

Canadian Geothermal Energy Association  
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May 28, 2018

Dear Premier McLeod,

We at the Canadian Geothermal Energy Association noted with interest the recent release of the Northwest Territories' 2030 Energy Strategy. As the collective voice of Canada's geothermal industry, representing members in NWT and across Canada working to bring clean, reliable, and affordable power and heat to Canadians through geothermal development, we were intrigued to learn the plans of the Government of Northwest Territories as it moves to address long-term energy affordability, security, and sustainability.

We are writing to inform you of additional opportunities, beyond what was included in the 2030 Energy Strategy, for the GNWT to meet its objectives. A greater emphasis on geothermal development in NWT would help realize the "Vision of NWT Energy" described in the 2030 Energy Strategy, in accordance with all of the Guiding Principles laid out therein.

Strategic Goal #2 ("Reduce Greenhouse Gas Emissions from Electricity Generation in Diesel Communities by 25%") mentions geothermal as one of the energy solutions. However, geothermal is not priced out in terms of capital cost or GHG reductions like other energy sources are in that section. Geothermal power generation emits minimal greenhouse gases, while at the same time offering dispatchable and reliable electricity. Over a 30-year period (the estimated site lifespan assigned by CanGEA in our calculations of production capacity and capital cost) geothermal binary closed loop electricity plants will produce negligible carbon dioxide emissions. The US Department of Energy confirms that only 0.05 kg (50 grams) of CO<sub>2</sub> are emitted over a 30-year period and only 167 grams over a 100-year period for this type of geothermal plant, the type most likely to be used in any Canadian geothermal development.<sup>1</sup>

The ancillary benefits of geothermal energy generation will also help fulfill Strategic Goal #4 ("Increase the Share of Renewable Energy Used for Community Heat to 40% by 2030"). Geothermal heat as a by-product of geothermal electricity generation can be used for community heat, filling the need for heat previously provided by fossil fuels. This helps further fulfill Strategic Goal #2 as well. There is a "2-for-1" value for capital cost, as building a single geothermal electricity plant effectively produces two "fuels": the electricity generated, and the heat, which can be used via a district heating system to either replace fossil-fuel-burning sources of heat in the community, or to replace electric heating, thus reducing the amount of electricity needed on the grid. The use of heat generated as a by-product makes geothermal operations even more economical in colder climates such as NWT.

We note the mention of geothermal power in the discussion of Strategic Goal #6 ("A Longer Term Vision"). We are pleased to see the commitment of the GNWT to "expansion and use of

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<sup>1</sup> U.S. Department of Energy, *Energy that Works Around the Clock*, accessed October 18, 2017, [https://energy.gov/sites/prod/files/styles/borealis\\_photo\\_gallery\\_large\\_respondsmall/public/Geothermal%20Infographic.jpg?itok=G6jwms55](https://energy.gov/sites/prod/files/styles/borealis_photo_gallery_large_respondsmall/public/Geothermal%20Infographic.jpg?itok=G6jwms55).

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The Canadian Geothermal Energy Association (CanGEA) is the collective voice of Canada's geothermal energy industry. As a non-profit industry association, we represent the interests of our member companies with the primary goal of unlocking the country's tremendous geothermal energy potential. Geothermal energy can provide competitively priced, renewable, round-the-clock energy to the Canadian and U.S. markets.

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cleaner and renewable local energy resources.” We at CanGEO want to point out additional opportunities for cleaner and renewable local energy resources. The map illustrating the vision for renewable energy in NWT by 2030 shows only one geothermal development, in the Dehcho region. But the potential for geothermal development contributing to the NWT energy future extends far beyond that.

As one example, a geothermal heat and power project is positioned to become a reality in NWT near Fort Liard. The work being done there demonstrates that the 2030 Energy Strategy has reason for much greater optimism with regard to the costs and risks of geothermal development. Unlike other geothermal projects under development in BC or Yukon, the Fort Liard project does not require risky drilling. “Test” wells have already been drilled and deemed to be of sufficient quality for geothermal development by companies such as Chevron, who were operating in the area decades ago and first discovered and tested the resource. The resource has not changed, but advancements since then in drilling and completion technology have made the harnessing of geothermal energy even more attractive. The 2030 Energy Strategy exhorts the “significant theoretical potential” of geothermal in NWT, but laments the need for expensive test wells. But those test wells have already been drilled in some locations, and the data is available for developers and governments to use. Look no farther than geothermal projects underway in Alberta, Saskatchewan, and Northeast BC to see how publicly-available well data is being used to inform and de-risk geothermal development.

The GNWT previously created a favourability map to gather data on geothermal potential in NWT. However, a reservoir engineer was not employed at the time to determine the generation potential by depth. Note the Yukon favourability map available at the following web link, prepared in collaboration with CanGEO, which includes data such as inferred and indicated geothermal resources that the current NWT favourability map lacks:

<https://www.cangea.ca/Yukon-Geothermal-Resource-Estimate-Maps.html>

CanGEO would like to work with the GNWT, as we have with other provinces and territories, in making your favourability map more thorough and up to the standards of the Canadian Geothermal Code for Public Reporting. With a newly comprehensive and up-to-date favourability map, the potential for geothermal development in NWT will no longer be “theoretical.” The need for expensive test wells lamented by the 2030 Energy Strategy will be partially ameliorated by the use of comprehensive public data on NWT’s geothermal potential.

Thank you for taking the time to consider our comments and we hope you keep them in mind as the GNWT moves forward with the 2030 Energy Strategy. We applaud the goals set forth in the 2030 Energy Strategy and we are ready and willing to assist the GNWT in meeting those goals, particularly through geothermal development.

Geothermal is heat, power, jobs, local food and economic diversification. It can provide firm energy at a lower cost, on a timetable and in a manner that benefits taxpayers, ratepayers, First Nations, and the economy, all with a lower carbon footprint.

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Sincerely,

Nathan Coles  
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CC: Scott Spencer, NTPC

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