

The OPG – CNL – MIRARCO study

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Laboratoires Nucléaires Canadiens

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The OPG – CNL – MIRARCO study

Goal:

- Evaluate the economic feasibility of an SMR for an actual mine operating in the Canadian North;

Methodology

- Examine the mine electricity and heat consumption projections for the base case (14 years), and benchmark the technologies for four scenarios:
  1) Diesel generators – 5 generators + cogen (the current system)
  2) SMRs only – 5 Units
  3) SMRs (3 x) and diesel generators (2 x)
  4) Mixed system: SMRs (3 x), wind turbines (3 x) and diesel generators (2 x)
- Sensitivities: carbon emissions reduction, longer operating times (today)

Output

- Levelized cost of electricity ($ of electricity and heat production per kWh)
- Carbon emissions

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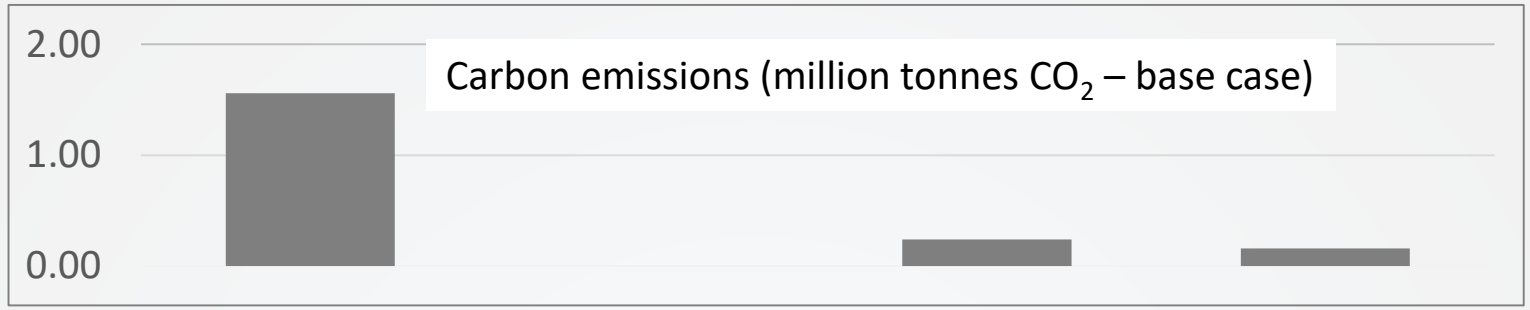

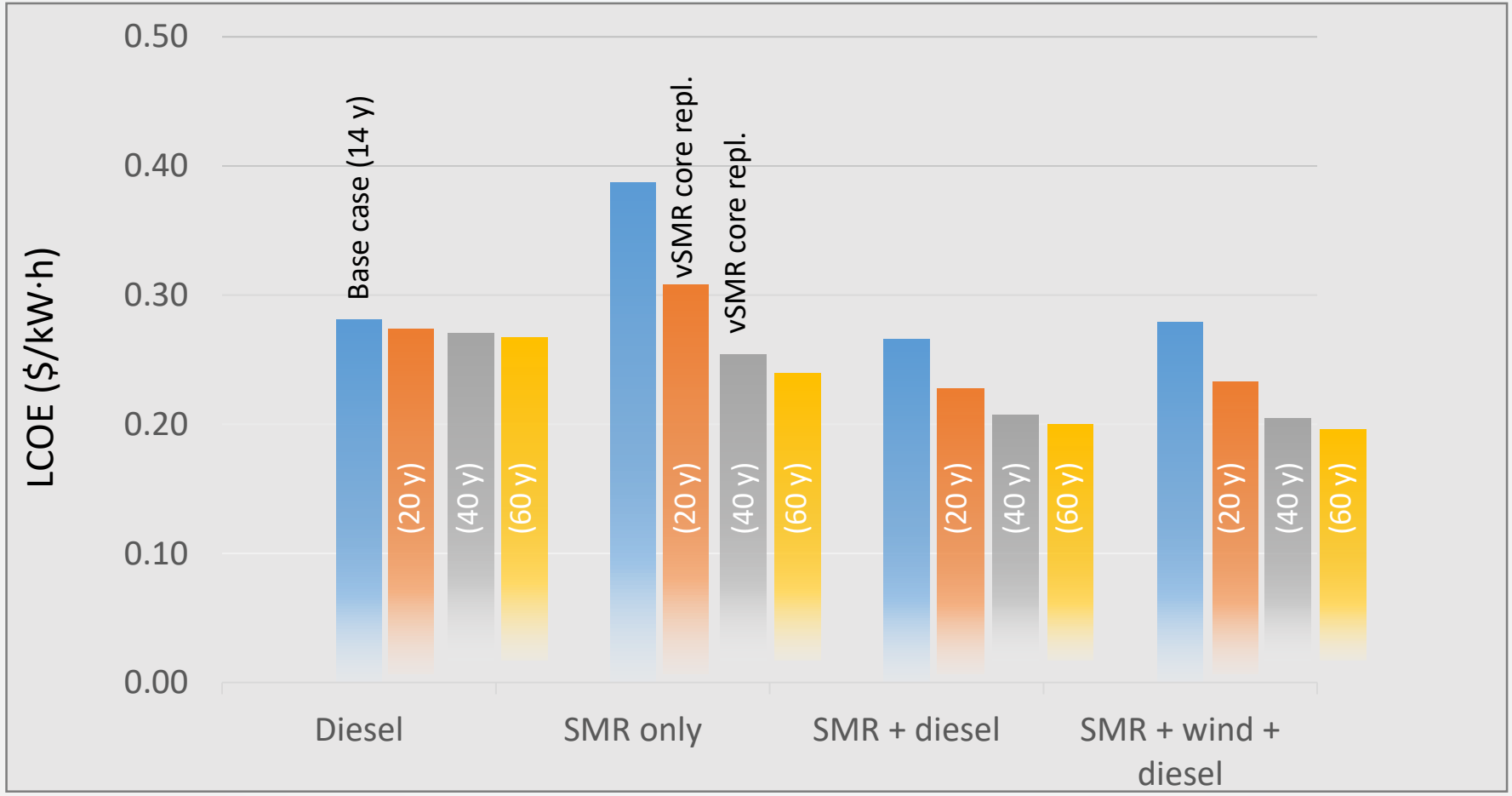

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What this study tells us:

This study provides realistic scenarios of energy production (electricity and heat) for an off-grid mine in Northern Canada.

- We teamed up with a mining company, with actual data and projections;
- What we found: SMRs offer a cost competitive alternative to diesel generators;
- Our most economical scenario: SMRs, used near capacity, provide the base load, coupled with diesel generators for peak shaving;
- SMRs with wind turbines and diesel generators is a good reliable alternative, however at a slight cost penalty;
- SMRs have zero GHG emissions and can help meet Canada's emission targets. SMRs can also mitigate the uncertainty of fuel and carbon costs.

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