Northwest Territoriesmi
Ihumiurviat
Malirutaliatigun

MEETING EDE 37-20-24

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND ENVIRONMENT

~

THURSDAY, DECEMBER 12, 2024
EAGLE ROOM, LEGISLATIVE ASSEMBLY
9:00 AM

AGENDA

1. Call to Order

2. Prayer

3. Review and Adoption of Agenda

4. Declarations of Conflict of Interest

5. Public Matters
    a) Technical Briefing from the Department of Infrastructure and Arctic Energy Alliance on Renewable Energy in Communities

6. In Camera Matters
    a) Debrief on Technical Briefing from INF/AEA
    b) Committee Project on Renewable Energy
    c) Renewables in Remote Communities Conference 2025

7. New Business
    a)

8. Date and Time of Next Meetings:
    a) Thursday, December 12, 2024 at 130PM

9. Adjournment

Renewable Heating in Communities

Technical Briefing to the Standing Committee on Economic Development and Environment

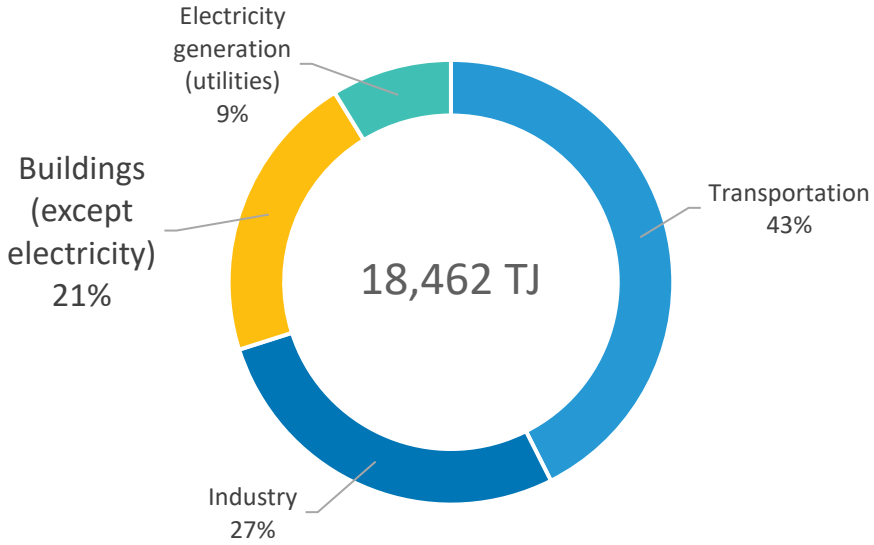
December 12, 2024

Government of
Northwest Territories

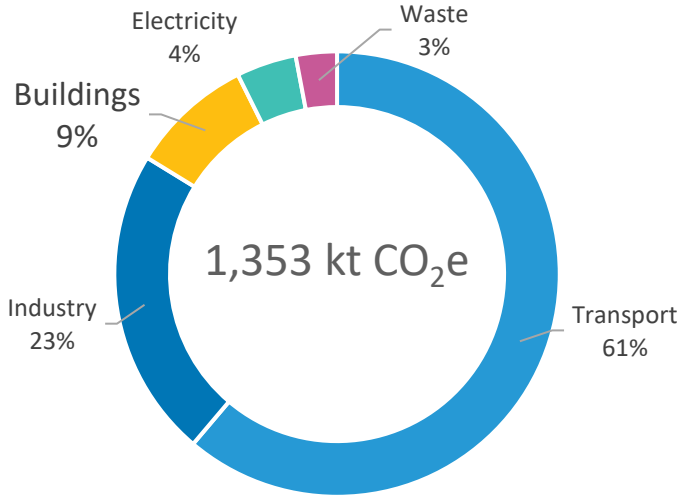
Presentation Overview

- Space heating energy use and GHGs
- 2030 Energy Strategy
- Renewing our territorial approach to energy
- Electric heating
- Biomass heating:
  - Main facts
  - GNWT leading the way
  - Supporting adoption
  - Select past projects
  - Supporting biomass supply chains to remote communities
  - Known challenges

Space Heating: Energy use & GHGs in 2022

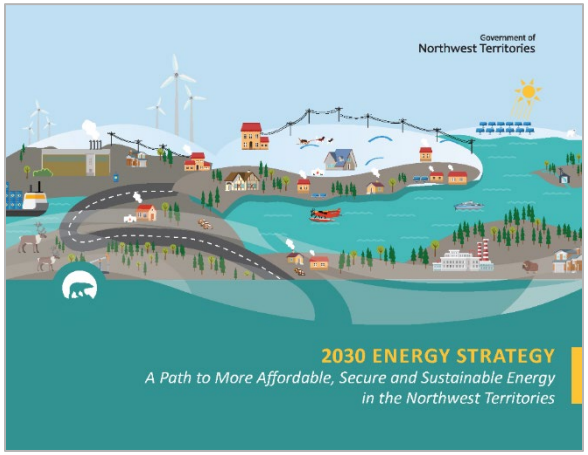


21% of primary energy use



9% of GHG emissions

2030 Energy Strategy



Goal to guide the long-term development of **secure**, **affordable** and **sustainable energy** for transportation, heat and electricity.

GNWT's **main mechanism to reach the 2030 target** of reducing NWT emissions by 30% below 2005 levels.

Six strategic objectives, including:

- **Increase the share of renewable energy used for community heating to 40% by 2030.**
- Reduce GHG emissions from power generation in diesel powered communities by 25% by 2030.

Renewing our Territorial Approach to Energy

- The GNWT released the 2030 Energy Strategy in 2018, with a commitment to reviewing it after five years. A such, the GNWT conducted engagement with partners, stakeholders and the public in 2023.
- In October 2024, the GNWT announced a commitment to achieving **net zero emissions** by 2050.
- As of December 2024, the GNWT is developing a revised Energy Strategy that will put the NWT on a trajectory towards **net-zero emissions** by 2050. The new Energy Strategy is anticipated to be released by March 2026.

Possible Technology Pathways to Net Zero

Five technology pathways will be key to achieving NZ emissions in the NWT:

1. Developing renewable electricity supply
2. **Electrifying heating** and transportation
3. **Developing biomass for space heating**
4. Substituting fossil fuels with liquid biofuels for hard-to-abate end-uses
5. Residual GHG emissions can be addressed using carbon offsets

What it means:

- **Doubling current electricity generation capacity**
- **Extending biomass availability in remote communities, possibly developing territorial production**

Electric Heating

Electrifying heating only makes sense in communities primarily fed by hydro and requires a modernized grid with a secure clean energy supply.

What we are doing:

- Completing Taltson overhaul (by March 2025)
- Advancing Taltson hydro expansion (and interconnection of grids)
- Exploring policy changes (to be directed to PUB) to improve the economics of electric heating in hydro communities (electric rate already available in South Slave)
- Fund the Arctic Energy Alliance to test cold-climate air-source heat pumps in Yellowknife
- Studies looking at resiliency of NWT hydro systems and impact of electrification

Biomass Heating: Main Facts

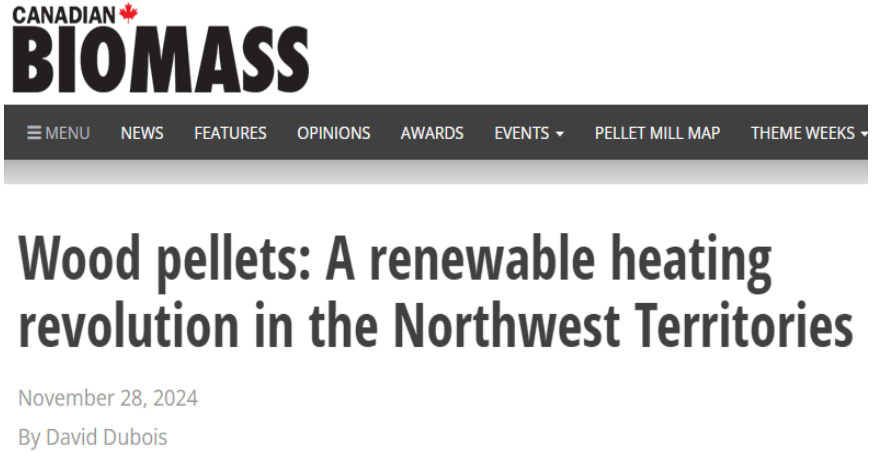
Biomass is a ‘low-tech’ heating option that can take multiple forms: cordwood, wood pellets, and wood chips.

One objective under the 2030 Energy Strategy is to increase this share to 40%

The carbon tax has resulted in expanded interest in biomass heating in past years, by increasing its cost effectiveness compared to fossil fuels.

A recent survey indicates that there are 96 large scale wood pellet boilers in the NWT, providing heat to 64 institutional buildings, 13 multi-unit residential buildings, and 19 commercial buildings.

NWT is a biomass leader in Canada (per capita, know-how).


CANADIAN BIOMASS

MENU NEWS FEATURES OPINIONS AWARDS EVENTS PELLET MILL MAP THEME WEEKS

Wood pellets: A renewable heating revolution in the Northwest Territories

November 28, 2024

By David Dubois

Biomass Heating: Main Facts

A recent GNWT survey estimated territorial biomass use in 2023:

- 20,000 tonnes of wood pellets (primarily used in boilers for large buildings)
- 14,500 cords of wood (used in houses)
- No wood chips currently

All wood pellets was imported from Southern Canada, while all cord wood was produced in the NWT.

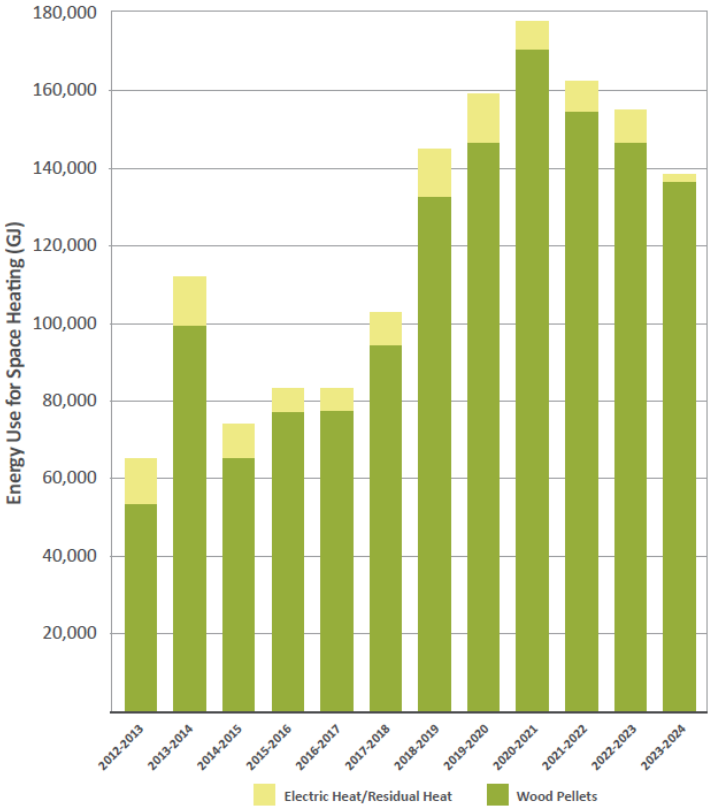
Main large consumers of wood pellets include: GNWT, Northview REIT, City of Yellowknife, Housing NWT.

Biomass: GNWT Leading the Way

In the past 15 years, the GNWT has been converting its buildings to biomass heating, when economically and technically feasible, to lower operational costs and GHG emissions (primarily through the Capital Assets Retrofit Fund).

The initiative led to the development of wood pellets supply chains in all NWT regions, supporting local economic development and allowing other buildings to convert to biomass.

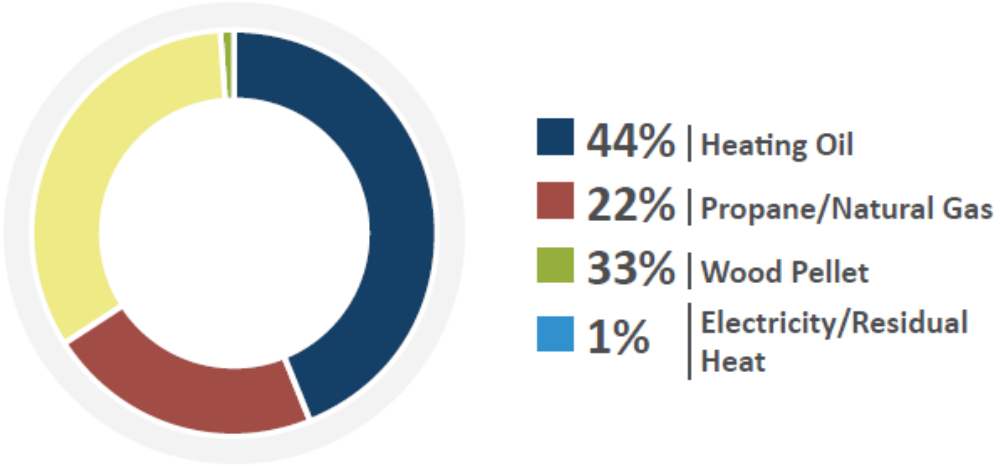
Between 2012 and 2024, biomass heating has more than doubled in GNWT buildings, representing nearly 138 TJ of energy.



GNWT Space Heating Provided by Renewable Energy from 2012 to 2024

Biomass: GNWT Leading the Way

As of 2023-2024, about 33% of GNWT buildings' heating is supplied by biomass, with 52 biomass boiler systems operating in 16 communities.



GNWT Space Heating Energy Sources in 2023-2024

Biomass: Supporting Adoption

The Arctic Energy Alliance administers rebates and programs aimed for residents and small organizations (funded by GNWT and Canada).

GNWT's GHG Grant Program is one main source of funding for larger biomass projects (including feasibility studies, connection to district heating systems, district heating systems).

Canada also directly funds biomass projects advanced by communities, Indigenous governments, and Indigenous organizations.

Biomass: Select Past Projects

Funded by the GNWT GHG Grant Program:

- $750,000 for Housing NWT to install a pellet boiler at Stanley Isaiah Complex (Fort Simpson)
- $1,125,000 for wood pellet boilers for Mildred Hall School and Range Lake Schools (Yellowknife)
- $928,000 for wood pellet boilers for École St Patrick and Weledeh Schools (Yellowknife)
- $330,000 for City of Yellowknife's aquatic center to connect to a biomass district heating system
- $300,000 for 6133 NWT Ltd. for a pellet boiler at the Yellowknife Post Office

Biomass: Monitoring non-GNWT projects

Several biomass projects are being proposed across the NWT, primarily by Indigenous organizations, and exploring federal funding. These include:

- A District Heating System in downtown Yellowknife
- Some mini District Heating Systems in the Dehcho
- Some projects in the Beaufort Delta

Biomass: Supporting Supply Chains to Remote Communities

In 2023, the GNWT partnered with Nihtat Energy Limited to conduct a study looking at the cost competitiveness of barge-delivered wood pellets as a heating option in 12 remote communities along the Mackenzie River. Main findings include:

- Wood pellets is a cost-effective alternative to heating oil in most communities studied
- Private investments were quite successful at creating supply chains in the Sahtu and the Dehcho, with limited or no public funding – with the GNWT being one main customer.
- Challenges to biomass expansion in remote communities include impacts from climate change on barging operations, the cost of barging, the lack of storage in certain communities, and limited pellet supply options.
- Additional seasonal storage in remote communities could help mitigate some of these challenges.

Biomass: Known Challenges

Reliance on one main producer from Southern Canada creates risks of possible supply chain disruptions. The GNWT has expressed support to the exploration of territorial production of biomass, especially around Yellowknife.

Biomass heating systems are significantly more complex to operate and maintain than heating oil systems. The GNWT is supporting initiatives to continue to train biomass boilers operators, including through the AEA, and have the Department of Infrastructure share the expertise it has gained in past 15 years.

Biomass supply in northernmost communities is costly and impacted by the effects of climate change. The GNWT has expressed support to projects aimed at increasing seasonal storage to increase resilience of biomass projects.

Questions?

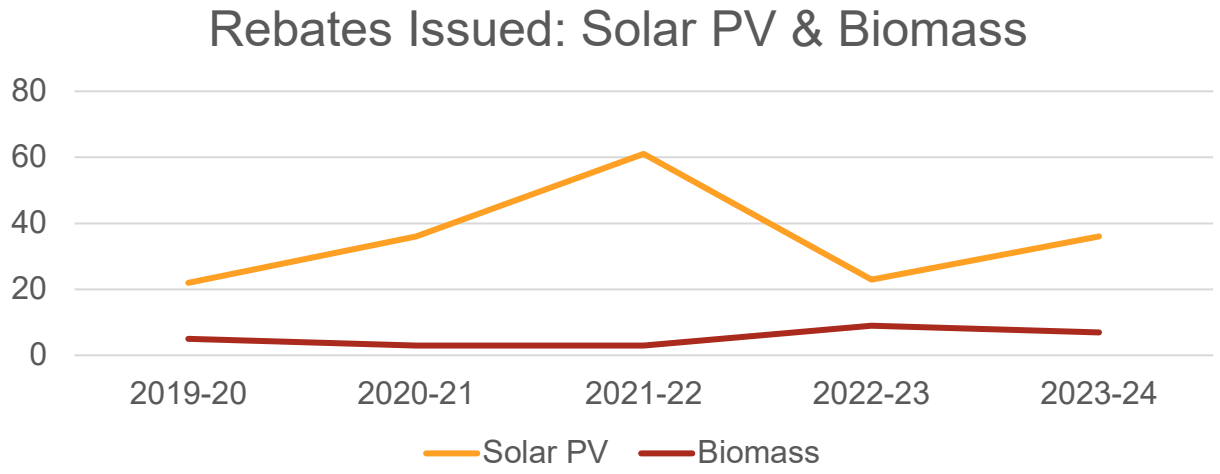
Arctic Energy Alliance

Renewable Energy in NWT Communities

Presentation to the Standing Committee on Economic Development and the Environment

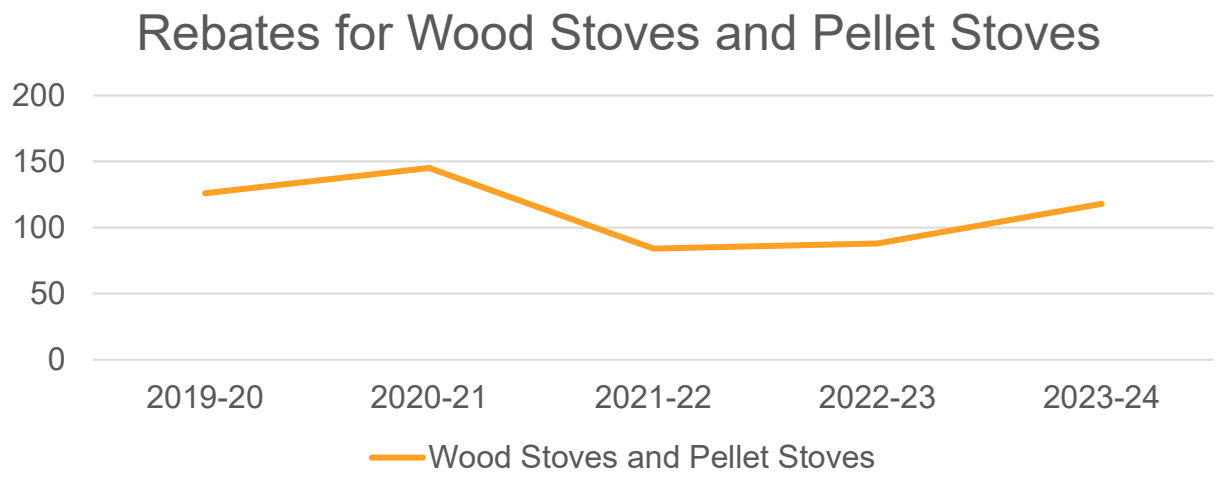
Thursday, December 12th, 2024

Alternative Energy Technologies Program



		Solar	Biomass
2019-20		22	5
2020-21		36	3
2021-22		61	3
2022-23		23	9
2023-24		36	7

Energy Efficiency Incentive Program



	Wood and Pellet Stove Rebates
2019-20	126
2020-21	145
2021-22	84
2022-23	88
2023-24	118

Community Wood Stove Program

	# of Wood Stoves Installed
2019-20	54
2020-21	92
2021-22	52
2022-23	26
2023-24	61

Community Wood Stove Program

Biomass Program

Biomass Week: January 27-31, 2025

Biomass Boiler Operator Training

Held in early November in Yellowknife, the training course had 20 participants and included classroom and on-site instruction. Partners included Housing NWT, Infrastructure, MACA and NWTAC.

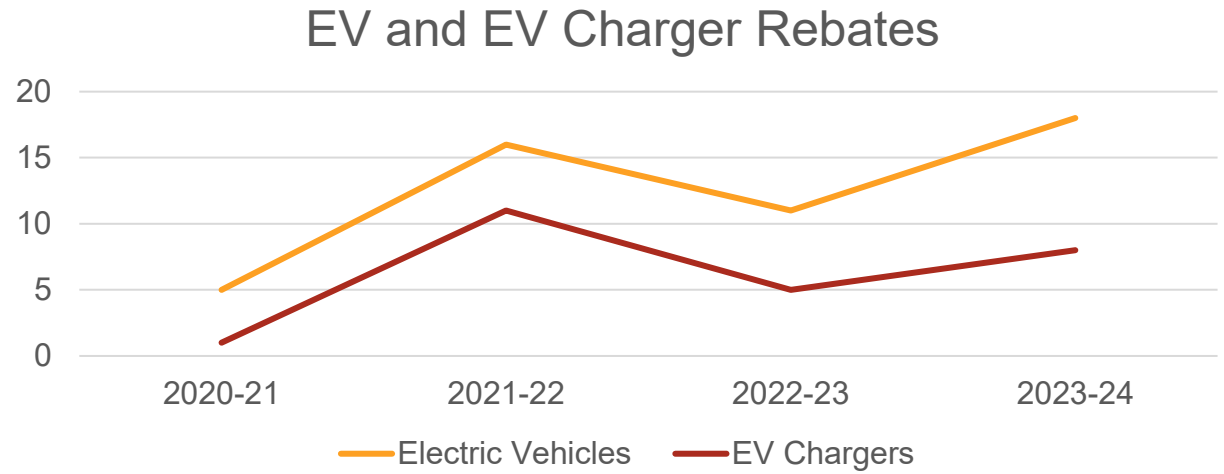
Cold Climate Air Source Heat Pump Pilot Project

- Two-year monitoring and demonstration project, in partnership with Housing NWT. Support also provided by ECC and Infrastructure.
- Final report due in early 2025.
- Expansion of demonstration project currently underway.

Firewood Access Training Program

Two training sessions offered in 2024-25, both in Norman Wells. 12 participants in the most recent training session. Support provided by ECE, ITI and the Town of Norman Wells.

Electric Vehicle Rebate Program

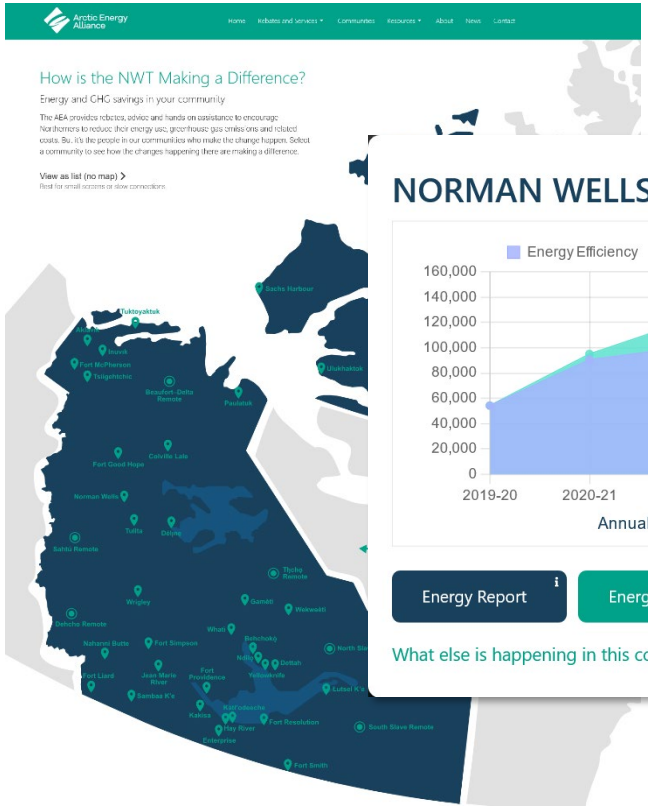


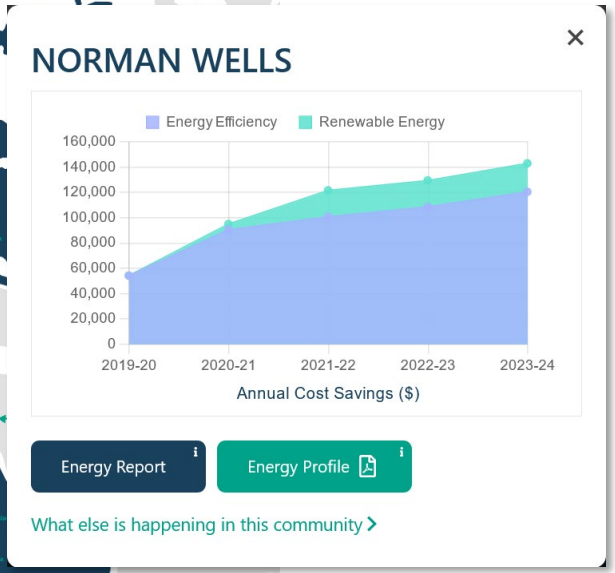
		EV	EV Charger	E-Bike
2020-21		5	1	
2021-22		16	11	
2022-23		11	5	
2023-24		18	8	90

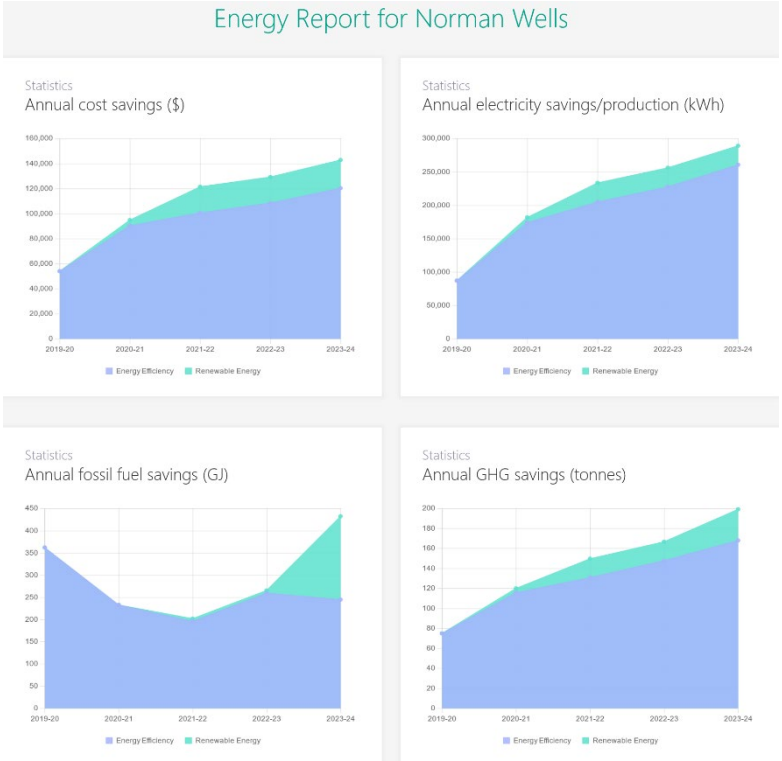
AEA Program Budgets

Fiscal Year	AETP	EEIP	Community Wood Stoves	Biomass Program	EV Rebate Program	Reducing Energy Poverty
2019-20	$700,000	$510,000	$200,000	$100,000	N/A	N/A
2020-21	$818,000	$541,000	$350,000	$100,000	NIL	N/A
2021-22	$1,097,000	$375,000	$182,000	$100,000	$100,000	N/A
2022-23	$987,000	$787,000	$275,000	$100,000	$207,000	N/A
2023-24	$930,000	$630,000	$327,000	$100,000	$230,000	$200,000
2024-25	$300,000	$200,000	NIL	$100,000	$100,000	$200,000
Total	**$4,832,000**	**$3,043,000**	**$1,334,000**	**$600,000**	**$637,000**	**$400,000**
2025-26	TBD					

Sharing Results







Thank you

Mahsi

Questions?

Arctic Energy Alliance