



PRELIMINARY RESULTS



THE MANUFACTURE AND USE OF WASTE CARDBOARD FUEL PELLETS IN INUVIK, NT FOSSIL FUEL AND EMISSION ANALYSIS

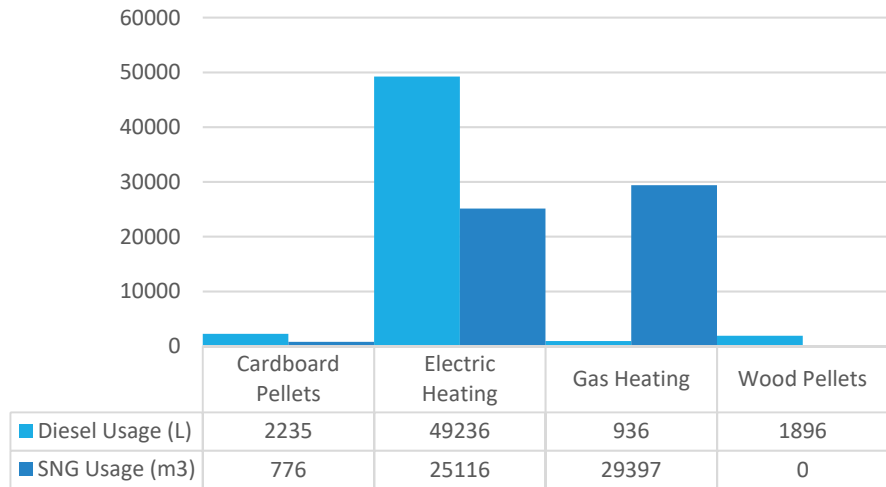
FOSSIL FUEL USAGE

- The graph to the right shows the quantity of fossil fuels needed to deliver the equivalent heating energy of 1 years' worth of cardboard pellets (60 tonnes').

RESULTS

- The use of waste cardboard fuel pellets required the second lowest quantity of fossil fuels next to wood pellets.

Fossil Fuel Usage Relative to Cardboard Pellets



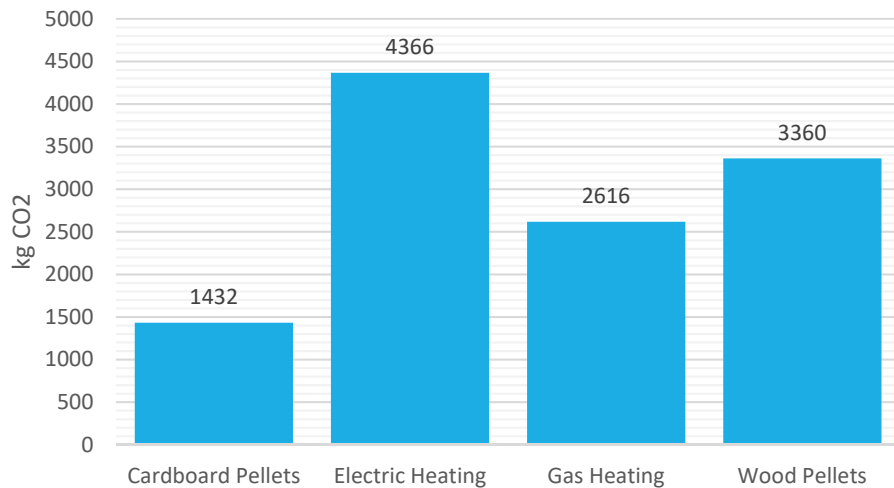
EMISSIONS QUANTITIES

- The graph to the right shows the kilograms of Carbon Dioxide released from each heating source in order to generate the equivalent space heating provided by one tonne of cardboard pellets.
- All heat sources other than the cardboard pellets are penalized with the emissions generated by cardboard decomposing in a landfillⁱⁱ.

RESULTS

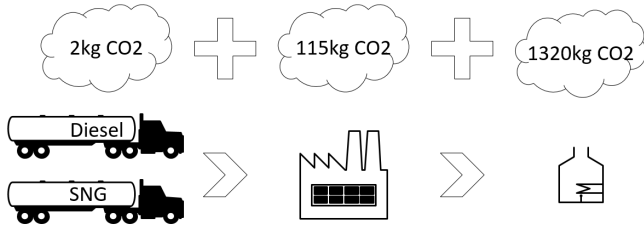
- Using cardboard fuel pellets resulted in the least amount of carbon dioxide being released.

CO2 Emissions of Heating Sources

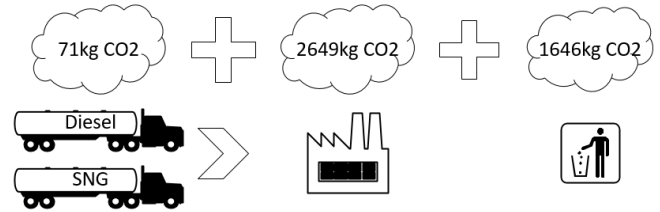


EMISSIONS SOURCES

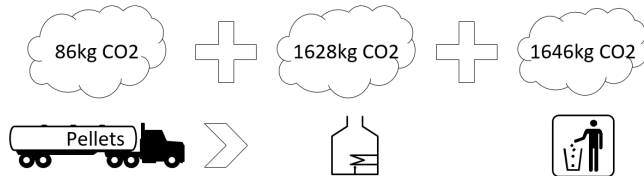
CARDBOARD FUEL PELLETS



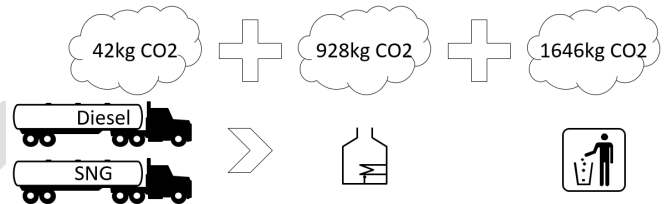
ELECTRIC HEATING



WOOD PELLETS



GAS HEATING



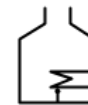
LEGEND

FUEL TRANSPORT EMISSIONS



Diesel emissions generated from transporting cargo into Inuvik. Calculated using an average fuel consumption of 57.6L per 100km, 43900L Tanker capacity, 35.5m³ SNG tanker capacity, 43 tonne pellet capacity (Natural Resources Canada, 2016) and trucking from Whitehorse YT.

COMBUSTION EMISSIONS



The emissions generated from the combustion of fuel. This value is calculated using data from Emissions Factors for Greenhouse Gas Inventories (United States Environmental Protection Agency, 2014).

POWER GENERATION EMISSIONS



The combined emissions from both the Diesel and SNG generators in Inuvik. This calculation assumes 67% diesel generation and 33% SNG generation and reported generator efficiencies from NTPC. (Northwest Territories Power Corporation, 2016).

LANDFILL EMISSIONS



The emissions created from anaerobic decomposition of cardboard in a landfill without gas recovery. This value is calculated using data from Determination of the Impact of Waste Management Activities on Greenhouse Gas Emissions (ICF Consulting, 2005)

ⁱ 60% of 273kg of waste cardboard per day, multiplied by 365 produces 59,787kg of cardboard annually. 273kg waste cardboard per day calculated using NWT landfill statistics.

ⁱⁱ Landfill emissions were calculated using the 'Determination of the Impact of Waste Management Activities on Greenhouse Gas Emissions 2005 Update' report generated by ICF Consulting.