f. *Champion and recognize success:*
To work with and monitor specific clients as “case studies” to efficient, renewable and carbon-neutral energy practices.
5. **Integrate:** To transfer established efficient, renewable and carbon-neutral energy practices into the institutions of NWT society.

Our values: how we operate

Mutual respect

We show genuine concern for each other, our clients and others, treating them with understanding and appreciation through fairness, equality and healthy dialogue. We listen carefully to what people say, remain open to all suggestions and questions, and respect others' points of view.

Service and partnership

We believe that the most important way to achieve our vision is through partnerships. We view all our clients as potential partners and are dedicated to ensuring they get top-quality service.

Learning

We are committed to continuous improvement. We build on good ideas, learn from our experiences and challenge ourselves and the status quo.

Results

We have a clear vision of where we're going and how to get there. We focus our resources to achieve our objectives.

Honesty and integrity

We say what we believe and we lead by example.

Positive work environment

We take pride in our professional work ethic, our “can-do” attitude and our informal and flexible work environment. We recognize a job well done.

High-quality work

We are dedicated to detail. We strive to provide top-quality and unbiased advice, based on solid, science-based research. We review each other's work to make sure we get things right.

Core programs

A significant amount of the work we do is tied to 12 core programs that are directly funded by the Government of the Northwest Territories (GNWT) Department of Infrastructure, as well as through the Government of Canada's Low Carbon Economy Leadership Fund.

These programs provide a range of services and support to residents, businesses, community governments, Indigenous governments and non-profit organizations throughout the territory.

The 12 programs can be grouped into three categories: energy efficiency and conservation, renewable and alternative energy, and regional offices.

Energy efficiency and conservation programs

Reducing energy use and increasing energy efficiency are the easiest and most cost-effective ways to reduce greenhouse gas emissions and lower energy bills. This is why the AEA has seven programs geared toward energy efficiency and conservation across the Northwest Territories.

FOR
businesses

AEA FUNDING

\$760,000 (from GNWT
Department of Infrastructure
and Government of Canada)

Commercial Energy Conservation and Efficiency Program

The Commercial Energy Conservation and Efficiency Program provides rebates to NWT businesses that make upgrades to conserve energy and improve their energy efficiency. The program is open to businesses both on-grid and off-grid.

Through this program, the AEA also offers businesses building energy audits to find the greatest savings in energy, greenhouse gases and money. If a business wants to investigate potential savings before taking on a project, the first step is to conduct a desktop "yardstick" audit, which analyzes utility bill data. Next would be an on-site "targeted" audit, in which an AEA Energy Management Specialist will evaluate a building in person.

Results

Audits

Building energy audits completed:

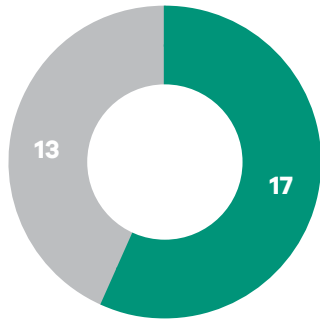
6 yardstick audits (in 4 communities)

1 targeted audit

The targeted energy audit identified roughly \$12,000 in potential annual savings on energy bills and 19 tonnes of potential annual greenhouse gas savings.

Completed projects

Total rebates: **30**
 Total value of rebates: **\$610,000**
 Average rebate: **\$20,000**

**Communities**

Rebates in Yellowknife ●
 Rebates outside Yellowknife ●

9
 Communities receiving rebates

Payback

Capital cost (all projects, before rebates):
\$1,600,000
 Estimated annual savings (all projects):
\$130,000
 Simple payback (all projects, after rebates):
7.2 years

Greenhouse gases

Annual greenhouse gases avoided:
180 tonnes

(equivalent to the greenhouse gases emitted by driving a passenger car 680,000 km)

\$170
 Rebate cost per lifetime⁵ tonne reduced

Energy savings

Annual electricity consumption avoided:
130,000 kWh

(equivalent to approximately 20 percent of the electricity consumed each year in the community of Wekweètì)

\$0.23 Rebate cost per lifetime kWh avoided

3 kW Power demand increased
 (equivalent to running two dishwashers at the same time)

1,900 GJ Annual fossil fuel consumption avoided (oil and propane)
 (equivalent to 48,000 L of heating oil [300 barrels], or 55,000 L of gasoline [350 barrels])

Why does fossil fuel consumption increase in some communities?

Many businesses are converting their lighting to LEDs. LED lights use less electricity than other forms of lighting, but also produce less heat. This means that when the lighting in a building is converted to LEDs, the heating system will have to do a little more work to make up the difference. The situation can be similar for some other electricity-saving technologies such as lighting controls or ECM pumps.

The money saved by using less electricity for lighting is often greater than the extra spent on heating fuel. Six of our business clients completed lighting retrofits this year. On average, each of them will save an estimated \$3,400 a year, even after taking additional heating fuel into account.

Four of the businesses that converted their lighting this year are located in communities that use hydroelectricity, which does not produce greenhouse gases. Using less hydroelectricity and burning more heating fuel means that greenhouse gas emissions increase slightly. On the other hand, our clients in communities that produce electricity by burning fuel such as diesel, natural gas or propane can sometimes both save money and reduce their overall greenhouse gas emissions.

The AEA promotes energy efficiency, regardless of the energy source, due to the many benefits of energy efficient practices.

⁵ Assuming a lifetime of 20 years for all upgrades.

Greenhouse gas and energy savings by community

Community	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Power demand avoided/increased (kW)	Annual fossil fuel consumption avoided/increased (GJ)
Déline	1	↓ 4	\$210	0	N/A	0	↓ 60
Fort Simpson	2	↓ 8	\$160	↓ 4,000	\$0.33	↓ 1	↓ 73
Fort Smith*	1	0	-\$16,000	↓ 10,000	\$0.07	↓ 5	↑ 3
Hay River*	3	↓ 40	\$93	↓ 39,000	\$0.09	↓ 5	↓ 550
Inuvik	3	↓ 33	\$56	↓ 17,000	\$0.11	0	↓ 75
Lutsel K'e	1	↓ 2	\$250	↓ 2,200	\$0.20	0	0
Norman Wells	1	↓ 3	\$160	↓ 8,000	\$0.06	↓ 2	↑ 24
South Slave Remote	1	↓ 1	\$250	0	N/A	0	↓ 12
Yellowknife*	17	↓ 92	\$230	↓ 51,000	\$0.41	↑ 16	↓ 1,100

* Hydro community

Greenhouse gas and energy savings by region

Region	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Power demand avoided/increased (kW)	Annual fossil fuel consumption avoided/increased (GJ)
Beaufort-Delta	3	↓ 33	\$56	↓ 17,000	\$0.11	0	↓ 75
Dehcho	2	↓ 8	\$160	↓ 4,000	\$0.33	↓ 1	↓ 73
North Slave	17	↓ 92	\$230	↓ 51,000	\$0.41	↑ 16	↓ 1,100
Sahtú	2	↓ 7	\$190	↓ 8,000	\$0.17	↓ 2	↓ 36
South Slave	6	↓ 42	\$120	↓ 52,000	\$0.10	↓ 10	↓ 560

Greenhouse gas and energy savings by hydro vs. non-hydro communities

Community type	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Power demand avoided/increased (kW)	Annual fossil fuel consumption avoided/increased (GJ)
Hydro	21	↓ 130	\$190	↓ 100,000	\$0.25	↑ 6	↓ 1,700
Non-hydro	9	↓ 51	\$100	↓ 31,000	\$0.17	↓ 3	↓ 200

Community Government Building Energy Retrofit Program

Through the Community Government Building Energy Retrofit Program, the Arctic Energy Alliance supports community governments across the NWT to better manage their energy use and save money in the process.

The first step is to conduct a “yardstick” energy audit of community government buildings, which looks at utility bill data. Next is a “targeted” energy audit, in which an AEA Energy Management Specialist will evaluate a building in person. Both audits are subsidized by the AEA. They identify ways to save electricity, heating fuel, water, greenhouse gas emissions and money. From there, we help the community government make the recommended changes, including providing rebates and offering project coordination services for a fee.

FOR
community governments
AEA FUNDING
\$330,000 (from GNWT
Department of Infrastructure
and Government of Canada)

Results

Audits

Building energy audits completed:

3 yardstick audits (in 1 community)

Completed projects

Total rebates (in four communities): **4**

15 Buildings retrofitted
by clients

Total value of rebates: **\$44,000**
\$11,000 Average rebate

Payback

Capital cost (all projects, before rebates):
\$100,000

Estimated annual savings: **\$22,000**

Simple payback (after rebates): **2.7 years**

Greenhouse gases

13 tonnes

Annual greenhouse gases avoided
(equivalent to the greenhouse gases emitted by
driving a passenger car 49,000 km)

\$170

Rebate cost per lifetime⁶ tonne reduced

Energy savings

19,000 kWh

Annual electricity consumption avoided
(equivalent to three percent of the electricity
consumed each year in the community of Wekweètì)

\$0.12

Rebate cost per lifetime
kWh avoided

2 kW

Power demand avoided
(equivalent to running two dishwashers at the same time)

22 GJ

Annual fossil fuel consumption
increased (oil and propane)
(equivalent to 570 L of heating oil [4 barrels],
or 640 L of gasoline [4 barrels])

⁶ Assuming a lifetime of 20 years for all upgrades.

Greenhouse gas and energy savings by community

Community	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Power demand avoided/increased (kW)	Annual fossil fuel consumption avoided/increased (GJ)
Hay River*	1	↓ 1	\$210	0	N/A	0	↓ 11
Jean Marie River	1	↓ 1	\$430	0	N/A	0	↓ 9
Ulukhaktok	1	↓ 8	\$210	↓ 14,000	\$0.12	↓ 2	↑ 42
Wekweètì	1	↓ 4	\$35	↓ 4,800	\$0.03	0	0

* Hydro community

Greenhouse gas and energy savings by region

Region	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Power demand avoided/increased (kW)	Annual fossil fuel consumption avoided/increased (GJ)
Beaufort-Delta	1	↓ 8	\$210	↓ 14,000	\$0.12	↓ 2	↑ 42
Dehcho	1	↓ 1	\$430	0	N/A	0	↓ 9
South Slave	1	↓ 1	\$210	0	N/A	0	↓ 11
Tłıchq	1	↓ 4	\$35	↓ 4,800	\$0.03	0	0

Greenhouse gas and energy savings by hydro vs. non-hydro communities

Community type	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Power demand avoided/increased (kW)	Annual fossil fuel consumption avoided/increased (GJ)
Hydro	1	↓ 1	\$210	0	N/A	0	↓ 11
Non-hydro	3	↓ 13	\$170	↓ 19,000	\$0.11	↓ 2	↑ 33

The importance of project coordination

One of the services that the AEA offers through its Community Government Building Energy Retrofit Program is project coordination. It's an important facet of the program. Community governments have limited resources, especially in the smaller communities, and administrative staff can be pulled in many directions at once. Taking on a building energy retrofit can be a big job; if community government staff were to handle project coordination duties, it could add to an already substantial workload.

That's why the AEA offers this service. We can help our clients determine which energy upgrades to make, determine the technical specifications, issue requests for proposals, select contractors, draft contracts and ensure the work is being done according to specifications.

More than anything, this offers our clients peace of mind, as evidenced by the fact that 16 of the 26 community governments that have used this program have also used our project coordination service. And considering we offer a \$15,000 subsidy, it's easy to take advantage.

Helping people save energy and money isn't always as simple as providing a rebate. Without effective project coordination in place, many of these projects couldn't happen. We're happy we can offer our clients a way to make those projects a reality.

Progress to date

Since the AEA's targeted work with community governments began in the 2015/16 fiscal year...

- 28 of the 33 community governments in the NWT have had targeted energy audits done by the AEA on most or all of their buildings.
- All of the community governments in the Tłıchǫ territory and the Dehcho region have had audits completed.
- 21 NWT community governments have accessed or applied for funding to implement their energy management opportunities, which were recommended by the AEA as a result of their targeted energy audits. Most have accessed funding for more than one building or project in more than one year.
- 16 community governments have used the AEA's project coordination services to help them complete their projects.
- 61 percent of the community governments that have had targeted energy audits completed by the AEA have received a rebate and/or project coordination services from us to implement some of the audit recommendations.

Deep Home Energy Retrofit Program

The Deep Home Energy Retrofit Program provides rebates to help owners of older, less energy-efficient homes reduce the costs and greenhouse gas emissions associated with heating. These rebates can help homeowners offset the costs of upgrading their insulation, windows, air sealing and heating systems.

FOR

residents, businesses,
community governments,
Indigenous governments,
non-profit organizations

AEA FUNDING

\$280,000 (from GNWT
Department of Infrastructure
and Government of Canada)

The program allows homeowners to undertake more extensive upgrades than they might otherwise consider. Results are measured by conducting EnerGuide home evaluations before and after the upgrades.

Unlike other AEA programs, participants who complete an exterior wall insulation upgrade, and who plan to complete additional upgrades, are eligible for an interim rebate when their wall insulation has been installed. The final rebate is issued when all upgrades are complete.

Results

Home energy evaluations

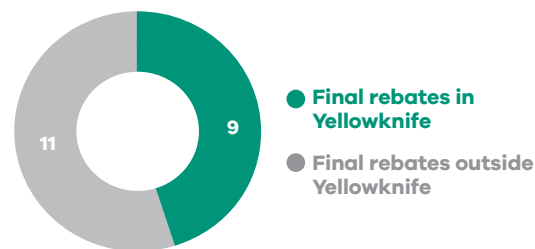
0 pre-retrofit evaluations
20 post-retrofit evaluations (in 4 communities)

The on-site home energy evaluations (both pre- and post-retrofit) are included in the evaluations reported for the Energy Rating Services Support Program (see page 27).

Completed projects

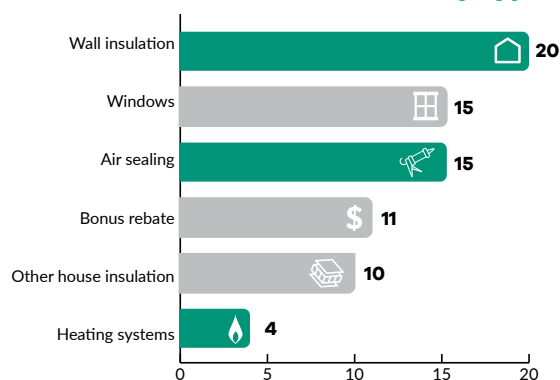
20 Total rebates (all final rebates)
 Total value of rebates: **\$110,000**
\$5,700 Average final rebates

Communities



Communities receiving rebates: **4**

Rebates by type



Payback⁷

Capital cost (all final projects, before rebates):

\$2,100,000

Estimated annual savings
 (all products, final projects):

\$88,000

Simple payback (final projects, after rebates):

20 years

Greenhouse gases

Annual greenhouse gases avoided:

130 tonnes

(equivalent to the greenhouse gases emitted by driving a passenger car 490,000 km)

\$98 Rebate cost per lifetime⁸ tonne reduced

⁷ Payback, savings and rebate cost calculations are for final projects only.

⁸ Assuming a lifetime of 30 years for all upgrades.

Energy savings

Annual electricity consumption avoided: **34,000 kWh**

(equivalent to approximately five percent of the electricity consumed each year in the community of Wekweètì)

\$0.39 Rebate cost per lifetime kWh avoided

1,900 GJ

Annual fossil fuel consumption avoided (oil, propane and natural gas)

(equivalent to 50,000 L of heating oil [320 barrels], or 57,000 L of gasoline [360 barrels])

Greenhouse gas and energy savings by community

Community	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Annual fossil fuel consumption avoided/increased (GJ)
Fort Smith*	7	↓ 28	\$87	↓ 2,800	\$0.87	↓ 400
Hay River*	3	↓ 19	\$84	↓ 7,300	\$0.21	↓ 250
Norman Wells	1	↓ 4	\$69	↓ 250	\$1.10	↓ 53
Yellowknife*	9	↓ 75	\$100	↓ 22,000	\$0.34	↓ 1,100

*Hydro community

Greenhouse gas and energy savings by region

Region	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Annual fossil fuel consumption avoided/increased (GJ)
North Slave	9	↓ 75	\$100	↓ 22,000	\$0.34	↓ 1,100
Sahtú	1	↓ 4	\$69	↓ 250	\$1.10	↓ 53
South Slave	10	↓ 47	\$90	↓ 10,000	\$0.41	↓ 680

Greenhouse gas and energy savings by hydro vs. non-hydro communities

Community type	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Annual fossil fuel consumption avoided/increased (GJ)
Hydro	19	↓ 120	\$96	↓ 32,000	\$0.36	↓ 1,700
Non-hydro	1	↓ 11	\$120	↓ 1,200	\$1.10	↓ 190

Designated Income Home Winterization Program

Winterization is a low-cost, high-impact way to save energy. This program provides homeowners with the supplies, knowledge and other resources to winterize their homes and save on heating fuel. It also provides LED light bulbs, low-flow showerheads and faucet aerators to reduce the consumption of electricity and water.

FOR
residents

AEA FUNDING

\$130,000 (from GNWT Department of Infrastructure, GNWT Anti-Poverty Fund and Government of Canada)

Like our Community Wood Stove Program (see page 37) and Community Energy Planning Project (see page 46), this program is based on a community partnership model. Six community organizations partnered with us this year. Five of those hired a community liaison worker on a temporary contract as a way to ground the project in the community, raise awareness and capacity around winterization and support local employment.

The AEA trained three of the liaison workers to install contents of the winterization kits that are central to this program; the two other workers were already familiar with the equipment being installed. We also helped the communities hold workshops for lower-income homeowners to learn about winterization and how it saves energy.

Results

Community workshops: **5**

137 Energy efficiency kits distributed

Total value of incentives: **\$57,000**

\$420 Average incentive

Payback

Capital cost (all projects, before incentives):

\$57,000

Estimated annual savings:

\$140,000

Simple payback (after incentives):

0 years

Greenhouse gases

Annual greenhouse gases avoided:

280 tonnes

(equivalent to the greenhouse gases emitted by driving a passenger car 1,000,000 km)

\$30 Rebate cost per lifetime⁹ tonne reduced

Energy savings

Annual electricity consumption avoided:

150,000 kWh

(equivalent to approximately 15 percent of the electricity consumed each year in the community of Wekweètì)

Rebate cost per lifetime kWh avoided

\$0.05

2,300 GJ Annual fossil fuel consumption avoided (oil and propane)

(equivalent to 60,000 L of heating oil [370 barrels], or 68,000 L of gasoline [430 barrels])

Greenhouse gas and energy savings by community

Community	No. of incentives	Annual GHGs avoided/increased (tonnes)	Incentive cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Incentive cost/lifetime kWh avoided	Annual fossil fuel consumption avoided/increased (GJ)
Fort McPherson	30	↓ 64	\$28	↓ 32,000	\$0.05	↓ 590
Fort Simpson	28	↓ 51	\$40	↓ 27,000	\$0.07	↓ 450
Gamètì	29	↓ 58	\$32	↓ 31,000	\$0.05	↓ 510
Jean Marie River	20	↓ 54	\$12	↓ 32,000	\$0.02	↓ 340
Tulita	30	↓ 52	\$45	↓ 32,000	\$0.05	↓ 400

Greenhouse gas and energy savings by region

Region	No. of incentives	Annual GHGs avoided/increased (tonnes)	Incentive cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Incentive cost/lifetime kWh avoided	Annual fossil fuel consumption avoided/increased (GJ)
Beaufort-Delta	30	↓ 64	\$28	↓ 32,000	\$0.05	↓ 590
Dehcho	48	↓ 110	\$24	↓ 59,000	\$0.04	↓ 790
Sahtú	30	↓ 52	\$45	↓ 32,000	\$0.05	↓ 400
Tłı̨chǫ	29	↓ 58	\$32	↓ 31,000	\$0.05	↓ 510

Energy Efficiency Incentive Program

The Energy Efficiency Incentive Program provides rebates on the purchase of new, energy-efficient appliances and other products, with the goal of reducing energy costs and greenhouse gas emissions by conserving or reducing energy use.

Results

Total rebates: **2,601**

Total value of rebates: **\$410,000**

Average rebate: **\$160**

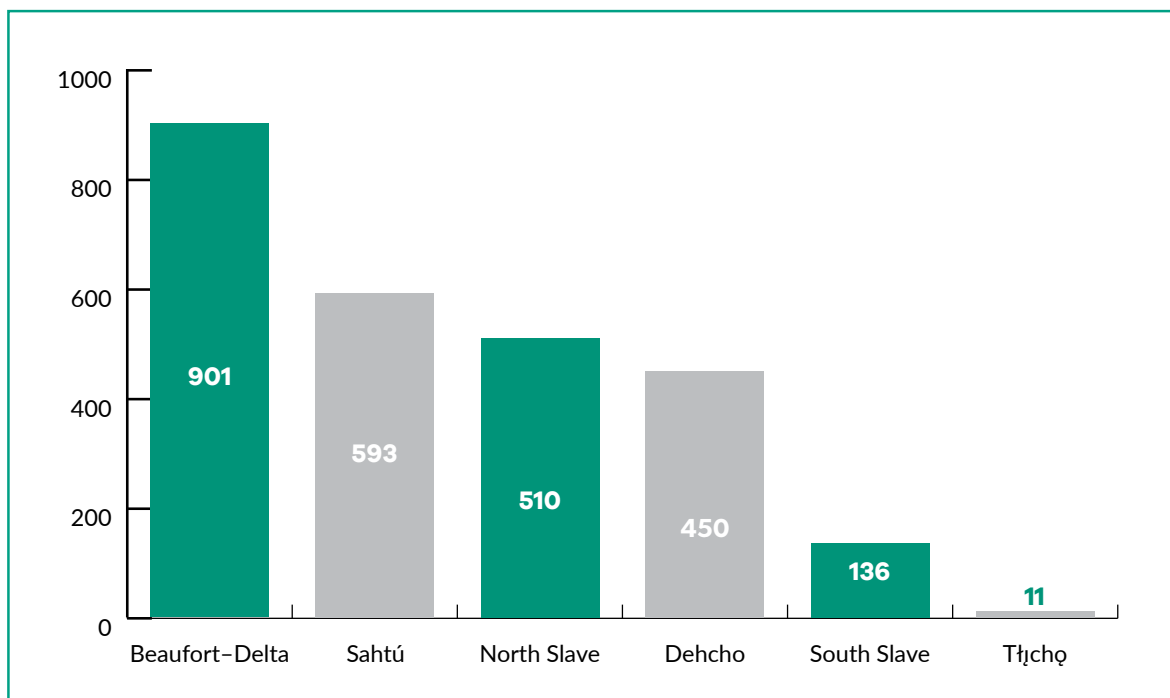
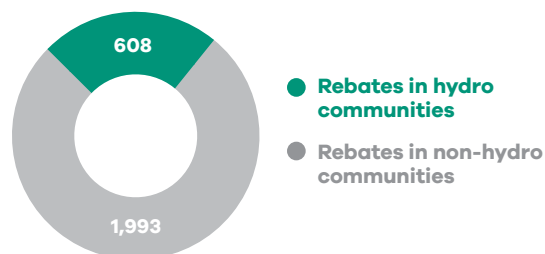
FOR

residents, businesses,
community governments,
Indigenous governments,
non-profit organizations

AEA FUNDING

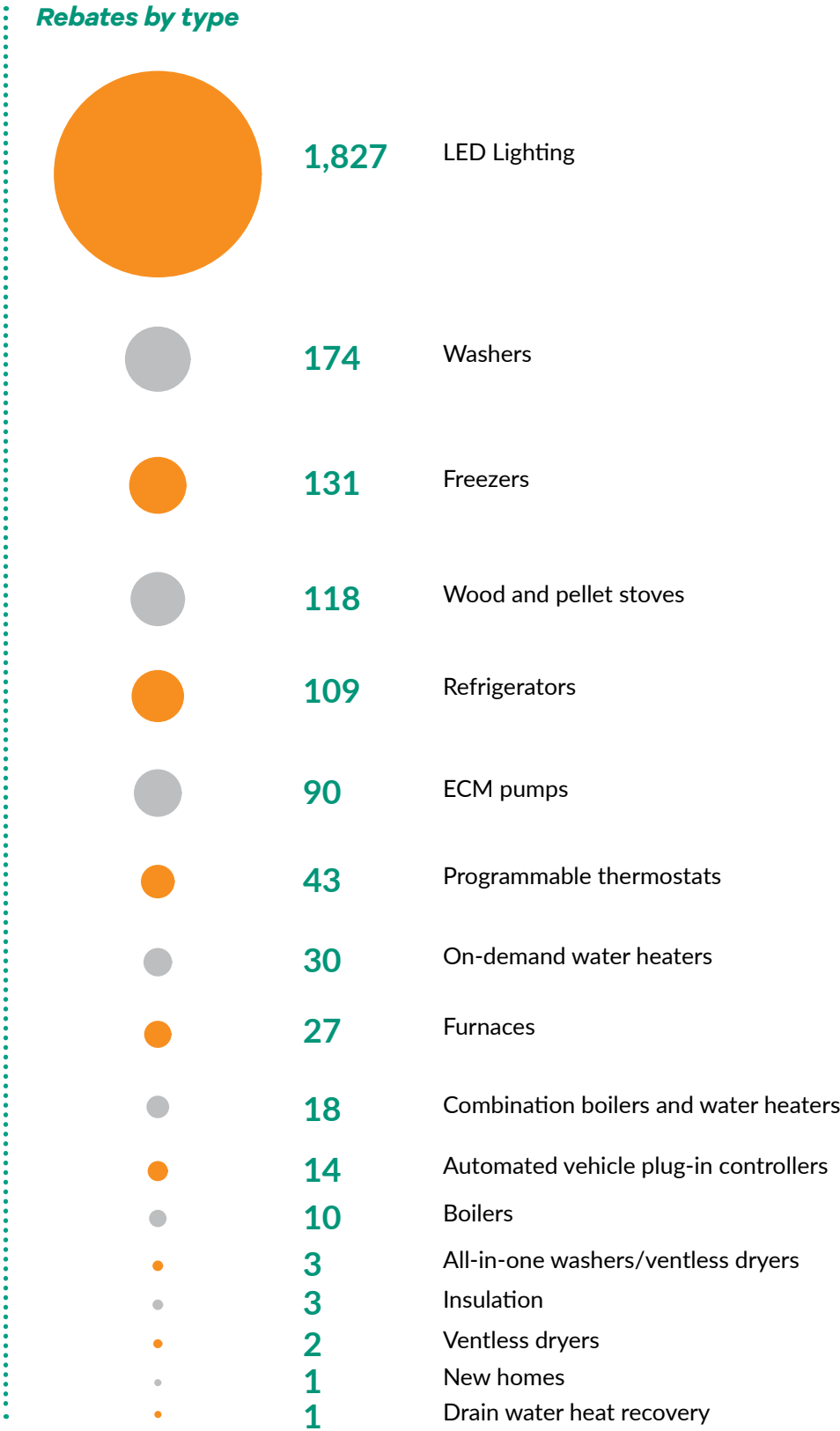
\$630,000 (from GNWT
Department of Infrastructure
and Government of Canada)

Rebates by region¹⁰



¹⁰ Hydro communities are those communities that receive most of their electricity from hydroelectric generators. This includes Behchokq, Dettah, Enterprise, Fort Resolution, Fort Smith, Hay River, Kátł'odeeche, Ndilo and Yellowknife. All other communities in the NWT are "non-hydro," which receive most of their electricity from generators that burn fossil fuels.

Rebates by type



PaybackCapital cost *(all products, before rebates):***\$1,900,000**Estimated annual savings *(all products):***\$390,000**Simple payback *(all products, after rebates):***3.8 years****Greenhouse gases**

Annual greenhouse gases avoided:

600 tonnes*(equivalent to the greenhouse gases emitted by driving a passenger car 2.2 million km)*Rebate cost per lifetime¹¹
tonne reduced:**\$48****Energy savings**

Annual electricity consumption avoided:

820,000 kWh*(equivalent to approximately 120 percent of the electricity consumed each year in the community of Wekweètì)*

Rebate cost per lifetime kWh avoided

\$0.04**4,800 GJ** Annual fossil fuel
consumption avoided (oil and propane)*(equivalent to 120,000 L of heating oil [780 barrels],
or 140,000 L of gasoline [890 barrels])***Greenhouse gas and energy savings in hydro communities**

Several communities in the NWT use hydroelectricity, including Behchokò, Dettah, Enterprise, Fort Resolution, Fort Smith, Hay River, Kátł'odeeche, Ndilo and Yellowknife. All other communities in the territory burn fossil fuels to create electricity.

In both hydro and non-hydro communities, saving electricity can help you lower your power bill. In a non-hydro community, it also means reducing greenhouse gas emissions because less fossil fuel must be burned to create that power. Hydroelectricity, on the other hand, does not create greenhouse gas emissions. So, saving electricity in a hydro community does not have associated greenhouse gas reductions.

Across the NWT, most households and organizations burn fossil fuels for space heating. Switching to a more efficient heating system, or to a less carbon-intensive fuel source such as wood, can help you directly reduce your greenhouse gas emissions—even in a hydro community.

For these reasons, you will see throughout this report that, in some cases, greenhouse gas savings are low in hydro communities, even though electricity savings are high. In other cases, greenhouse gas savings are relatively high because of improvements or efficiencies related to space heating.

Greenhouse gas and energy savings by community

Community	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Annual fossil fuel consumption avoided/increased (GJ)
Aklavik	71	↓ 7	\$36	↓ 7,300	\$0.05	↓ 16
Behchokò*	10	↓ 1	\$140	↓ 5,100	\$0.05	↓ 13
Dettah*	3	↓ 1	\$93	↓ 1,700	\$0.10	↓ 17
Délıne	71	↓ 6	\$30	↓ 9,600	\$0.02	↑ 19
Fort Good Hope	147	↓ 9	\$32	↓ 16,000	\$0.02	↑ 41
Fort Liard	94	↓ 5	\$18	↓ 9,600	\$0.01	↑ 29
Fort McPherson	84	↓ 56	\$12	↓ 96,000	\$0.01	↑ 280
Fort Providence	42	↓ 3	\$65	↓ 5,000	\$0.05	↑ 5
Fort Resolution*	3	↓ 1	\$82	↓ 1,700	\$0.10	↓ 20
Fort Simpson	356	↓ 54	\$29	↓ 52,000	\$0.04	↓ 220
Fort Smith*	16	↓ 18	\$55	↓ 8,700	\$0.11	↓ 260
Hay River*	73	↓ 84	\$45	↓ 82,000	\$0.04	↓ 1,200
Inuvik	527	↓ 50	\$36	↓ 72,000	\$0.03	↑ 20
Kakisa	1	↓ 1	\$30	0	N/A	↓ 20
Łutsel K'e	1	0	\$220	↓ 84	\$0.14	0
Norman Wells	173	↓ 13	\$47	↓ 25,000	\$0.03	↑ 44
North Slave Remote	4	↓ 9	\$30	↓ 84	\$3.10	↓ 130
Paulatuk	51	↓ 4	\$32	↓ 6,200	\$0.02	↑ 19
Tsiigehtchic	39	↓ 3	\$18	↓ 5,000	\$0.01	↑ 12
Tuktoyaktuk	73	↓ 8	\$40	↓ 11,000	\$0.03	↑ 17
Tulita	202	↓ 20	\$28	↓ 29,000	\$0.02	↑ 46
Ulukhaktok	56	↓ 5	\$38	↓ 7,600	\$0.03	↑ 13
Whaıı	1	0	\$250	↓ 84	\$0.14	0
Yellowknife*	503	↓ 240	\$62	↓ 370,000	\$0.04	↓ 3,400

*Hydro community

Greenhouse gas and energy savings by region

Region	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Annual fossil fuel consumption avoided/increased (GJ)
Beaufort-Delta	901	↓ 130	\$28	↓ 210,000	\$0.02	↑ 350
Dehcho	450	↓ 59	\$28	↓ 61,000	\$0.03	↓ 190
North Slave	510	↓ 250	\$61	↓ 380,000	\$0.04	↓ 3,600
Sahtú	593	↓ 49	\$34	↓ 79,000	\$0.02	↑ 150
South Slave	136	↓ 110	\$48	↓ 97,000	\$0.05	↓ 1,500
Tłı̨chǫ	11	↓ 1	\$140	↓ 5,200	\$0.05	↓ 13

Greenhouse gas and energy savings by hydro vs. non-hydro communities

Community type	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Annual fossil fuel consumption avoided/increased (GJ)
Hydro	608	↓ 340	\$58	↓ 470,000	\$0.04	↓ 4,900
Non-hydro	1,993	↓ 260	\$30	↓ 350,000	\$0.03	↑ 160



Shannon, our Tłı̨chǫ Territory Energy Project Coordinator, sets up for an event in Gamètı to speak with residents about energy efficiency.

Energy Rating Services Support Program

The Energy Rating Services Support Program provides homeowners across the NWT with access to affordable home energy evaluations.

The AEA's registered energy advisors evaluate new and existing homes under licence with Natural Resources Canada (NRCAN). Using NRCAN's EnerGuide Rating System for homes, the AEA can provide a measure of a home's performance according to a national standard. An evaluation also provides a homeowner with a detailed list of potential upgrades to use less energy.

By helping homeowners determine potential upgrades, this program supports other AEA rebate programs, such as the Energy Efficiency Incentive Program and the Alternative Energy Technologies Program. And home energy evaluations are required under the Deep Home Energy Retrofit Program.

FOR
residents

AEA FUNDING

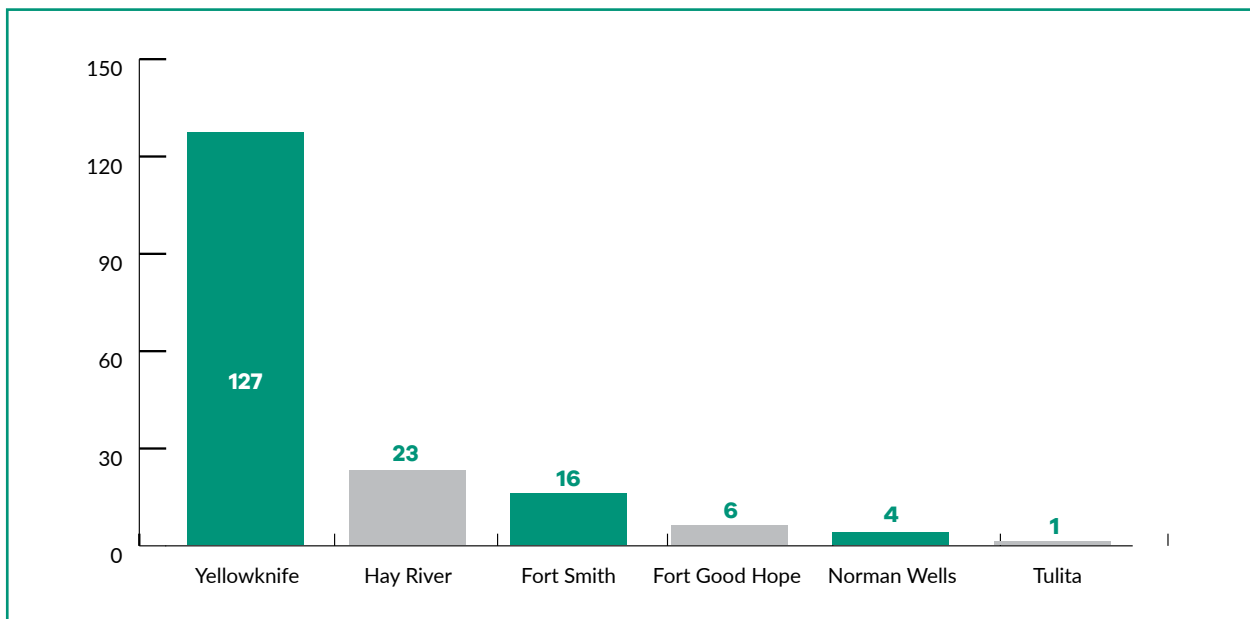
\$300,000 (from GNWT Department of Infrastructure) + fee for service

In addition to conducting home evaluations, the AEA provides free, unbiased home energy efficiency advice to NWT homeowners. We also develop working partnerships with contractors and builders to increase their knowledge of residential energy efficiency, and how to create a healthy balance between envelope air tightness and adequate ventilation.

Results

140 Evaluations of existing homes
Evaluations of new homes: **37**
177 Total evaluations

Total evaluations by community



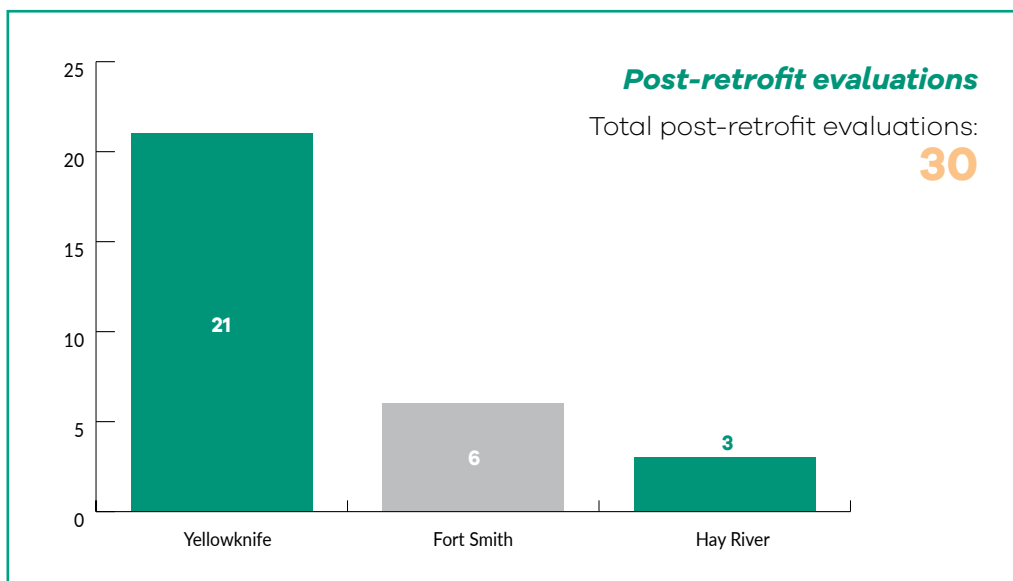
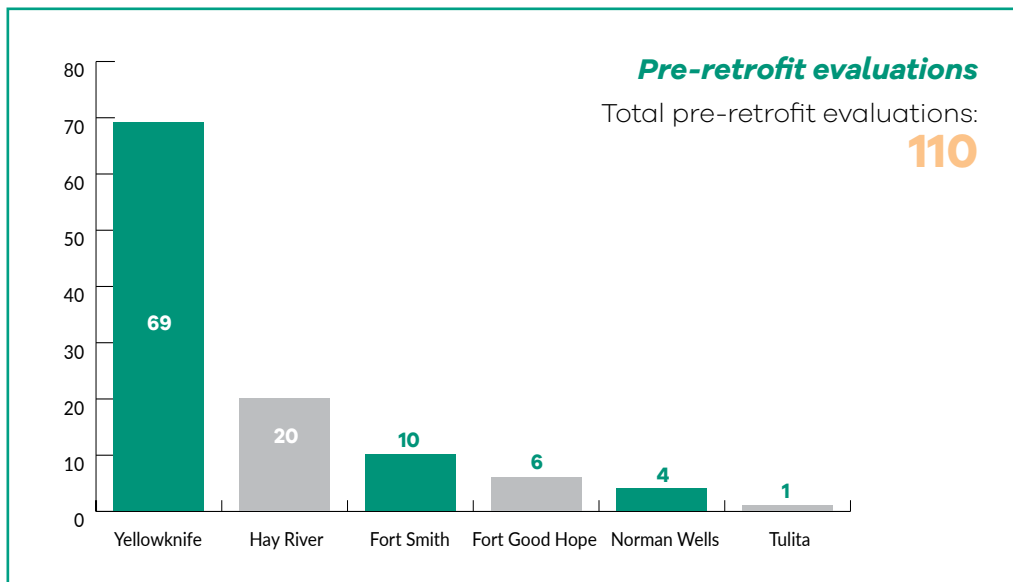
EXISTING HOMES

For existing homes, the Arctic Energy Alliance provides two types of evaluations:

- Pre-retrofit: conducted before implementing energy-saving upgrades

- Post-retrofit: conducted after a homeowner implements recommended upgrades

The evaluations of existing homes listed below include those homes evaluated for the Deep Home Energy Retrofit Program (see page 17).



NEW HOMES

The AEA provides two types of evaluations for new home construction:

- **Blueprint:** conducted using building plans to calculate the expected energy use of a new home
- **New home final:** conducted when construction is complete

Blueprint evaluations

18

Total blueprint evaluations

All 18 blueprint evaluations were for homes in Yellowknife.

New home final evaluations

19

Total new home final evaluations

All 19 new home final evaluations were in Yellowknife.

Payback^{12,13}

\$230,000

Potential annual savings
(all existing homes)

Greenhouse gases¹³

580 tonnes

Potential annual greenhouse gases avoided

(equivalent to the greenhouse gases emitted by driving a passenger car 2.2 million km)

Energy savings¹³

250,000 kWh

Potential annual electricity
consumption avoided

(equivalent to approximately 38 percent of the electricity consumed each year in the community of Wekweètì)

3,200 GJ

Annual fossil fuel consumption
avoided (oil and propane)

*(equivalent to 82,000 L of heating oil [520 barrels],
or 94,000 L of gasoline [590 barrels])*

¹²Estimated capital costs are unknown, as the AEA does not ask for quotes on its recommended upgrades for homes.

¹³These numbers represent the estimated annual savings in money, greenhouse gases and energy that would result if all homeowners who had pre-retrofit evaluations done were to complete all of the AEA's recommended upgrades. Actual savings can be measured with a post-retrofit evaluation, but comparatively few homeowners choose to complete this process.

New home evaluations are not included in these numbers. Although new homes can be energy efficient, they cannot be considered to save energy unless they replace an older home.

Potential greenhouse gas and energy savings by community

Community	Potential annual GHGs avoided/increased (tonnes)	Potential annual electricity consumption avoided/increased (kWh)	Potential annual fossil fuel consumption avoided/increased (GJ)
Fort Good Hope	↓ 62	↓ 22,000	↓ 210
Fort Smith*	↓ 11	↓ 49,000	↓ 70
Hay River*	↓ 88	↓ 9,400	↓ 660
Norman Wells	↓ 20	↓ 10,000	↓ 46
Tulita	↓ 17	↓ 600	↓ 120
Yellowknife*	↓ 380	↓ 160,000	↓ 2,100

*Hydro community

Potential greenhouse gas and energy savings by region

Region	Potential annual GHGs avoided/increased (tonnes)	Potential annual electricity consumption avoided/increased (kWh)	Potential annual fossil fuel consumption avoided/increased (GJ)
North Slave	↓ 380	↓ 160,000	↓ 2,100
Sahtú	↓ 99	↓ 33,000	↓ 370
South Slave	↓ 99	↓ 58,000	↓ 730

Potential greenhouse gas and energy savings by hydro vs. non-hydro communities

Community type	Potential annual GHGs avoided/increased (tonnes)	Potential annual electricity consumption avoided/increased (kWh)	Potential annual fossil fuel consumption avoided/increased (GJ)
Hydro	↓ 480	↓ 220,000	↓ 2,800
Non-hydro	↓ 99	↓ 33,000	↓ 370

Non-Profit Energy Efficiency and Conservation Program

The Non-Profit Energy Efficiency and Conservation Program provides rebates to non-profit organizations that make energy-efficient upgrades to their buildings, similar to the programs for businesses and community governments.

Under this program, non-profits can also take advantage of building energy audits.

FOR
non-profit organizations

AEA FUNDING
\$290,000 (from GNWT
Department of Infrastructure
and Government of Canada)

Results

Audits

Building energy audits completed:

1 yardstick audit

Completed projects

10 Total rebates

Total value of rebates: **\$190,000**

\$19,000 Average rebate

Communities



Communities receiving rebates: **4**

Payback

Capital cost (all projects, before rebates):

\$790,000

Estimated annual savings (all projects):

\$38,000

Simple payback (all projects, after rebates):

16 years

Greenhouse gases

9 tonnes

Annual greenhouse gases avoided
(equivalent to the greenhouse gases emitted by
driving a passenger car 32,000 km)

\$1,100

Rebate cost per lifetime¹⁴ tonne reduced

¹⁴ Assuming a lifetime of 20 years for all upgrades.

Energy savings

Annual electricity consumption avoided:

110,000 kWh

(equivalent to approximately 17 percent of the electricity consumed each year in the community of Wekwéëti)

Rebate cost per lifetime kWh avoided:

\$0.08

37 kW Power demand avoided

98 GJ Annual fossil fuel consumption avoided (oil and propane)

(equivalent to 2,500 L of heating oil [16 barrels], or 2,900 L of gasoline [18 barrels])

Greenhouse gas and energy savings by community

Community	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Power demand avoided/increased (kW)	Annual fossil fuel consumption avoided/increased (GJ)
Fort Smith*	1	0	\$1,700	↓ 3,400	\$0.02	↓ 2	0
Hay River*	3	↓ 2	\$230	↓ 4,200	\$0.08	0	↓ 24
Ulukhaktok	1	↑ 1	-\$770	↓ 2,500	\$0.16	↓ 1	↑ 7
Yellowknife*	5	↓ 8	\$1,100	↓ 100,000	\$0.09	↓ 34	↓ 81

* Hydro community

Greenhouse gas and energy savings by region

Region	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Power demand avoided/increased (kW)	Annual fossil fuel consumption avoided/increased (GJ)
Beaufort-Delta	1	↑ 1	-\$770	↓ 2,500	\$0.16	↓ 1	↑ 7
North Slave	5	↓ 8	\$1,100	↓ 100,000	\$0.09	↓ 34	↓ 81
South Slave	4	↓ 2	\$270	↓ 7,600	\$0.06	↓ 2	↓ 24

Greenhouse gas and energy savings by hydro vs. non-hydro communities

Community type	No. of rebates	Annual GHGs avoided/increased (tonnes)	Rebate cost/lifetime tonne of GHGs reduced	Annual electricity consumption avoided/increased (kWh)	Rebate cost/lifetime kWh avoided	Power demand avoided/increased (kW)	Annual fossil fuel consumption avoided/increased (GJ)
Hydro	9	↓ 9	\$990	↓ 110,000	\$0.08	↓ 36	↓ 110
Non-hydro	1	↑ 1	-\$770	↓ 2,500	\$0.16	↓ 1	↑ 7

Renewable and alternative energy programs

Replacing fossil fuels with renewable or alternative energy sources can greatly reduce greenhouse gas emissions. The Arctic Energy Alliance has four programs designed to help northerners adopt these technologies.

Alternative Energy Technologies Program

The Alternative Energy Technologies Program provides incentives for northerners to adopt alternative energy systems, such as solar, wind, wood and more. The program is divided into three streams:

- For residents
- For businesses (including off-grid businesses)
- For community-based organizations (including community governments, non-profit organizations and Indigenous governments)

FOR

residents, businesses, community governments, Indigenous governments, non-profit organizations

AEA FUNDING

\$930,000 (from GNWT Department of Infrastructure and Government of Canada)

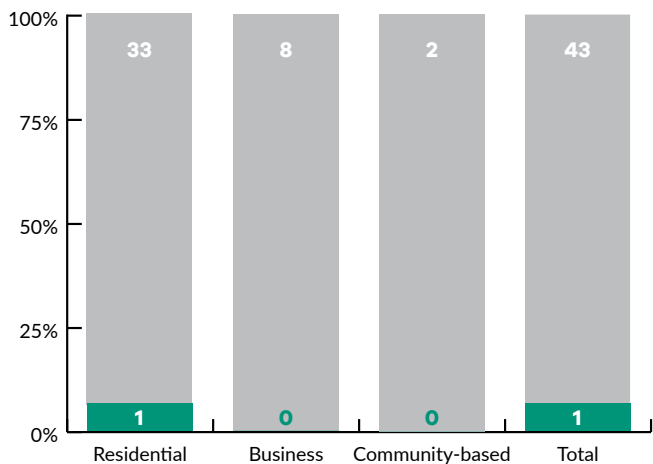
Results

	Residential	Business	Community-based	TOTAL
Total rebates	34	8	2	44
Total value of rebates	\$210,000	\$250,000	\$17,000	\$480,000
Average rebate	\$6,200	\$31,000	\$8,700	\$11,000

Project types

	Residential	Business	Community-based	TOTAL
Biomass	4	3	0	7
Solar PV	31	3	2	36
Wind	0	1	0	1

Communities



● Rebates in Yellowknife

● Rebates outside Yellowknife

Payback¹⁵

	Residential	Business	Community-based	TOTAL
Capital costs (before rebates)	\$610,000	\$600,000	\$130,000	\$1,300,000
Estimated annual savings	\$80,000	\$34,000	\$6,100	\$120,000
Simple payback (after rebates)	4.9 years	10.4 years	18.1 years	7.2 years

Greenhouse gases

	Residential	Business	Community-based	TOTAL
Annual greenhouse gases avoided (tonnes)	100	97	4	210
Rebate cost per lifetime ¹⁶ tonne reduced	\$100	\$130	\$200	\$120

Energy savings

	Residential	Business	Community-based	TOTAL
Annual electricity avoided/produced (kWh)	53,000	33,000	4,400	90,000
Rebate cost/lifetime kWh avoided/produced	\$0.20	\$0.38	\$0.20	\$0.26
Power demand avoided (kW)	74	92	4	170
Annual fossil fuel consumption avoided (GJ)*	490	1,100	0	1,600

*Does not include fuel savings from solar PV systems

¹⁵ These figures are based on estimates used to pre-approve rebate applications, and may not accurately reflect the final systems as installed.

¹⁶ Assuming a lifetime of 20 years for all projects.

Combined greenhouse gas and energy savings by community

Community	No. of rebates	Annual GHGs avoided (tonnes)	Rebate cost/ lifetime tonne of GHGs reduced	Annual electricity consumption avoided/ produced (kWh)	Rebate cost/ lifetime kWh avoided/ produced	Power demand avoided (kW)	Annual fossil fuel consumption avoided (GJ) [†]
Beaufort-Delta Remote	1	3	\$200	2,700	\$0.20	3	0
Dehcho Remote	20	37	\$110	23,000	\$0.18	23	0
Fort Simpson	1	19	\$130	0	N/A	0	280
Hay River*	2	27	\$87	0	N/A	0	400
Norman Wells	1	12	\$75	0	N/A	0	180
North Slave Remote	13	71	\$110	57,000	\$0.14	57	0
Sachs Harbour	1	2	\$210	1,700	\$0.20	2	0
South Slave Remote	4	36	\$120	6,700	\$0.67	86	540
Yellowknife*	1	0	N/A	0	N/A	0	160

* Hydro community

[†] Does not include fuel savings from solar PV systems

Combined greenhouse gas and energy savings by region

Region	No. of rebates	Annual GHGs avoided (tonnes)	Rebate cost/ lifetime tonne of GHGs reduced	Annual electricity consumption avoided/ produced (kWh)	Rebate cost/ lifetime kWh avoided/ produced	Power demand avoided (kW)	Annual fossil fuel consumption avoided (GJ) [†]
Beaufort-Delta	2	4	\$200	4,400	\$0.20	4	0
Dehcho	21	56	\$120	23,000	\$0.29	23	280
North Slave	14	71	\$120	57,000	\$0.15	57	160
Sahtú	1	12	\$75	0	N/A	0	180
South Slave	6	63	\$110	6,700	\$1.00	86	940

[†] Does not include fuel savings from solar PV systems

Combined greenhouse gas and energy savings by hydro vs. non-hydro communities

Community type	No. of rebates	Annual GHGs avoided (tonnes)	Rebate cost/ lifetime tonne of GHGs reduced	Annual electricity consumption avoided/ produced (kWh)	Rebate cost/ lifetime kWh avoided/ produced	Power demand avoided (kW)	Annual fossil fuel consumption avoided (GJ) [†]
Hydro	3	27	\$120	0	N/A	0	550
Non-hydro*	41	180	\$120	90,000	\$0.23	170	1,000

* Includes off-grid locations near hydro communities.

[†] Does not include fuel savings from solar PV systems

Biomass Energy Program

Through the Biomass Energy Program, the Arctic Energy Alliance provides northerners with accessible technical advice, project coordination, and education on existing or potential biomass projects. AEA staff also help clients by facilitating the development of partnerships with potential contractors and funders for projects.

There are several ways to use biomass energy, such as biomass heating (for example, a wood-pellet furnace or boiler), co-generation (heat and electricity from the same system) and district heating (using one heat source for several buildings).

In the 2023/24 fiscal year, the AEA continued our ongoing work by holding Biomass Week educational workshops and community-based Burn-It-Smart workshops, completing pre-feasibility analyses, and facilitating the installation of pellet boilers for organizations. The Biomass Energy Program remains dedicated to promoting biomass heating technologies across the NWT, aiming to reduce greenhouse gas emissions and reliance on fossil fuels.

FOR

residents, businesses,
community governments,
Indigenous governments,
non-profit organizations

AEA FUNDING

\$100,000 (from GNWT
Department of Infrastructure)

WORKSHOPS AND EDUCATIONAL OUTREACH

The AEA hosted Biomass Week workshops in January, featuring 31 presentations that drew 260 participants, slightly down from 300 last year. These workshops targeted homeowners, students, and operators of larger buildings,

covering topics such as wood stoves, pellet/chip boiler installation, operational logistics, environmental benefits, savings of biomass, funding sources, and successful projects. AEA also conducted Burn-It-Smart workshops in Behchokò, Nahanni Butte, Whatì, and Fort McPherson. Additionally, AEA created a working group to revive a biomass boiler operator training course in collaboration with other partners.

PELLET BOILER INSTALLATION PROJECT

This year, the AEA continued our project to help organizations install new pellet boilers, focusing on systems producing 100 kW or less. A call for expressions of interest resulted in seven submissions, leading to yardstick/prefeasibility analyses and reports for all. Three buildings moved ahead to the RFQ stage, with one successfully securing a contractor. The other two are still in negotiation. Despite the challenges of contractor availability and long wait times for boilers, the project aims to provide substantial GHG and cost savings.

PRE-FEASIBILITY ANALYSIS

We completed a pre-feasibility analysis for a commercial system in Hay River.

KNOWLEDGE AND EXPERIENCE-SHARING

The AEA facilitated knowledge and experience sharing by organizing a Biomass Event, aiming to integrate clean energy biomass technologies into the NWT community. This event included participation in the Wood Pellet Association of Canada conference in Ottawa. We also produced six biomass case studies that were showcased on CBC's "Northbeat," at the Capitol Theatre in Yellowknife, and at various other events. The case studies featured projects like Rows in Hay River, the Kát'odeeche Youth Centre, and residential installations in Nahanni Butte.

CHALLENGES AND FUTURE DIRECTIONS

The program faced challenges due to a drop in technical capacity and the lengthy process of securing contractors. However, the higher uptake in biomass-related rebates indicates the effectiveness of previous advice and promotional efforts. Moving forward, the AEA aims to maintain and expand our technical expertise

and continue fostering community and partner engagement. The ongoing support for existing biomass systems and the promotion of new installations are crucial for the program's success and its contribution to reducing the NWT's carbon footprint.

Community Wood Stove Program

Under its Community Wood Stove Program, the AEA typically forms a two-year partnership with each participating community, where each partner has designated roles and responsibilities and provides 50 percent of the funding for new stoves. We can structure a project in one of two ways: we can have the stoves purchased, delivered and installed all in the same fiscal year, or we can handle purchase and delivery in one year and installation in the next.

FOR
residents

AEA FUNDING

\$490,000 (from GNWT
Department of Infrastructure
and Government of Canada)

Many of the stoves installed under the program are replacements for older, less-efficient stoves—some of which are no longer safe. This means the program may not create a large reduction in greenhouse gas emissions in any given year. It also may not have the relatively quick payback that could be seen by installing stoves in homes that previously did not have them. However, one of the program's main benefits is that by providing new, more efficient stoves that have been installed according to safety codes, it allows residents to continue to use wood heat safely and affordably instead of switching back to fossil fuels. And the newer stoves burn much more cleanly, improving local air quality.

We installed 13 new stoves and replaced 48 stoves this year in Behchokò, Fort McPherson, Gamètì, Nahanni Butte and Whatì.

Results

The goals of each project are to:

- increase wood burning safety by supporting code-compliant installations
- reduce particulate emissions in smoke from wood stoves
- increase local capacity around wood harvesting and seasonal local employment
- increase wood burning efficiency by installing EPA-certified wood stoves

61 Total stoves installed

Total stoves installed: **13**

48 Replacement stoves installed

\$380,000

Total value of incentives (*installed stoves only*)

\$6,300 Average incentive

Payback

Capital cost (all installed stoves, before incentives):

\$770,000

Estimated annual savings

(from heating oil avoided, all installed stoves):

\$42,000

Simple payback (all installed stoves, after incentives):

9.2 years**Greenhouse gases****59 tonnes**

Annual greenhouse gases avoided

(equivalent to the greenhouse gases emitted by
driving a passenger car 220,000 km)**\$330**Incentive cost per lifetime¹⁷ tonne reduced

(all installed stoves; incentives for purchase, delivery and installation)

2,600 kg

Annual particulate emissions reduced

(a 93% decrease)

Energy savings**840 GJ** Annual fossil fuel
consumption avoided (oil)(equivalent to 22,000 L of heating oil [140 barrels],
or 25,000 L of gasoline [160 barrels])For the purposes of this program, electricity
savings are assumed to be zero.**Savings from wood stove use**Because the 61 recipients who had new
stoves installed in 2023/24 are using new,
efficient wood stoves, they are estimated
to see the following savings each year
compared to heating with oil alone:**300 tonnes**

Annual greenhouse gas emissions

4,200 GJ

Annual fossil fuel consumption

(or 110,000 L of heating oil)

\$210,000 Annual heating cost

Tony Gon from Behchokp stands with the new stove he received under the Community Wood Stove Program.

Building success through partnerships

One of the AEA's core values is that the most important way to achieve our vision is through partnerships. And you can see that value in the work that we do. We take a partnership approach to just about every interaction we have.

Often, those partnerships are informal. We want to empower our clients and help them make decisions that are best for them. But other times we form partnerships in the true sense of the word. This is most easily seen in some of our programs and special projects, such as the Community Wood Stove Program, the Designated Income Home Winterization Program and the Community Energy Planning project.

Creating these formal partnerships can achieve several things. It allows the other organizations to have a strong say in the projects that happen in their communities. It means that we have people involved who know the communities and what they need. And it can even help build local capacity.

Providing rebates and advice are important parts of what we do—they help make change happen. But we believe that partnerships make that change truly meaningful.

Greenhouse gas and energy savings by community

Community	No. of installed stoves	Annual GHGs avoided/increased (tonnes)	Incentive cost/lifetime tonne of GHGs reduced	Annual particulate emissions avoided/increased (kg)	Annual fossil fuel consumption avoided (GJ)
Behchokq*	20	↓ 31	\$200	↓ 520	↓ 450
Fort McPherson	20	↓ 22	\$270	↓ 970	↓ 320
Gamèti	4	0	\$9,100	↓ 250	0
Nahanni Butte	12	↓ 5	\$720	↓ 550	↓ 65
Whatì	5	0	\$8,600	↓ 310	0

* Hydro community

Greenhouse gas and energy savings by region

Region	No. of installed stoves	Annual GHGs avoided/increased (tonnes)	Incentive cost/lifetime tonne of GHGs reduced	Annual particulate emissions avoided/increased (kg)	Annual fossil fuel consumption avoided (GJ)
Beaufort-Delta	20	↓ 22	\$270	↓ 970	↓ 320
Dehcho	12	↓ 5	\$720	↓ 550	↓ 65
Tłıchq	29	↓ 32	\$310	↓ 1,100	↓ 450

Greenhouse gas and energy savings by hydro vs. non-hydro communities

Community type	No. of installed stoves	Annual GHGs avoided/increased (tonnes)	Incentive cost/lifetime tonne of GHGs reduced	Annual particulate emissions avoided/increased (kg)	Annual fossil fuel consumption avoided (GJ)
Hydro	20	↓ 31	\$200	↓ 520	↓ 450
Non-hydro	41	↓ 27	\$470	↓ 2,100	↓ 390

Electric Transportation Incentive Program

In 2020, we launched our Electric Vehicle Incentive Program to provide rebates to reduce the cost of purchasing and using an electric vehicle (EV) in the NWT. This year, we expanded the program to include other types of electric transportation. These additions include e-bikes and on-the-land transportation, such as electric snowmobiles, ATVs and boat motors.

Switching to electric transportation can help consumers reduce the amount of greenhouse gas emissions released to the atmosphere from vehicles that use fossil fuels.

Rebates on EVs and charging stations are only available to clients in communities that use hydroelectricity. However, rebates on e-bikes and on-the-land vehicles are available throughout the NWT.

FOR

residents, businesses,
community governments,
Indigenous governments,
non-profit organizations

AEA FUNDING

\$250,000 (from GNWT
Department of Infrastructure)

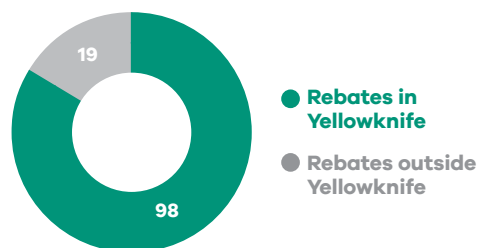
Results

117 Total rebates

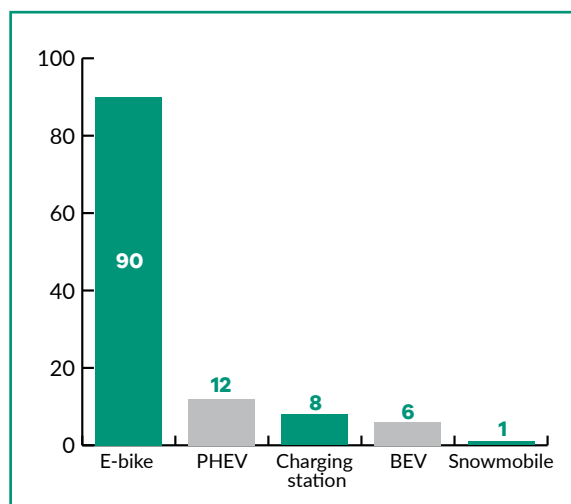
Total value of rebates: **\$210,000**

\$1,800 Average rebate

Communities



Rebates by type



Payback

Capital cost (all products, before rebates):

\$1,300,000

Estimated annual savings (all products):

\$18,000

Greenhouse gases

41 tonnes

Annual greenhouse gases avoided
(equivalent to the greenhouse gases emitted by
driving a passenger car 150,000 km)

\$380

Rebate cost per lifetime¹⁸
tonne reduced

Energy savings**37,000 kWh**

Annual electricity consumption increased
(approximately six percent of the electricity consumed each
year in the community of Wekwèètì)

Rebate cost per lifetime kWh avoided

-\$0.43**300 GJ**

Annual fossil fuel consumption
avoided (gasoline)

(equivalent to 9,000 L of gasoline [56 barrels])

Greenhouse gas and energy savings by community

Community	No. of rebates	Annual GHGs avoided (tonnes)	Rebate cost/ lifetime tonne of GHGs reduced	Annual electricity consumption increased (kWh)	Rebate cost/ lifetime kWh avoided	Annual fossil fuel consumption avoided (GJ)
Fort Liard	1	0.1	\$430	9	-\$6.20	2
Fort Simpson	3	0.4	\$430	28	-\$6.20	6
Fort Smith*	5	3	\$420	3,600	-\$0.36	44
Hay River*	9	3	\$370	2,500	-\$0.45	42
Inuvik	1	0.1	\$430	9	-\$6.20	2
Yellowknife*	98	35	\$380	31,000	-\$0.42	210

* Hydro community

Greenhouse gas and energy savings by region

Region	No. of rebates	Annual GHGs avoided (tonnes)	Rebate cost/ lifetime tonne of GHGs reduced	Annual electricity consumption increased (kWh)	Rebate cost/ lifetime kWh avoided	Annual fossil fuel consumption avoided (GJ)
Beaufort-Delta	1	0.1	\$430	9	-\$6.20	2
Dehcho	4	0.5	\$430	37	-\$6.20	8
North Slave	98	35	\$380	31,000	-\$0.42	210
South Slave	14	6	\$390	6,000	-\$0.40	86

Greenhouse gas and energy savings by hydro vs. non-hydro communities

Community type	No. of rebates	Annual GHGs avoided (tonnes)	Rebate cost/ lifetime tonne of GHGs reduced	Annual electricity consumption increased (kWh)	Rebate cost/ lifetime kWh avoided	Annual fossil fuel consumption avoided (GJ)
Hydro	112	41	\$380	37,000	-\$0.42	290
Non-hydro	5	0.7	\$430	47	-\$6.20	10

Community engagement

While the Arctic Energy Alliance is well known for its rebate and energy evaluation programs, community engagement is just as important. By engaging with community members, the AEA can provide education and advice, and promote and coordinate our programs across the NWT. When people are energy conscious, they are more likely to adopt efficient and renewable energy practices. Engagement is one of the main tools we use to foster that energy consciousness.

FOR

residents, businesses,
community governments,
Indigenous governments,
non-profit organizations

AEA FUNDING

allocated from \$1,600,000
base funding (from GNWT
Department of Infrastructure)

The AEA has offices in six communities across the NWT: Behchokò, Fort Simpson, Hay River, Inuvik, Norman Wells, and Yellowknife. These offices allow us to keep a closer connection to the communities throughout the territory. Who better to understand the needs of each region than the people who live there?

Each of the AEA's offices is involved in every program and project that we undertake, but also engage in their own work, unique to each region. In fact, we have a Regional Office Program to coordinate the work of our regional offices, and community engagement is a huge component.

One of the main ways we get involved in our communities is through trade shows, events and other community engagement activities. We partner with organizations throughout the NWT to help educate northerners on our programs and the importance of responsible energy use.

The following are highlights from just a few of those activities.

Beaufort–Delta office (Inuvik)

School engagement in Inuvik

In May and June, our team visited East Three Secondary School to engage with Grade 5 to 7 students. We conducted classroom presentations and a renewable energy bike ride, reaching 45 students and demonstrating renewable energy possibilities within the community. The interactive sessions were a hit, with students appreciating the hands-on learning and small gifts like sunglasses and coffee mugs for teachers.



Norm and Mark speak with local kids about saving energy at a pop-up booth at the Midnight Sun Complex in Inuvik.

Energy education at Northmart

In December, we set up an educational booth at Northmart in Inuvik, generating significant interest in our rebate programs through a live LED light demonstration. This event, combined with a meeting with the mayor and town council, helped to solidify relationships and discuss future community projects. Despite a low turnout at an earlier open house due to a mild snowstorm, the Northmart location proved highly effective for public engagement.

Dehcho office (Fort Simpson)

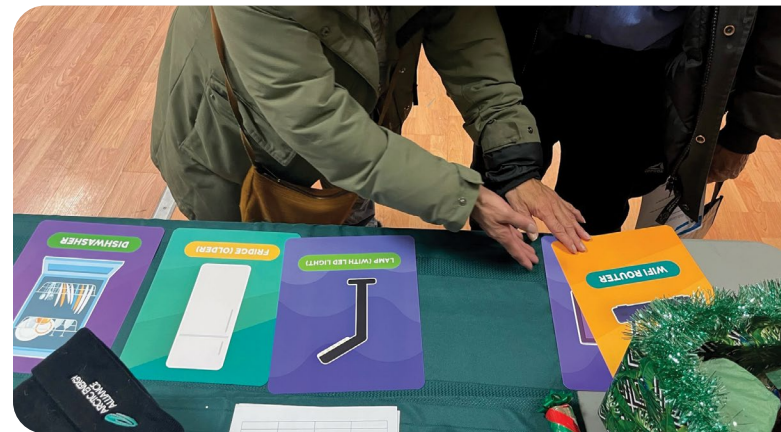
Program promotion in Fort Simpson

In early July, our team hosted an engagement session in Fort Simpson, coinciding with activities at the Arctic Energy Alliance office. We discussed various rebate programs and insulation rebates with attendees, enhancing community awareness of our offerings. The convenience of the location and the informative session made this event particularly successful.

Visit to Jean Marie River First Nation

In July, we visited Jean Marie River to engage with the local community before their annual general meeting. This visit allowed us to introduce ourselves and discuss our updated rebate programs. The highlight was connecting with community members and enjoying some fresh moose meat!

Connie Villeneuve, the Government Service Officer in Jean Marie River, holds up an information sheet with tips on saving energy.



This year we created a new game that we can use at public events, like the career fair in Norman Wells, shown here.

Sahtú office (Norman Wells)

Norman Wells Open House

Last winter our team hosted an open house in Norman Wells, attracting members of the local community to discuss energy efficiency and conservation. Ken Baigent, a registered energy advisor, addressed common concerns about high power and fuel bills, recommending home energy evaluations and guiding attendees on how to apply for rebates through the AEA website. The event was successful, with two attendees signing up for home energy evaluations, laying the groundwork for future rebate applications.

Tulita Trades and Technology Career Fair

Later in February, we participated in the Tulita Trades and Technology Career Fair. Our booth was popular among students, who were intrigued by the energy profile charts and engaged in discussions about energy savings and potential careers in energy efficiency. The event provided an excellent opportunity to educate students about the AEA's offerings and inspire interest in energy-related careers. One math teacher even took energy profile charts to use as educational tools in her class.

South Slave office (Hay River)

Earth Week family movie night

In April, we hosted an Earth Week family movie night in partnership with the Soaring Eagle Friendship Centre. The event featured a screening of the thought-provoking film 2040 and fostered discussion about energy and environmental issues. The movie highlighted the importance of sustainability and energy efficiency, contributing to ongoing community engagement efforts.



Residents in Hay River attend our screening of the movie 2040 for Earth Week.

ECE career fair at Deh Gah School

In June, we attended the ECE career fair at Deh Gah School in Fort Providence. The event provided an opportunity to connect with youth and community members, promoting job opportunities in the energy sector and increasing awareness about the AEA's programs. Attendees enjoyed the engagement and the promotional materials distributed at the booth.

Tłıchq office (Whatì and Behchokò)

New regional office grand opening

In May, our team hosted the grand opening of the new Tłıchq regional office in the Kq Gocho Centre (Sportsplex). The event featured a comprehensive information session about the AEA's rebate programs and services. Community members, including local leaders and residents, attended to learn about energy efficiency initiatives, enjoy food and refreshments, and participate in a raffle for great prizes. The event successfully introduced the community to the new office and established valuable connections.

Christmas light exchange in Behchokò

In December, Shannon Mackenzie organized a Christmas light exchange event in Behchokò. Local residents were encouraged to exchange their old, energy-consuming Christmas lights for new LED lights. During the exchanges, Shannon demonstrated the energy savings using a Kill-a-Watt meter, comparing the old and new lights. The event also provided an opportunity to distribute the AEA's 2024 calendars and promotional items, and to inform residents about energy efficiency rebates. The event highlighted the benefits of LED lights and promoted energy-saving practices in the community.

Yellowknife office

Electric vehicle meetup in Yellowknife

In partnership with the Yellowknife Car Share Co-op, the AEA attended an electric vehicle meet-up to promote electric transportation in Yellowknife. This meet-up featured electric cars and bikes, and we gave advice on electric transportation and promoted rebates on both e-bikes and electric passenger vehicles through our Electric Transportation Incentive Program.

Biomass Week pellet boiler tour

The AEA organized a pellet boiler tour on January 30th to help promote Biomass Week. Tour participants met at the Yellowknife Fieldhouse and took a tour of the biomass district heating system that heats the City of Yellowknife's Fieldhouse and Multiplex. City of Yellowknife building maintainer Shannon Watson gave a passionate tour of the heating system and showed tour participants the air-handling unit in the building as well. Seeing biomass heating in action helps to promote the adoption of renewable energy technologies in the NWT.



People seem to love our toques, which we give away at events like this pop-up booth at the Northern store in Behchokò.



Every year we use renewable energy systems to provide hot water for Ecology North's dishwashing station at Folk on the Rocks in Yellowknife. And sometimes when gear doesn't work like it should, we need to come up with creative solutions on the fly.

Special projects

In addition to our core programs, the Arctic Energy Alliance undertakes special projects as opportunities arise. These projects can support residents, businesses, community or Indigenous governments, or non-profit organizations in the NWT.

Over the 2023/24 fiscal year, the AEA conducted nine projects (three under Public Relations and Marketing), with funding provided by the GNWT Department of Infrastructure (through its core funding to the AEA and the Low Carbon Economy Leadership Fund), Environment and Climate Change Canada (through the Low Carbon Economy Leadership Fund) and Natural Resources Canada.

Cold-Climate Air-Source Heat Pumps (ccASHP)

The Cold-climate Air-source Heat Pumps (ccASHP) project was designed to obtain credible field monitoring data on the performance of ccASHPs in Yellowknife. The objective was to gather sufficient information to make informed decisions regarding the promotion and rebates for this technology by studying the suitability of ccASHPs—including their operation in homes, their energy efficiency, and their potential for reducing greenhouse gases.

There has been growing public interest in heat pumps over the past several years. While the Yukon Government has been testing the technology in Whitehorse, Yellowknife experiences an even colder climate, necessitating localized testing to understand how ccASHPs perform under these conditions.

In the 2022/23 fiscal year, we had two mini-split ccASHPs and monitoring equipment installed in two units of a multi-unit building, with a third unit in the building serving as a control.

This setup allowed for comparative analysis and troubleshooting to ensure accurate data collection. The heat pumps were up and running for this fiscal year, and we received an interim report in August, which covered six months of data. However, more data will be required to draw firm conclusions.

Community Energy Planning

Since its inception, the AEA has engaged with several NWT communities on community energy planning, focusing on local solutions to energy use, conservation, and efficiency while building local capacity and energy literacy. This year, the project transitioned from a two-year model to a one-year model due to changes in funding, with a significant focus on mentoring Community Energy Champions—local individuals hired part-time to work with the AEA project team. The project involved community engagement activities, presentations, capacity building, and networking to develop a community energy plan and assist community governments in seeking funding to implement identified projects.

Year-one partner

An expression of interest went out in May 2023, resulting in a partnership with the Community Government of Gamètì. This phase aimed to engage the community in the energy planning process, involving workshops, information sessions, surveys, and meetings. The activities were designed to gather input from community members to create a comprehensive energy plan that reflects local priorities and values. The role of the Community Energy Champion was crucial in guiding these activities and ensuring community involvement. The plan's formal adoption and selection of priority projects are expected by April 2024.

Implementation of projects with year-two partners

In this phase, communities that had completed their energy plans moved into implementing some of the projects they had identified. This phase focuses on executing specific projects, enhancing local infrastructure, and achieving tangible savings on both energy and costs. Community Energy Champions played a key role in coordinating these efforts, with support from AEA. The Hamlet of Ulukhaktok, the Village of Fort Simpson, the Hamlet of Tulita, and the Town of Fort Smith participated in this phase, working on various energy-efficiency upgrades and system improvements.

- Hamlet of Ulukhaktok: Upgraded building envelopes on public works garages, calculated to result in annual cost savings of \$32,900 and a GHG reduction of almost 14 tonnes of CO₂ equivalent. Plans to create a Wind Energy Working Group.
- Village of Fort Simpson: Connected the community aquatic center and gym to a biomass district heating system, with project completion in March 2024.
- Hamlet of Tulita: Completed HVAC system repairs on the arena.
- Town of Fort Smith: Completed final installation and programming of ECM- and VFD-driven pumps in their water treatment plant.

Wrap-up and evaluation workshop

The wrap-up and evaluation workshop marked the conclusion of the funding provided by Natural Resources Canada through the Clean Energy in Remote and Rural Communities (CERRC) program, which began in 2020. Held in Yellowknife in June, the workshop reflected on the past three years, evaluating the project's effectiveness and planning for future community energy initiatives. Each day of the workshop focused on different themes and included various stakeholders, providing a platform for sharing experiences, evaluating project processes, and fostering future collaborations.

Contractor Outreach

While the AEA provides rebates, advice and other services related to upgrading the energy efficiency of buildings, it's frequently contractors who do the work to make those upgrades happen. Usually our clients work with contractors, but sometimes we work with them directly, and they're always an important part of the process. So it makes sense for us to build relationships with them. Five years ago, we started the Contractor Outreach project to strengthen our relationships with contractors and building maintainers and build more capacity in the NWT around energy-efficient technologies. The project does this by:

- Providing information on energy-efficient technologies.
- Supporting the adoption of these technologies across the NWT.
- Fostering relationships between AEA and local contractors.

This year we ran a three-day webinar series with three different topics: heating controls, insulation and energy-efficient building standards.

There were also interactive sessions with games and prizes to enhance participant engagement, and feedback was gathered from participants to improve future sessions. Twenty-one participants registered, primarily from the NWT. Sessions were well-received, with attendees appreciating the informative content. The sessions on insulation were particularly popular and may be revisited in future events.

Energy-Efficient Technologies

The primary goal of the Energy-Efficient Technologies project is to help industrial, commercial and institutional clients adopt specific energy conservation and efficiency measures that have a quick payback. By introducing technologies like automated vehicle plug-in controllers, the project aims to reduce ongoing energy use, costs, and greenhouse gas (GHG) emissions while normalizing the use of these technologies among contractors, distributors and building owners in the NWT.

The project originally began in 2018 and has featured various technologies. For the 2023/24 fiscal year, it focused on automated vehicle plug-in controllers. These devices are designed to manage the power supply to vehicle block heaters based on the outdoor temperature. This ensures that the block heater systems are only powered on when necessary, which saves energy.

This year, we had six clients install 101 automated vehicle plug-in controllers under the project. In addition, the AEA building in Yellowknife had 2 devices installed to showcase the technology.

The project successfully introduced automated vehicle plug-in controllers to a broader audience, resulting in significant energy savings and increased awareness of the technology among clients and AEA staff. The project also featured two 30-second commercials on CBC's "Northbeat" and in theatres in Yellowknife and Hay River to promote automated vehicle plug-in controllers, further boosting public awareness.

New-Building Guide

The New-Building Guide project was initiated to update the AEA's existing recommendations for constructing energy-efficient buildings in the NWT. The goal was to incorporate the latest best practices and changes in building codes to provide accurate and up-to-date advice for clients.

The project began with a comprehensive analysis of the previous guide and a review of recent updates to building codes. The team then identified areas where changes were necessary to align with current standards. The updated guide now offers more relevant and practical advice for constructing energy-efficient buildings in the unique climate conditions of the NWT.

One of the key outcomes of this project was the enhancement of the guide's usability. Clients now have access to clearer, more concise information that helps them make informed decisions about building practices that improve energy efficiency and reduce greenhouse gas emissions. The updated guide is expected to significantly impact new constructions by promoting sustainable building practices and contributing to long-term energy savings.

Public Relations and Marketing

Developed and deployed by its communications team, the AEA undertakes public relations and marketing initiatives to enhance public awareness and engagement with its energy conservation and efficiency programs. The following projects contributed to the overarching goal of making the public aware of the AEA's work and fostering a culture of energy efficiency in the NWT.

AEA Calendar

The AEA Calendar project aimed to highlight energy projects across the territory by showcasing two client projects from each region over the past several years. This visually appealing calendar was designed by a contractor, with 1,000 copies printed and distributed across the territory.

The calendar not only served as a functional item for recipients but also as a tool to celebrate and promote the successful energy projects within the NWT.

No Idle Zone

The No Idle Zone campaign produced a small initial run of signs and bumper stickers, aimed at encouraging the public to reduce vehicle idling. This initiative was part of a broader effort to raise awareness about the environmental and economic benefits of minimizing idle time for vehicles.

While the original intent was to gather real-world data on fuel usage to create educational materials, the difficulty in collecting reliable data led to a shift in focus. The project instead concentrated on producing signs and bumper stickers, which served as effective visual reminders to the public about the importance of reducing idling. This simple yet impactful approach helped convey the message of energy conservation in a tangible way.

Facebook Presence

Maintaining a robust presence on Facebook is a key component of AEA's public engagement strategy. In 2023/24 we devised a project to increase and track engagement. By posting twice a week and sharing relevant posts in community groups, the AEA was able to grow its number of followers from approximately 900 to 1,035.



Students at Mackenzie Mountain School in Norman Wells try out our new appliance game as part of a presentation on energy use.

School Engagement

The AEA has a significant amount of educational material, and we often visit schools to talk about energy efficiency and conservation. The NWT's new school curriculum provided an opportunity for us to develop more extensive materials for school-aged kids. The result was the School Engagement project, a multi-year project designed to align with specific grade curriculums and enhance energy education across schools in the NWT. The main objective was to create a toolbox activity for Grades 5–7, providing AEA staff with structured materials to deliver in classrooms. The project strives to educate students on energy efficiency and conservation, raise awareness about renewable energy sources, and inform about the activities and services of AEA.

We initially developed a toolbox activity for Grade 7 students last fiscal year. This year, we piloted the activity and trained AEA staff on how to deliver it. The activity was ultimately used in schools in four communities.

Operations management

The Arctic Energy Alliance uses cash-based cost tracking, accrual accounting, and project resource-loading systems in our operations. Our cash-based project cost planning and tracking system, together with our accounting system, enables project- and ledger-level budgeting and expense tracking. These two systems are linked.

We use timesheet and billing software that includes project setup, budgets, resources assignment, timesheets, and advanced reporting tools. Using this software, each staff member is allocated time for each project and task to which they are assigned. This enables us to plan and report on staff activity at project and task levels.

The AEA has an established financial system including policies, procedures, budgeting and expenditure control. The system requires all expenditures at the project and ledger levels be planned and budgeted for. Once project and ledger-level budgets are loaded into our tracking and accounting software, purchase orders can only be issued if they are budgeted for, and only within prescribed spending thresholds. All purchase orders are electronically generated and are used to track planned, in-progress and actual expenditures against budgeted expenditures.

Salary time expenditures are tracked using our timesheet software and paid using our accounting system. Every two weeks, staff members submit their timesheets to the

Executive Director for review and approval. This system restricts staff to only booking time against projects and tasks they are assigned. The approved timesheets are loaded into the accounting system and used to allocate staff costs to projects, and for payment purposes.

The AEA associates individual expenditures to vendors and projects. A single line-item amount can be allocated to one or more projects, or the AEA can allocate entire transactions to one or more projects. This provides us the flexibility to provide detailed project-level expenditures such as those provided in our quarterly reporting.

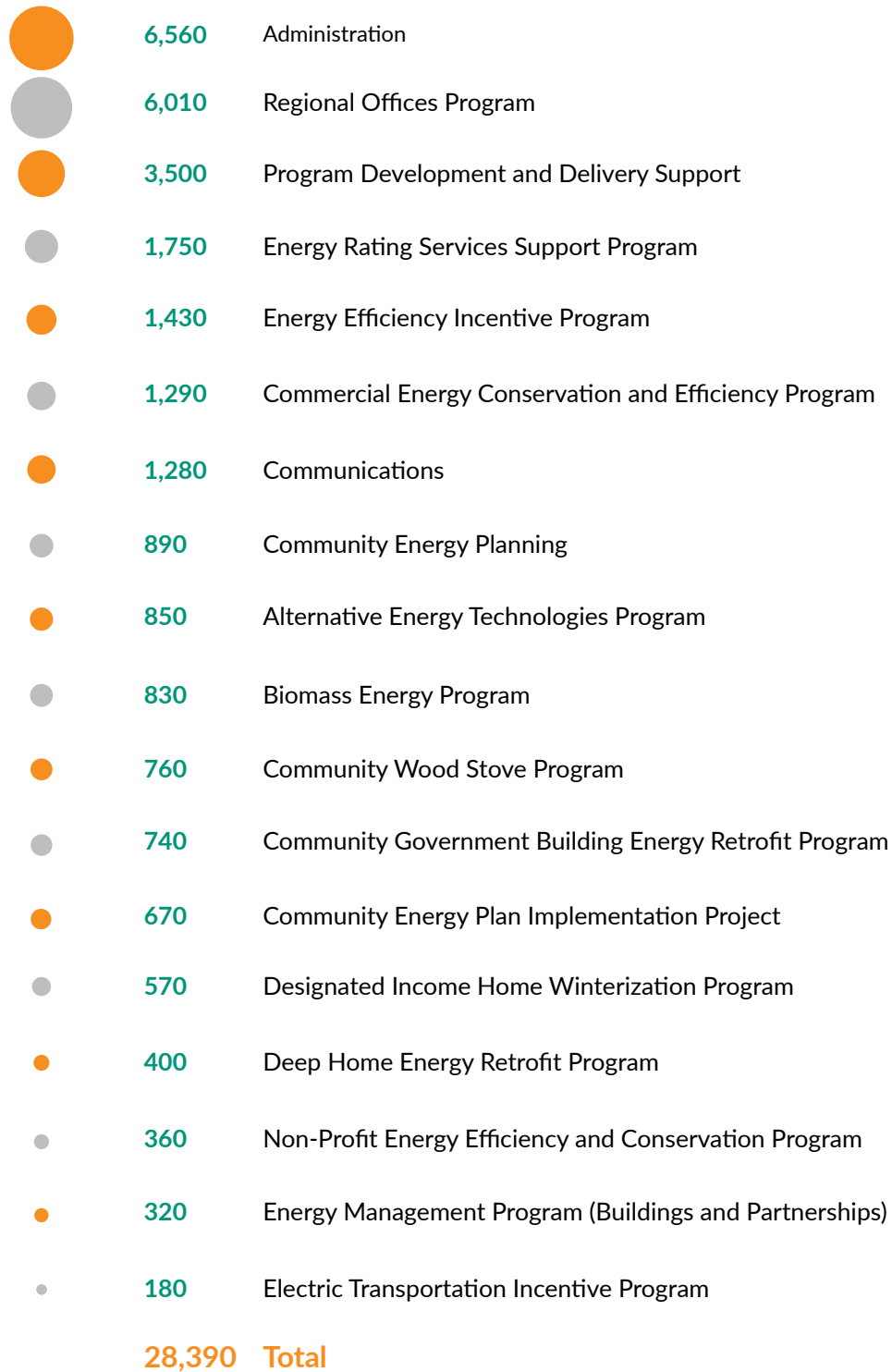
The table on the next page summarizes the outcome of the AEA's work, and the subsequent chart reports the total staff hours dedicated to achieving that outcome.

Impact of AEA programs and projects

Metric	Commercial Energy Conservation and Efficiency Program	Community Government Building Energy Retrofit Program	Deep Home Energy Retrofit Program	Designated Income Home Winterization Program	Energy Efficiency Incentive Program	Energy Rating Services Support Program	Non-Profit Energy Efficiency and Conservation Program	Alternative Energy Technologies Program	Community Wood Stove Program	Electric Transportation Incentive Program	Total
Total no. of incentives	30	4	20	137	2,601	-	10	44	61	117	3,024
No. of incentives in Yellowknife	17	-	9	-	503	-	5	1	-	98	633
No. of incentives outside Yellowknife	13	4	11	137	2,098	-	5	43	61	19	2,391
Total value of incentives	\$610,000	\$44,000	\$110,000	\$57,000	\$410,000	-	\$190,000	\$480,000	\$380,000	\$210,000	\$2,500,000
Average incentive	\$20,000	\$11,000	\$5,700	\$420	\$160	-	\$19,000	\$11,000	\$6,300	\$1,800	\$830
Total capital cost	\$1,600,000	\$100,000	\$2,100,000	\$57,000	\$1,900,000	-	\$790,000	\$1,300,000	\$770,000	\$1,300,000	\$9,900,000
Est. annual savings	\$130,000	\$22,000	\$88,000	\$140,000	\$390,000	-	\$38,000	\$120,000	\$42,000	\$18,000	\$990,000
Est. annual electricity savings/increase (MWh)	↑ 130	↓ 19	↓ 34	↓ 150	↓ 820	-	↓ 110	↓ 90	-	↑ 37	↓ 1,300
Incentive cost per lifetime kWh avoided/produced	\$0.23	\$0.12	\$0.39	\$0.05	\$0.04	-	\$0.08	\$0.26	-	-\$0.43	\$0.12
Estimated power demand avoided/produced (kW)	↑ 3	↓ 2	-	-	-	-	↓ 37	↓ 170	-	-	↓ 210
Est. annual fossil fuel savings/increase (GJ)	↓ 1,900	↑ 22	↓ 1,900	↓ 2,300	↓ 4,800	-	↓ 98	↓ 1,600	↓ 840	↓ 300	↓ 14,000
Est. annual greenhouse gases avoided/increased (tonnes)	↓ 180	↓ 13	↓ 130	↓ 280	↓ 600	-	↓ 9	↓ 210	↓ 59	↓ 41	↓ 1,500
Incentive cost per lifetime tonne of greenhouse gas emissions reduced	\$170	\$170	\$98	\$30	\$48	-	\$1,100	\$120	\$330	\$380	\$100
Total no. of desktop energy evaluations (blueprint and yardstick evaluations)	6	3	-	-	-	18	2	-	-	-	29
No. of desktop energy evaluations in Yellowknife	1	-	-	-	-	18	1	-	-	-	20
No. of desktop energy evaluations outside Yellowknife	5	3	-	-	-	-	1	-	-	-	9
Total no. of on-site energy evaluations	1	-	20*	-	-	159	-	-	-	-	160
No. of on-site energy evaluations in Yellowknife	1	-	9*	-	-	109	-	-	-	-	110
No. of on-site energy evaluations outside Yellowknife	-	-	11*	-	-	50	-	-	-	-	50

* Also counted in Energy Rating Services Support Program. Not counted in total.

Staff hours by program/project*



Financial management

Highlights

Results of operations for the year ending March 31, 2024

- Overall revenues totalled \$6.8 million and overall expenses totalled \$6.4 million.
- The AEA budgeted for an overall deficit of \$150,000 this year, and ended the year with an overall surplus of \$350,000, representing 5 percent of total revenues. This is an 1,100 percent increase from the previous year's surplus of \$30,000, which represented 0.6 percent of total revenues.
- Net financial assets increased \$350,000 over the course of the year, compared to a \$6,900 increase the previous year.

Key revenues	Value	Increase/decrease from 2022/23	Comparison to budget
GNWT contributions	\$6,100,000	↑ 46%	90%
Canada contributions	\$27,000	↓ 92%	25%
Other source income	\$280,000	↑ 27%	690%

Key expenses	Value	Increase/decrease from 2022/23	Comparison to budget
Rebates distributed	\$2,800,000	↑ 100%	89%
Consulting fees	\$290,000	↓ 14%	76%
Travel and accommodations	\$280,000	↑ 1%	60%
Advertising and promotion	\$95,000	↑ 24%	80%

Financial position on March 31, 2024

Key assets	Value	Increase/decrease from 2022/23	Primary reasons
Total assets	\$2,700,000	↓ 6%	
Cash and short-term investments	\$1,200,000	↓ 51%	Increase in cash outlays
Accounts receivable	\$1,400,000	↑ 310%	Increase to receivables for contribution funding due from source

Key liabilities	Value	Increase/decrease from 2022/23	Primary reasons
Total liabilities	\$630,000	↓ 45%	Decrease in contributions payable
Accounts payable and accrued liabilities	\$530,000	↓ 51%	Repaid unspent contributions
Deferred revenues	\$50,000	-	

Key net assets	Value	Increase/decrease from 2022/23	Notes
Total net assets	\$2,100,000	↑ 20%	Increase in excess revenues over expenses
Internally restricted reserves	\$1,100,000	↑ 12%	Operating reserve increased for staff wages and other expenses
Unrestricted accumulated surplus	\$890,000	↑ 27%	Represents membership fees and other revenue



Mark speaks with local kids about energy at a pop-up booth in the Northmart in Inuvik.

Cash flow for the year ending March 31, 2024

- Gross cash from operations showed a surplus of \$380,000, compared to a surplus of \$44,000 the previous year.
- There was a net cash flow deficit of \$1,100,000, down 232 percent over the previous year, largely due to repaid unspent government funding and an increase in accounts receivable.

Key cash receipts	Value	Increase/ decrease from 2022/23
GNWT contributions	\$5,300,000	↑ 10%
Canada contributions	\$97,000	↓ 77%
Other sources	\$230,000	↓ 40%

Management discussion and analysis

The Arctic Energy Alliance prudently manages its people and money to deliver quantifiable results in line with the organization's strategic plan. The organization is financially sound, has a three-month operating reserve and can respond to changes in our financial or operating environment quickly and effectively.

As evidenced in this annual report, the Arctic Energy Alliance delivered an outstanding variety and number of public services this year, and was able to do so effectively with the right balance of management and financial controls, thus ensuring an effective and prudent use of public money.

The financial future of the organization is positive because of two principal factors: the cost of heating and electric energy in the Northwest Territories, and the Government of Canada's commitment to addressing the factors underlying climate change. Therefore, demand for the services the organization delivers is expected to remain stable. Combined with the confidence governments have in funding a fiscally and operationally sound organization like the Arctic Energy Alliance, it is reasonable to expect funding stability over the next one to two years. The AEA saw an increase in funding partway through the 2018/19 fiscal year, which was provided by the Government of Canada and the GNWT through the federal Low Carbon Economy Leadership Fund. Beginning in 2019/20 the AEA ramped up its operations to take full advantage of this additional funding, including hiring and training new staff members to increase capacity, adding new programs and projects to address areas not covered by existing programs, and increasing incentive amounts to encourage more people to adopt energy-efficient and renewable-energy technologies.

Membership and governance

As on March 31, 2024.

Board of directors

- Robert Sexton, President; Director of Energy, GNWT Department of Infrastructure
- Daniel Korver, Vice-President; Director, Infrastructure Services (Projects), Housing NWT
- Gordon Van Tighem, Treasurer; Chairperson, Northwest Territories Public Utilities Board
- Mark Heyck, Secretary; Executive Director, Arctic Energy Alliance
- Sara Brown, Chief Executive Officer, NWT Association of Communities
- Cory Doll, Manager, Climate Change and Air Quality, GNWT Department of Environment and Climate Change
- Paul Grant, Chief Operating Officer, Northwest Territories Power Corporation
- Grace Lau-a, Director, Community Operations, GNWT Department of Municipal and Community Affairs
- Vic Barr, Manager, Northland Utilities (Yellowknife) Ltd.

General members

- GNWT Department of Infrastructure
- GNWT Department of Environment and Climate Change
- GNWT Department of Municipal and Community Affairs
- Housing NWT
- NWT Association of Communities
- NWT Public Utilities Board

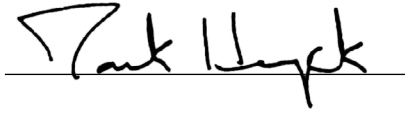
Sustaining members

- Northland Utilities (Yellowknife) Ltd.
- Northwest Territories Power Corporation

Staff

- Taylor Arsenault, Program and Administrative Assistant
- Norm Como, Program Coordinator
- Kevin Cull, Communications Coordinator
- Derek Erasmus, Project Coordinator
- Marta Goodwin, Finance Officer
- Michael Goodwin, Senior Energy Management Specialist
- Mark Heyck, Executive Director
- Michelle Leger, Program Coordinator
- Faye MacDonald, Office Manager
- Shannon Mackenzie, Tłıchʼo Territory Energy Project Coordinator – Behchokò
- Dharshan Maheswaran, Energy Management Specialist
- Margaret Mahon, Operations Manager/ Senior Energy Management Specialist
- Bilal Malik, Energy Management Specialist
- Nicolena Minakis, South Slave Regional Energy Project Coordinator – Hay River
- Abdul Mohammed, Energy Management Specialist
- Tanner Nygaard, Energy Management Specialist
- Noonee Sanspariel, Project Coordinator
- Louise Schumann, Program and Administrative Assistant
- Jennifer Wicks, Human Resources and Program Assistant
- Dorothy Wright, Sahtú Regional Energy Project Coordinator – Norman Wells

"I, Mark Heyck, Executive Director of the Arctic Energy Alliance, duly authorized on behalf of the board of directors of the Arctic Energy Alliance, represent and warrant that this annual report is true and accurate."

A handwritten signature in black ink, appearing to read "Mark Heyck", is written over a horizontal line.

Mark Heyck,
Executive Director
August 20, 2024

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Kay Tay Whee Tili
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The Arctic Energy Alliance is a non-profit, non-government agency whose vision is that "NWT Society will become a global leader in clean, efficient, sustainable energy practices." The Arctic Energy Alliance's mission is to promote and facilitate the adoption of efficient and renewable and energy practices by all members of NWT society.