

Evaluating NWT's Renewable Energy Technologies

This guide offers three simple but critical questions to inform conversations regarding greenhouse gas emissions and renewable energy technologies in the NWT. There are many possible ways to reduce emissions. More are presented every day. How do we know how realistic or beneficial each technology is?

The three most important questions are:

- 1) What percentage of territorial emissions is this applicable to?**
- 2) What is the estimated total emissions' reduction this could achieve by 2030?**
- 3) What is the lifecycle cost per lifecycle ton of emissions saved?**

Solutions that offer the best performance deserve the most support. By focusing on these three questions we can determine which are best for us, in our corner of the world, and implement those solutions on a scale and timeframe that will make a difference.

To understand the level of impact required, the International Panel on Climate Change's (IPCC) latest modelling suggests that to avoid the worst consequences of climate change, GHG emissions must be reduced continuously, reaching 45% by 2030, and net zero by 2050.

We need a
45%
reduction in emissions
by 2030

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What percentage of territorial emissions is this applicable to?

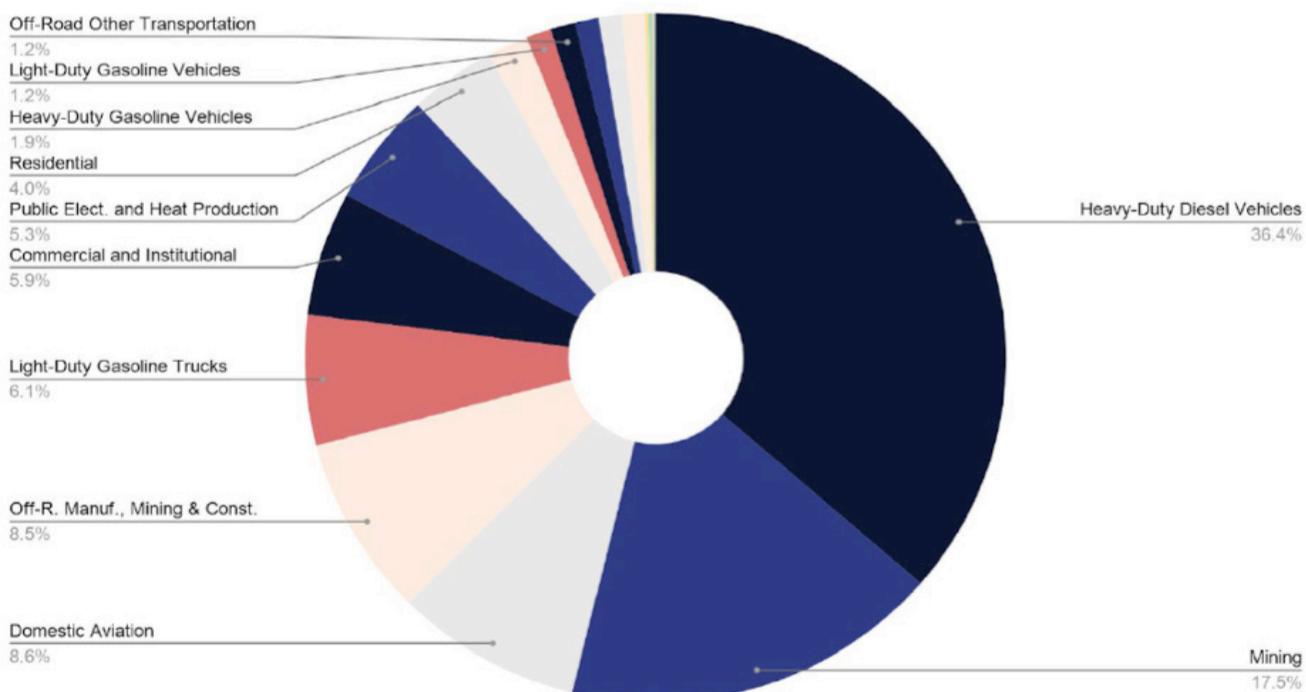
Renewable technologies must address the major sources of emissions.

For example, public electricity (and any associated heat production) makes up roughly 5% of the NWT's total emissions. Therefore, **even if every single community in the NWT got 100% of their electricity from renewable sources (such as solar panels or wind) it would barely put a dent in overall emissions.** Despite this fact, the vast majority of discussion about renewable energy options is about alternatives to electricity production by diesel generators in remote communities.

Adding community-based emissions from heating and transportation to the emissions from electricity still only accounts for roughly 25% of total emissions. Resource extraction and transportation outside community boundaries make up 75% of total emissions. Proposals that effectively address these major sources would provide much greater value.

Environment and Climate Change Canada tracks the scale and source of emissions in Canada:

Northwest Territories 2017 GHG Emissions Inventory



2 What is the estimated total emissions' reduction this could achieve by 2030?

Given the emergency need to reduce emissions as soon as possible, technology either needs to be widely available now, or currently expanding production.

Climate change is an urgent problem. Weather records in the NWT show clear, persistent increases in temperature and precipitation, as well as a host of rare or unprecedented weather effects. The sooner a technology is implemented, the better, as it can begin contributing to lowering overall emissions. Real reductions now are better than promised reductions later.

Asking ***What is the estimated total emissions' reduction this could achieve by 2030?*** helps focus on the technologies that we can use right now rather than waiting for something that isn't fully developed yet.

3 What is the lifecycle cost per lifecycle ton of emissions saved?

Life-cycle costs and emission reductions need to be known so valid comparisons can be made.

To have the widest implementation, and therefore the greatest impact, our resources must be made to go as far as they can. The entire life cycle of any technology can be split into seven stages:

- Planning
- Design
- Construction



- Operations
- Maintenance
- Refurbishment, and
- Disposal



Each of these stages has a cost associated with it, and together they make up the “life-cycle cost” of the technology. Each solution will have an expected service life. Everything must be replaced eventually. When it’s replaced the cycle starts over again. Over its life, it should reduce emissions. Together these are the “life-cycle emissions.”

We cannot achieve the necessary reductions without spending a lot of money. By asking ***What is the lifecycle cost per lifecycle ton of emissions saved?*** we can ensure the dollars we do spend go as far as possible.

Decide for yourself

New technology can be intimidating to understand, and many people say their ideas are the best. It can be difficult to decide who should be listened to. By asking the questions in this primer anyone can determine which technologies deserve support.

For more information on renewable technology in the NWT check out:

- GNWT 2030 Energy Strategy
- Climate Emergency: Getting the NWT off Diesel – Alternatives North