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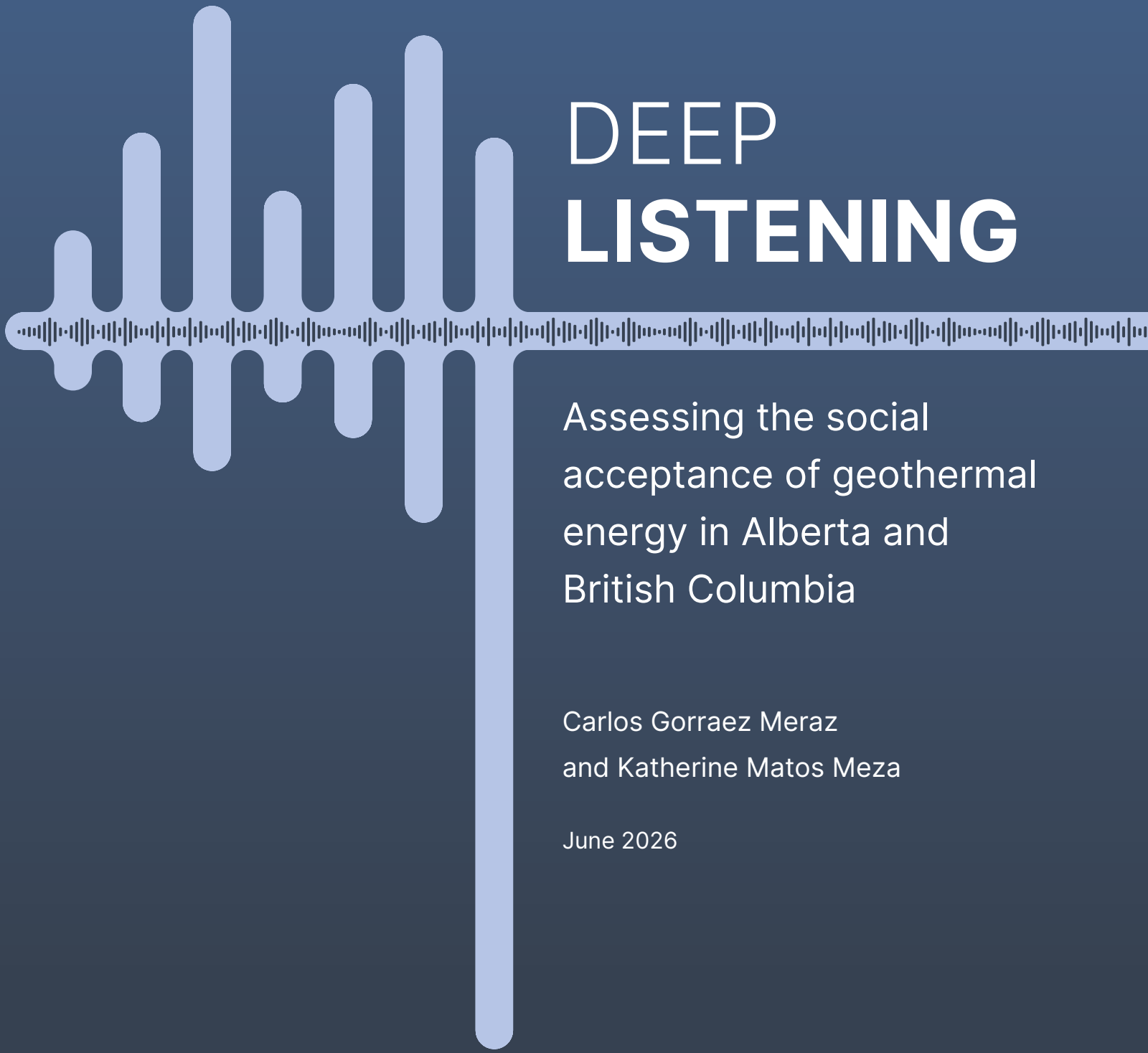

DEEP LISTENING

Assessing the social acceptance of geothermal energy in Alberta and British Columbia

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Acknowledgments

Institutional partner

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Executive summary

Ultradeep geothermal represents a transformative opportunity for Canada's energy system. If deployed successfully, it could expand the availability and lower the cost of clean, reliable, baseload electricity, particularly in Western Canada.

While technological advances, financing mechanisms, and policy discussions are progressing, social acceptance remains a critical condition for deployment. This report presents the first empirical assessment of public perceptions and social acceptance of ultradeep geothermal in Alberta and British Columbia, and is based on a survey of 2,603 adults conducted in May and June 2025.

The findings indicate that the public is cautiously optimistic about ultradeep geothermal: it is broadly accepted but not yet well understood. The extent of its future deployment will likely depend on demonstrated performance, perceived public value, credible communication, and trusted social endorsement.

Key findings

1. **Western Canadians prioritize affordability, safety, and reliability.** Across Alberta and British Columbia, affordability, safety for humans, and reliability emerge as the most salient attributes people expect from any energy source. Acceptance of ultradeep geothermal is therefore closely tied to whether it is perceived to perform credibly on these core dimensions. Communication strategies should therefore lead with affordability, safety, and reliability, and provide clear, concrete evidence of geothermal performance on each. Messaging can then be layered for specific audiences by emphasizing secondary considerations where relevant (e.g., low climate impact, job creation, or ecosystem safety), without displacing core benefits. For policymakers, this implies prioritizing transparent cost information, strong safety assurances, and credible reliability signals, while addressing segment-specific concerns to build confidence and accelerate acceptance.

2. **Geothermal energy, especially ultradeep geothermal energy, is not yet well-understood. Changing that requires clear information, credible evidence, and practical examples to build informed public confidence.**
   Geothermal is among the least familiar major energy technologies in both Alberta and British Columbia. One in two respondents report being only slightly or not at all familiar with it. Importantly, however, low familiarity does not translate into opposition. Public opinion remains fluid and responsive to credible information, with many evaluations being formed under conditions of limited information.

3. **Geothermal energy has moderate social acceptance and little opposition, compared with other renewable energy sources.**
   Ultradeep geothermal sits on a middle ground of public opinion, with acceptance neither strong nor weak, and perceptions still forming. Across both provinces, most respondents reported low opposition to geothermal energy relative to alternative options, with respondents in Alberta expressing slightly higher levels of support overall. Under current conditions, social acceptance does not appear to be a binding constraint for the development of ultradeep geothermal projects.

4. **Acceptance increases when people believe ultradeep geothermal can deliver meaningful advantages and when they perceive positive social endorsement from peers, communities, or trusted groups.**
   These social cues act as signals of legitimacy, reducing hesitation toward a technology that remains unfamiliar to many people. Communication should therefore emphasize affordability, safety, and reliability, supported by credible evidence delivered by trusted voices, and showcasing actual projects.

5. **This is a high-leverage moment to consolidate social acceptance.**
   Low familiarity combined with moderate acceptance and limited opposition suggests that public perceptions are still forming. When attitudes toward ultradeep geothermal are not yet anchored to negative or positive perceptions or evaluations, credible information and early engagement can have greater influence than after opinions solidify. Therefore, investing now in public awareness helps shape perceptions before they harden—in either direction.

6. **Scientists and universities are the most trusted messengers.**
   Scientists and universities receive the highest trust levels in both provinces, followed by renewable energy companies and environmental organizations. Government and oil and gas actors receive comparatively lower trust ratings.

Given the strong role of *subjective norms*—perceived social endorsement or opposition from respected voices—in shaping acceptance, trusted institutions and peers play an important role in building social acceptance for geothermal over time. Therefore, engagement approaches that foreground independent scientific expertise and transparent research may carry greater normative influence, particularly when familiarity is low.

Contents

1. Introduction

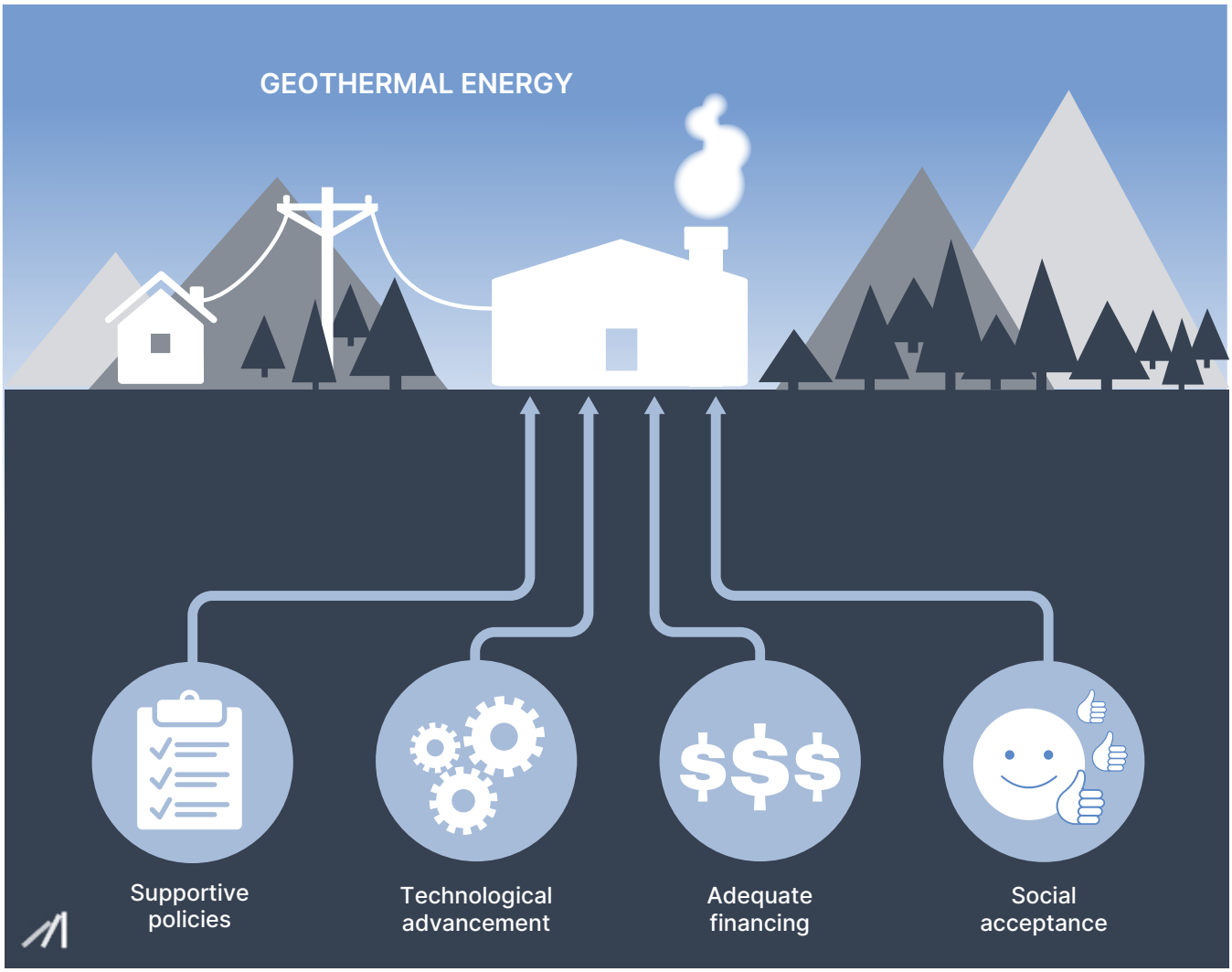
Ultradeep geothermal systems generate energy (electricity and/or heat) by drilling five kilometres or deeper into hot “basement” rock. Unlike conventional geothermal systems, which rely on naturally occurring reservoirs of hot water or steam, ultradeep geothermal typically requires next-generation heat extraction technologies: either enhanced (open-loop) geothermal systems or advanced (closed-loop) geothermal systems (Gall, Lovekin, Pearce, & Smejkal, 2024).

Unlocking the ability to produce electricity and heat economically by drilling deep into the Earth almost anywhere would be a transformative opportunity for Canada, paving the way for clean, secure, baseload energy wherever it is needed (Graham, Quigley, Janzwood, & Homer-Dixon, 2022). Yet despite this opportunity, ultradeep geothermal remains largely overlooked and is often perceived as a niche or risky solution (Leitch, Haley, & Hastings-Simon, 2019; Barich, et al., 2022; Cascade Institute, n.d.). Limited project visibility and low public familiarity have fostered misconceptions about geothermal’s benefits, risks, and feasibility, undermining stakeholder confidence and slowing investment, policy uptake, and project timelines (Allansdottir, Pellizzone, & Sciullo, 2019; Malo, Moutenet, Bédar, & Raymond, 2019).

For a new, unfamiliar, and capital-intensive energy technology, technical feasibility alone does not necessarily lead to deployment. The widespread adoption of clean energy-generating technologies like enhanced or advanced geothermal depends on the alignment of four conditions: technological advances, appropriate financing, supportive policy frameworks, and social acceptance (Figure 1).

FIGURE 1:

Geothermal energy deployment depends on the alignment of four conditions

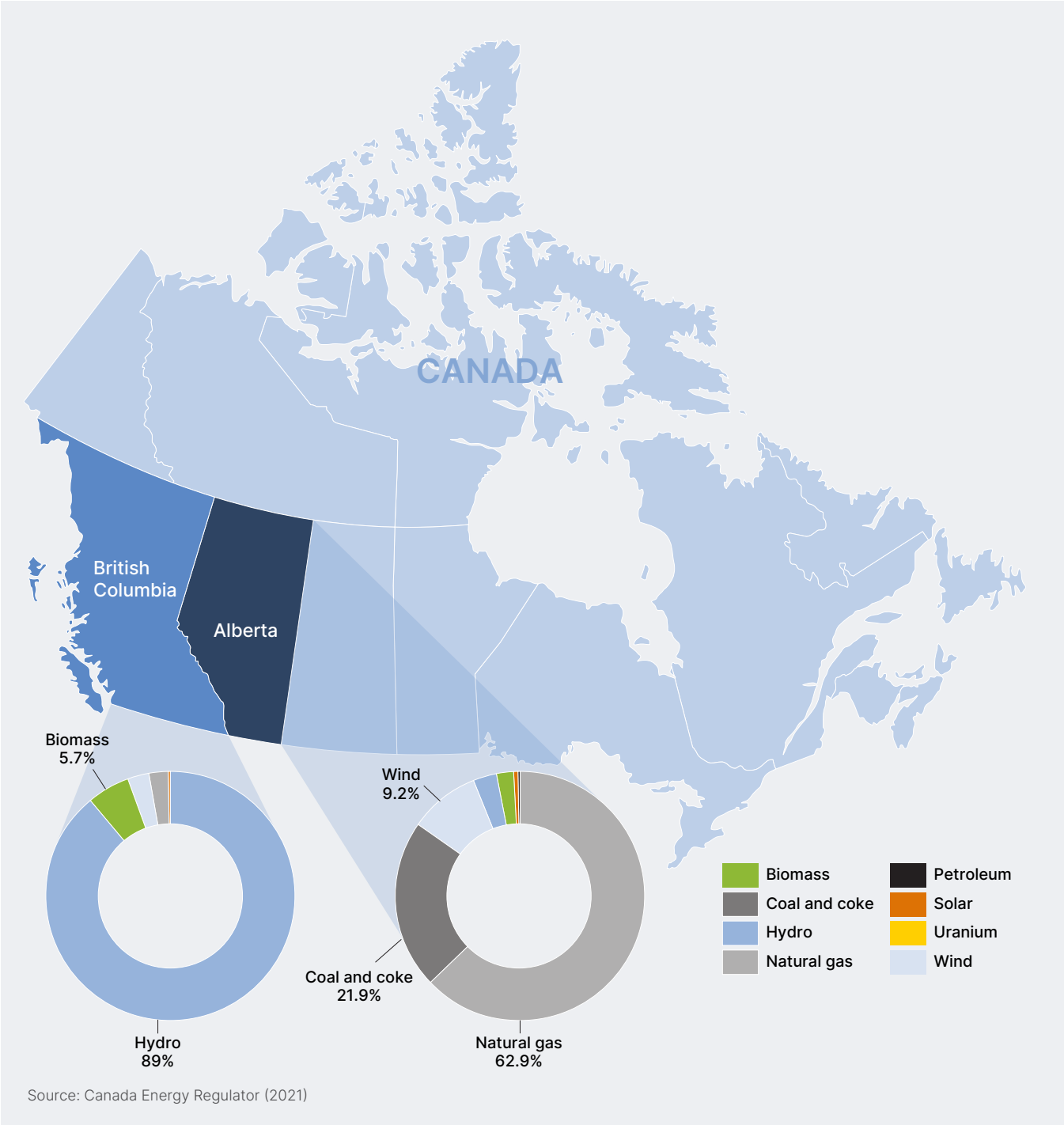


While Canada is making advances in the first three conditions, social acceptance has received comparatively less attention and remains a key source of uncertainty for geothermal expansion. Although many jurisdictions have examined public perceptions of geothermal technologies, Canada still lacks systematic empirical evidence on how people understand and evaluate geothermal options, particularly emerging technologies such as ultradeep geothermal (Renoth, et al., 2023).

This gap is especially consequential in Western Canada. Alberta and British Columbia face different energy profiles (Figure 2), economic structures, and policy environments, yet both must expand low-carbon, dispatchable energy sources to meet climate and electrification goals. Understanding people's perceptions of ultradeep geothermal is a crucial first step for designing effective communication, engagement, and policy strategies that support socially viable geothermal development.

FIGURE 2:

Alberta and British Columbia have very different energy profiles



Source: Canada Energy Regulator (2021)

To help address this gap, this report presents the first dedicated assessment of public perceptions and social acceptance of ultradeep geothermal in Alberta and British Columbia. Specifically, we present new polling data that allow us to draw conclusions about:

1. the priorities and expectations people bring when evaluating any energy source;
2. baseline familiarity with major clean energy technologies;
3. the level of support for geothermal compared to other energy sources; and
4. the current level of social acceptance for ultradeep geothermal.

We then analyze these data, identifying key attitudinal and demographics that shape social acceptance. Together, these dimensions provide an integrated picture of how people in Alberta and British Columbia understand and evaluate ultradeep geothermal, and how best to consolidate social acceptance in the two provinces.

By combining survey data with a structured analysis of public priorities, familiarity, and acceptance drivers, this report provides actionable insights for policymakers, project developers, and communicators seeking to advance geothermal energy production as part of Canada's clean energy transformation.

2. Results

This section presents our findings on how people in Alberta and British Columbia evaluate ultradeep geothermal and other provincially relevant energy sources. It first examines the attributes people prioritize when assessing energy sources, then considers baseline familiarity with major energy technologies, comparative support for geothermal relative to other options, and overall levels of social acceptance. Together, these findings improve our understanding of ultradeep geothermal's place in the broader public perception landscape.

Survey design and sample

The analysis draws on a cross-sectional online survey of adults aged 18 and older in Alberta and British Columbia. Two province-specific questionnaires were administered by Leger Opinion (LEO), a professional survey research firm, using controlled online recruitment. Data were collected between May 12 and June 1, 2025, resulting in 2,603 valid responses (Alberta = 1,301; British Columbia = 1,302). Quotas for age and gender were applied to align the sample with provincial census distributions.

See the complete survey in Appendix A.

2.1. Affordability, safety, and reliability matter most

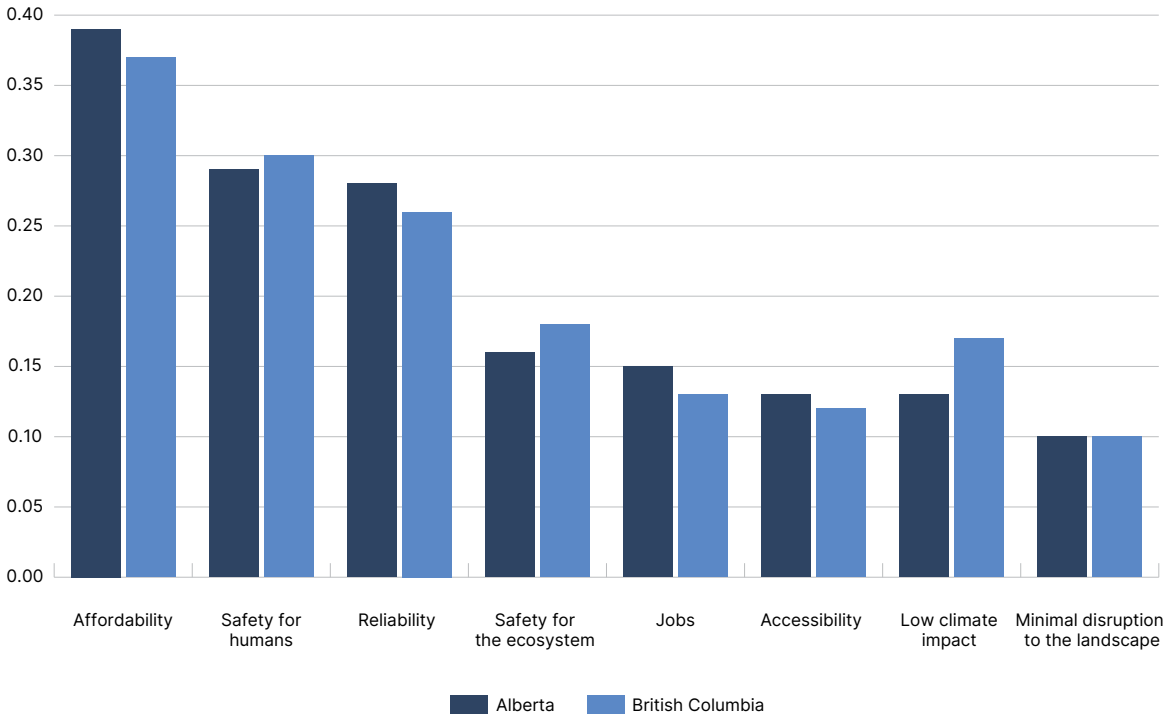
Before examining geothermal specifically, the survey first asked respondents to identify and rank the general attributes they value most in energy systems, regardless of technology type. These include affordability, reliability, accessibility, safety for humans, safety for ecosystems, low climate impact, job creation, and minimal disruption to the landscape. Together, these attributes reflect the broader considerations that shape public evaluations of energy options (van Rijnsoever & Farla, 2014; DeCicco, Yan, Keusch, & Neidert, 2015; Boyd, Liu, & Hmielowski, 2019; Aklin, 2021). Affordability and reliability, in particular, are often treated as non-negotiable conditions for public support, while environmental performance and economic co-benefits tend to play a secondary role when costs rise (Moore, 2015).

Respondents in Alberta and British Columbia completed a selection-and-ranking task to identify which system attributes they prioritize, independent of technology type. Respondents first selected their top four attributes from the eight presented and then ranked those four from most to least important. We have summarized results using a weighted salience index that combines selection frequency and mean rank (range: 0–1, with higher values indicating higher priority). Figure 3 presents the resulting attribute priorities for each province.

Social acceptance for geothermal will depend on whether it is perceived as cost-competitive, safe, and reliable.

FIGURE 3:

Albertans and British Columbians prioritize affordability, safety, and reliability



S = F/(N×mP)

"F" is the frequency of selection of attribute, "N" is the total number of respondents in the attribute ranking task (AB=1,301; BC=1,302), and "mP" is the mean rank position of attribute (with 1 = highest importance, 4 = lowest among selected). The index ranges from 0 (never selected) to 1 (always selected first).

Across both provinces, affordability emerged as the most salient energy system priority, underscoring the salience of energy costs for households. Safety for humans and reliability followed closely, indicating that people expect energy systems not only to be affordable but also safe, dependable, and protective of well-being.

These priorities have direct implications for ultradeep geothermal acceptance. Social acceptance for geothermal will depend on whether it is perceived as cost-competitive, safe, and reliable, relative to alternatives. While ultradeep geothermal has the potential to perform well on these dimensions, the survey results suggest that public perceptions of geothermal are still developing, as is reflected in the low familiarity but moderate support (see Sections 2 and 3). This highlights that a key near-term challenge is not only technical, but also communicative: public awareness and proponent credibility matter as much for people as technological viability.

Communication strategies should therefore lead with the three highest-priority attributes (affordability, safety for humans, and reliability), and provide clear, concrete evidence of geothermal performance on each. Messaging can then be layered for specific audiences by emphasizing secondary considerations where relevant (e.g., low climate impact, job creation, or ecosystem safety), without displacing core concerns. Policymakers should prioritize transparent cost information, strong safety assurances, and credible reliability signals, while addressing segment-specific concerns to build confidence and accelerate acceptance.

2.2. Familiarity with geothermal is low

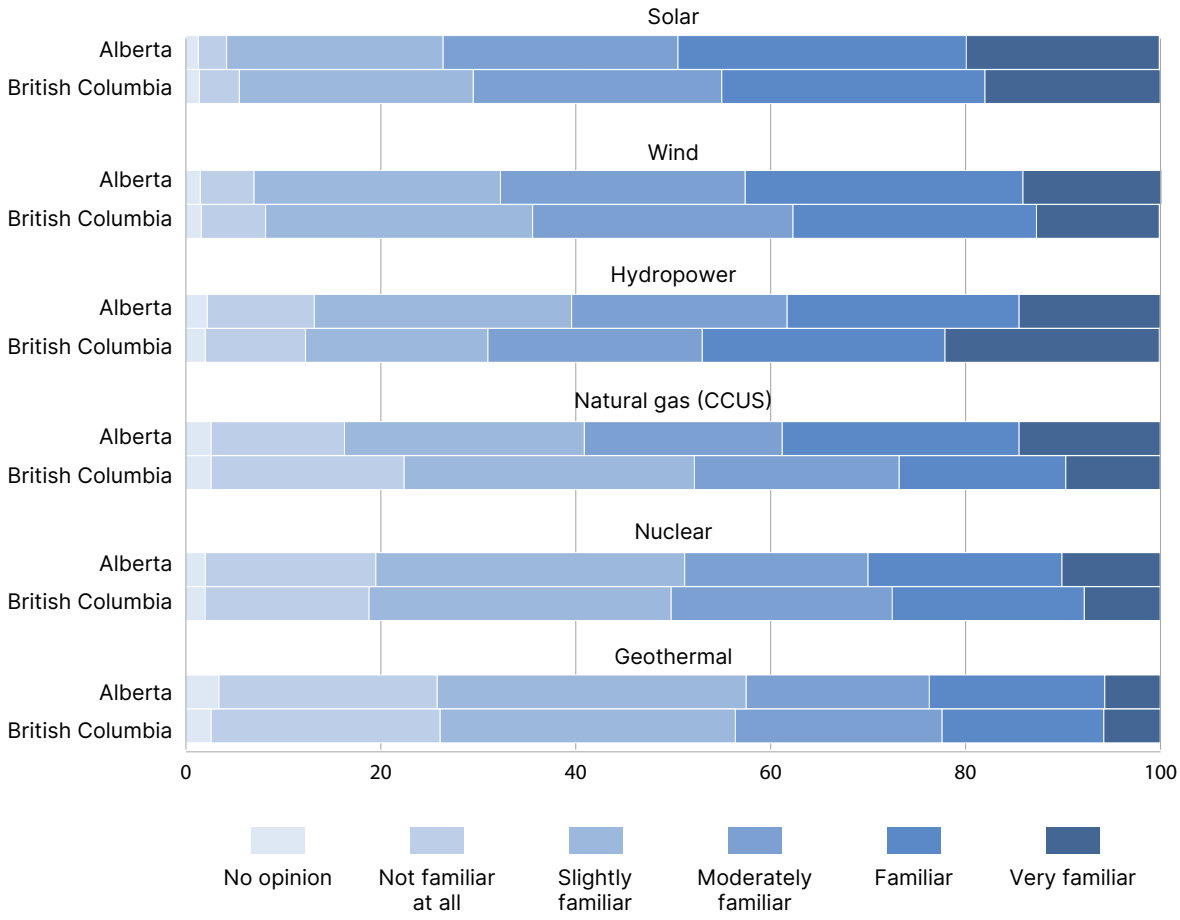
Familiarity is a foundational condition for social acceptance: public knowledge of how a technology works shapes perceived legitimacy, expectations, and willingness to support deployment. Across energy technologies, research consistently shows that unfamiliarity is associated with uncertainty, hesitancy, and lower support, especially for technologies perceived as complex or novel (Dowd, Boughen, Ashworth, & Carr-Cornish, 2011; Carr-Cornish & Romanach, 2014). This challenge is particularly pronounced for geothermal energy, where limited visibility—because its infrastructure is less visible than other energy technologies and geothermal projects remain relatively scarce—and technical complexity can amplify perceived uncertainty, especially for novel technologies such as ultradeep geothermal (Vargas-Payera, 2018; Cousse, Trutnevyte, & Hahnel, 2021).

Figure 4 compares familiarity levels across energy sources in Alberta and British Columbia. In both provinces, solar and wind are the most familiar technologies, with clear majorities of respondents reporting that they are familiar or very familiar. Hydropower is also relatively well known, particularly in British Columbia, reflecting its central role in the provincial electricity system. By contrast, geothermal remains among the least familiar energy sources in both provinces.

Across Alberta and British Columbia, approximately half of respondents report being not at all familiar or only slightly familiar with geothermal, while only around one in five describe themselves as familiar or very familiar. In other words, geothermal recognition lags behind solar, wind, hydropower, and even nuclear energy. This low baseline familiarity helps contextualize the broader acceptance results: for many respondents, geothermal—especially ultradeep geothermal—is not yet a well-understood option, making clear information, credible evidence, and practical examples essential for building informed public confidence.

FIGURE 4:

Geothermal is the least familiar clean energy technology in both provinces



We assessed familiarity using a five-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Data are based on survey responses collected in AB=1,301; and BC=1,302.

2.3. Social acceptance of ultradeep geothermal is moderate

Building on the baseline context of other available energy sources, we then measured geothermal's social acceptance as the mean of two complementary dimensions: favourability (a cognitive evaluation of the technology) and comfort (an affective response), each assessed on a 1–5 Likert scale. This combined measure captures both rational appraisal and emotional orientation toward ultradeep geothermal.

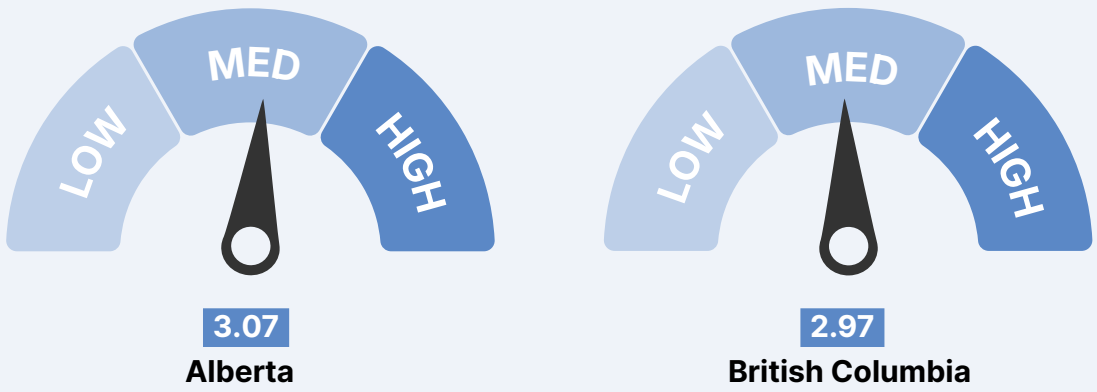
Social acceptance

Social acceptance refers to public approval expressed through supportive attitudes and behavioural intentions (Wüstenhagen, Wolsink, & Bürer, 2007; Huijts, Molin, & Steg, 2012). It reflects both evaluative judgments (cognitive assessments of a technology's benefits, risks, and effectiveness) and affective responses (emotional reactions such as trust, concern, or enthusiasm), which can translate into political support, community acceptance, and market adoption. Social acceptance is dynamic and can shift over time as perceptions, values, and experiences evolve (Bertsch, Hall, Weinhardt, & Fichtner, 2016).

Using this measure, ultradeep geothermal receives moderate acceptance in both provinces. As shown in Figure 5, average acceptance scores are 3.07 in Alberta and 2.97 in British Columbia (1–5 scale). These values fall within the medium range, indicating that most people are neither strong supporters nor strong opponents. This finding is particularly noteworthy given the low baseline familiarity with geothermal reported earlier (Figure 4), suggesting that limited awareness does not automatically translate into rejection.

FIGURE 5:

Ultradeep geothermal is broadly, if moderately, accepted in Alberta and British Columbia (1–5 scale)



At the same time, acceptance appears to be shaped by uncertainty rather than firm opposition. Many respondents cluster around neutral to mildly positive views, while a smaller group expresses strong discomfort or unfavourability. Taken together, these patterns point to conditional acceptance, an early-stage evaluation where public support could stabilize or shift over time as the broader perception landscape evolves, including changes in familiarity, perceived benefits and fairness, trust in governance and industry, and the visibility of credible project examples and risk-management practices. Depending on how these conditions develop, acceptance could increase as confidence grows or decline if public concerns intensify.

Geothermal support compared to other energy sources

Social acceptance can be reflected in supportive attitudes and behaviours. To assess the general level of support for geothermal in a broader energy context, the survey asked to what extent respondents support geothermal energy relative to other energy sources used in their regions.

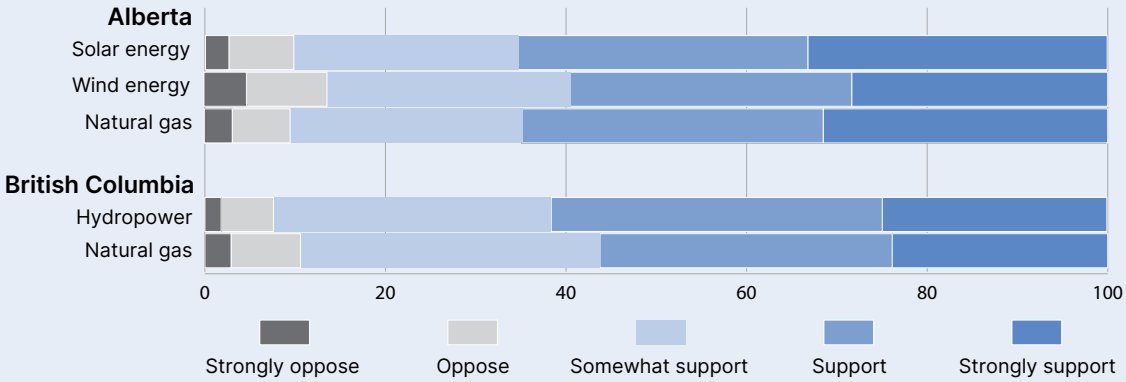
Results show that geothermal energy has overall positive signs of support[1] with little active opposition in both Alberta and British Columbia when compared with other electricity generation sources (Figure 6). Respondents in Alberta expressed slightly higher levels of support for geothermal overall.

It is important to underline that established technologies such as solar, wind, and hydropower continue to register high levels of overall support. What Figure 6 shows is that geothermal performs competitively, even against popular and well-understood energy sources in each province. It does not appear to be a marginal or systematically disadvantaged option when respondents evaluate it alongside other major energy sources.

FIGURE 6:

Support for geothermal is strong compared to other energy options

To what extent do you support the use of geothermal energy compared to the use of other energy sources in your region?



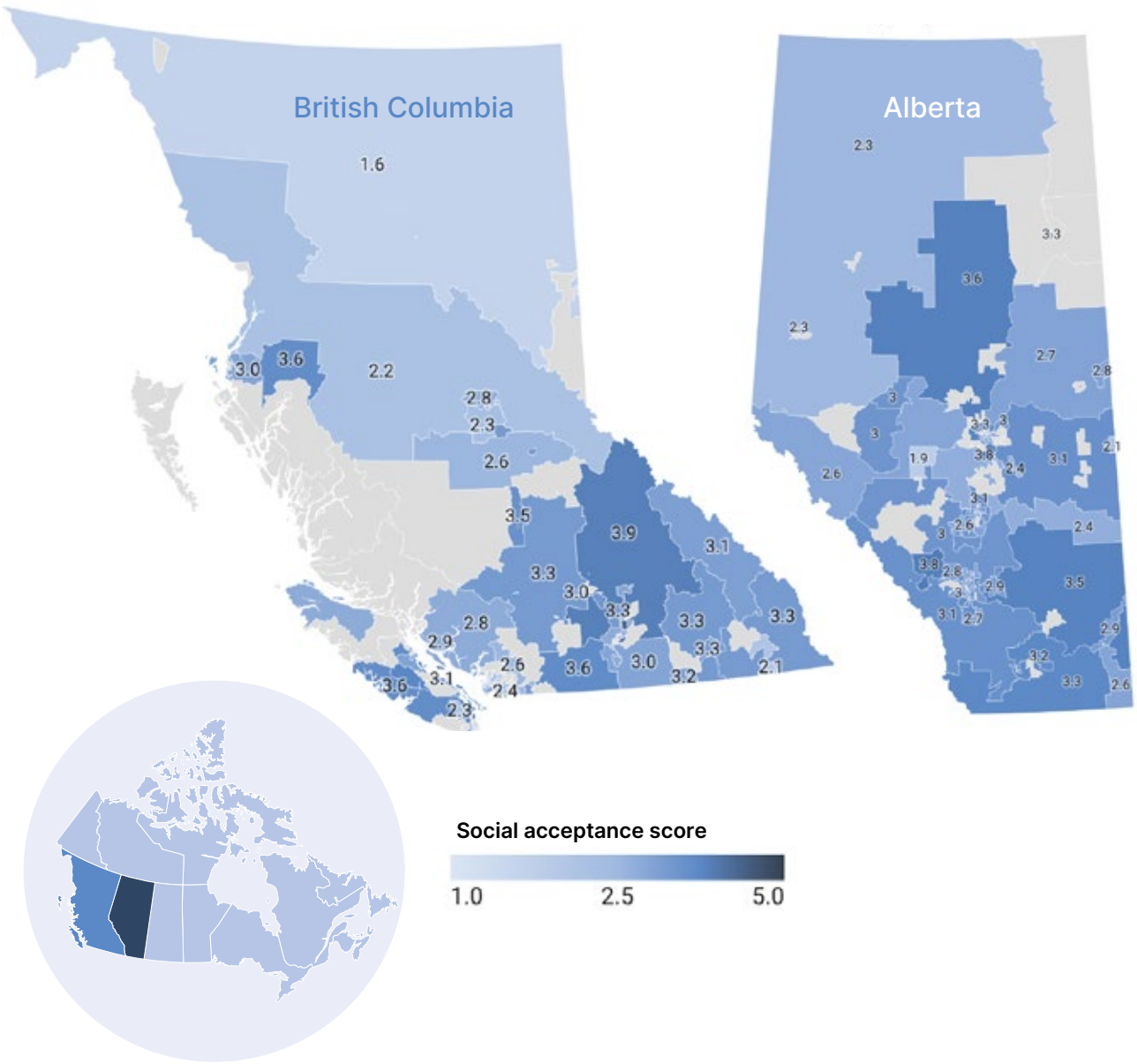
[1]The comparative question presented in Figure 6 asks respondents to evaluate their support for geothermal energy relative to other energy sources in their region. This differs from the social acceptance measure used elsewhere in this report, which combines favourability and comfort ratings into a composite score capturing both cognitive and affective dimensions of acceptance. For further details, see our methodological note in Appendix B.

Geothermal energy has overall positive signs of support with little active opposition in both Alberta and British Columbia when compared with other electricity generation sources.

Social acceptance also varies by geography. As shown in Figure 7, average acceptance scores differ across forward sortation areas (the first three digits of a postal code) within both provinces, with some areas exhibiting higher acceptance than others. Although this regional variation should be interpreted as exploratory, forward sortation area-level estimates are based on smaller sample sizes in some areas and should therefore be treated with caution.

FIGURE 7:

Geographical distribution of social acceptance levels of ultradeep geothermal in Alberta and British Columbia (1–5 scale)



3. Analysis: Drivers of social acceptance

While Section 2 provided a snapshot of ultradeep geothermal's overall levels of acceptance, this section aims to understand the main drivers that shape the levels of social acceptance of ultradeep geothermal. For this, we conducted regression analyses for Alberta and for British Columbia. *Regression analysis* is a statistical method for understanding how the drivers or predictors below influence social acceptance of ultradeep geothermal, and how strong those relationships are.

This analysis assessed six hypothesized drivers or predictors. Each driver was measured with a single Likert scale (1–5), using statements that capture the concept of each driver:

- **Familiarity:** self-reported understanding of how ultradeep geothermal works and its basic principles (respondents were not expected to be experts).
- **Subjective norms**: perceived social endorsement or opposition from "trusted others" (e.g., family members, peers, community members).
- **Perceived fairness:** expectations that local communities have a voice in decision making and that costs, risks, and benefits are shared fairly.
- **Perceived benefits:** anticipated positive effects, such as reducing energy costs, improving energy security, expanding access to clean energy, or enhancing local conditions.
- **Perceived environmental impacts:** anticipated negative effects on land, water, air quality, or ecosystems resulting from geothermal development or operation.
- **Perceived risks:** potential safety concerns or uncertain financial impacts associated with geothermal development and use.

Together, these predictors represent *informational* dimensions (what people know), *normative beliefs* (perceived social endorsement), *evaluative* dimensions (how they assess benefits and fairness), and *risk-related* dimensions of public response. Figure 8 illustrates the conceptual framework linking these predictors to overall social acceptance of ultradeep geothermal.

FIGURE 8:

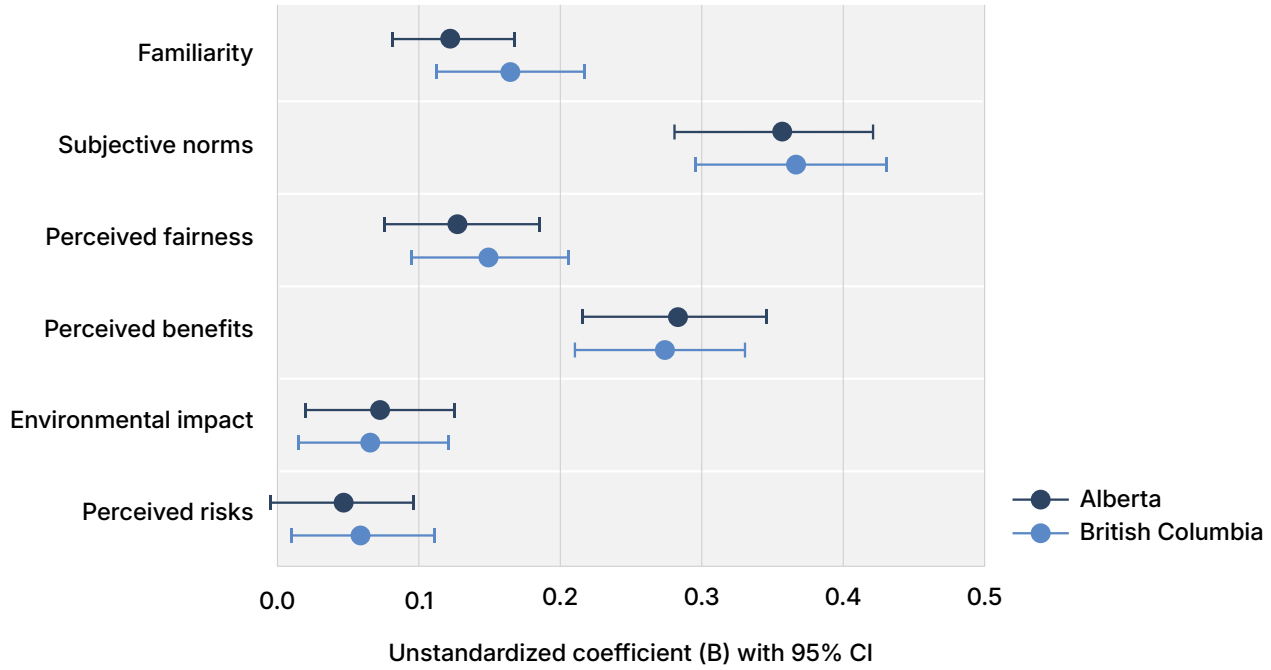
Conceptual framework of predictors of social acceptance of ultradeep geothermal

3.1. Perceived benefits and endorsements from trusted sources drive acceptance

Figure 9 summarizes the regression results for Alberta and British Columbia. The dots in the figure represent unstandardized coefficient estimates, indicating how strongly each factor is associated with social acceptance. More specifically, each dot answers the following question: *If a given factor increases by one point on its scale, while holding all other factors constant, by how much does social acceptance change?* For example, a one-point increase in familiarity is associated with a 0.163 increase in social acceptance in British Columbia and 0.121 in Alberta.

FIGURE 9:

Endorsement by trusted sources and emphasis on benefits drive acceptance of geothermal



Note: **B** = Unstandardized coefficients, 95% confidence intervals. Most key predictors were positive and did not include zero, indicating consistent, statistically significant effects ($p<.05$). Model fit statistics: $R^2 = 0.595$ (Alberta), $R^2 = 0.644$ (British Columbia)

Across both provinces, perceived benefits and perceived social support or opposition from important others emerged as the strongest and most consistent predictors of ultradeep geothermal acceptance.

Endorsement by trusted sources had the largest effect in both Alberta (B = 0.36) and British Columbia (B = 0.37). A one-point increase in perceived social endorsement is associated with roughly a third-of-a-point increase in acceptance. This effect suggests that people who believe that people they trust support ultradeep geothermal are substantially more likely to express higher acceptance themselves.

Perceived benefits also showed a strong and consistent association (B ≈ 0.27–0.29) with social acceptance. People who believe that ultradeep geothermal can deliver meaningful advantages—such as reliability, affordability, energy security, or local benefits—report significantly higher levels of acceptance.

In other words, acceptance increases when people believe ultradeep geothermal can deliver meaningful advantages and when they perceive positive social endorsement from peers, communities, or trusted groups. These social cues act as signals of legitimacy, reducing hesitation toward a technology that remains unfamiliar to many people.

Beyond these primary drivers, familiarity and perceived fairness show moderate but positive effects. People who report a greater understanding of ultradeep geothermal tend to express

higher acceptance, as do those who believe development will occur in a fair, transparent, and accountable manner. Together, familiarity and fairness help reduce uncertainty and strengthen early-stage confidence.

By contrast, perceived risks and environmental impacts show weak or non-significant effects in both provinces. This does not mean that respondents are indifferent to environmental protection or safety. Rather, it likely reflects the current stage of public engagement: when baseline familiarity is low and few projects are visible, many respondents may not yet have enough information to form strong, differentiated judgments about risks or environmental impacts. These considerations may become more influential as projects become more concrete and locally salient.

These findings highlight practical levers for strengthening social acceptance of ultradeep geothermal in Western Canada. Communication should foreground clear public value, aligned with top public priorities such as affordability, reliability, and safety, supported by credible evidence and real project examples. Because second-order beliefs strongly shape acceptance, outreach should rely on trusted messengers and visible social endorsement. Developers and governments should also prioritize procedural fairness through transparent decision making, meaningful participation, and equitable benefit sharing. While perceived risks and environmental impacts are not currently dominant drivers, proactive risk management and early disclosure will rise in importance as projects become more locally salient.

These findings also suggest that building social acceptance for geothermal will depend on demonstrating practical value, strengthening credible social signals, and ensuring transparent and equitable development processes. While the overall pattern is consistent across Alberta and British Columbia, acceptance will likely vary locally depending on community priorities, project design choices, benefit distribution, and the quality of engagement.

Scientists and universities are geothermal's best messengers

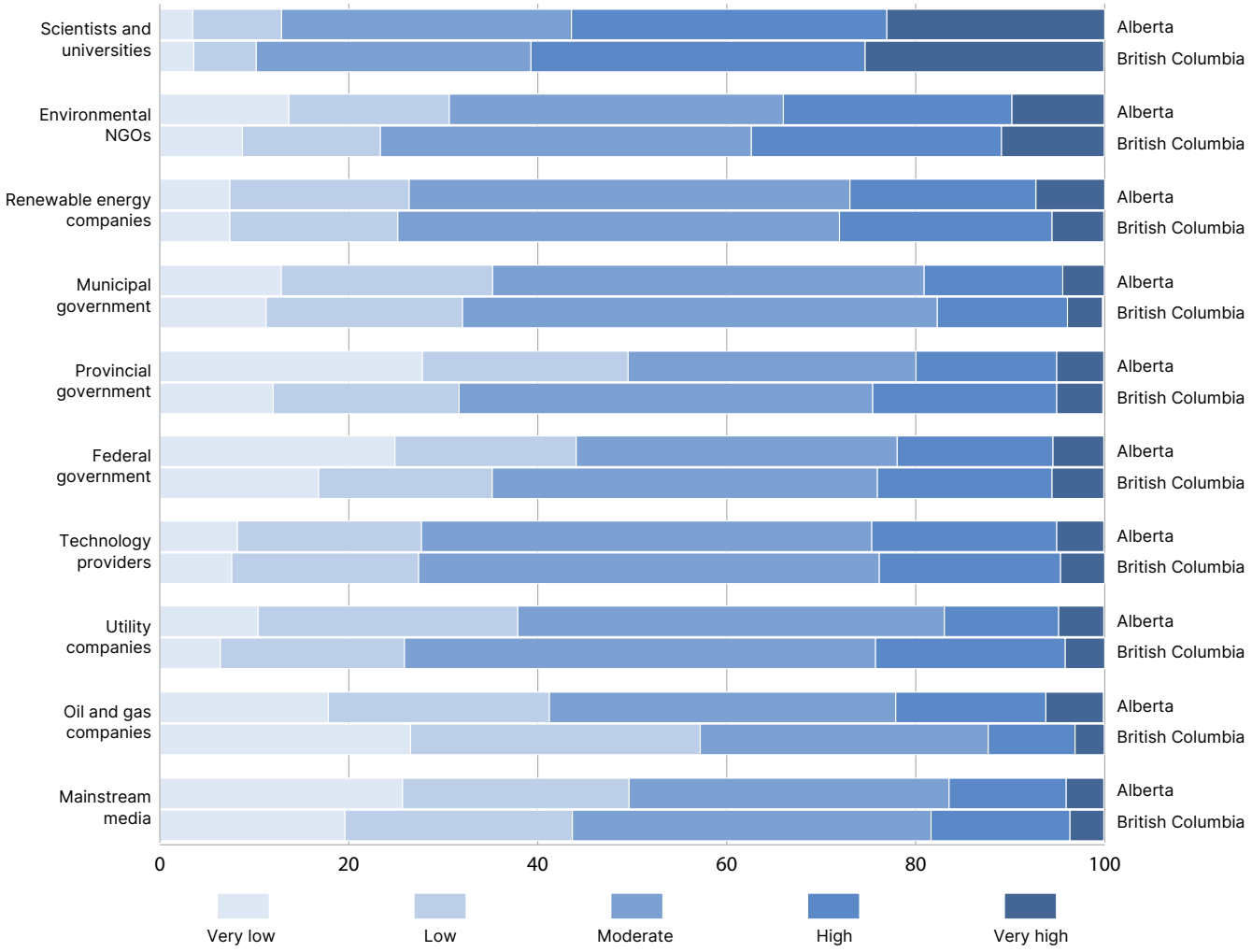
Subjective norms about geothermal (perceptions of the extent to which trusted sources endorse or oppose geothermal) emerge as a key driver of social acceptance. Therefore, outreach led by trusted messengers that highlight the benefits of ultradeep geothermal can amplify acceptance by reinforcing collective endorsement from trusted groups.

Trust plays an important enabling role in shaping social acceptance, particularly under conditions of limited familiarity. When knowledge about a technology is low, individuals are more likely to rely on trusted actors as heuristics for evaluating risks and benefits (Huijts, Molin, & Steg, 2012).

As Figure 10 shows, scientists and universities are the most trusted actors in both Alberta and British Columbia, followed by renewable energy companies and environmental non-governmental organizations. From a strategic communication perspective, engagement approaches that foreground independent scientific expertise and university-led research are likely to be more effective than messages delivered solely by project proponents or government actors.

FIGURE 10:

Scientists and universities are the most trusted messengers



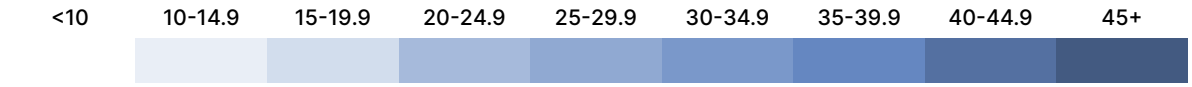
Note: Level of trust measures respondents' confidence that certain organizations or groups will act in good faith and prioritize the public interest in the development of geothermal systems.

3.2. Demographics still matter, but less than perceived benefits and endorsements from trusted sources

Although demographic variables were weaker predictors of ultradeep geothermal acceptance relative to the informational, normative, and evaluative drivers shown in Figure 7, demographic patterns remain useful for identifying audience segments and tailoring communication strategies. This section summarizes acceptance levels across selected groups, including gender, income, education, and political preference.

The heat maps presented in this section show that acceptance levels vary across demographic segments. While these differences do not explain acceptance to the same extent as perceived benefits, fairness, familiarity, and the endorsement of trusted sources, they should still inform tailored engagement and communication approaches. Key observations are summarized below:

% Acceptance (low to high)



Gender:

Acceptance is consistently higher among men than women in both provinces. Women are more likely to fall in the low-to-medium acceptance range, suggesting that communication for female audiences should emphasize safety assurance, transparency, and credible risk-management practices.

Low	Medium	High	Gender	Low	Medium	High
18.3%	31.5%	50.2%	Male	24.4%	32.2%	43.5%
32.6%	38.7%	28.7%	Female	36.5%	36.3%	27.1%
	Alberta				**British Columbia**	

Age:

Acceptance of ultradeep geothermal tends to be higher among respondents aged 25 to 54, particularly in Alberta, where this age group shows the largest shares of high acceptance. However, acceptance levels remain predominantly in the medium to high range across all age groups in both provinces.

Low	Medium	High	Age	Low	Medium	High
32.7%	36.4%	30.9%	18-24	31.2%	35.5%	33.3%
20.2%	35.5%	44.3%	25-34	24.1%	42.4%	33.5%
23.7%	32.3%	44.1%	35-44	30.4%	30.4%	39.1%
29.7%	29.7%	40.5%	45-54	29.5%	42.3%	28.2%
23.7%	39.9%	36.4%	55-64	27.7%	34.2%	38.0%
25.2%	36.7%	38.1%	65+	35.0%	27.4%	37.6%
	Alberta				**British Columbia**	

Income:

Acceptance generally increases with income, particularly in Alberta. Lower-income groups show more caution, consistent with the high salience of affordability as an energy priority.

Low	Medium	High	Income	Low	Medium	High
36.8%	31.6%	31.6%	Less than $19,999	37.0%	32.6%	30.4%
32.0%	39.2%	28.8%	$20,000 - $39,999	36.8%	31.6%	31.6%
25.2%	37.8%	37.0%	$40 000 - $59,999	34.5%	34.5%	30.9%
34.7%	30.6%	34.7%	$60,000 - $79,999	28.2%	40.2%	31.6%
21.8%	38.5%	39.7%	$80,000 - $99,999	29.6%	28.9%	41.5%
21.6%	34.3%	44.1%	$100,000 - $119,999	24.0%	43.8%	32.3%
13.0%	33.7%	53.3%	$120,000 - $139,999	26.3%	35.5%	38.2%
13.3%	41.7%	45.0%	$140,000 - $159,999	23.0%	25.7%	51.4%
24.4%	34.8%	40.8%	$160,000 and over	21.4%	35.7%	42.9%
Alberta				**British Columbia**		

Education:

Acceptance tends to be higher among respondents with university and postgraduate education, particularly in Alberta, suggesting that more highly educated segments may be more receptive to ultradeep geothermal.

Low	Medium	High	Income	Low	Medium	High
28.1%	37.8%	34.1%	Highschool	33.0%	34.0%	33.0%
29.3%	33.9%	36.8%	College	33.0%	33.0%	34.0%
23.5%	36.0%	40.5%	Bachelor's degree	27.4%	35.4%	37.1%
15.0%	31.0%	54.0%	Master's degree	23.8%	38.1%	38.1%
(*)	(*)	52.0%	Doctorate/ Ph.D.	(*)	(*)	(*)
Alberta				**British Columbia**		

(*) Sample size is not representative (less or equal to 10)

Political preference:

In Alberta, acceptance is higher among Liberal and NDP supporters than Conservative supporters, while Green Party supporters appear more likely to remain in the medium (neutral) range. In British Columbia, political differences are present but less pronounced.

Low	Medium	High	Political preference	Low	Medium	High
29.1%	33.9%	37.0%	Conservative (CPC)	33.7%	32.7%	33.7%
16.7%	35.1%	48.2%	Liberal (LPC)	26.8%	32.6%	40.6%
15.9%	35.4%	48.8%	New Democratic Party (NDP)	27.2%	36.8%	36.0%
(*)	(*)	(*)	Green Party (GPC)	(*)	41.0%	35.9%
	Alberta				**British Columbia**	

(*) Sample size is not representative (less or equal to 10)

Urban-rural status:

In Alberta, respondents living in suburban and urban areas tend to exhibit higher levels of acceptance of ultradeep geothermal than those in rural areas. In British Columbia, acceptance is more evenly distributed across rural, suburban, and urban settings, with no single living area clearly standing out.

Low	Medium	High	Urban-rural status	Low	Medium	High
29.7%	36.4%	33.9%	Rural (<10,000)	37.1%	24.3%	38.6%
23.9%	36.9%	39.2%	Suburban (10,000-100,000)	30.9%	35.1%	34.0%
25.0%	33.6%	41.4%	Urban (100,000+)	27.5%	36.8%	35.8%
	Alberta				**British Columbia**	

4. Audience personas

To translate empirical findings into practical insights for geothermal communications, we developed two audience personas based on patterns observed in the survey analysis. These audience personas are analytically informed profiles synthesizing demographic tendencies, attitudinal drivers, familiarity levels, and trust patterns identified in the descriptive and regression results presented in previous sections of this report.

Their purpose is illustrative rather than predictive: they show how different segments may evaluate ultradeep geothermal and what types of engagement approaches may resonate under current conditions of familiarity and trust. The personas should therefore be interpreted as applied communication tools grounded in the study's findings, not as rigid or mutually exclusive categories.

TABLE 1:

Audience personas for ultradeep geothermal in Alberta and British Columbia

	Pragmatic supporter 	Cautious skeptic 
PROFILE:	Pragmatic supporters tend to have higher acceptance of ultradeep geothermal. They are more likely to be men and higher-income respondents, and they typically report higher familiarity with geothermal. Political preferences vary by province, but this group is generally more open to innovation and public investment in clean energy.	Cautious skeptics show lower acceptance and are more likely to fall within the low-to-medium range. They are more likely to be women and lower-income respondents, and typically report lower familiarity with geothermal. Political identity varies, especially in British Columbia.
HOW THEY THINK:	Their support is driven primarily by perceived benefits (especially affordability, reliability, and safety), reinforced by positive social endorsement and confidence that development can be carried out fairly. They are receptive to evidence-based messaging and tend to evaluate ultradeep geothermal as a credible clean energy option.	Their hesitation reflects uncertainty, financial caution, and a preference for proven technologies, rather than entrenched opposition. Acceptance is constrained by lower familiarity, weaker perceptions of benefits, and concerns about fairness, transparency, and accountability in project development.
WHAT RESONATES:	Clear evidence of performance, cost and reliability narratives, real project examples, and credible expert validation.	Simple explanations, clarity on costs and who pays, visible safety assurance, and transparent governance. Acknowledging uncertainty and demonstrating strong oversight matters more than promotional messaging.
BEST MESSENGERS:	Engineers and independent experts, utility representatives and grid operators, local governments, Indigenous partners, and trusted community leaders.	Local community representatives, trusted third-party experts, public regulators, Indigenous partners, and credible institutions communicating transparently.

5. Conclusions and recommendations

Acceptance of ultradeep geothermal in Alberta and British Columbia is shaped by public priorities, low baseline familiarity, and perceived value. Across both provinces, people prioritize affordability, safety for humans, and reliability as the most important attributes of any energy system. At the same time, geothermal remains among the least familiar energy sources, which helps explain why many evaluations are still tentative.

Despite low familiarity, ultradeep geothermal receives moderate acceptance (Alberta: 3.07; British Columbia: 2.97 on a 1–5 scale), indicating conditional support rather than resistance. Regression results show that acceptance is driven primarily by perceptions around benefits and whether geothermal is endorsed by trusted sources, with fairness and familiarity playing secondary but meaningful roles. Demographic patterns are less influential than these attitudinal drivers, but help identify segments for tailored outreach, with lower acceptance more common among women and lower-income households.

Building acceptance will therefore depend on demonstrating tangible benefits on the attributes people value most, closing the familiarity gap with credible information, and ensuring transparent and fair development processes.

Understanding what drives public acceptance of ultradeep geothermal is essential for effective communication, policy design, and project development. Table 1 summarizes the key findings from the report and links them to actionable recommendations.

The evidence points to a clear window of opportunity. Public perceptions of ultradeep geothermal are still forming and there is no active opposition. Acting now before perceptions harden, is likely to yield the highest return on engagement investment.

TABLE 2:

Recommendations for advancing ultradeep geothermal acceptance

	FINDINGS	RECOMMENDATIONS
1	**Albertans and British Columbians prioritize affordability, safety, and reliability when it comes to energy systems.**	***Lead with what people prioritize most.*** Emphasize ultradeep geothermal's tangible household and system benefits (stable bills, dependable 24/7 energy, safety), not technical descriptions.
2	**Geothermal has the lowest familiarity compared to other clean energy sources.**	***Close the familiarity gap with clear, public-facing education.*** Explain what ultradeep geothermal is, how it works, and how risks are managed using simple analogies, short videos, and clear visuals. Emphasize that it complements wind and solar by providing reliable energy, winter and summer, day and night.
3	**Ultradeep geothermal receives moderate acceptance with low active opposition.**	***Seize this high-leverage moment to consolidate social acceptance.*** A situation of low familiarity combined with moderate acceptance and limited opposition suggests that public perceptions are still forming. Investing now in public awareness lays the groundwork before perceptions harden (and misinformation spreads).
4	**Social acceptance is mainly driven by perceptions of benefits and the endorsement of trusted sources.**	***Build legitimacy through trusted messengers and visible endorsements.*** Because subjective norms strongly shape acceptance, prioritize trusted messengers rather than relying on developers alone.
5	**Scientists and universities are the most trusted stakeholders.**	***Foreground independent expertise in communication strategies.*** Other trusted stakeholders beyond scientists and universities include renewable energy companies and environmental NGOs.
6	**Social acceptance is also driven by fairness and perceived familiarity.**	***Design for and communicate fairness from the start.*** Ensure transparent decision making, meaningful community participation, clear accountability, and equitable benefit sharing to strengthen confidence and reduce opposition.
7	**Social acceptance varies across demographic segments.**	***Tailor outreach to key audience segments.*** Use targeted framing where helpful: • **Women:** safety assurance, transparency, trusted oversight • **Lower-income households:** affordability, bill stability, protection from cost increases • **Younger audiences:** jobs, innovation, local opportunity • **Environment-focused groups:** climate/ecosystem co-benefits backed by evidencew • **Skeptical groups:** proven performance, step-by-step explanations, real examples ***Use audience persona profiles for effective communication strategies.*** See Section 4 for detailed audience persona profiles.

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Appendix A: Survey

GENERAL INFORMATION

To start, we'd like to ask a few general questions about you and where you live. This will help us contextualize your responses.

What is your gender?

- Man
- Woman
- Non-Binary
- Other
- Prefer not to say

What is your age range?

- 18-24 years
- 25-34 years
- 35-44 years
- 45-54 years
- 55-64 years
- 65+ years

Which of the following categories best describes your total household income after taxes for the past year?

- Less than $19,999
- $20,000 - $39,999
- $40 000 - $59,999
- $60,000 - $79,999
- $80,000 - $99,999
- $100,000 - $119,999
- $120,000 - $139,999
- $140,000 - $159,999
- $160,000 and over
- Prefer not to say

What province do you live in?

- Alberta
- British Columbia
- I am not currently residing in Alberta or British Columbia

How long have you been living in the province where you currently reside?

- 0-3 years
- 4-6 years
- 7-10 years
- More than 10 years
- Prefer not to say

To help us better understand regional differences, please enter the FIRST THREE characters of your postal code (known as the FSA – Forward Sortation Area)

Do you live in an urban, suburban, or rural area?

- Rural (population of less than 10,000)
- Suburban (population between 10,000 and 100,000)
- Urban (population of more than 100,000)

ATTRIBUTES OF ENERGY SYSTEMS

The following questions focus on what you value most in an energy system—that is, the technologies and processes involved in generating, storing, distributing, and delivering energy to where it's used and by whom. Please take a moment to review the list of attributes carefully and answer based on what matters most to you, followed by what matters least.

Please select the FOUR attributes you consider MOST IMPORTANT [select four]:

- Affordability (reasonable cost)
- Reliability (consistent and uninterrupted supply)
- Low climate impact (minimizing GHG emissions and pollution)
- Accessibility (available to everyone, regardless of where they live)
- Safety for Humans (no negative impacts on people's health)
- Safety for the Ecosystem (no negative impacts on biodiversity)
- Jobs (produce many high-quality jobs)
- Minimal disruption to the landscape (minimizing impairment of views and displacement of existing land uses, such as farmland or recreational areas)

Rank the following attributes of an energy system in order of importance, starting with the MOST IMPORTANT (highest priority) attribute at the top and ending with the LEAST IMPORTANT (lowest priority) attribute at the bottom:

- *[Self selected ranking]*

Now that you've ranked the four attributes you consider most important, please rank the remaining attributes. But, this time, start by placing the LEAST IMPORTANT attribute at the TOP and finish with the attribute you consider the most important at the bottom:

- *[Self selected ranking]*

FAMILIARITY

In this section, we'd like to understand your general level of knowledge—first about different energy sources/ technologies and then specifically about geothermal systems. Familiarity means having some knowledge or understanding of how the technology works and its basic principles; you don't need to be an expert.

How FAMILIAR are you with each of the following energy sources?

[Likert scale: Not familiar at all, slightly familiar, moderate familiar, familiar, very familiar, don't know/no opinion]

- Geothermal energy
- Hydropower energy
- Solar energy
- Wind energy
- Nuclear energy
- Natural gas energy with CCUS (also known as Carbon Capture, Utilization, and Storage)

Next, we'd like to gauge your familiarity with different types of geothermal systems. To help you answer the next questions, here are brief definitions of the different types of geothermal systems that will be referenced throughout the survey:

- Geoexchange systems: These use the steady, mild temperature just a few metres underground to heat or cool buildings. A common example is a ground-source heat pump that moves heat into your home in winter and pulls it out in summer.
- Hydrothermal systems: These tap into naturally occurring underground reservoirs of hot water. The hot water or steam is brought to the surface and used to spin a turbine and generate electricity.
- Ultradeep geothermal systems: These drill more than 5 km into hard rock to reach very high temperatures. The heat is then used to spin a turbine and produce electricity.

To what extent are you FAMILIAR with each of the following types of geothermal systems?
[Likert scale: Not familiar at all, slightly familiar, moderate familiar, familiar, very familiar, don't know/no opinion]

- Geoexchange systems
- Hydrothermal systems
- Ultradeep geothermal systems

SUPPORT

Next, we're interested in understanding your level of support for different types of geothermal energy systems. By support, we mean two things: first, the extent to which you are in favour of the overall development of these technologies, and second, how comfortable you would feel with their implementation and use in your community or region.

Please read each question carefully and share your honest opinion.

Overall, to what extent are you IN FAVOUR of the development of the following types of geothermal systems?
[Likert scale: Not at all in favour, slightly in favour, moderately in favour, very much in favour, extremely in favour, don't know/no opinion]

- Geoexchange systems
- Hydrothermal systems
- Ultradeep geothermal systems

To what extent do you FEEL COMFORTABLE with its implementation and use in your community or region?
[Likert scale: Not at all comfortable, slightly comfortable, moderately comfortable, very much comfortable, extremely comfortable, don't know/no opinion]

- Geoexchange systems
- Hydrothermal systems
- Ultradeep geothermal systems

Overall, to what extent do you SUPPORT the use of geothermal energy compared to the use of the following energy sources in your region?
[Likert scale: Strongly oppose, oppose, somewhat support, support, strongly support, don't know/no opinion]

- Solar energy
- Wind energy
- Natural gas

Overall, to what extent do you SUPPORT the use of geothermal energy compared to the use of the following energy sources in your region?
[Likert scale: Strongly oppose, oppose, somewhat support, support, strongly support, don't know/no opinion]

- Hydropower energy
- Natural gas

Thinking about the people whose opinions matter most to you (e.g., family, close friends), how much do you think they SUPPORT the use of the following geothermal systems in your region?
[Likert scale: Strongly oppose, oppose, somewhat support, support, strongly support, don't know/no opinion]

- Geoexchange systems
- Hydrothermal systems
- Ultradeep geothermal systems

To ensure that responses are recorded accurately, please select "Slightly support" for this statement.

- No support at all
- Slightly support
- Moderately support
- Support
- Strongly support

PERCEIVED FAIRNESS, BENEFIT, AND TRUST
This segment of the survey focuses on your perceptions of fairness, potential benefits, and trust related to geothermal systems.

To help you answer the following questions, here is how we're thinking about fairness, benefits, and trust:

- ***Fairness: refers to whether local communities have a voice in the decision-making process and whether the costs, risks, and benefits are shared fairly among those involved.***
- ***Benefits: include positive effects such as reducing energy costs, improving energy security (having a stable, reliable energy supply with less dependence on foreign or unstable sources), providing access to clean energy, or enhancing local conditions.***
- ***Trust: reflects your confidence that certain people, organizations, or groups will act with good intentions and prioritize the public's best interests when managing geothermal system development.***

To what extent do you believe the development of the following geothermal systems in your region would be FAIR?
[Likert scale: Not fair at all, slightly fair, moderately fair, fair, very fair, don't know/no opinion]

- Geoexchange systems
- Hydrothermal systems
- Ultradeep geothermal systems

How BENEFICIAL do you think the development and use of the following geothermal systems could be for your community or region?
[Likert scale: Not at all beneficial, slightly beneficial, moderately beneficial, beneficial, very beneficial, don't know/ no opinion]

- Geoexchange systems
- Hydrothermal systems
- Ultradeep geothermal systems

Please indicate the level of TRUST in each of the following people/organizations/groups:
[Likert scale: Very low, low, moderate, high, very high, don't know/no opinion]

- Municipal government
- Provincial government
- Federal government
- Oil and gas companies
- Renewable energy companies
- Scientists and university researchers
- Environmental/nonprofit organizations
- Utilities
- Mainstream media
- Technology providers (i.e., companies delivering ground-source heat pumps)

PERCEIVED ENVIRONMENTAL IMPACTS AND RISKS

In this section of the survey, we ask about your views on potential risks and environmental concerns associated with geothermal systems that may be developed or are currently being developed in your region.

To help you answer the following questions, here are the definitions of key terms:

- ***Environmental impacts refer to potential negative effects on land, water, air quality, or ecosystems resulting from the development or operation of geothermal systems.***
- ***Risk refers to potential safety concerns or uncertain financial impacts that may arise from the development and use of geothermal systems.***

Please read each question carefully and share your opinion.

How concerned are you that the following geothermal systems might cause negative ENVIRONMENTAL IMPACTS?

[Likert scale: Not at all concerned, slightly concerned, moderately concerned, concerned, very concerned, don't know/no opinion]

- Geoexchange systems
- Hydrothermal systems
- Ultradeep geothermal systems

How RISKY do you think the following geothermal systems are for your community or region?

[Likert scale: Not at all risky, slightly risky, moderately risky, risky, very risky, don't know/no opinion]

- Geoexchange systems
- Hydrothermal systems
- Ultradeep geothermal systems

DEMOGRAPHIC

What is the highest level of education you have completed?

- High school
- College
- Bachelor's degree
- Master's degree
- Doctorate/Ph.D.
- Other

What party did you vote for in the last Canadian federal election?

- Conservative (CPC)
- Liberal (LPC)
- New Democratic Party (NDP)
- Green Party (GPC)
- Other
- Don't remember
- Prefer not to say

What party did you vote for in the last provincial [Alberta] election?

- United Conservative Party (UCP)
- Alberta New Democratic Party (NDP)
- Independent
- Other
- Don't remember
- Prefer not to say

What party did you vote for in the last provincial [British Columbia] election?

- Conservative Party of British Columbia
- BC New Democratic Party (NDP)
- BC Green Party
- Independent
- Other
- Don't remember
- Prefer not to say

For this question, we're interested in your general beliefs on a few topics. To help guide your response, we define the terms as follows:

- CONSERVATIVE refers to supporting minimal government intervention and a preference for traditional values.
- PROGRESSIVE refers to support for reforms, social change, and a more active role for institutions.

There are no right or wrong answers—we are simply interested in understanding where your views generally fall on the topics listed below.
[Likert scale: Very conservative, moderately conservative, neutral /no opinion, moderately progressive, very progressive]

- Economic/fiscal
- Social
- Environmental

Do you, a family member, or a close friend work in the oil and gas industry?

- I work in the oil and gas industry
- A member of my family works in the oil and gas industry
- My friend works in the oil and gas industry
- None of the above

Do you, a family member, or a close friend work in the renewable energy industry?

- I work in the renewable energy industry
- A member of my family works in the renewable energy industry
- My friend works in the renewable energy industry
- None of the above

Appendix B: Methodological note

The comparative question presented in Figure 6 aims to evaluate support for geothermal energy relative to other energy sources. *Support* and *social acceptance* are related concepts, and both reflect a positive orientation toward a technology, but they are not identical.

Support was measured in this report through the question "Overall, to what extent do you support the use of geothermal energy compared to the use of other energy sources in your region?" Prior to this question, respondents were given the definition of the different types of geothermal systems. The question intends to capture a general level of endorsement in a comparative frame.

Social acceptance, as defined in this report, is a compound measure that integrates favourability and comfort ratings into a composite score capturing both cognitive and affective dimensions of acceptance. In practice, social acceptance and support tend to move together: technologies that register higher social acceptance scores have higher support. Readers should nonetheless be careful not to treat the comparative support data in Figure 6 as a direct substitute for province-representative social acceptance estimates for solar, wind, hydropower, or other energy sources.

The current study did not include full acceptance measures for energy sources beyond geothermal, which limits direct comparability. Future deployments of this survey instrument will extend social acceptance measurement to a broader set of energy technologies, enabling more rigorous cross-technology benchmarking. In the interim, the comparative support data in Figure 6 provide a useful directional signal: they indicate how geothermal is positioned relative to alternatives in respondents' minds, even if they do not constitute equivalent measures of social acceptance across technologies.