Acknowledgments

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ᐅᓇ ᐅᓂᒃᑳᖅ ᓴᕿᑎᑦᑎᓯᒪᔪᖅ ᐊᒻᒪᓗ ᑭᖑᕙᖅᓯᒪᓇᑎᒃ ᖃᐅᔨᓴᕈᑎᖏᑦ ᓄᓇᐅᑉ ᐆᓇᕐᓂᖓ ᐊᑐᖅᑕᐅᔪᓐᓇᕐᒪᖔᑦ ᖃᒪᓂᑦᑐᐊᕐᒥ. ᐱᓯᒪᓂᖃᖅᑐᖅ ᐃᑲᔫᑎᓂᐊᖅᑐᓂᒃ ᑲᔪᓯᔪᓄᑦ ᐅᖃᖃᑎᒌᒍᑕᐅᔪᓄᑦ ᐱᔾᔪᑎᒋᓪᓗᒋᑦ ᓄᓇᓕᖓᓂ ᐊᑯᓂᐅᔪᒃᑯᑦ ᐆᒻᒪᕐᑯᑎᖃᕐᕕᐅᔪᓐᓇᕐᓂᖓ ᓯᕗᓂᒃᓴᑦᑎᓐᓂ. ᑕᐃᒫᒃ ᐱᑦᑎᐊᓕᓪᓗᒍ ᖃᐅᔨᓇᓱᑦᑎᐊᕐᓗᒍ ᖄᖓᑕ ᐃᑭᐊᖓ ᖃᓄᓇᑑᖕᒪᖔᑦ, ᐆᓇᖅᑎᑦᑎᓲᑦ ᒪᓂᕋᖓ, ᐊᒻᒪᓗ ᐊᑕᔪᓂᒃ ᖃᐅᔨᒪᓇᓐᖏᑦᑐᓂᒃ, ᐃᓕᑦᑎᓇᓱᒃᑐᑦ ᐋᑐᑎᖃᕈᓐᓇᕐᒪᖔᑕ ᑐᓐᖓᕕᐅᓗᑎᒃ ᑐᑭᓯᓂᐊᕋᑦᑎᒍᑦ ᓄᓇᐅᑉ ᐆᓇᕐᓂᖓ ᐆᒻᒪᕐᑯᑎᒋᔭᐅᔪᓐᓇᕐᒪᖔᑦ ᐃᓗᐊᒍᑦ ᐊᖏᓂᖅᓴᐅᔪᑦ ᓱᕈᖅᓴᐃᓐᖏᑦᑐᓂᒃ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᒃᓴᓄᑦ ᐊᑐᖅᑕᐅᔪᓐᓇᖅᑐᓄᑦ.

ᑖᒃᑯᓄᖓ ᓄᓇᓖᑦ ᑕᐅᑦᑐᖏᓐᓄᑦ, ᐊᑑᑎᓖᑦ ᐱᓕᕆᐊᕆᔭᑦᑎᓐᓄᑦ ᐱᔭᕐᓂᓐᖏᑦᑐᓕᕆᔭᕆᐊᓕᖏᓐᓂᒃ ᓇᓂᓯᓯᒪᑐᐃᓐᓇᓐᖏᑦᑐᒍᑦ ᑭᓯᐊᓂᑦᑕᐅᖅ ᐱᕕᖃᖅᑎᑦᑎᔪᖅ ᓴᕿᑦᑎᓗᑕ ᖃᐅᔨᒪᔭᑦᑎᓐᓂᒃ, ᐋᕿᑦᑎᐊᕈᑎᒃᓴᓂᒃ ᐃᓱᒪᒃᓴᖅᓯᐅᕈᑎᒃᓴᓄᑦ. ᖃᐅᔨᓇᓱᑦᑎᐊᕐᓗᒍ ᐃᑲᔫᑎᔪᖅ ᓇᓂᓗᒋᑦ ᐃᓂᖏᑦ ᓄᓇᒥ ᐆᓇᕐᓂᖏᑦ ᐆᒻᒪᕐᑕᐅᔪᓐᓇᖅᑐᑦ ᐊᓯᖏᓪᓗ ᓄᑖᑦ ᐱᓕᕆᔾᔪᑕᐅᔪᓐᓇᖅᑐᑦ, ᓱᕐᓗ ᓯᕿᓂᕐᒥᑦ, ᐊᓄᕆᒥᑦ, ᐊᒻᒪᓗ ᐃᒫᓂᑦ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᑦ, ᐊᔪᖏᑎᑦᑎᔪᖅ ᓄᓇᓕᖓᓂ ᐊᒻᒪᓗ ᐃᓱᒪᓕᐅᕆᓂᕐᓂᒃ ᑐᑭᓯᑦᑎᐊᒃᑲᓐᓂᕐᓗᑎᒃ ᓇᓕᖃᓃᑦᑎᐊᕐᓂᐊᕐᒪᑕ ᐊᑭᓕᕆᐊᓕᖕᓄᑦ, ᐱᔭᕐᓂᓐᖏᑦᑐᑦ ᐊᑦᑕᕐᓇᖅᑎᑦᑎᔪᓐᓇᖅᑐᓄᑦ, ᐊᒻᒪᓗ ᐊᔪᖅᑎᑦᑎᔪᓄᑦ. ᑐᑭᓯᓇᕐᓂᐊᕐᒪᑕ, ᐅᓇ ᐅᓂᒃᑳᖅ ᐃᑲᔫᑎᓗᓂ ᑕᑯᑎᑦᑎᓗᓂ ᐅᖃᖃᑎᒌᒍᑎᒃᓴᓄᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᓂᒃ ᐊᑑᑎᖃᕐᓗᓂ, ᑲᔪᓯᔪᓐᓇᕐᓗᓂ, ᐊᒻᒪᓗ ᐃᑲᔫᑎᓗᓂ ᖃᒪᓂᑦᑐᐊᕐᒥᐅᓄᑦ ᐊᑯᓂᐅᔪᒃᑯᑦ.

ᑕᐃᑲᓂᑦᑕᐃᓐᓇᖅᑕᐅᖅ, ᐱᒻᒪᕆᐅᙱᖅ ᐃᓕᓴᖅᓯᓗᑕ ᑕᒪᒃᑯᐊ ᐱᔭᕐᓂᓐᖏᑦᑐᑦ ᐃᒻᒥᒍᑦ ᓈᒻᒪᓐᖏᓗᐊᖅᑐᑦ ᐃᓱᒪᒋᓪᓗᒋᑦ ᐊᖏᔪᑦ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᑦ ᓇᑉᐸᖅᑕᐅᒋᐊᓕᑦ ᓴᓇᔭᐅᓂᖏᓐᓄᑦ, ᐱᓗᐊᖅᑐᒥᒃ ᑕᒪᒃᑯᐊ ᓄᓇᐅᑉ ᐃᑭᐊᖓᓂᑦ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᒃᓴᓄᑦ ᓴᓇᓂᖅ. ᓄᓇᕗᒻᒥᑦ ᐃᓄᐃᑦ ᑕᐅᑦᑐᖏᓐᓂᑦ, ᑕᒪᒃᑯᐊ ᐱᓕᕆᐊᖑᔪᑦ ᑎᑭᐅᑎᓂᐊᖅᑐᖅ ᖃᓄᐃᓕᐅᕈᑎᒃᓴᒥᖕᓂᒃ ᐃᓄᐃᑦ ᓇᖕᒥᓂ- ᒐᕙᒪᖃᕈᓐᓇᕐᓂᕐᒧᑦ, ᓄᓇᓕᖕᓂ ᓇᖕᒥᓂᓕᔭᐅᓗᓂ, ᐊᒻᒪᓗ ᑐᓂᓯᓯᒪᓂᐊᖅᑐᑦ ᐊᑯᓂ ᐃᓅᓯᓕᕆᓂᕐᒧᑦ ᐊᒻᒪᓗ ᑮᓇᐅᔭᓕᐅᕈᑕᐅᓗᓂ ᐃᑲᔫᑎᓂᐊᖅᑐᑦ. ᑕᐃᒪᓗ ᐅᓇ ᐅᓂᒃᑳᖅ ᐅᖃᐅᓯᖃᕐᓂᐊᓚᐅᓐᖏᑦᑐᖅ ᑐᑭᒧᐊᒃᑎᑦᑎᓂᕐᒥᒃ ᒐᕙᒪᖃᕐᓂᕐᒥᒃ ᐅᕝᕙᓘᓐᓃᑦ ᓇᖕᒥᖃᕐᓂᕐᒥᒃ ᖃᓄᐃᓕᖓᓇᔭᖅᑕᖏᓐᓂᒃ ᓇᓗᓇᐃᑦᑎᐊᖅᓯᒪᓗᑎᒃ, ᑕᒪᒃᑯᐊ ᐃᓱᒪᒋᔭᓕᐊᓕᑦ ᐱᒻᒪᕆᐅᔪᑦ ᑕᐃᒪᓗ ᐅᖃᖃᑎᒌᒍᑎᖏᑦ ᓅᓂᐊᕐᒪᑕ ᓄᓇᒥᑦ ᐃᑲᔫᑎᓂᑦ ᖃᐅᔨᓇᓱᑦᑎᐊᕐᓂᖅ ᐃᒻᒪᖄ ᐊᑐᓕᖅᑎᑕᐅᓂᐊᕐᒪᑕ.

ᓯᕗᓂᒃᓴᑦᑎᓐᓂ ᕿᓂᕐᓂᖅ ᓄᓇᒥ ᐆᓇᖅᑐᖏᓐᓂᑦ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᖃᕐᓂᖅ ᖃᒪᓂᑦᑐᐊᕐᒥ ᑕᐃᒪᐃᒻᒪᑦ ᑐᑭᒨᒃᑎᑕᐅᓗᓂ ᐃᓄᖕᓂᑦ ᓯᕗᓕᐅᖅᑎᓂᑦ ᐊᒻᒪᓗ ᒪᓕᑦᑎᐊᕐᓗᓂ ᓄᓇᓕᖕᓂ ᓯᕗᓪᓕᐅᑎᕐᑯᔭᐅᔪᓂᒃ, ᐃᓚᒋᔭᐅᓗᑎᒃ ᓄᓇᓖᑦ ᓇᖕᒥᓂᖃᖅᑐᑦ ᓇᑉᐸᖅᑕᐅᓯᒪᔪᒥᒃ, ᐊᑯᓂ ᐃᖅᑲᓇᐃᔮᖃᑦᑎᑦᑎᓂᐊᖅᑐᖅ ᐊᒻᒪᓗ ᐱᔭᕇᖅᓴᑎᑦᑎᓗᓂ ᐃᓄᖕᓂᒃ, ᐊᒻᒪᓗ ᖃᑭᒋᐊᒃᑲᓐᓂᕈᑎᒋᓗᒍ ᐃᑲᔫᑎᒃᓴᓄᑦ ᓄᓇᓕᖕᓂ ᐱᓕᑦᑎᕚᐅᑎᖏᓐᓄᑦ ᐊᒻᒪᓗ ᖃᓄᐃᖏᑦᑎᐊᕈᑎᒃᓴᖏᓐᓄᑦ.

Foreword

This report provides an insightful and timely assessment of geothermal resource potential in Baker Lake. It also represents an essential contribution to ongoing discussions about the community's long-term energy future. By carefully evaluating subsurface conditions, temperature gradients, and associated uncertainties, the study offers a valuable technical foundation for understanding geothermal energy as one option within a broader portfolio of clean energy solutions.

From a community perspective, the value of this work lies not only in its technical findings but also in the opportunity it creates for informed, grounded decision making. The analysis helps situate geothermal energy alongside other technologies, such as solar, wind, and hybrid systems, enabling the community and decision makers to better understand relative levelized costs, technical risks, and practical constraints. In that sense, the report supports an evidence-based discussion of which pathways are most appropriate, feasible, and beneficial for Baker Lake over the long term.

At the same time, it is essential to recognize that technical feasibility alone is not sufficient when considering major energy infrastructure projects, particularly those involving subsurface resource development. From a Nunavut Inuit perspective, such projects must ultimately be framed around Inuit self-determination, community ownership, and the delivery of long-term social and economic benefits. While this report was not intended to address governance or ownership models in detail, those considerations are essential as discussions move from resource assessment toward potential implementation.

Future exploration of geothermal energy in Baker Lake should therefore be guided by Inuit leadership and aligned with community priorities, including local ownership of infrastructure, long-term employment and training opportunities for Inuit, and reinvestment of benefits into community services and well-being. Significant capital investments in energy

ᐊᖏᔪᒥᒃ ᐊᑭᑐᔪᒥᒃ ᖃᑮᔪᑎᒃᓵᓕᐅᕐᓗᑎᒃ ᐆᒻᒪᖁᑎᖃᐅᑎᒃᓴᓂᒃ ᐃᓱᒪᒋᔭᐅᔭᕆᐊᓕᒃᑕᐅᖅ ᓴᓇᔭᐅᑎᓪᓗᒍ ᐊᑕᑦᑎᐊᕐᓗᓂ ᖃᑮᔪᑎᒃᓵᓕᐅᕈᑎᒋᓗᒍ ᐃᒡᓗᒃᓴᓄᑦ, ᓂᕿᒃᓴᖃᕐᑎᑦᑎᓂᕐᒧᑦ, ᐋᓐᓂᐊᖃᖅᑕᐃᓕᑎᑦᑎᓂᕐᒧᑦ, ᐊᒻᒪᓗ ᐊᓯᖏᓐᓂᒃ ᐊᖑᑎᖃᒻᒪᕆᒃᑐᓂᒃ ᐃᓅᓯᓕᕆᓂᕐᒧᑦ ᓇᑉᐸᕆᐊᓕᖕᓄᑦ, ᖃᐅᔨᒪᑦᑎᐊᕐᓗᑕ ᐆᒻᒪᖁᑎᖃᐅᑎᒃᓴᒧᑦ ᓴᓇᔭᐅᔪᑦ ᐃᖏᕐᕋᓖᓕᐊᓂᖔ ᐊᔪᐃᓐᓃᖅᑎᑦᑎᓯᒪᓂᐊᖅᑐᖅ ᐊᖏᓂᖅᓴᑎᒍᑦ ᓄᓇᓕᖕᓂ ᓴᐱᓕᔾᔪᓐᖏᒻᒪᑕ ᐋᕿᒃᓯᒪᔾᔪᑕᐅᓂᖏᓛᕐᓗᓂ ᐃᒻᒥᒍᑐᐊᖅ ᓇᐸᓂᖕᖔᓄᑦ ᐱᔭᕐᓂᓐᖏᑦᑑᑎᒃᓴᓄᑦ ᐋᕿᒃᓯᒪᔾᔪᑎᒃᓴᓄᑦ.

 ᐅᓇ ᐅᓂᒃᑳᖅ ᕿᒥᕐᕈᐊᖅᑕᐅᒋᐊᓕᒃ ᐱᒋᐊᕐᓂᖔᓂ ᑐᓂᓯᓯᒪᔪᖅ ᐊᑑᑎᖃᒻᒪᕆᒃᑐᓂᒃ ᓄᓇᐅᑉ ᐆᓇᕐᓂᖔᓂᒃ ᐊᑐᖅᑕᐅᔪᓐᓇᖅᑐᒥᒃ ᐊᒻᒪᓗ ᑎᑭᐅᑎᓗᐊᕆᐊᖃᓐᖏᑕᖏᓐᓂᒃ, ᐱᓗᐊᖅᑐᒥᒃ ᐃᒃᐱᒋᑦᑎᐊᖅᓱᒍ ᐆᓇᕐᓂᖔ ᐊᑐᖅᑕᐅᔪᓐᓇᖅᑐᖅ ᐊᔾᔨᒋᓐᖏᑕᖔ ᖃᐅᒻᒪᖁᑎᓄᑦ ᐅᐊᔭᑎᒍᑦ. ᐃᓂᖃᖅᑎᑦᑎᔪᖅ ᑐᑭᓯᓇᓱᖃᑎᒌᒍᑕᐅᒃᑲᓐᓂᕐᓗᓂ, ᓇᓗᓇᐃᑦᑎᐊᒃᑲᓐᓂᕐᓗᒍ ᐱᔭᕐᓂᓐᖏᑦᑐᖏᑦ-ᑮᓇᐅᔭᓕᐅᕈᑕᐅᔪᓐᓇᕐᓂᖔᓄᑦ ᖃᐅᔨᓴᕐᓗᒍ, ᐊᒻᒪᓗ ᓄᓇᓕᖕᓂᑦ-ᐃᖏᕐᕋᑎᑕᐅᓗᑎᒃ ᐅᖃᖃᑎᒌᒍᑎᒃᓴᑦ ᖃᓄᖅ ᑭᖑᓪᓕᕐᒥᒃ ᐱᓕᕆᓂᐊᕐᒪᖔᑦᑕ. ᐱᔾᔪᑎᒋᓪᓗᒍ, ᑐᓂᓯᓯᒪᔪᖅ ᐊᑐᑎᖃᒻᒪᕆᒃᑑᓪᓗᓂ ᖃᒪᓂᑦᑐᐊᕐᒥᐅᓄᑦ ᐃᑲᔫᑎᔪᖅ, ᐃᓱᒪᒋᑦᑎᐊᕐᓗᒋᑦ ᓱᕈᖅᓴᐃᓐᖏᑦᑐᒥᒃ ᐆᒻᒪᖁᑎᖃᕈᓐᓇᕐᓂᖅ ᐱᓯᒪᔪᖅ ᑕᒪᐃᓐᓂᒃ ᐱᔭᕐᓂᓐᖏᑦᑑᖃᑦᑕᕐᒪᑕ ᐊᑐᖅᑕᐅᔪᑦ ᐅᑭᐅᖅᑕᖅᑐᒥ ᐊᒻᒪᓗ ᓄᓇᓖᑦ ᐊᑐᑎᖏᑦ, ᓯᕗᓪᓕᐅᑎᕐᑯᔭᖏᑦ, ᐊᒻᒪᓗ ᐱᔪᒪᔭᖏᑦ.

ᐋᓕᒃᔅ ᑯᒃ ᐆᒻᒪᖁᑎᖃᐅᑎᓂᒃ ᖃᐅᔨᒪᔨᒻᒪᕆᖓᑦ ᖃᒪᓂᑦᑐᐊᖅ, ᓄᓇᕗᑦ

infrastructure should also be considered alongside complementary investments in housing, food security, health, and other critical social infrastructure, ensuring that energy projects function as enablers of broader community resilience rather than stand-alone technical solutions.

This report should be viewed as a starting point that provides valuable insight into geothermal potential and its limitations, particularly with respect to heat applications versus electricity generation. It creates space for further dialogue, more detailed techno-economic analysis, and community-led discussion about next steps. In that regard, it offers real value to Baker Lake by supporting informed, thoughtful consideration of clean energy options that reflect both the technical realities of the North and the community's values, priorities, and aspirations.

Alex Cook

Energy Champion for Baker Lake, Nunavut

House overlooking the river in Baker Lake, Nunavut. Photo by Ysaline Bacon (CC BY 4.0).

Baker Lake, Nunavut. © Jane M / Adobe Stock.

ᐊᐅᓚᑦᓯᔩᓂᑦ ᓇᐃᓈᖅᓯᒪᔪᖅ

ᓄᓇᕗᑦ ᐊᖏᓂᖅᐹᖑᕗᖅ, ᓇᖕᒥᓂ-ᒐᕙᒪᖃᖅᑐᖅ ᓄᓇᕗᑦ ᑎᐅᓕᑐᐊᓕ, ᐊᖏᕐᕋᕆᔭᐅᔪᖅ 25 ᐃᓄᐃᑦ ᓄᓇᓖᑦ. ᐅᑯᐊ ᓄᓇᓖᑦ ᓵᑎᓯᒪᖃᑦᑕᖅᑐᑦ ᐊᖏᔪᒥᒃ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᒃᓴᓄᑦ ᐱᔭᕐᓂᖕᖏᑦᑐᖅᓯᐅᖅᑐᑎᒃ. ᐊᑕᓂᖃᖕᖏᑦᑎᐊᖅᑐᑦ ᐊᓯᒥᖕᓄᑦ ᓄᐊᑦ ᐊᒥᐊᓕᒐᒥ ᐊᕐᑯᑎᑕᖃᖕᖏᑦᑐᖅ, ᓄᓇᓯᐅᑎᑯᑖᒃᑕᖃᖕᖏᑦᑐᖅ, ᐅᖅᑯᓘᖕᓃᑦ ᐅᐊᔭᓂᒃ ᐊᑕᔪᖃᖕᖏᑦᑐᑦ ᐊᓯᒥᖕᓄᑦ, ᐊᑐᖅᓯᔪᑦ ᓇᖕᒥᓂᖅ ᒫᓯᓂᒃ ᐅᖅᓱᐊᓗᖕᓂᒃ, ᑎᑭᑎᑕᐅᕙᒃᑐᑦ ᐅᒥᐊᕐᔪᐊᒃᑯᑦ ᐊᑕᐅᓯᐊᖅᑐᑎᒃ ᐊᕐᕌᒍᒥ, ᑕᒪᕐᒥᒃ ᐅᕐᑰᑎᑦᑎᔪᑦ ᐃᑲᔫᑎᒃᓴᐅᓯᖏᑦᑎᒍᑦ ᐊᒻᒪᓗ ᖃᐅᒻᒪᕐᑯᑎᖃᖅᑎᑦᑎᓗᓂ. ᐅᑯᐊ ᑭᓯᐊᓂᐅᕙᒃᑐᑦ ᐊᓯᖃᖕᖏᑦᑐᖅ ᐊᑭᑐᔫᓗᓂ, ᐱᔭᕐᓂᖕᖏᑦᑐᖅ ᑎᑭᑎᓇᓱᒃᑐᒍ, ᐆᒻᒪᕐᑯᑎᖃᐅᑎᓄᑦ ᐊᑐᖅᑕᐅᔪᑦ, ᐊᒻᒪᓗ ᐊᖏᔪᒥᒃ ᓯᓚᑦᑎᓐᓂᒃ ᓱᑭᖅᓴᐃᔪᑦ.

ᑕᐃᒪᓐᓇᐃᓕᖓᑎᓪᓗᒍ, ᓄᓇᓕᖕᓂ ᓯᕗᓕᐅᖅᑎᑦ ᖀᓂᖅᑐᑦ ᖃᓄᖅ ᐱᕚᓪᓕᕈᑎᒃᓴᓂᒃ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᒃᓴᓄᑦ ᐃᒃᑲᒃᓴᐅᑎᒃᓴᖅ ᓇᓗᓇᐃᖅᓯᓗᑎᒃ ᓄᓇᓕᖕᓂ ᐊᒻᒪᓗ ᑕᒪᐅᖕᒎᑐᐃᓐᓇᖕᖏᑦᑐᒥᒃ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᖃᖅᑎᑦᑎᔾᔪᑎᒃᓴᑦ ᐅᑯᐊᓗ ᐃᑲᔫᑎᓂᐊᖅᑐᑦ ᐅᑭᐅᖅᑕᖅᑐᖅ ᐊᕙᑖᓂᒃ. ᓄᓇᒥᑦ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᒃᓴᖏᓐᓄᑦ, ᐅᑯᐊᓗ ᐅᕐᑰᑎᑦᑎᔪᓐᓇᖅᑐᑦ ᐆᓇᕐᓂᖓᓂᑦ ᐃᑎᓂᖅᐹᖓᓂᑦ ᓄᓇᐅᑉ ᐊᑐᖅᓯᓗᑎᒃ, ᖃᐅᒻᒪᕐᑯᑎᖃᕐᑎᑦᑎᕙᐅᓪᓗᓂ ᐃᒃᑲᒃᓴᐅᑎᖃᕐᕙᐅᓗᓂ, ᐅᖅᑯᓘᖕᓃᑦ ᑕᒪᕐᒥᒃ, ᐅᑯᐊ ᐊᔪᕐᓇᖕᖏᑦᑐᑦ ᐊᑐᖅᑕᐅᔪᓐᓇᕐᒥᔪᑦ.

ᐅᑯᐊ Hᐋᓪᓚᒃᑯᑦ ᖃᒪᓂᑦᑐᐊᖅ (ᑕᐃᔭᐅᔩᑦ ᐸᐃᑯ ᓚᐃᒃ), ᐅᑯᐊᓗ ᓄᓇᓪᒪᓇᖕᒦᑦᑐᑦ ᖃᓇᑕᒥ ᕿᑎᑦᑎᐊᖕᒐᓂ, ᑖᓐᓇᑐᐊᖅ ᓯᓪᔭᒥᐅᑕᐅᖕᖏᑦᑐᖅ ᓄᓇᓕᒃ ᓄᓇᕗᒻᒥ. ᐃᓂᖃᖅᑐᖅ ᖄᖓᓂ ᑲᓇᑕᐅᑉ ᐊᐅᒎᓇᖕᖏᑦᑐᐊᓂ ᖁᓕᐋᓘᐊᓂ, ᐊᕕᒃᑐᖅᓯᒪᔪᑦ ᐱᑕᖃᖅᑐᑦ ᓄᑕᐅᖕᖏᓂᖅᐹᓂᒃ ᐅᔭᖃᓂᒃ ᓄᓇᕐᔪᐊᓕᒫᒥ. ᒪᓕᒃᓗᒍ ᖃᐅᔨᒪᔾᔪᑎᑕᖃᖕᖏᓂᖓᓄᑦ, ᐅᖃᖅᑐᖃᖃᐅᔪᖅ ᑲᓇᑕᒥ ᖃᐅᔨᓴᖅᑕᐅᓇᓱᒃᓗᓂ ᐊᑦᑎᒃᑐᐊᓃᑦᑐᖅ ᓄᓇ ᐆᓇᕐᓂᖓ ᑕᐅᕙᑦᓯᒪ ᓄᓇᖓᓂ, ᐊᑦᑎᒃᑐᒦᓪᒪᑦ ᓄᓇᒥᐅᑕᑕᖃᐅᖅᑐᖅ. ᖃᐅᔨᓴᕈᑎᕗᑦ, ᑕᐃᒪᓐᓇᐅᒐᓗᐊᖅᑎᓗᒍ, ᓇᓂᓯᓯᒪᔪᑦ ᖃᒪᓂᑦᑐᐊᖅ ᐃᓂᖃᖅᑎᑦᑎᔪᓐᓇᖅᑐᖅ ᓄᓇᐅᑉ ᐃᑭᐊᖓᓂᑦ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᖃᕈᓐᓇᖅᑐᒥᒃ.

ᖃᐅᔨᓴᕈᑎᐅᓪᓗᒍ ... RESPEC ... 500-ᒦᑕ ... 2022-ᒥ. ... CanmetENERGY, ᐊᒻᒪᓗ RESPEC ...

... CanmetENERGY ... RESPEC. ...

Executive summary

Nunavut is a vast, self-governed Inuit territory, home to 25 Inuit communities, where energy sovereignty remains a key challenge. Not connected to the rest of North America by road, rail, or electricity transmission line, people rely entirely on fossil fuels, shipped in once a year by boat, for both space heating and electricity. This dependency leads to high costs, logistical vulnerabilities, and environmental risks, while limiting local control over energy decisions.

In this context, Inuit leaders and local organizations are seeking to bolster their energy security by identifying local and sustainable energy alternatives that are adapted to the Arctic environment. Geothermal energy, which harnesses heat from deep within the Earth to generate renewable heat, electricity, or both, is one promising option.

The hamlet of Baker Lake (also known as Qamani'tuaq), which marks the geographic centre of Canada, is the only inland community in Nunavut. It sits on the Canadian Shield, a region made up of some of the oldest rocks on Earth. Based on limited data, earlier national assessments suggested a low geothermal potential for this area, due mainly to low average geothermal gradients. Our research, however, reveals higher-than-expected subsurface temperatures, opening possibilities for a deep geothermal development.

To assess this potential, Qulliq Energy Corporation, Nunavut's public power utility, partnered with RESPEC, a consulting and engineering services firm, to drill a 500-metre-deep borehole near Baker Lake in 2022. This project aimed to better evaluate the geothermal resource. The data collected include a downhole temperature profile and numerous core samples, which were later analyzed at the Institut National de la Recherche Scientifique (INRS), CanmetENERGY, and RESPEC laboratories.

Using these borehole data, I conducted a geothermal resource assessment in collaboration with CanmetENERGY, Qulliq Energy Corporation, and RESPEC. We estimated underground temperatures down to 10 km using statistical methods. Our results, summarized here and presented in detail in Bacon et al. (2024), show that subsurface temperatures are higher than previously expected, suggesting that Baker Lake could host a deep geothermal system.

ᐃᑭᐊᖓ ᓄᓇᐅᑉ ᐆᓇᕐᓂᖓ ᐊᑦᑎᒃᓯᓯᒪᔪᖅ 10 ᑭᓚᒦᑐᒥ ᐊᑐᖅᓯᓪᓗᑕ ᓈᓴᐅᖅᓯᒪᔪᓂᒃ. ᑐᑭᓯᓇᖅᓯᔪᑦ, ᓇᐃᓈᖅᓯᒪᕗᑦ ᑕᕝᕙᓂ ᐊᒻᒪᓗ ᐅᖃᐅᓯᐅᔪᑦ ᓇᓗᓇᐃᔭᑦᑎᐊᖅᓯᒪᓪᓗᑎᒃ ᑕᒪᕐᒥᒃ ᑕᐃᑲᓂ ᐸᐃᑲᓐ ᐊᓯᙱᓪᓗ (2024), ᑕᑯᑎᑦᑎᔪᑦ ᖃᖓᑕ ᐃᑭᐊᖓ ᐆᓇᕐᓂᖓ ᐆᓇᕐᓂᖅᓴᐅᓚᐅᖅᑐᖅ ᓂᕆᐅᒋᔭᐅᔪᒥᑦ, ᐃᓱᒪᓕᖅᓯᒪᕗᖅ ᖃᒪᓂᑦᑐᐊᖅ ᐃᓂᖃᖅᑎᑦᑎᕕᐅᔪᓐᓇᖅᑐᖅ ᐃᑎᔪᒥᑦ ᓄᓇᒥ ᐃᑭᐊᖓᓂ ᐃᒃᑲᒃᓴᐅᑎᒃᓴᖅ.

ᑕᐃᒪᐃᓕᖓᔪᖅ, ᓄᓇᐅᑉ ᐃᑭᐊᖓᓂ ᐃᑯᐊᒃᓴᐅᑎᒃᓴᖅ ᐱᓯᒪᔪᖅ ᐅᕐᑰᑎᑦᑎᔪᓐᓇᖅᑐᖅ ᑐᕐᑯᖅᓯᒪᓗᓂ ᐊᒥᓱᓄᑦ ᑭᓚᒦᑕᔅᓄᑦ ᓄᓇᐅᑉ ᐃᑭᐊᖓᓂᑦ, ᐃᑎᓂᖅᓴᐅᖄᑦᑕᖅᑐᖅ 3 ᑭᓚᒦᑕᔅ. ᐅᓇ ᑎᑎᕋᖅ ᑐᓂᓯᓯᒪᔪᖅ ᑐᑭᓯᓇᖅᓯᑎᓯᒪᓪᓗᓂ ᖃᓄᐃᓕᖓᓂᖓᓂᒃ ᑕᒪᓐᓇ ᐃᓕᓐᓇᓱᒃᑕᕗᑦ ᓇᓂᔭᕗᑦ ᐊᑐᒐᒃᓴᐅᓂᐊᕐᒪᑕ ᐅᓄᕐᓂᖅᓴᓄᑦ.

ᑭᓱᒥᑦ ᐊᓂᐊᕆᔪᓐᓇᙱᑦᑐᖅ, ᐃᒪᕈᓱᖅ ᐅᔭᖁᖓ ᑲᓇᑕᐅᑉ ᕐᑯᓕᐊᓗᐊᓂ ᐊᐅᒍᓐᓇᙱᑦᑐᒥ, ᐊᐅᓪᓗᑎᔪᒍᑦ ᐱᐅᓯᕚᓪᓕᖅᑎᓪᓗᒍ ᓄᓇᐅᑉ ᐃᑭᐊᖓᓂ ᐃᒃᑲᒃᓴᐅᑎ, ᑕᐃᒪᓗ ᖄᖓ ᐃᒪᖃᕐᓗᓂ ᐃᒻᒥᓂᒃ ᐊᐅᓚᐅᑎᖃᖅᑐᖅ ᐃᒪᖓᓄᑦ ᐊᒻᒪᓗ ᐅᕐᑰᑎᑦᑎᔾᔪᑎᖓᓄᑦ. ᑕᐃᒪᓗ ᓄᑖᑦ ᓴᕿᑉᐸᓪᓕᐊᑎᓪᓗᒋᑦ ᖃᕆᓴᐅᔭᖅᑎᒍᑦ ᐱᓕᕆᔾᔪᑕᐅᓕᖅᑐᖅ, ᐱᐅᓯᕚᓪᓕᖅᐸᓪᓕᐊᑐᐃᓐᓇᕐᓂᐊᖅᑐᖅ ᓄᓇᐅᑉ ᐃᑭᐊᖓᓂ ᐆᓇᕐᓂᖓ ᐊᑐᕈᓐᓇᖅᓯᓗᒍ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᓄᑦ ᓄᓇᖓᓐᓂ ᓄᓇᕗᑦ, ᐃᓱᒪᕆᔭᐅᓚᐅᖅᓯᒪᔪᖅ ᐊᑑᑎᖃᕋᔭᙱᓂᖓᓂᒃ.

ᐅᓇ ᐃᓚᑕᐅᓇᓱᒃᑐᖅ ᓇᓂᓯᓯᒪᔪᖅ 4-ᑭᓚᒦᑕᔅ ᐃᑎᑎᒋᔪᖅ ᐊᑐᕈᓐᓇᖅᑐᖅ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᓄᑦ ᓄᑖᖑᓗᓂ ᐃᒃᑲᒃᓴᐅᑎ ᐊᑐᖅᑕᐅᔪᓐᓇᕐᓂᐊᕐᒪᑦ ᐅᕐᑰᑎᑦᑎᔪᓐᓇᕐᓗᓂ ᓄᓇᓕᖕᓂᒃ. ᓂᐅᖅᑐᖅᑕᐅᓂᖓ ᑎᑭᐅᒪᔪᖅ 7-8 ᑭᓚᒦᑕᔅ, ᐆᒻᒪᕐᑯᑎᖃᕐᑎᑦᑎᔪᓐᓇᖅᑐᖅ ᐃᒃᑲᒃᓴᐅᑕᐅᔪᓐᓇᖅᑐᖅ ᑕᒪᐃᓐᓂᒃ ᓄᓇᓕᖕᓂᒃ ᐊᔪᕐᓇᖁᔭᕐᑰᖔᖏᑦᑐᖅ.

ᑕᐃᒪᓐᓇᐅᓚᓗᐊᖅᑎᓪᓗᒍ, ᐊᒥᓱᑦ ᑐᑭᓯᐊᓂᒃᑕᐅᙱᑦᑐᑦ, ᐱᓗᐊᖅᑐᒥᒃ ᓄᓇ ᑕᐃᒪᓐᓇᐃᑎᑦᑎᓲᖑᓕᖓ ᐊᒻᒪᓗ ᐊᐅᓚᐅᓯᕆᔭᑦ ᖄᖓᓂ ᐃᒪᖃᕈᓐᓇᖅᑐᖅ ᐃᑎᔫᔪᖅ, ᓴᙱᔪᓂᒃ ᐃᓂᑐᖃᖓᓂᑦ ᓴᙱᔪᐋᓗᒃ ᐃᖏᕐᕋᓂᖓ. ᓱᓕ. ᖃᐅᔨᓴᖅᑕᐅᒃᑲᓐᓂᕆᐊᖃᖅᑐᖅ ᑐᑭᓯᓇᙱᑦᑐᑦ ᐊᒻᒪᓗ ᑮᓇᐅᔭᓕᐅᕈᑕᐅᔪᓐᓇᕐᒪᖔᑦ ᓄᓇᐅᑉ ᐆᓇᕐᓂᖓ ᖃᒪᓂᑦᑐᐊᕐᒥ. ᐅᓇ ᐃᓚᖃᖅᑐᖅ ᖃᑦᑕᖅ ᐊᑐᖅᑕᐅᔪᓐᓇᖅᑐᖅ, ᓄᓇᓕᖕᓂ ᑐᑭᓯᓇᓱᒃᑎᒃᑲᓗᑕ, ᐊᒻᒪᓗ ᓄᐃᑦᑎᓗᑕ ᐃᓂᖓᓂᑦ ᖃᐅᔨᓴᕈᑎᑖᕐᓴᓂᒃ ᐊᑐᖅᓯᓗᑕ ᖃᓄᐃᓕᐅᕈᑕ ᐅᓕᖅᑐᒃᓂ ᓱᕐᓗ ᖃᕆᓴᐅᒃᑯᑦ ᑕᑯᓐᓇᑦᑎᐊᕐᓗᒋᑦ, ᐳᓚᓕᖕᒧᑦ ᖃᐅᔨᓴᕐᓗᒍ, ᐃᑎᔪᒥᒃ ᓂᐅᖅᑐᕐᓗᒍ, ᐅᕝᕙᓘᓐᓃᑦ ᓄᓇᖓᑕ ᑕᐅᑦᑐᖓ ᐊᔾᔨᙳᐊᓕᐊᖑᓗᑎᒃ ᖃᕆᓴᐅᔭᒃᑯᑦ.

ᖃᑭᐟᔪᑎᒃᓴᑦ ᐱᐅᓯᕚᓪᓕᖅᑎᓪᓗᓂ ᓄᓇᖓᓂ ᐆᓇᕐᓂᖃᕐᓂᖓ ᐊᒻᒪᓗ ᐃᑎᔪᒥᒃ ᓂᐅᖅᑐᕐᓗᒍ ᖃᐅᔨᓴᖅᑕᐅᓗᓂ ᑲᓇᑕᐅᑉ ᕐᑯᓕᐊᓗᐊ ᐊᐅᒍᓐᓇᙱᑦᑐᒥ, ᒥᑭᔪᒥᒃ ᑲᔪᓯᔪᓇᕐᒪᖔᑦ ᑲᔪᓯᔪᓐᓇᖏᓪᒪᖔᑦ ᐱᓕᕆᐊᒃᓴᓄᑦ, ᐃᑲᔪᕈᓐᓇᖅᑐᑦ ᐅᖓᓯᒃᑐᒦᑦᑐᓂ ᓄᓇᓕᖕᓂ ᐃᓱᒪᓕᐅᕈᑎᒃ ᐃᒻᒥᖕᓄᑦ ᓄᓇᒥᑦ ᐆᓇᕐᓂᖓᓂᑦ ᐃᑲᔫᓯᐅᑎᖃᕈᓐᓇᕐᒪᖔᑦ ᑎᑭᐅᑎᑦᑎᐊᕈᓐᓇᐅᓂᐊᕐᒪᑦ ᐆᒻᒪᕐᑯᑎᖃᐅᑎᒃᓴᖅᑐᓄᑦ.

In this context, *deep geothermal* refers to systems accessing heat stored several kilometres below the surface, typically deeper than 3 km. This document provides a non-technical overview of that study to make its findings accessible to a broader audience.

Given the low-porosity, low-permeability crystalline rocks of the Canadian Shield, we focus on enhanced geothermal systems (EGS), which increase rock permeability through hydraulic stimulation to circulate water and extract heat. While still an emerging technology, enhanced geothermal systems could make it possible to tap into geothermal energy in regions like Nunavut, previously considered unfeasible.

This study finds that a 4-km-deep well pair to power a new district heating system could meet the space-heating needs of the community. If drilling reached 7-8 km, electricity generation sufficient to power the entire community may also be possible.

For Baker Lake, this could mean more than energy alone: a community-owned geothermal system could strengthen local governance over energy resources, create long-term jobs in operations and maintenance, and reinvest savings into priorities like housing or cultural infrastructure.

However, many uncertainties remain, especially regarding naturally occurring and engineered subsurface permeability in a deep, high-pressure in-situ regime. Further research is needed to assess the technical and economic feasibility of a geothermal system in Baker Lake. This includes reservoir modelling and collecting more site-specific data using techniques such as scanline fracture surveys, hydraulic testing, deeper drilling, or geophysical imaging. To ensure alignment with Inuit values and priorities, further research must integrate community-led approaches such as collaborative community consultation to incorporate local knowledge and priorities. Geothermal pilot projects should be community designed, led, and owned to ensure skills and benefits remain in the community.

Investing in enhanced geothermal and deep drilling research in the Canadian Shield, along with small-scale pilot projects, could help remote Northern communities determine for themselves whether geothermal energy is a viable means of achieving energy security.