Social Acceptance of Geothermal Systems in the United States

A National Assessment of Public Perceptions and Drivers of Acceptance

GEOTHERMAL RISING

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Part I

Executive Summary and Key Insights

This report presents a national, data-driven assessment of social acceptance of geothermal systems in the United States, comparing geoexchange, hydrothermal, and next-generation geothermal systems across national, regional, and state levels.

Geothermal at a Crossroads: Why Social Acceptance Now Matters

Geothermal energy is increasingly recognized as a critical component of the United States' clean energy transition. Its ability to provide firm, low-carbon, and locally sourced energy positions it as a strong complement to variable renewables such as wind and solar. Yet despite substantial technical potential and growing policy interest, geothermal deployment across the U.S. remains uneven and limited in scale. While technology and regulatory frameworks continue to evolve, this study demonstrates that **social acceptance is a decisive factor in determining** geothermal's real-world viability.

Energy transitions do not occur through technology alone. Public perceptions of benefits, fairness, costs, risks, and social value strongly influence whether energy projects advance, stall, or face resistance. For geothermal—particularly next-generation geothermal systems—acceptance is less about awareness and more about confidence in implementation, perceived legitimacy, and alignment with local priorities. As the U.S. seeks to scale geothermal across diverse geographic and social contexts, understanding how acceptance varies by technology and place is no longer optional—it is foundational.

Study Scope, Design, and Analytical Approach

National Coverage with Regional and State-Level Resolution

This study draws on a large, nationally representative survey of U.S. residents, with sufficient sample sizes to support robust analysis at both the regional and state levels in geothermal-relevant areas. The dataset enables comparison across major U.S. regions and detailed examination of key geothermal states, allowing national trends to be identified while preserving the contextual nuance required for policy, industry, and community engagement.

Three Distinct Geothermal Technologies

Rather than treating geothermal as a single, homogeneous energy source, the study explicitly distinguishes among three geothermal system types:

- **Geoexchange systems**, typically deployed at the building or district scale;
- **Hydrothermal systems**, representing conventional geothermal electricity generation; and
- **Next-generation geothermal systems**, reaching greater depths and including enhanced and closed-loop technologies, thereby expanding geographic potential.

This distinction is critical. Public evaluations of geothermal are not uniform across technologies, and acceptance drivers differ meaningfully depending on perceived maturity, scale, and societal role.

Defining and Measuring Social Acceptance

In this study, social acceptance is defined as the degree to which individuals feel favorable toward and comfortable with the deployment of a given geothermal technology. Acceptance is treated as a behavioral precursor—a necessary condition for public support, project approval, and long-term legitimacy.

Acceptance is modeled as a function of multiple psychological and social factors, including:

- Perceived benefits
- Perceived costs
- Perceived risks
- Familiarity and understanding
- Perceived fairness
- Social responsibility and societal contribution
- Social norms and influence of important others
- Hedonic or affective responses

By applying consistent modeling across technologies and geographies, the study identifies both generalizable drivers and context-specific dynamics.

Headline Findings: What the Data Shows

Several clear and consistent insights emerge from the analysis.

- **Geothermal energy enjoys moderate to high levels of acceptance across the United States**, particularly when respondents perceive tangible benefits such as energy reliability, affordability, and long-term sustainability. Across nearly all regions and states examined, perceived benefits exert a strong and positive influence on acceptance.
- **Perceived benefits and perceived fairness are the most reliable and recurrent drivers of acceptance nationwide.** When geothermal development is viewed as equitable, transparent, and delivering meaningful advantages to communities, support increases markedly. Fairness plays a particularly important role in regions with historical energy inequities or higher energy burdens.
- **Cost sensitivity varies substantially by geography.** In some states and regions, affordability concerns strongly constrain acceptance, while in others, cost perceptions play a more secondary role. This variation reflects local energy prices, income distributions, and prior exposure to energy infrastructure.

- **In the general attitudinal regression analyses, perceived risk does not emerge as a primary barrier to acceptance**, suggesting that risk concerns become more influential when people assess concrete project scenarios rather than abstract technology categories.
- **Finally, next-generation geothermal systems are evaluated through a distinctly social lens.** Acceptance of emerging systems is less tied to technical risk assessments and more strongly shaped by perceptions of social responsibility, long-term community value, and contribution to energy resilience and climate goals.

Together, these findings indicate that geothermal acceptance in the United States is driven less by fear or opposition and more by whether people see geothermal as fair, valuable, and aligned with collective priorities.

Patterns of Social Acceptance Across the United States

While national trends provide a useful overview, the analysis reveals substantial regional and state-level variation in **how** geothermal acceptance is formed, even where overall acceptance levels remain similar.

Across regions, several consistent patterns emerge. **Geoexchange systems** tend to be evaluated through pragmatic lenses emphasizing perceived benefits, familiarity, and fairness. **Hydrothermal systems**, where present, often benefit from higher baseline familiarity but remain sensitive to perceptions of equity and community integration. **Next-generation geothermal systems**, by contrast, are evaluated more strongly through narratives of societal contribution and long-term value, reflecting their emerging status and lower public familiarity.

At the state level, acceptance structures become more differentiated. States with higher energy costs or more isolated energy systems show heightened sensitivity to affordability and fairness considerations. States with longer geothermal exposure histories exhibit stronger reinforcing effects of familiarity and perceived benefits. In several cases, social norms and perceptions of community endorsement emerge as meaningful secondary drivers, particularly where energy development is closely tied to local identity, employment, or regional development goals.

To synthesize these patterns, Table 1 groups geographies according to **recurring acceptance structures**, defined by the dominant *secondary drivers* that shape acceptance beyond a broadly shared baseline of perceived benefits.

Table 1

Acceptance Structures Across U.S. Regions and States

Acceptance Structure	Geographies Included	Defining Characteristics
Benefit-Led Acceptance (Universal Baseline)	**United States (National); all 5 regions; all 14 states**	Across all geographies and technologies, perceived benefits are the strongest and most consistent predictor of acceptance. Acceptance is anchored in expectations of reliability, affordability, and long-term value. Differences across regions and states emerge primarily through secondary drivers layered on top of this shared benefits baseline.
Equity- and Fairness-Sensitive Acceptance	**Alaska; California (geoexchange & hydrothermal); Hawaii; Northeastern U.S.; Pacific Region**	Perceived fairness plays a consistently significant secondary role, reflecting sensitivity to equity, transparency, community inclusion, and distributional outcomes. Fairness strengthens acceptance where historical energy inequities, high costs, or land-use concerns are salient.
Familiarity-Reinforced Acceptance	**California; Nevada; Idaho; Utah; Mountain West & Central Plains**	Familiarity significantly reinforces acceptance, especially for geoexchange and hydrothermal systems with longer exposure histories. Familiarity amplifies perceived benefits rather than substituting for them, indicating that experience and visibility deepen—but do not replace—benefit-based evaluations.
Socially Framed Acceptance	**New Mexico; Louisiana; Texas; Southern Interior U.S.; Mid-Atlantic & Southeast Coast**	Social responsibility and social norms emerge as influential secondary drivers. Acceptance is closely tied to perceived societal contribution, collective benefit, and community endorsement, particularly for emerging and large-scale applications.
Affordability-Constrained Acceptance	**Alaska; Idaho; Montana (regional signal); Southern Interior U.S.; Northeastern U.S.**	Perceived costs exert a negative secondary influence on acceptance in specific contexts. Cost concerns do not displace benefits as the primary driver but condition acceptance where energy burdens are high or affordability is a dominant public priority.
Next-Generation Social-Value Acceptance	**United States (National); California; Nevada; New Mexico; Hawaii; Pacific Region**	Acceptance of next-generation geothermal is shaped less by technical risk and more by social responsibility, long-term community value, and contribution to energy transition goals. Benefits remain central, but evaluations rely more heavily on normative and societal framing due to low familiarity.
Contextualized Place-Based Acceptance	**Hawaii; California (next-generation); Alaska**	Acceptance reflects strong interaction between benefits, fairness, and local context. Cultural values, environmental sensitivity, and place-specific energy realities shape how benefits are interpreted, rather than whether benefits matter.

Note. Acceptance structures are derived from multivariate regression analyses of technology-specific acceptance. Groupings emphasize recurring patterns in **secondary drivers** that shape acceptance beyond a broadly shared baseline of perceived benefits. Differences in absolute acceptance levels are not emphasized, as acceptance clusters within a narrow moderate range across geographies.

This layered approach—national trends supported by regional and state nuance—underscores the central conclusion of the report: **there is no single pathway to geothermal acceptance**, but there are clear, evidence-based principles that can guide effective engagement.

Implications for Policy, Industry, and Communication

Implications for Policymakers

Policymakers should recognize—and plan for—the fact that social acceptance is not a secondary consideration but a core enabling condition for geothermal scale-up. Policies that emphasize procedural fairness, transparency, and local benefit sharing are likely to be more effective than those focused narrowly on technical deployment targets. Tailoring policy frameworks to regional energy realities, particularly affordability concerns, can strengthen public support and reduce friction.

Implications for Industry and Developers

For developers, the evidence suggests that communication strategies should prioritize benefit clarity and fairness, rather than overemphasizing risk mitigation alone. Demonstrating how geothermal projects contribute to local economic resilience, energy affordability, and long-term sustainability is likely to resonate more strongly than purely technical messaging. For next-generation geothermal systems, framing projects as part of a broader societal transition appears especially important.

Implications for Communication and Public Engagement

Public engagement efforts should move beyond one-size-fits-all approaches. Acceptance drivers differ not only by region but by technology type. Effective engagement will require aligning messages with local priorities, levels of familiarity, and community values. Importantly, the generally weak role of risk perceptions in general attitudinal models suggests that engagement strategies can focus more on opportunity, fairness, and shared benefit rather than defensive reassurance.

Conclusion

This analysis makes clear that geothermal's future in the United States will be shaped as much by social dynamics as by subsurface resources or engineering advances. The good news is that public acceptance is not fundamentally hostile to geothermal energy. On the contrary, when geothermal is understood, perceived as fair, and connected to tangible community benefits, support is strong.

By grounding geothermal deployment strategies in empirical evidence on social acceptance, policymakers, industry leaders, and advocates can move beyond assumptions and engage communities more effectively. In doing so, geothermal can fulfill its potential as a socially viable pillar of the U.S. clean energy transition.

Part II

National, Regional, and State-Level Findings

1. Introduction: Why Social Acceptance Matters

As the United States (U.S.) accelerates its transition toward a low-carbon energy system, geothermal energy is increasingly recognized as a strategic solution with distinctive advantages. Geothermal systems can provide reliable, always-available energy for heating, cooling, and power generation, with low greenhouse gas emissions, domestic supply, and strong alignment with long-term decarbonization goals. Unlike variable renewable sources, geothermal offers firm, dispatchable energy that can support grid reliability, electrification, and resilience across regions (U.S. Department of Energy, 2019; Tester et al., 2021).

Despite this technical and strategic potential, geothermal deployment across the United States remains limited. While technological, regulatory, and financial challenges continue to play an important role, it is increasingly clear that non-technical factors are equally decisive. Among these, social acceptance has emerged as a critical condition shaping whether energy projects advance, stall, or fail. Research across energy systems shows that even technically sound and economically competitive technologies can face delays or resistance if they are poorly understood, perceived as risky, or viewed as misaligned with community values and priorities (Hofmann et al., 2014; Graham et al., 2022; Bolinger et al., 2023).

Social acceptance refers to the degree to which energy technologies are viewed by the public as appropriate, beneficial, fair, and trustworthy. It influences political support, regulatory pathways, community engagement processes, investment confidence, and ultimately market adoption. Rather than reflecting simple approval or opposition, social acceptance is a dynamic process shaped by familiarity, perceived benefits and costs, social norms, trust in institutions, and perceptions of fairness and responsibility (Wüstenhagen et al., 2007; Huijts et al., 2012). These factors may vary across regions, technologies, and stages of deployment, and can evolve over time as experience and information change.

For geothermal energy, social acceptance plays a particularly important role. Unlike more visible clean energy technologies, such as solar panels or wind turbines, many geothermal systems operate beneath the ground and outside everyday public experience. As a result, public familiarity with geothermal technologies remains relatively low, even in regions with strong geothermal potential. Low visibility can lead to uncertainty, misconceptions, or disengagement, not necessarily opposition, but a lack of informed support. Federal assessments have explicitly identified public unfamiliarity and limited awareness as important barriers to broader geothermal deployment (U.S. Department of Energy, 2019).

At the same time, geothermal systems align closely with the attributes that Americans consistently prioritize when evaluating energy sources, including long-term affordability, reliability across seasons and weather conditions, and safety for humans. This alignment creates a significant opportunity. When geothermal technologies are clearly explained and connected to these public priorities, acceptance tends to be moderately positive, even in areas with little prior exposure.

Understanding how these perceptions form, and which factors most strongly influence them, is therefore essential for scaling geothermal deployment nationwide.

Social acceptance should not be understood as a single threshold that must be crossed, but as a continuum that shapes different outcomes at different stages. Early-stage acceptance may depend primarily on general beliefs, values, and familiarity, while project-specific support often hinges on concrete information about cost, performance, and local impacts (Wüstenhagen et al., 2007; Huijts et al., 2012). Insights into social acceptance thus provide actionable guidance for developers, utilities, policymakers, and advocates seeking to design effective communication strategies, engagement processes, and policy frameworks.

This report responds to that need by examining social acceptance of geothermal systems across the United States. By situating geothermal within the broader energy transition and focusing on the social and psychological drivers of public evaluation, the analysis provides a foundation for understanding not only where acceptance stands today, but how it can be strengthened to support the next phase of geothermal deployment.

2. Social Acceptance Framework

2.1. Social Acceptance

Social acceptance refers to the degree to which energy technologies are viewed by the public as appropriate, beneficial, and legitimate. It encompasses not only expressed support, but also emotional comfort, perceived social endorsement, and tolerance of potential impacts. In the energy literature, social acceptance is widely understood as a multidimensional and dynamic phenomenon rather than a binary outcome of support or opposition (Wüstenhagen et al., 2007; Huijts et al., 2012).

Instead of asking whether people simply “accept” or “reject” a technology, social acceptance is better seen as a continuum that ranges from strong favorability leading to support, through cautious approval or passive tolerance, to skepticism or resistance. Individuals may recognize the societal value of an energy system while still feeling uneasy about its costs, risks, or local impacts. Acceptance can therefore vary across contexts, technologies, and stages of deployment, and may evolve over time as familiarity, experience, and information change.

In this study, social acceptance is understood as the combined expression of three closely related dimensions: overall favorability toward a technology, personal comfort with its deployment, and general support for its use. Together, these dimensions capture both cognitive evaluations (e.g., perceived benefits) and affective responses (e.g., unease or reassurance), providing a holistic measure of how people evaluate geothermal systems in the contemporary U.S. energy context.

2.2. The Eight Energy-System Attributes

When members of the public evaluate energy technologies, they do so through a set of underlying criteria that apply broadly across technologies, rather than being specific to geothermal alone. Prior research shows that people consistently rely on a limited number of core attributes when judging energy systems (van Rijnsoever & Farla, 2014; Boyd et al., 2019; Volken et al., 2019). These attributes form the evaluative lens through which all energy options are assessed.

This study focuses on eight such attributes:

- **Affordability**. Reasonable cost, reflecting concerns about household energy bills and overall system costs.
- **Reliability**. Consistent and uninterrupted supply across seasons, weather conditions, and demand peaks.
- **Safety for humans.** No negative impacts on people, capturing perceived risks to health, safety, and well-being.
- **Safety for ecosystems.** No negative impacts on biodiversity, reflecting broader environmental concerns.
- **Low climate impact**. Minimizing greenhouse gas (GHG) emissions and pollution, referring to perceived contributions to climate change mitigation.
- **Accessibility**. Available to everyone, regardless of where they live, indicating whether energy services are seen as broadly available and equitably distributed.
- **Job creation**. The potential to generate high-quality employment.
- **Minimal landscape disruption**. Limited impacts on views, land use, and local environments.

These attributes are reasonable and intuitive criteria for public evaluation. They map closely onto established behavioral motivations: gain-oriented concerns (e.g., affordability), hedonic concerns (e.g., safety and comfort), and normative concerns (e.g., environmental responsibility and fairness) (Lindenberg & Steg, 2007). Importantly, these attributes are not specific to geothermal; they reflect how people judge any energy system. Identifying which attributes are most salient establishes baseline expectations against which geothermal technologies can be evaluated.

2.3. Familiarity Across Clean Energy Sources

Familiarity plays a central role in shaping social acceptance, particularly for technologies that are less visible or more technically complex. However, familiarity is inherently relative rather than absolute. Measuring familiarity with geothermal alone would obscure whether low awareness reflects general disengagement from energy issues or a specific visibility gap relative to other technologies.

To address this, we measure familiarity across a range of clean energy sources, including solar, wind, hydropower, nuclear, bioenergy, and natural gas with carbon capture. This comparative approach allows geothermal familiarity to be interpreted in context, revealing structural differences in public awareness rather than attitudes alone.

By comparing geothermal to other clean energy technologies, the analysis can distinguish between *low familiarity* and *low acceptance*. A lack of familiarity does not necessarily imply opposition; instead, it often signals limited exposure, minimal media presence, or few everyday reference points. This distinction is critical for interpretation, as it supports later findings that low familiarity reflects low visibility rather than inherent resistance to geothermal technologies (Dowd et al., 2011; Cousse et al., 2021).

2.4. Measuring Social Acceptance and the Analytical Model

Social acceptance in this study is treated as a multidimensional construct rather than a binary outcome of support or opposition. It is measured as a composite index combining favorability, comfort, and overall support for geothermal technologies. Favorability reflects general attitudes toward a technology, comfort captures affective responses to its presence or operation, and overall support indicates a willingness to endorse or tolerate deployment. Each component is measured on a five-point Likert scale, and the composite score is calculated as the mean of the three items.

This approach captures both cognitive and emotional dimensions of acceptance while avoiding reliance on a single indicator. It also allows social acceptance to be compared consistently across geoexchange, hydrothermal, and next-generation geothermal systems, while preserving sensitivity to variation in public responses. Figure 1 illustrates how social acceptance is operationalized in this study.

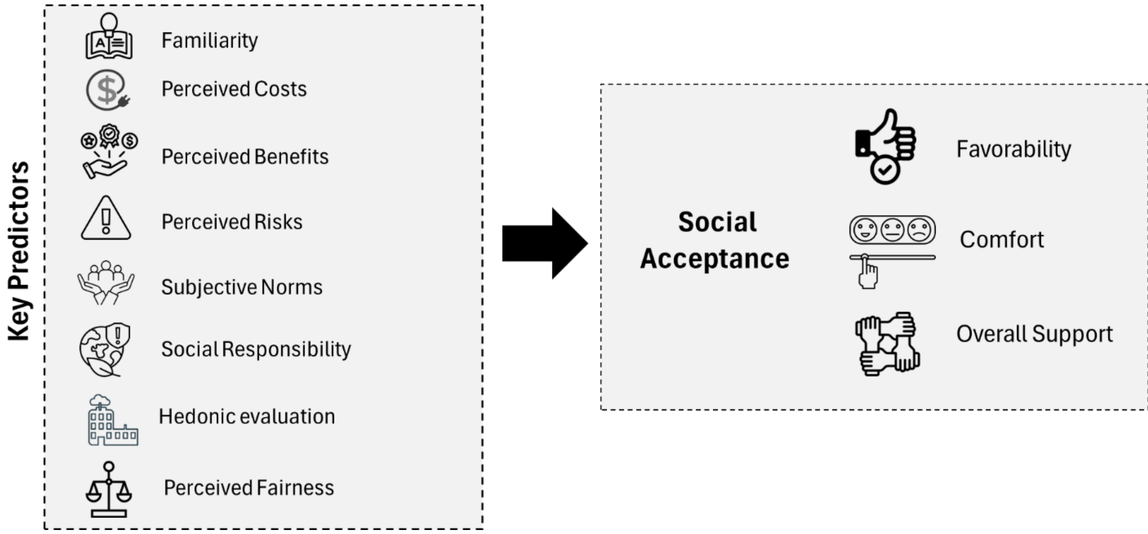
Building on this measurement, the analysis examines the factors that shape social acceptance using an integrated analytical framework. Drawing on established energy-acceptance literature (Wüstenhagen et al., 2007; Huijts et al., 2012), the model identifies eight key attitudinal factors: familiarity, perceived costs, perceived benefits, perceived risks, subjective norms, perceived social responsibility, hedonic evaluation, and perceived fairness.

Each factor represents a distinct evaluative dimension. Perceived benefits and costs capture instrumental judgments about value and trade-offs, while perceived risks reflect concerns about safety and uncertainty. Familiarity captures exposure and understanding, subjective norms reflect perceived social approval, and social responsibility captures normative expectations about sustainability. Hedonic evaluation reflects emotional responses to physical features such as noise or industrial appearance, and fairness captures procedural and distributive justice.

The framework does not assume that all factors exert equal influence. Their relative importance is expected to vary by technology maturity, visibility, and regional context. Figure 1 summarizes this analytical model, in which the eight drivers are modeled as antecedents of social acceptance, measured as a composite of favorability, comfort, and overall support. This framework provides the conceptual foundation for the empirical analyses that follow.

Figure 1

Analytical framework for social acceptance of geothermal systems



3. Social Acceptance and the Geothermal Deployment

Social acceptance is increasingly recognized as a strategic prerequisite for the successful deployment of geothermal energy. Clean-energy technologies do not advance solely because they are technically viable or economically competitive, but because they are understood, trusted, and perceived as beneficial and appropriate by the public. For geothermal systems—ranging from household heat pumps to district thermal networks and larger-scale geothermal developments—public perceptions shape policy support, regulatory pathways, market uptake, and long-term viability.

Across the deployment lifecycle, social acceptance influences whether geothermal technologies gain traction or encounter resistance. Higher acceptance can support planning, policy alignment, and market uptake, while weak or uncertain acceptance may contribute to delays, limited adoption, or reduced political and institutional support. As geothermal expands into new regions and applications, understanding these acceptance patterns becomes increasingly important for anticipating deployment challenges and opportunities.

In many parts of the U.S., geothermal remains relatively “out of sight and out of mind.” Limited everyday exposure contributes to weak public understanding of what geothermal is, how it works, and how it compares to other clean energy options. This lack of familiarity does not necessarily reflect opposition, but it can hinder adoption, reduce political salience, and slow market development if left unaddressed.

At the same time, geothermal aligns closely with the attributes that Americans prioritize most when evaluating energy systems, particularly affordability, reliability, and safety. When geothermal technologies are clearly explained and meaningfully connected to these priorities, acceptance tends to be moderately positive, even in regions with limited prior exposure. Understanding which factors most strongly drive acceptance, therefore, provides actionable guidance for developers, utilities, policymakers, and advocates seeking to scale geothermal deployment.

As geothermal becomes increasingly integrated into decarbonization strategies—supported by heat-pump incentives, district-thermal initiatives, and growing interest in firm clean energy—**the central question is no longer whether geothermal can contribute to the energy transition, but how it is currently perceived by the public.** Addressing this question requires robust, U.S.-specific evidence on public awareness, priorities, and acceptance across different geothermal technologies and regional contexts.

4. Study Design and Data Overview

To address longstanding gaps in understanding public perceptions of geothermal energy, Geothermal Rising supported a large-scale national assessment of social acceptance of geothermal systems in the United States. The 2025 study represents the most comprehensive and contemporary effort to examine how Americans evaluate geothermal technologies across applications and regions.

The analysis is based on a national survey of **6,144 respondents across all 50 states**, using a two-branch sampling strategy. Fourteen geothermal-relevant states were oversampled to allow for deeper state-level insights aligned with current geothermal activity, policy development, and heating transitions. Respondents from the remaining states were grouped into five multi-state regions to ensure broad geographic coverage while maintaining analytical clarity. Regional groupings and associated sample sizes are shown in **Table 1**.

Table 2

Regional Groupings Used for U.S. Coverage

Region	States Included	Survey Completes
Mountain West & Central Plains	AZ, MT, WY, SD, NE, KS, OK	284
Great Lakes Region	IL, IN, MI, OH, WI, MO, IA	824
Mid-Atlantic & Southeast Coast	DE, MD, DC, VA, NC, SC, GA, FL	997
Southern Interior U.S.	AL, AR, KY, MS, TN, WV	363
Northeastern U.S.	ME, NH, VT, MA, RI, CT, NJ, PA	548
Total	—	3,016

Note. Results for non-oversampled states are presented at the regional level to ensure analytical clarity and avoid overinterpretation of individual states with smaller sample sizes.

Fourteen geothermal-relevant states were included in the oversampled design to support targeted state-level analysis. The distribution of survey completes across these states is shown in **Table 2**.

Table 3

Key Geothermal States Included in the Study

State	Survey Completes
Alaska	130
California	497
Colorado	194
Hawaii	164
Idaho	167
Louisiana	181
Nevada	176
New Mexico	168
New York	294
North Dakota	164
Oregon	181
Texas	459
Utah	174
Washington	179
Total	**3,128**

Note. States were selected for their strategic relevance to geothermal deployment. Sample sizes allow for cross-state comparison and targeted state-level insights but are not intended to provide nationally representative estimates for individual states.

The survey collected multiple forms of data relevant to social acceptance and energy evaluation. Respondents ranked eight core energy-system attributes that reflect the criteria Americans use to judge energy sources. Familiarity was measured across a range of clean energy technologies, allowing geothermal awareness to be interpreted in comparative context. Attitudinal data were collected for geoexchange, hydrothermal, and next-generation geothermal systems, including measures of social acceptance and its key drivers: familiarity, perceived costs, perceived benefits, perceived risks, perceived fairness, subjective norms, social responsibility, and hedonic evaluation.

Together, these data provide a robust empirical foundation for understanding contemporary U.S. attitudes toward geothermal energy. The analysis that follows translates these findings into actionable insights for developers, policymakers, utilities, state agencies, and advocates seeking to advance geothermal deployment across diverse technological and regional contexts.

Results are presented in three stages to reflect both the study design and the analytical framework outlined above. First, national-level results establish baseline patterns in public priorities, familiarity, and social acceptance of geothermal systems across the U.S. Second, regional analyses highlight meaningful variation across geographic and policy contexts. Finally, state-level insights focus on geothermal-relevant states included in the oversampled design, providing targeted, deployment-relevant perspectives.

5. National-Level Results

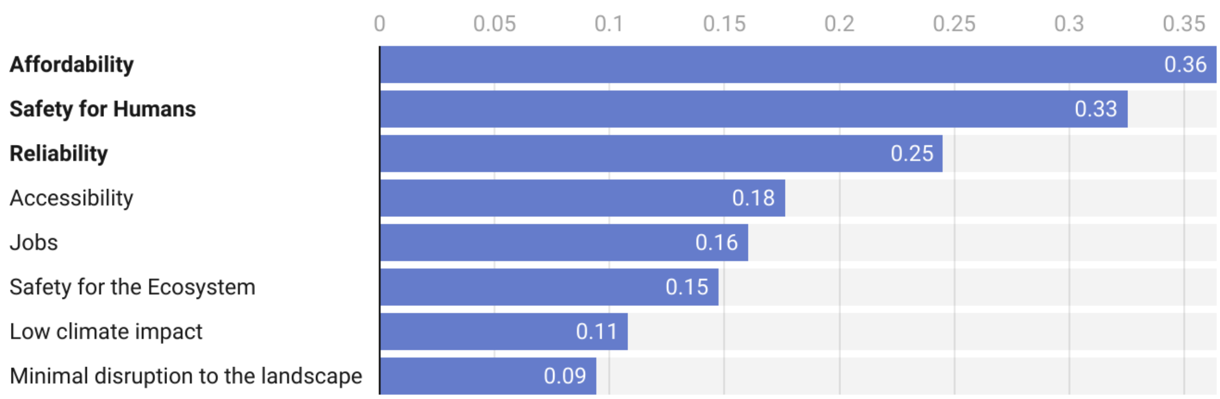
5.1. Public Priorities in Energy Systems

At the national level, respondents demonstrate clear and consistent priorities when evaluating energy systems (Figure 2). Across the full sample, affordability, reliability, and safety for humans emerge as the most important attributes guiding public evaluation. These attributes form a practical baseline against which all energy technologies—including geothermal—are implicitly assessed.

Attributes related to environmental performance, such as low climate impact and safety for ecosystems, also rank highly but generally follow core economic and reliability considerations. Attributes such as job creation, accessibility, and minimal landscape disruption tend to be secondary, suggesting that while these factors matter, they are less central to initial judgments about energy systems.

Figure 2
Public Priorities in Energy Systems (National-Level)

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where Fis the frequency of selection of attribute, Nis the total number of respondents in the attribute ranking task (6,144), and mPis 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).

Created with Datawrapper

These results reveal a crucial insight for the geothermal sector: **the attributes Americans prioritize most—affordability, safety, and reliability—are the same attributes where geothermal technologies generally perform very well.**

Geothermal systems are:

- cost-stable and competitive over the long term,
- inherently safe with minimal operational risk, and
- reliable in all seasons and weather conditions.

This alignment shows that geothermal is well positioned to meet the public's core expectations for an energy solution. However, the challenge for the industry is **not technical performance**, but

visibility and public understanding. Many Americans simply have not yet connected their energy priorities with what geothermal can deliver. This makes it essential, in the following sections, to explore how familiar the public is with geothermal technologies and how this shapes their perceptions.

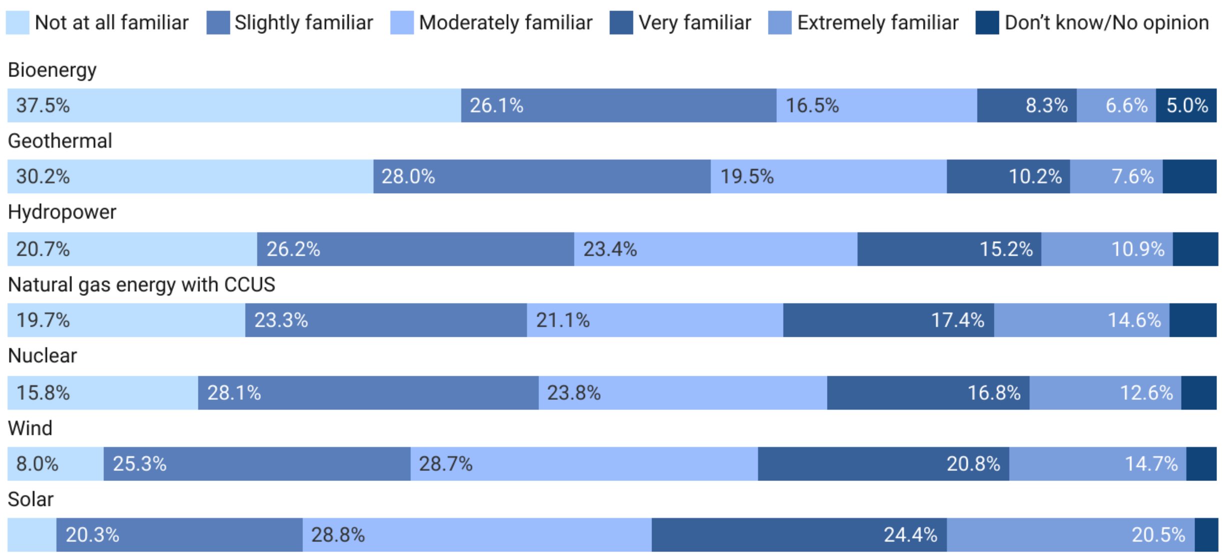
5.2. Familiarity with Geothermal Systems

National familiarity levels vary substantially across clean energy technologies. Solar and wind energy are the most familiar technologies, reflecting their widespread deployment, visibility, and presence in public discourse. Hydropower and nuclear energy show moderate familiarity, while bioenergy and natural gas with carbon capture are less well known.

In contrast, geothermal energy exhibits significantly lower familiarity than most other clean energy sources. A substantial share of respondents report being only slightly familiar (or not familiar at all) with geothermal technologies. This familiarity gap highlights a structural visibility issue rather than an attitudinal one: geothermal remains largely outside everyday public experience compared to more visible renewables.

Figure 3

National-Level Self-Reported Familiarity with Clean Energy Sources



Familiarity was measured using a 5-point scale ("Not at all familiar" to "Extremely familiar," plus "Don't know/No opinion"). Results are based on national survey data from 6,144 U.S. adults across five regions and 14 geothermal-relevant states (2025 GR Geothermal Perception Study). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

These findings highlight a significant visibility gap. Geothermal technologies perform strongly on many of the attributes Americans value most, such as affordability, safety, and reliability, but relatively few people have encountered geothermal in their daily lives or seen clear explanations of how it works. Low familiarity does not indicate opposition; instead, it signals a major opportunity for broader awareness and more effective communication.

5.3. Acceptance Levels for Geothermal Systems

Beyond familiarity, it is important to understand how positively Americans evaluate geothermal technologies when they are presented with clear information. Social acceptance is a core condition for successful deployment. Figure 4 presents national acceptance scores for the three geothermal systems included in the study.

Figure 4

Social Acceptance Levels for Geothermal Systems across the U.S.

Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale.

Across the U.S., social acceptance levels of geothermal systems are closely clustered and moderately positive, even though public familiarity with these technologies remains relatively limited. Hydrothermal systems receive the highest acceptance score, reflecting their association with long-standing geothermal power use in certain regions. Geoexchange follows closely, supported by the perception that ground-source heat pumps are safe, domestic, and reliable. Next-generation geothermal has slightly lower acceptance, which is expected given its emerging status and limited public exposure.

The narrow spread between the three scores indicates that Americans tend to evaluate geothermal technologies in a generally favorable way when presented with clear information. While social acceptance varies slightly by technology type, the overall pattern shows a positive baseline across the board.

5.4. Key Predictors of Acceptance

Regression analysis identifies a consistent set of predictors shaping national-level social acceptance of geothermal systems. Across technologies, perceived benefits emerge as the strongest and most stable predictor of acceptance. Subjective norms—the perception that important others support geothermal—also show a strong positive association with acceptance.

Familiarity and perceived fairness play secondary but meaningful roles, particularly for less familiar system types. In contrast, perceived risks and perceived costs show weaker and less consistent associations with acceptance at the national level, suggesting that opposition is not primarily driven by generalized risk or cost concerns.

Overall, the results indicate that acceptance is shaped more by positive evaluations—benefits, social endorsement, and fairness—than by fear or resistance. This pattern underscores the importance of benefit-focused communication and trust-building strategies over risk-centered messaging.

While these national-level results establish clear baseline patterns, acceptance and familiarity vary across geographic contexts. The following section examines how these patterns differ across U.S. regions and key states.

6. Regional Results (Five Regions)

6.1. Mountain West & Central Plains

This region has elevated geothermal potential, including strong prospects for sedimentary-basin next-generation geothermal systems and opportunities to support rural energy infrastructure.

For this study, the Mountain West & Central Plains region includes the following states:

Arizona (AZ), Montana (MT), Wyoming (WY), South Dakota (SD), Nebraska (NE), Kansas (KS), and Oklahoma (OK).

6.1.1. Public Priorities in Energy Systems

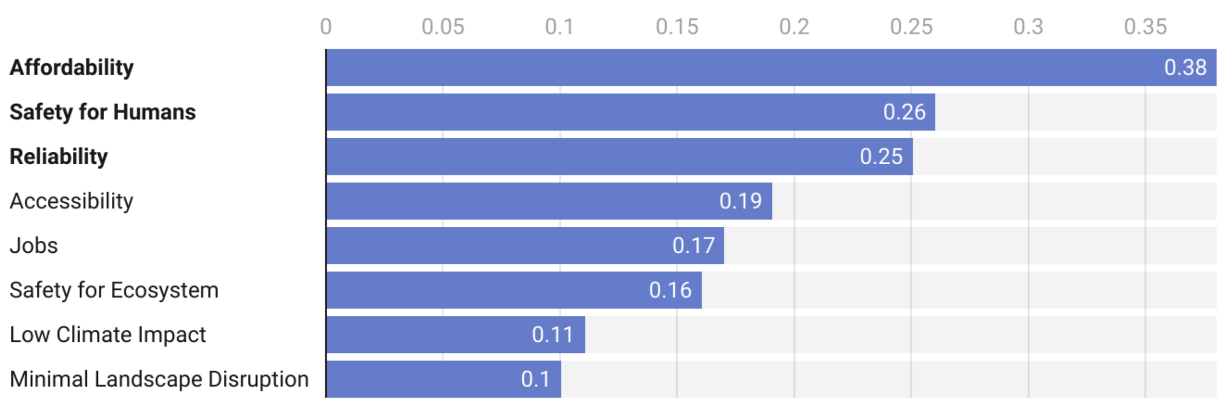
Residents in this region prioritize energy attributes in ways that largely mirror national patterns (Figure 5). Affordability, human safety, and reliability emerge as the strongest considerations, highlighting a preference for energy systems that are stable, safe, and cost-effective. Mid-tier priorities—accessibility, job creation, and ecosystem safety—reflect a blend of practical and environmental concerns.

Climate impact and landscape disruption rank lowest. This does not indicate disregard for environmental issues; rather, economic and safety considerations remain the more immediate drivers of decision-making.

These priorities align closely with core strengths of geothermal systems, suggesting strong potential resonance as familiarity and visibility improve.

Figure 5
Public Priorities in Energy Systems in the Mountain West & Central Plains Region

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (284), 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).

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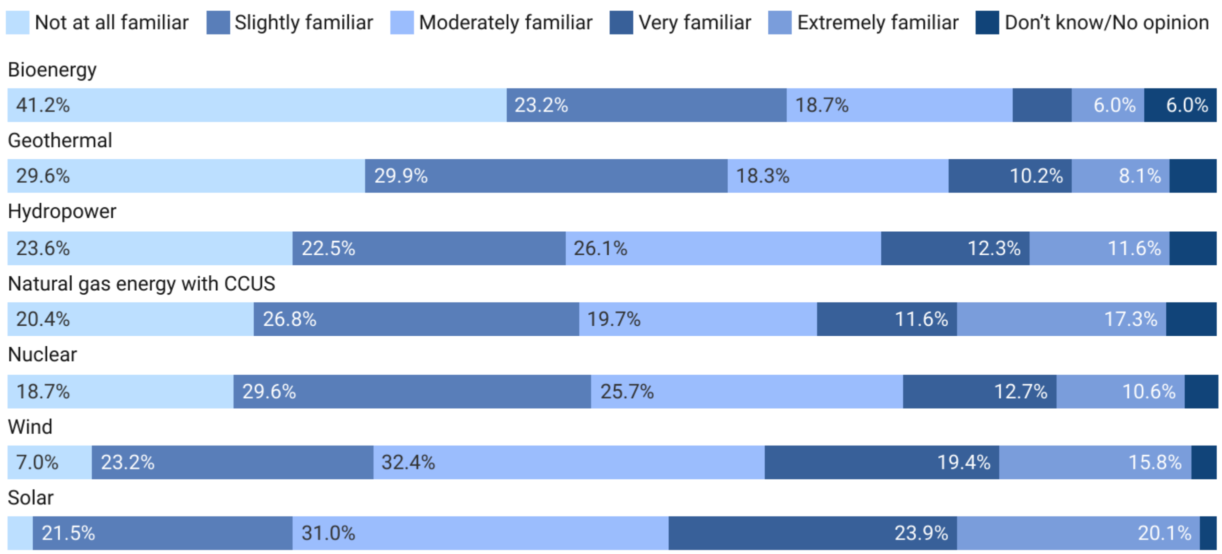
6.1.2. Familiarity with Geothermal Systems

Familiarity with geothermal systems in the Mountain West & Central Plains is relatively low: nearly 30% of residents report being "not at all familiar," and only about 18% describe themselves as "very" or "extremely" familiar. This pattern is similar to national results, reflecting limited regional visibility of geothermal projects. By contrast, solar, wind, and hydropower are far more widely recognized. Increasing public familiarity remains a key step for strengthening understanding and acceptance of geothermal technologies in this region.

Figure 6

Self-Reported Familiarity with Clean Energy Sources in the Mountain West & Central Plains Region



Familiarity was measured using a 5-point scale ("Not at all familiar" to "Extremely familiar"), plus a "Don't know/No opinion" option. Results are based on regional survey data from residents of AZ, MT, WY, SD, NE, KS, and OK (2025 GR Geothermal Perception Study). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

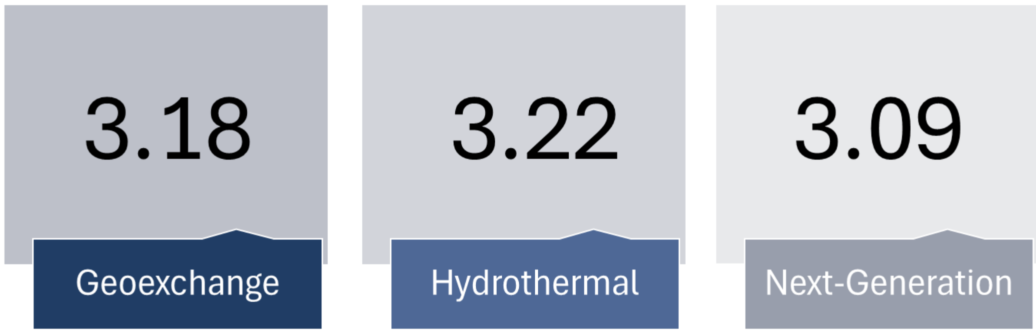
6.1.3. Acceptance Levels for Geothermal Systems

Social acceptance of geothermal technologies in the Mountain West & Central Plains is moderately positive and closely clustered across the three system types (Figure 7). Hydrothermal receives the highest score in the region, with geoexchange just behind. Next-generation geothermal is slightly lower—but still positive—reflecting its emerging status and comparatively low visibility.

Overall, the region shows a generally favorable baseline toward geothermal, suggesting strong potential for increased support as awareness grows.

Figure 7

Social Acceptance Levels for Geothermal Systems in the Mountain West & Central Plains Region



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (284) from residents of AZ, MT, WY, SD, NE, KS, and OK (2025 GR Geothermal Perception Study)

6.1.4. Key Predictors of Acceptance

The predictors of geothermal acceptance in the Mountain West & Central Plains region vary somewhat across the three technologies, but several consistent themes emerge.

Geoexchange and Hydrothermal systems share a similar pattern:

- **Perceived Benefits** and **Subjective Norms** are the strongest drivers of acceptance.
- **Familiarity** and **Perceived Fairness** also contribute meaningfully.
- **Cost perceptions and risks** show little influence at this stage.

Next-Generation geothermal shows a different profile:

- Only **Subjective Norms** and **Perceived Fairness** are significant predictors of acceptance.
- Familiarity, benefits, risks, costs, hedonic impressions, and social responsibility are *not* statistically significant, suggesting that limited public awareness constrains the role of these factors.

Across all geothermal systems, perceived risks remain weaker predictors of acceptance compared with perceived benefits, social norms, and fairness—reflecting low public visibility rather than irrelevance. Overall, the results suggest that social acceptance of mature technologies, such as geoexchange and hydrothermal systems, is primarily shaped by tangible advantages and increasing familiarity. In contrast, acceptance of next-generation geothermal technologies depends more strongly on trust, perceptions of fairness, and social cues, underscoring their early-stage status in the public consciousness.

6.2. Great Lakes

The Great Lakes region is characterized by high industrial energy demand, ambitious decarbonization goals, and extensive experience with district heating and ground-source heat pump systems. These characteristics make the region a strategically important area for geothermal deployment, particularly for heating, industrial applications, and community-scale thermal networks.

For this study, the Great Lakes region includes the following states:

Illinois (IL), Indiana (IN), Michigan (MI), Ohio (OH), Wisconsin (WI), Missouri (MO), and Iowa (IA).

6.2.1. Public Priorities in Energy Systems

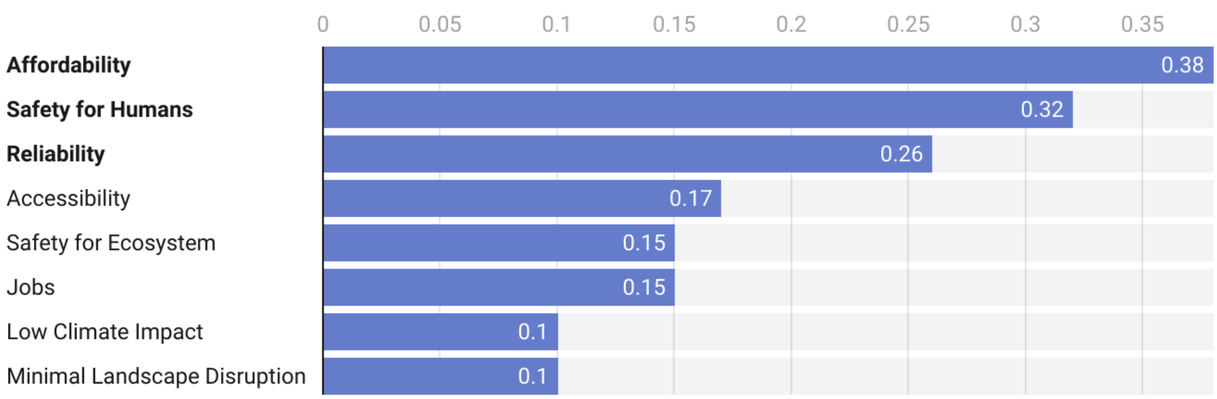
Energy source preferences in the Great Lakes region are shaped primarily by practical and safety-focused considerations (Figure 8). Affordability is the highest-ranking attribute, reflecting the region's large industrial base, high heating demand, and sensitivity to energy costs. Safety for humans and reliability follow closely, underscoring the importance of dependable and secure energy systems—particularly in states with aging infrastructure and cold winters.

Secondary priorities include accessibility, ecosystem protection, and job creation, while low climate impact and minimal landscape disruption rank lower but still contribute to overall evaluations.

Overall, residents of the Great Lakes region prioritize energy systems that are cost-effective, safe, and consistently reliable, aligning with both industrial requirements and household energy expectations.

Figure 8
Public Priorities in Energy Systems in the Great Lakes Region

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (824), 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).

Created with Datawrapper

6.2.2. Familiarity with Geothermal Systems

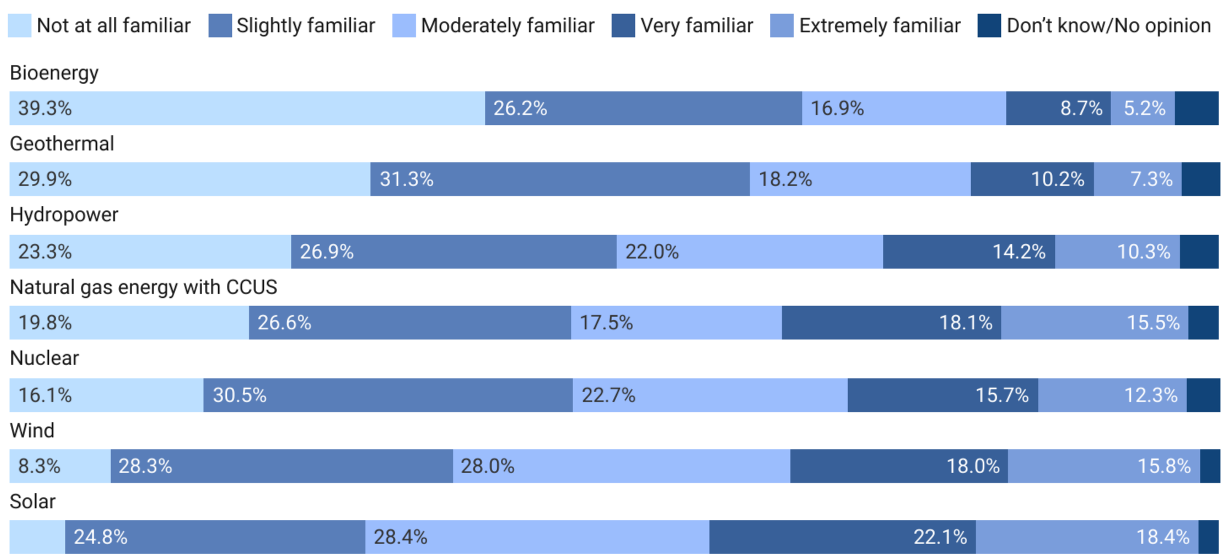
Figure 9 shows that geothermal remains moderately familiar but less visible than wind, solar, and nuclear energy across the Great Lakes region. Nearly one-third of residents report being "not at all familiar" with geothermal, and another third indicate only slight familiarity. In contrast, solar and wind have the highest recognition, reflecting their strong presence in public discourse and regional deployment.

Hydropower and nuclear also show higher levels of familiarity, likely linked to longstanding infrastructure and industrial energy use in states such as Michigan, Ohio, and Illinois.

Overall, geothermal awareness is limited but not absent, suggesting substantial room for growth—particularly given the region's strong potential for district heating, industrial decarbonization, and ground-source applications.

Figure 9

Self-Reported Familiarity with Clean Energy Sources in the Great Lakes Region



Familiarity was measured using a 5-point scale ("Not at all familiar" to "Extremely familiar"), plus a "Don't know/No opinion" option. Results are based on regional survey data from residents of IL, IN, MI, OH, WI, MO, and IA (2025 GR Geothermal Perception Study). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

6.2.3. Acceptance Levels for Geothermal Systems

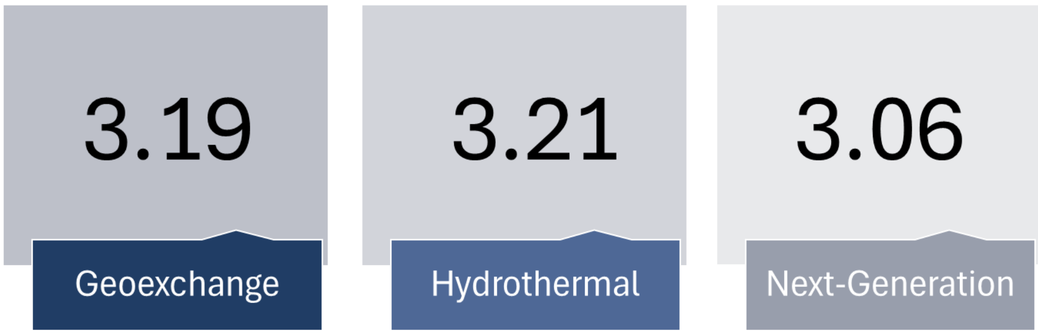
Social acceptance levels for geothermal systems in the Great Lakes region are moderate and closely aligned across all three technologies (Figure 10). Hydrothermal receives the highest average acceptance, followed by geoexchange and next-generation geothermal.

These results indicate a broad, stable baseline of support for geothermal solutions in a region with strong industrial energy needs and growing interest in decarbonized heat. While next-generation geothermal scores slightly lower, the gap is small, suggesting openness to emerging technologies once familiarity and visibility increase.

Overall, the Great Lakes region demonstrates a favorable environment for geothermal adoption, with acceptance levels comparable to national patterns and consistent across system types.

Figure 10

Social Acceptance Levels for Geothermal Systems in the Great Lakes Region



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (824) from residents of IL, IN, MI, OH, WI, MO, and IA(2025 GR Geothermal Perception Study)

6.2.4. Key Predictors of Acceptance

In the Great Lakes Region, the predictors of geothermal acceptance show a broadly consistent pattern across the three technologies, with some important differences between mature and emerging systems.

Geoexchange and Hydrothermal follow a similar structure:

- **Perceived Benefits** are the strongest and most consistent predictors of acceptance.
- **Familiarity**, **Perceived Social Responsibility**, **Subjective Norms**, and **Fairness** also show significant positive effects.
- **Cost perceptions** and **hedonic impressions** do not meaningfully influence acceptance.
- **Risk perceptions** are weaker but occasionally significant, particularly for Geoexchange.

Next-Generation geothermal has a more selective profile:

- Acceptance is driven mainly by **Perceived Benefits**, **Social Responsibility**, and **Familiarity**.
- Other factors—including **cost**, **risks**, **fairness**, and **social norms**—are not statistically significant, likely reflecting lower public awareness and limited direct experience with next-generation systems.

Overall, these results suggest that support for mature geothermal technologies, such as geoexchange and hydrothermal systems, is shaped by a broad set of belief-based factors. In contrast, support for next-generation geothermal systems depends primarily on general positive beliefs and basic levels of familiarity, reflecting their more emerging status. As in other regions, perceived risks and cost considerations remain comparatively weak predictors of support at this stage of public understanding.

6.3. Mid-Atlantic & Southeast Coast

The Mid-Atlantic & Southeast Coast is a fast-growing region with increasing urban cooling demand, diverse electricity mixes, and highly varied state energy policies. These factors create a complex but promising landscape for geothermal adoption—particularly for cooling-dominant applications, district systems, and long-term resilience planning.

For this study, the Mid-Atlantic & Southeast Coast region includes the following states and jurisdictions:

Delaware (DE), Maryland (MD), Washington, D.C. (DC), Virginia (VA), North Carolina (NC), South Carolina (SC), Georgia (GA), and Florida (FL).

6.3.1. Public Priorities in Energy Systems

Energy priorities in the Mid-Atlantic & Southeast Coast are strongly shaped by rapid population growth, high cooling demand, and sensitivity to household energy costs (Figure 11). Affordability is the most salient attribute, followed by safety for humans and reliability, indicating a clear preference for energy systems that are cost-effective, safe, and dependable under increasing demand pressures.

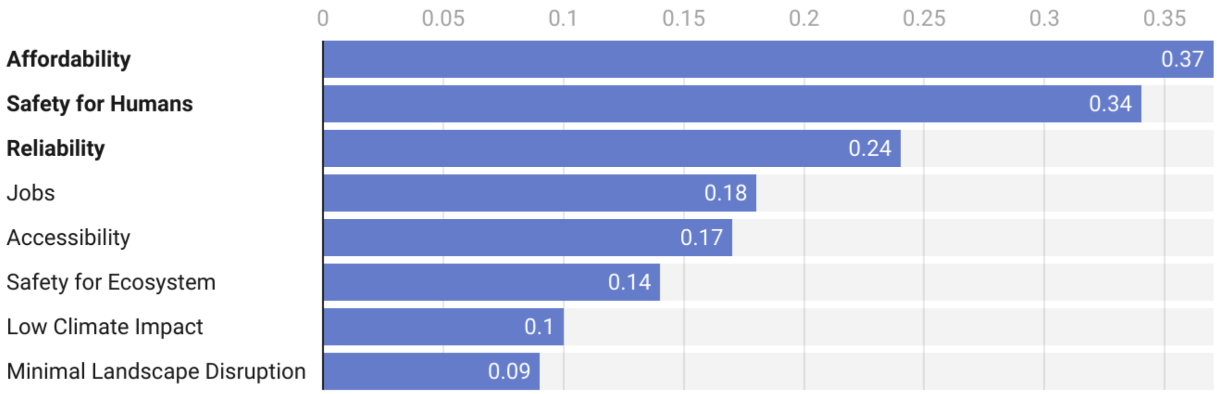
Job creation and accessibility occupy a mid-tier position, reflecting interest in local economic benefits and equitable access, while environmental attributes—ecosystem safety, low climate impact, and minimal landscape disruption—rank lower overall. This pattern suggests that economic and personal safety considerations outweigh environmental criteria when residents evaluate energy options in this region.

Overall, these priorities align closely with key strengths of geothermal systems, particularly for cooling-dominant and district-scale applications.

Figure 11

Public Priorities in Energy Systems in the Mid-Atlantic & Southeast Coast Region

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (997), 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).

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6.3.2. Familiarity with Geothermal Systems

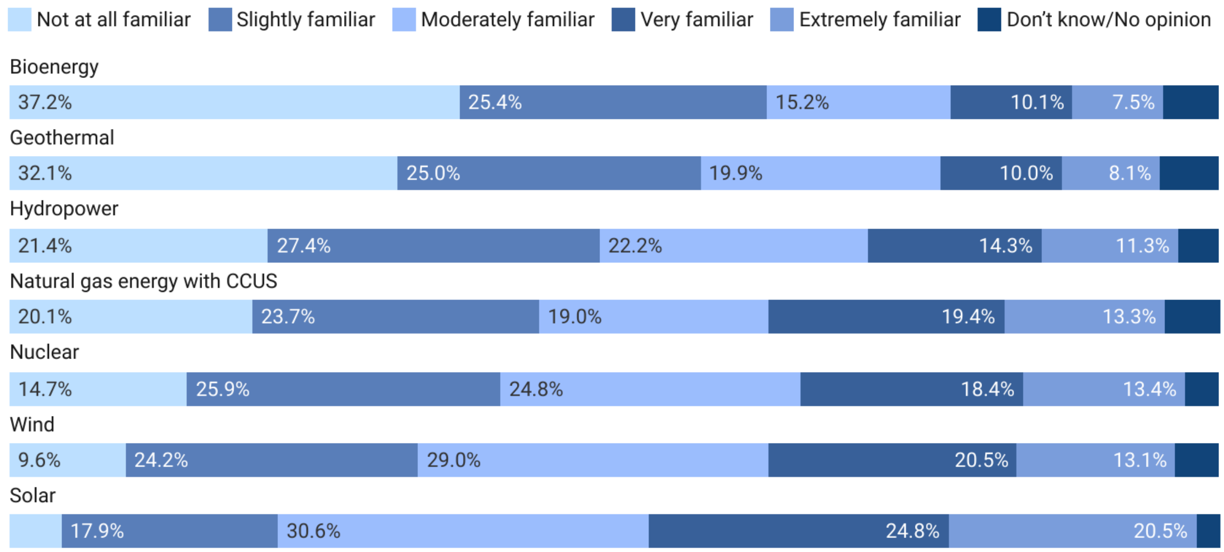
Public familiarity with geothermal systems in the Mid-Atlantic & Southeast Coast remains relatively low compared with more visible clean-energy technologies (Figure 12). Approximately one-third of residents report being "not at all familiar" with geothermal, while only a small share describe themselves as very or extremely familiar.

In contrast, solar and wind show substantially higher recognition, reflecting their widespread deployment and strong presence in public discourse. Hydropower and nuclear occupy a middle position, likely influenced by existing infrastructure and long-standing regional exposure. Bioenergy shows familiarity levels similar to geothermal, indicating broader challenges for less visible technologies.

Overall, these results point to a clear awareness gap rather than active resistance. Given the region's strong alignment with geothermal's core strengths, particularly for cooling-dominant and district-scale applications, increasing visibility and basic understanding remains a critical lever for strengthening acceptance in the Mid-Atlantic & Southeast Coast.

Figure 12

Self-Reported Familiarity with Clean Energy Sources in the Mid-Atlantic & Southeast Coast Region



Familiarity was measured using a 5-point scale ("Not at all familiar" to "Extremely familiar"), plus a "Don't know/No opinion" option. Results are based on regional survey data from residents of DE, MD, DC, VA, NC, SC, GA, and FL (2025 GR Geothermal Perception Study). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

6.3.3. Acceptance Levels for Geothermal Systems

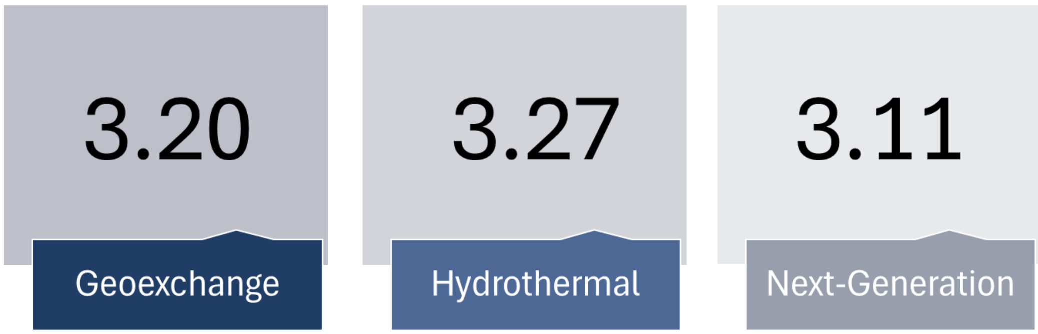
Social acceptance of geothermal systems in the Mid-Atlantic & Southeast Coast is moderately positive and closely clustered across all three technologies (Figure 13). Hydrothermal systems receive the highest average acceptance score (3.27), followed by geoexchange (3.20). Next-generation geothermal scores slightly lower (3.11), reflecting its emerging status and lower public visibility.

The narrow spread among acceptance scores suggests that residents in this region do not sharply differentiate between geothermal system types. Instead, evaluations appear to be shaped by general attitudes toward geothermal as a category, rather than by detailed technological distinctions.

Overall, these results indicate a stable baseline of support for geothermal solutions in the Mid-Atlantic & Southeast Coast. While acceptance is not yet strong, it is broadly favorable, suggesting that greater familiarity, clearer performance signals, and targeted communication could meaningfully strengthen support—particularly for next-generation geothermal as it becomes more visible.

Figure 13

Social Acceptance Levels for Geothermal Systems in the Mid-Atlantic & Southeast Coast Region



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (997) from residents of DE, MD, DC, VA, NC, SC, GA, and FL (2025 GR Geothermal Perception Study)

6.3.4. Key Predictors of Acceptance

In the Mid-Atlantic & Southeast Coast, the predictors of geothermal acceptance show a highly consistent pattern across all three technologies, with fewer distinctions between mature and next-generation systems than observed in some other regions.

Geoexchange and Hydrothermal follow a similar structure:

- **Perceived Benefits** are the strongest and most consistent predictors of acceptance.
- **Familiarity, Perceived Social Responsibility, Subjective Norms, and Fairness** all show significant positive effects.
- **Cost perceptions** have a significant negative influence on acceptance.
- **Risk perceptions** are weak and only marginally significant, while **hedonic impressions** do not meaningfully influence acceptance.

Next-Generation geothermal shows a closely aligned profile:

- Acceptance is driven primarily **by Perceived Benefits, Social Responsibility, and Familiarity.**
- **Subjective Norms and Fairness** also contribute positively.
- **Cost perceptions** remain a significant negative predictor.
- **Risk perceptions and hedonic impressions are not statistically significant**, reflecting limited public exposure and low salience of specific risk concerns.

Overall, these results suggest that acceptance across all geothermal systems in this region is shaped by a common set of belief-based factors. Perceived benefits and social legitimacy consistently outweigh risk-based considerations, indicating that support is driven more by evaluations of value and collective endorsement than by perceived hazards. At the same time, cost concerns emerge as a shared constraint across technologies, while risk perceptions remain secondary at this stage of public understanding.

6.4. Southern Interior U.S.

The Southern Interior U.S. is characterized by a mix of rural and mid-sized urban areas, historically fossil-fuel-reliant energy systems, and growing interest in energy affordability and economic resilience. The region's energy landscape is shaped by moderate heating and cooling demand, legacy infrastructure, and varied state-level policy approaches, creating both challenges and emerging opportunities for geothermal deployment—particularly for building-scale heating and cooling, institutional applications, and long-term cost stability.

For this study, the Southern Interior U.S. region includes the following states:

Alabama (AL), Arkansas (AR), Kentucky (KY), Mississippi (MS), Tennessee (TN), and West Virginia (WV).

6.4.1. Public Priorities in Energy Systems

Energy priorities in the Southern Interior U.S. are strongly centered on economic and personal security considerations (Figure 14). Affordability is the most salient attribute in the region, followed by safety for humans and reliability, indicating a clear preference for energy systems that are cost-effective, safe, and dependable.

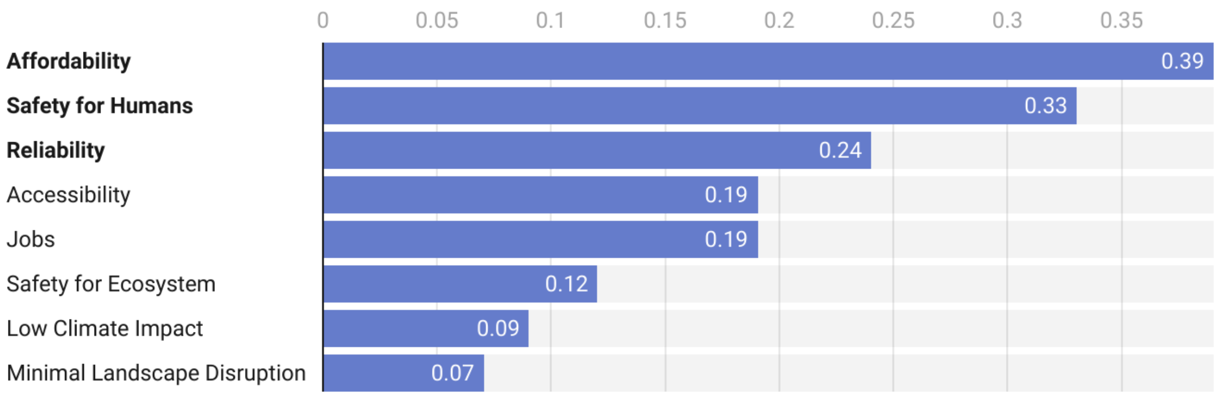
Accessibility and job creation occupy a mid-tier position, reflecting the importance of equitable access and local economic benefits in a region with a mix of rural communities and legacy energy infrastructure. Environmental attributes, safety for ecosystems, low climate impact, and minimal landscape disruption rank lower overall, suggesting that economic and reliability concerns outweigh environmental criteria when residents evaluate energy options.

Overall, these priorities align closely with core strengths of geothermal systems, particularly for building-scale and institutional applications that can provide long-term cost stability and high operational safety. As in other regions, the primary challenge lies in limited visibility and familiarity, rather than misalignment with public expectations.

Figure 14

Public Priorities in Energy Systems in the Southern Interior U.S. Region

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (363), 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).

Created with Datawrapper

6.4.2. Familiarity with Geothermal Systems

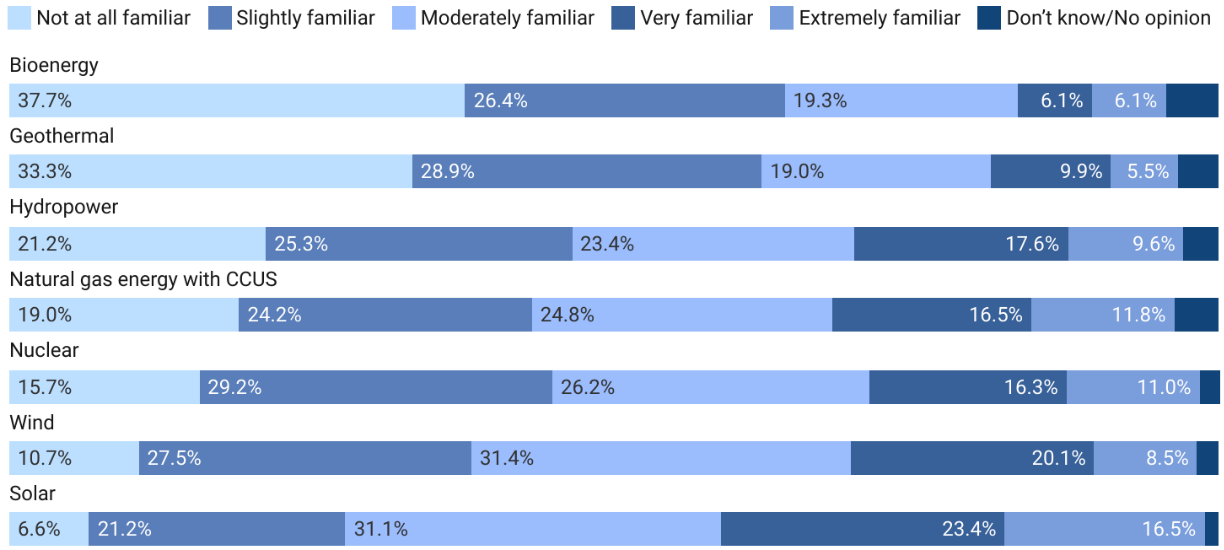
Public familiarity with geothermal systems in the Southern Interior U.S. remains relatively low compared with more established clean-energy technologies (Figure 15). Approximately one-third of residents report being "not at all familiar" with geothermal, while fewer than one in five describe themselves as very or extremely familiar.

In contrast, solar and wind show substantially higher levels of recognition, reflecting their widespread deployment and visibility across the region. Hydropower and nuclear occupy a middle position, likely shaped by existing infrastructure and long-standing exposure. Bioenergy, similar to geothermal, shows relatively low familiarity, indicating broader awareness challenges for less visible technologies.

Overall, these results point to an awareness gap rather than active opposition. Given the region's strong emphasis on affordability, safety, and reliability, increasing basic familiarity and visibility remains a critical step for strengthening acceptance of geothermal systems in the Southern Interior U.S.

Figure 15

Self-Reported Familiarity with Clean Energy Sources in the Southern Interior U.S. Region



Familiarity was measured using a 5-point scale ("Not at all familiar" to "Extremely familiar"), plus a "Don't know/No opinion" option. Results are based on regional survey data from residents of AL, AR, KY, MS,TN, and WV (2025 GR Geothermal Perception Study). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

6.4.3. Acceptance Levels for Geothermal Systems

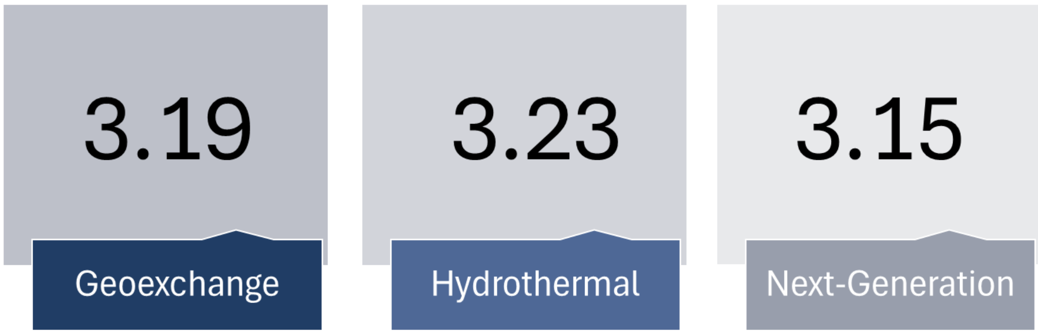
Social acceptance of geothermal systems in the Southern Interior U.S. is moderately positive and closely clustered across all three technologies (Figure 16). Hydrothermal systems receive the highest average acceptance score (3.23), followed by geoexchange (3.19). Next-generation geothermal shows slightly lower acceptance (3.15), reflecting its emerging status and lower public visibility.

The narrow spread among acceptance scores suggests that residents in this region do not strongly differentiate between geothermal system types. Instead, acceptance appears to be shaped by general attitudes toward geothermal, rather than by detailed technological distinctions.

Overall, these results indicate a stable baseline of support for geothermal systems in the Southern Interior U.S. While acceptance is not yet strong, it is broadly favorable, suggesting that increased familiarity and clearer communication of benefits could meaningfully strengthen support across all system types.

Figure 16

Social Acceptance Levels for Geothermal Systems in the Southern Interior U.S. Region



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (363) from residents of AL, AR, KY, MS, TN, and WV *(2025 GR Geothermal Perception Study)*

6.4.4. Key Predictors of Acceptance

In the Southern Interior U.S., the predictors of geothermal acceptance show a **largely consistent structure across the three technologies**, with some variation in the relative importance of social and economic factors.

Geoexchange systems follow a broad, multi-factor pattern:

- **Perceived Benefits** are the strongest predictor of acceptance.
- **Perceived Social Responsibility, Familiarity, Subjective Norms, and Fairness** all show significant positive effects.
- **Cost perceptions** have a significant negative influence on acceptance.
- **Risk perceptions and hedonic impressions** are not statistically significant.

Hydrothermal systems show a more selective profile:

- **Perceived Benefits** remain the strongest predictor of acceptance.
- **Social Responsibility, Familiarity, and Subjective Norms** also contribute positively.
- **Cost perceptions** are marginal and not statistically significant.
- **Risk perceptions, fairness, and hedonic impressions** do not meaningfully influence acceptance.

Next-Generation geothermal shows a distinct emphasis on social legitimacy:

- **Acceptance is driven primarily by Perceived Social Responsibility**, followed by **Perceived Benefits and Familiarity**.
- **Perceived Fairness** also contributes positively.

- **Cost perceptions have a significant negative effect.**
- **Risk perceptions, subjective norms, and hedonic impressions are not statistically significant**, reflecting limited public familiarity and engagement with next-generation systems.

Overall, these results suggest that geothermal acceptance in the Southern Interior United States is consistently shaped by perceived benefits and a sense of social responsibility. While support is generally driven by evaluations of value and societal contribution, cost concerns emerge as an important constraint—particularly for geoexchange and next-generation systems—highlighting sensitivity to affordability. In contrast, risk perceptions play a limited role across all geothermal technologies at this stage, indicating that public judgments are not yet strongly anchored in risk-based evaluations.

6.5. Northeastern U.S

The Northeastern U.S. is characterized by high electricity and heating costs, climate-forward state policies, and strong momentum in heat pump adoption, alongside growing community interest in renewable and low-carbon energy solutions. These conditions create a favorable but complex landscape for geothermal deployment—particularly for building-scale heating and cooling, district thermal systems, and long-term energy affordability and resilience.

For this study, the Northeastern U.S. region includes the following states:

Maine (ME), New Hampshire (NH), Vermont (VT), Massachusetts (MA), Rhode Island (RI), Connecticut (CT), New Jersey (NJ), and Pennsylvania (PA).

6.5.1. Public Priorities in Energy Systems

Energy priorities in the Northeastern U.S. reflect strong concern for cost, safety, and system reliability within a context of high energy prices and climate-forward policy environments (Figure 17). Affordability is the most salient attribute in the region, followed by safety for humans and reliability, underscoring the importance of stable and cost-effective energy solutions.

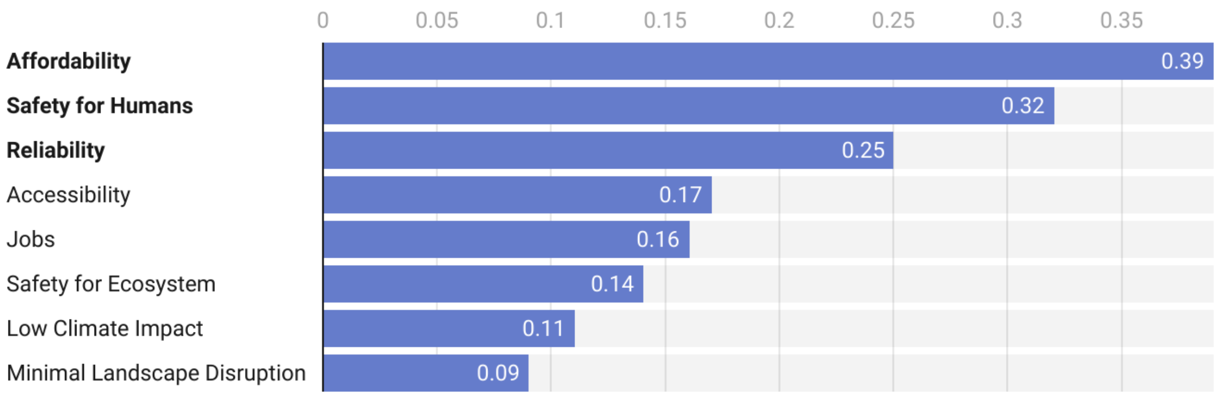
Accessibility and job creation occupy a mid-tier position, reflecting interest in equitable access and local economic benefits, while environmental attributes—safety for ecosystems, low climate impact, and minimal landscape disruption—rank lower overall. This pattern suggests that, even in a region with strong climate awareness, economic and reliability considerations remain the primary decision drivers when residents evaluate energy options.

Overall, these priorities align closely with key strengths of geothermal systems, particularly for building-scale and district heating applications that can offer long-term cost stability and dependable performance. As in other regions, the principal challenge lies not in alignment with public expectations, but in limited familiarity and visibility of geothermal technologies.

Figure 17

Public Priorities in Energy Systems in the Northeastern U.S. Region

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (548), 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).

Created with Datawrapper

6.5.2. Familiarity with Geothermal Systems

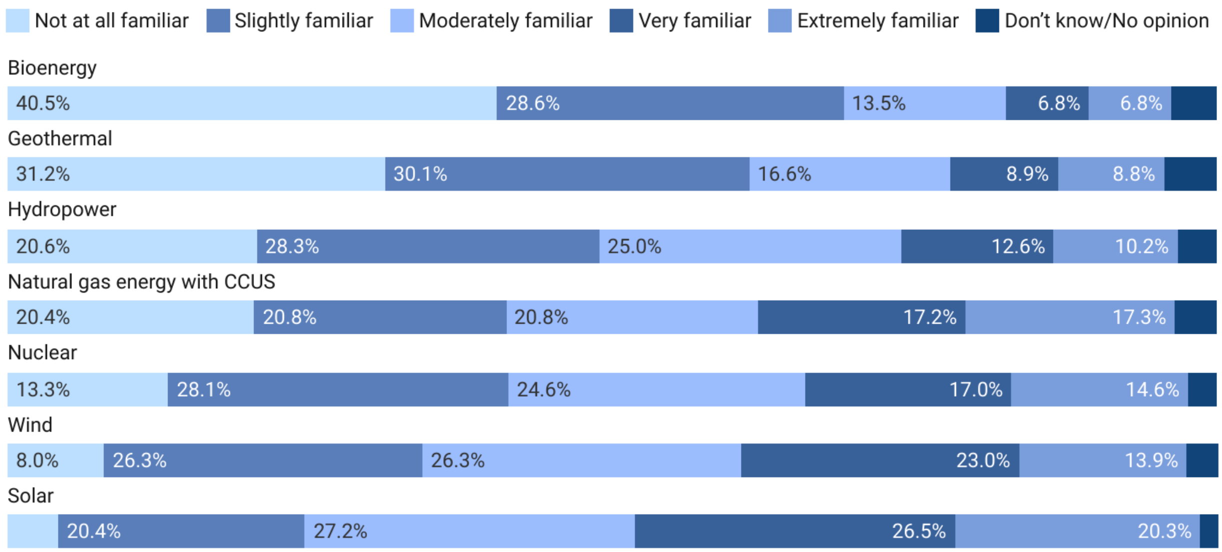
Public familiarity with geothermal systems in the Northeastern U.S. remains lower than for more established clean-energy technologies, despite the region's strong climate awareness and policy engagement (Figure 18). Approximately three in ten residents report being "not at all familiar" with geothermal, while fewer than one in five describe themselves as very or extremely familiar.

In contrast, solar and wind show substantially higher levels of recognition, reflecting widespread deployment and sustained public visibility. Hydropower and nuclear occupy an intermediate position, shaped by long-standing infrastructure and regional exposure. Bioenergy, similar to geothermal, shows comparatively low familiarity, indicating broader challenges for less visible technologies.

Overall, these results point to an awareness gap rather than active resistance. Given the region's strong interest in clean heating and cost stability, increasing visibility and basic understanding of geothermal systems remains a key step toward strengthening acceptance in the Northeastern U.S.

Figure 18

Self-Reported Familiarity with Clean Energy Sources in the Northeastern U.S Region



Familiarity was measured using a 5-point scale ("Not at all familiar" to "Extremely familiar"), plus a "Don't know/No opinion" option. Results are based on regional survey data from residents of ME, NH, VT, MA, RI, CT, NJ, and PA (2025 GR Geothermal Perception Study). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

6.5.3. Acceptance Levels for Geothermal Systems

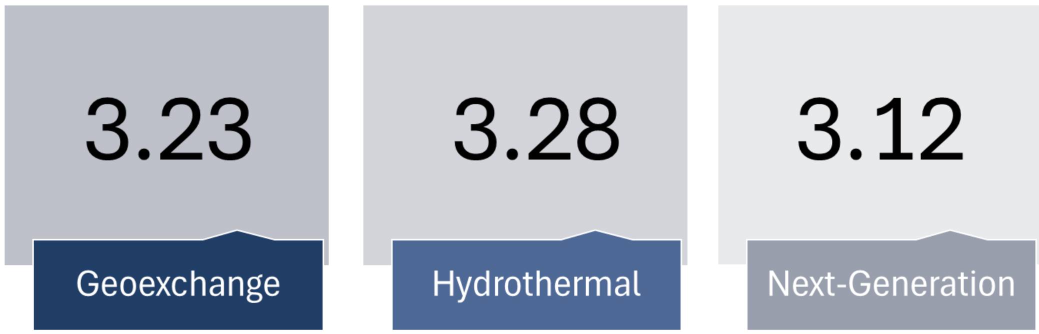
Social acceptance of geothermal systems in the Northeastern U.S. is moderately positive and closely clustered across all three technologies (Figure 19). Hydrothermal systems receive the highest average acceptance score (3.28), followed by geoexchange (3.23). Next-generation geothermal shows slightly lower acceptance (3.12), reflecting its emerging status and comparatively lower public visibility.

The narrow spread among acceptance scores suggests that residents in the Northeastern U.S. do not strongly differentiate between geothermal system types. Instead, acceptance appears to be shaped by general attitudes toward geothermal, rather than by detailed technological distinctions.

Overall, these results indicate a stable baseline of support for geothermal systems in the Northeastern U.S. While acceptance is not yet strong, it is broadly favorable, suggesting that greater familiarity and clearer communication of benefits could meaningfully strengthen support—particularly for next-generation geothermal.

Figure 19

Social Acceptance Levels for Geothermal Systems in the Northeastern U.S. Region



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (458) from residents of ME, NH, VT, MA, RI, CT, NJ, and PA *(2025 GR Geothermal Perception Study)*

6.5.4. Key Predictors of Acceptance

In the Northeastern U.S., the predictors of geothermal acceptance show a **consistent multi-factor structure across all three technologies**, with stronger overall engagement across economic, social, and risk-related considerations than in some other regions.

Geoexchange systems follow a broad, belief-driven profile:

- **Perceived Benefits** are the strongest predictor of acceptance.
- **Familiarity, Subjective Norms, and Social Responsibility** all show significant positive effects.
- **Perceived risks** also have a significant positive association, indicating active evaluation rather than risk avoidance.
- **Cost perceptions, fairness, and hedonic impressions are not statistically significant.**

Hydrothermal systems show a similarly robust pattern:

- **Perceived Benefits and Familiarity** are the strongest drivers of acceptance.
- **Social Responsibility, Subjective Norms, Fairness, and Risk perceptions** all contribute positively.
- **Cost perceptions** have a significant negative effect.
- **Hedonic impressions do not meaningfully influence acceptance.**

Next-Generation geothermal shows a socially grounded profile:

- **Acceptance is driven primarily by Perceived Benefits and Social Responsibility.**
- **Familiarity, Subjective Norms, and Fairness** also contribute positively.

- **Hedonic impressions show a small but significant negative effect**, suggesting caution toward less familiar or emotionally abstract technologies.
- **Cost and risk perceptions are not statistically significant.**

Overall, these results suggest that geothermal social acceptance in the Northeastern United States is shaped by a broad constellation of belief-based and social factors. Across the region, perceived benefits and social legitimacy consistently outweigh concerns related to cost and risk, indicating that support is driven more by evaluations of value and collective endorsement than by financial or safety apprehensions. At the same time, the relatively stronger engagement with risk and fairness considerations reflects the Northeast's policy maturity and a public that is already familiar with, and actively engaged in, clean-energy debates.

7. State Results (14 Key States)

7.1. Alaska

Alaska presents a unique energy context characterized by isolated and remote electricity grids, high energy costs, and strong technical feasibility for geothermal development. Many communities rely on diesel-based generation, making energy affordability, reliability, and resilience critical concerns. These conditions create a distinct opportunity for geothermal systems to provide stable, locally sourced, and low-emission energy, particularly for remote communities and off-grid applications.

Alaska has long been recognized for its substantial geothermal resource potential, especially for conventional and next-generation geothermal systems, supported by volcanic and tectonic activity. As a result, geothermal technologies in Alaska are often evaluated less as an abstract clean-energy option and more as a practical alternative to costly and logistically complex fossil fuel supply chains.

In this context, public perceptions of geothermal in Alaska are shaped by energy security, cost stability, and system reliability, alongside growing awareness of geothermal's role in supporting community resilience and long-term sustainability.

7.1.1. Public Priorities in Energy Systems

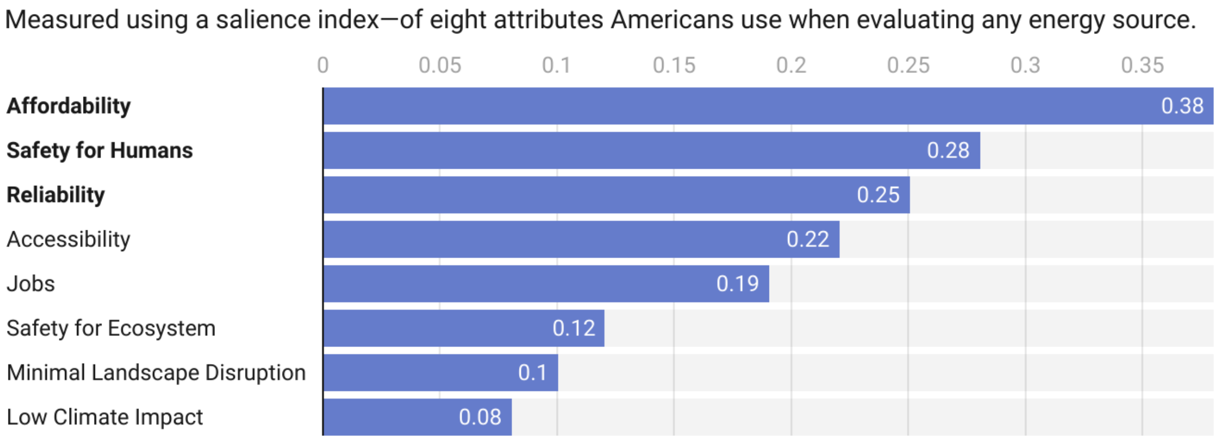
Energy priorities in Alaska are strongly shaped by high energy costs, geographic isolation, and the need for dependable local supply (Figure 20). Affordability is the most salient attribute, followed by safety for humans and reliability, underscoring the importance of energy systems that are cost-effective, safe, and dependable in remote and often harsh conditions.

Accessibility and job creation also rank relatively high, reflecting the value placed on energy solutions that can be deployed across dispersed communities while supporting local economic activity. Environmental attributes—safety for ecosystems, minimal landscape disruption, and low climate impact—rank lower overall, indicating that economic security and system performance take precedence when residents evaluate energy options.

Overall, these priorities align closely with geothermal's potential role in Alaska as a reliable, locally sourced energy solution capable of reducing dependence on imported fuels. As in other contexts, the key challenge lies not in priority alignment, but in translating geothermal's technical feasibility into visible, community-relevant solutions.

Figure 20

Public Priorities in Energy Systems in Alaska



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (130), 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).

Created with Datawrapper

7.1.2. Familiarity with Geothermal Systems

Self-reported familiarity with clean energy technologies in Alaska shows a mixed but relatively strong awareness profile, particularly for technologies already present in remote or off-grid contexts (Figure 21).

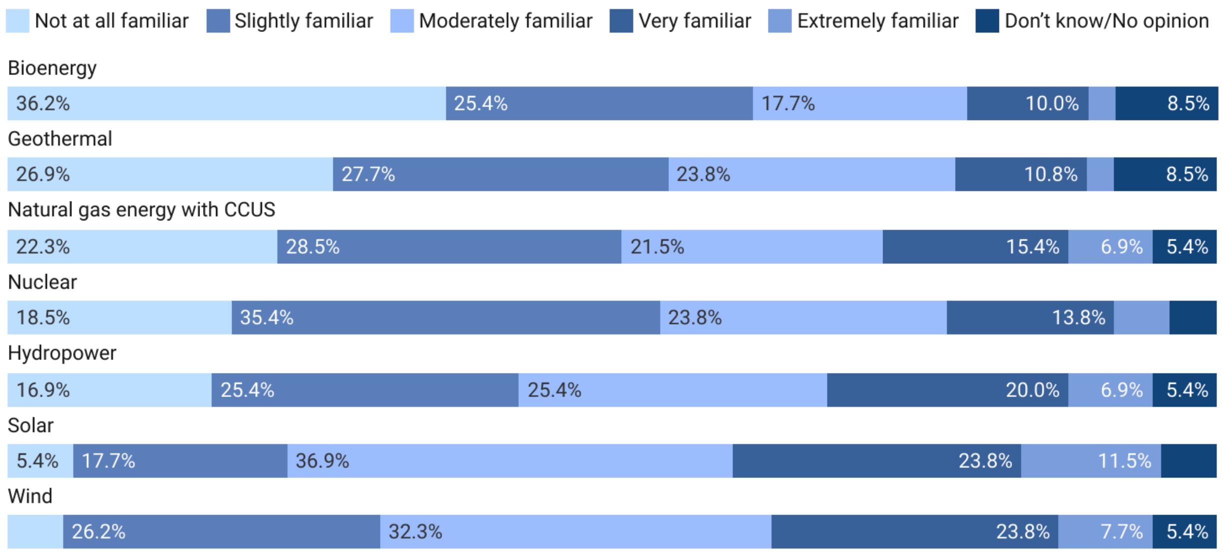
Geothermal familiarity is moderate compared to other clean energy sources. While just over a quarter of respondents report being not at all familiar, a comparable share indicates slight to moderate familiarity, and a meaningful minority reports being very or extremely familiar. This places geothermal ahead of bioenergy in terms of recognition, but behind more established technologies such as hydropower, wind, and solar.

Hydropower, wind, and solar show the highest overall familiarity levels, reflecting their longer presence in Alaska's energy mix and visibility in both centralized and community-scale applications. Nuclear and natural gas with CCUS occupy an intermediate position, with familiarity distributed more evenly across categories.

Overall, the familiarity pattern suggests that geothermal is not an unfamiliar concept in Alaska, but remains less visible than other renewables. Given Alaska's high geothermal feasibility and reliance on localized energy systems, this gap points to a communication and demonstration opportunity rather than a fundamental awareness barrier.

Figure 21

Self-Reported Familiarity with Clean Energy Sources in Alaska



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Alaska in the 2025 GR Geothermal Perception Study (n = 130). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

7.1.3. Acceptance Levels for Geothermal Systems

Acceptance of geothermal technologies in Alaska is moderate and relatively balanced across system types, with no technology exhibiting either strong support or pronounced opposition (Figure 22).

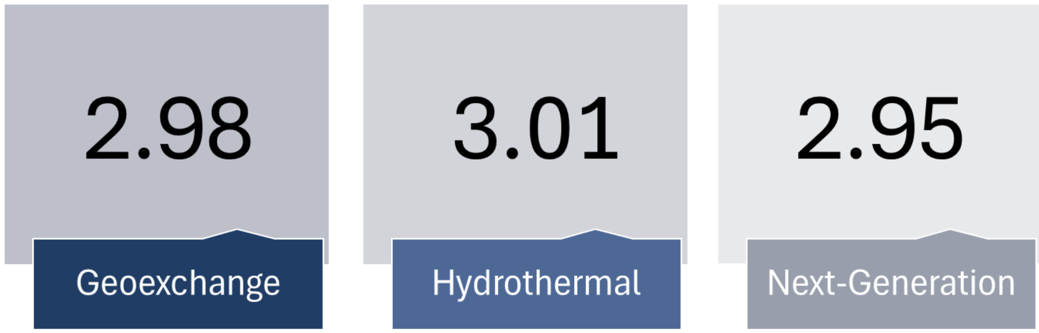
Hydrothermal systems receive the highest acceptance score, followed closely by geoexchange, while next-generation geothermal registers slightly lower acceptance. All three technologies cluster around the midpoint of the scale, suggesting cautious openness rather than firm endorsement.

The relatively narrow spread between technologies indicates that Alaskan respondents do not strongly differentiate between geothermal system types at this stage. Instead, acceptance appears shaped by broader considerations related to feasibility, cost, and reliability rather than detailed technical distinctions.

Overall, these acceptance levels suggest that geothermal is viewed as a potentially viable option, but one that would benefit from clearer demonstration of performance and community-level relevance. In a context defined by isolated grids and high energy costs, acceptance may increase as geothermal projects become more visible and better aligned with local energy needs.

Figure 22

Social Acceptance Levels for Geothermal Systems in Alaska



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (130) from residents of Alaska (2025 GR Geothermal Perception Study)

7.1.4. Key Predictors of Acceptance

In Alaska, the predictors of geothermal acceptance vary across technologies, reflecting the state's unique energy context, high energy costs, and strong sensitivity to equity considerations.

Geoexchange systems show a broad, multi-factor acceptance structure:

- **Perceived Fairness** is the strongest predictor of acceptance, followed by **Perceived Benefits**, **Familiarity**, and **Social Responsibility**, indicating that equity, tangible advantages, and basic understanding all contribute to support.
- **Cost perceptions** have a strong and significant negative effect, highlighting high sensitivity to affordability.
- **Risk perceptions** and **hedonic impressions** are marginally significant, suggesting some uncertainty, though these factors are not dominant.
- **Subjective norms** do not significantly influence acceptance, indicating limited reliance on social endorsement.

Hydrothermal systems display a more selective driver profile:

- **Perceived Fairness** and **Perceived Benefits** are the strongest positive predictors of acceptance.
- **Familiarity** also contributes positively, while cost, risk, hedonic impressions, and subjective norms are not statistically significant.

Next-generation geothermal follows a socially grounded pattern:

- **Social Responsibility** is the strongest predictor of acceptance, with **Perceived Benefits** also exerting a positive influence.
- **Cost** and **risk perceptions** are marginally significant, reflecting cautious evaluation.

- **Familiarity**, **fairness**, **subjective norms**, and **hedonic impressions** do not significantly shape acceptance.

Overall, these results indicate that perceived fairness and economic feasibility are central to geothermal acceptance in Alaska, particularly for geoexchange and hydrothermal systems. Benefits matter primarily when affordability concerns are addressed, while social responsibility is especially important for next-generation geothermal. Across all technologies, risk perceptions are not a primary barrier, whereas cost sensitivity remains a consistent constraint shaped by Alaska's isolated grids and high energy costs.

7.2. California

California represents the most mature geothermal market in the United States, with long-standing commercial deployment, established regulatory frameworks, and high public exposure to renewable energy technologies. The state's electricity system is shaped by ambitious climate policies, widespread clean energy adoption, and ongoing efforts to decarbonize both power and heat.

Geothermal energy has a visible presence in California's energy mix—particularly through large-scale hydrothermal power generation—which distinguishes it from most other states. As a result, public perceptions of geothermal in California are informed not only by abstract attitudes toward clean energy, but also by direct experience, institutional familiarity, and market maturity.

This context provides an important contrast to regions where geothermal remains largely hypothetical, allowing analysis of how familiarity, benefits, costs, and fairness shape acceptance when a technology is already established.

7.2.1. Public Priorities in Energy Systems

In California, public priorities for energy systems are led by affordability, safety for humans, and reliability, which together form the core criteria residents use to evaluate energy options (Figure 23). Despite the state's strong climate policy orientation, economic and system-performance considerations remain central.

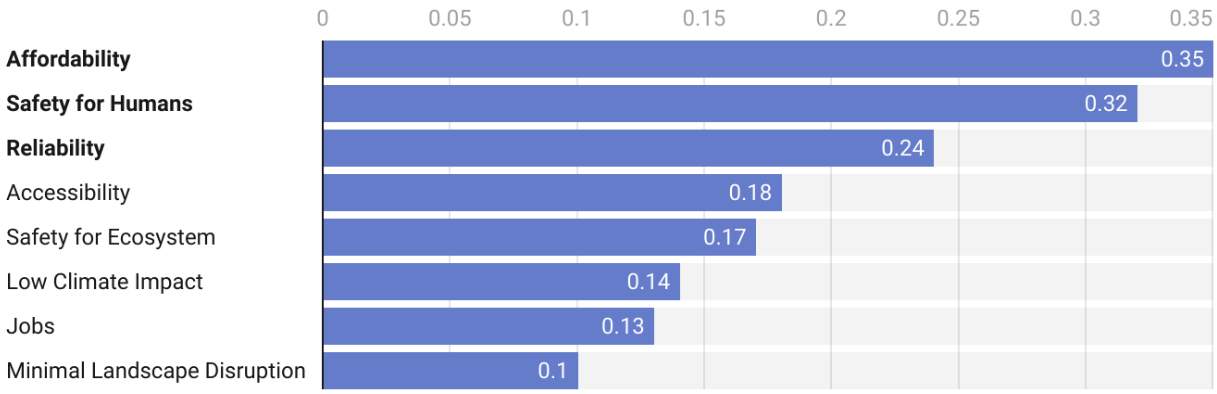
Affordability emerges as the most salient attribute, reflecting ongoing concerns about high electricity costs and cost-of-living pressures. Safety for humans and reliability follow closely, underscoring expectations that clean energy systems must deliver dependable and secure service alongside decarbonization goals.

Secondary priorities include accessibility and ecosystem safety, while low climate impact, job creation, and minimal landscape disruption rank lower in relative importance. This pattern suggests that, even in a mature clean-energy market, Californians continue to assess energy technologies primarily through the lens of practical performance and consumer impacts, rather than symbolic or environmental attributes alone

Figure 23

Public Priorities in Energy Systems in California

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (497), 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).

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7.2.2. Familiarity with Geothermal Systems

California exhibits high overall familiarity with clean energy technologies, reflecting its long-standing exposure to renewable energy deployment and public engagement with energy transition policies (Figure 24).

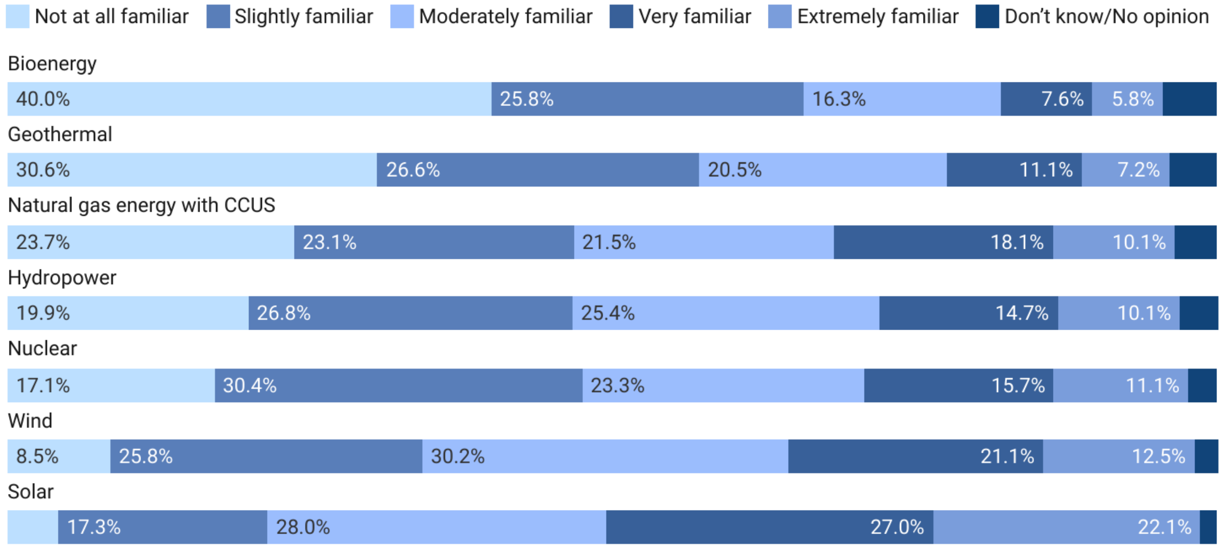
Solar and wind energy show the highest familiarity levels, with a large majority of respondents reporting moderate to extremely high familiarity. Hydropower and nuclear energy also display relatively strong familiarity, consistent with their established roles in California's electricity system and public discourse.

Familiarity with geothermal energy is notably higher in California than in many other states and regions, though it still trails solar and wind. A substantial share of respondents report moderate familiarity with geothermal, suggesting awareness shaped by California's existing geothermal industry, particularly large-scale hydrothermal power generation.

In contrast, bioenergy remains the least familiar clean energy source, with a sizeable portion of respondents indicating low or no familiarity. Overall, these results highlight California's comparatively advanced public exposure to clean energy technologies, while also indicating room for increased understanding of geothermal beyond its most visible applications.

Figure 24

Self-Reported Familiarity with Clean Energy Sources in California



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Alaska in the 2025 GR Geothermal Perception Study (n = 497). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

7.2.3. Acceptance Levels for Geothermal Systems

Acceptance of geothermal technologies in California is moderate to high, with clear differentiation across system types (Figure 25). Among the three technologies, hydrothermal geothermal receives the highest acceptance score, followed closely by geoexchange, while next-generation geothermal lags behind.

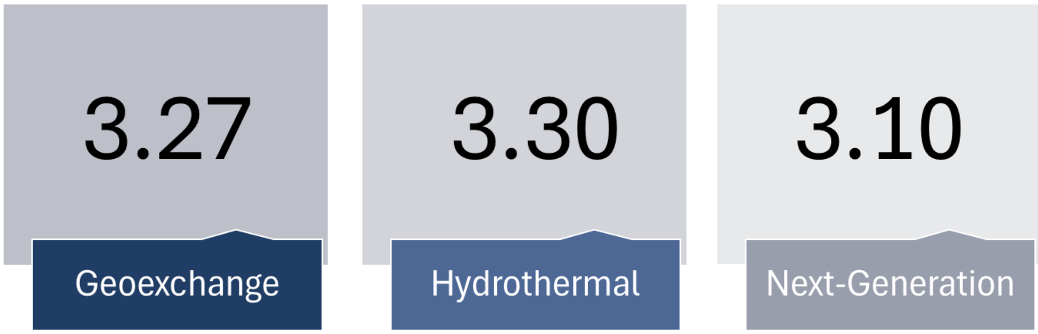
The stronger acceptance of hydrothermal systems reflects California's long history with commercial geothermal power generation and the visibility of operating projects. Geoexchange systems also enjoy relatively high acceptance, consistent with growing adoption of building-scale and district heating and cooling solutions.

In contrast, next-generation geothermal registers lower acceptance, suggesting greater uncertainty around emerging technologies that are less familiar and less visible to the public. Despite this gap, acceptance levels for next-generation systems remain above the neutral midpoint, indicating openness to further development under appropriate conditions.

Overall, these results highlight how market maturity and direct experience shape public acceptance, with established geothermal technologies benefiting from familiarity and proven performance, while emerging systems face higher informational and perceptual barriers.

Figure 25

Social Acceptance Levels for Geothermal Systems in California



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (497) from residents of California (2025 GR Geothermal Perception Study)

7.2.4. Key Predictors of Acceptance

In California, geothermal acceptance is shaped by a highly structured and socially embedded evaluation framework, reflecting the state's strong climate orientation, policy familiarity with clean energy, and relatively high public exposure to geothermal development.

Geoexchange systems show a robust, multi-dimensional acceptance structure:

- **Social Responsibility** is the strongest predictor of acceptance, followed by **Perceived Benefits**, **Familiarity**, and **Perceived Fairness**, indicating that societal contribution, tangible advantages, and equity considerations jointly shape support.
- **Subjective norms** (important people) have a significant positive effect, suggesting that social endorsement and peer influence play a meaningful role.
- **Risk perceptions** also exert a small but significant positive effect, indicating engagement with system safety rather than deterrence.
- **Cost perceptions** and **hedonic impressions** do not significantly influence acceptance, suggesting low sensitivity to affordability concerns for geoexchange systems in California.

Hydrothermal systems display a similarly comprehensive driver profile:

- **Perceived Fairness** is the strongest predictor of acceptance, followed by **Familiarity**, **Perceived Benefits**, **Subjective norms**, and **Social Responsibility**, reflecting a mature and socially contextualized evaluation process.
- **Hedonic impressions** also have a modest but significant positive effect, indicating affective appeal.
- **Cost perceptions** and **risk perceptions** are not statistically significant, suggesting limited concern about affordability or safety.

Next-generation geothermal follows a highly engaged and socially anchored pattern:

- **Social Responsibility** is the strongest predictor of acceptance, followed by **Perceived Benefits**, **Familiarity**, **Perceived Fairness**, and **Subjective norms**, indicating broad-based cognitive and social engagement.
- **Risk perceptions** have a significant positive association with acceptance, reflecting informed rather than fear-driven evaluation.
- **Cost perceptions** and **hedonic impressions** do not significantly shape acceptance.

Overall, these results indicate that geothermal acceptance in California is driven primarily by perceived societal contribution, benefits, familiarity, and fairness across all system types. Social norms play a consistent supporting role, while cost sensitivity is low. Risk perceptions are not a barrier and instead reflect active engagement with system characteristics. These patterns are consistent with California's mature clean energy landscape, strong climate norms, and high public familiarity with renewable energy deployment.

7.3. Colorado

Colorado represents an actively developing and exploratory geothermal context, shaped by ambitious climate goals, expanding clean-energy deployment, and continued reliance on natural gas for heating and firm capacity. Geothermal energy is increasingly viewed as a promising complementary solution, particularly for district heating, institutional applications, and future deep and next-generation systems.

Unlike mature markets, geothermal in Colorado remains emergent rather than established, and public perceptions are shaped more by expectations of future benefits and fairness than by direct experience. This makes Colorado a useful case for understanding how geothermal acceptance forms in regions where the technology is visible as a potential solution, but not yet normalized within the energy system.

7.3.1. Public Priorities in Energy Systems

Public priorities in Colorado emphasize economic and operational performance, with affordability, human safety, and reliability emerging as the most salient criteria when evaluating energy systems. Affordability ranks first, reflecting continued sensitivity to household energy costs amid electrification and energy-transition pressures. Safety for humans and system reliability closely follow, underscoring the importance of dependable and secure energy supply in a state balancing rapid renewable deployment with grid stability concerns.

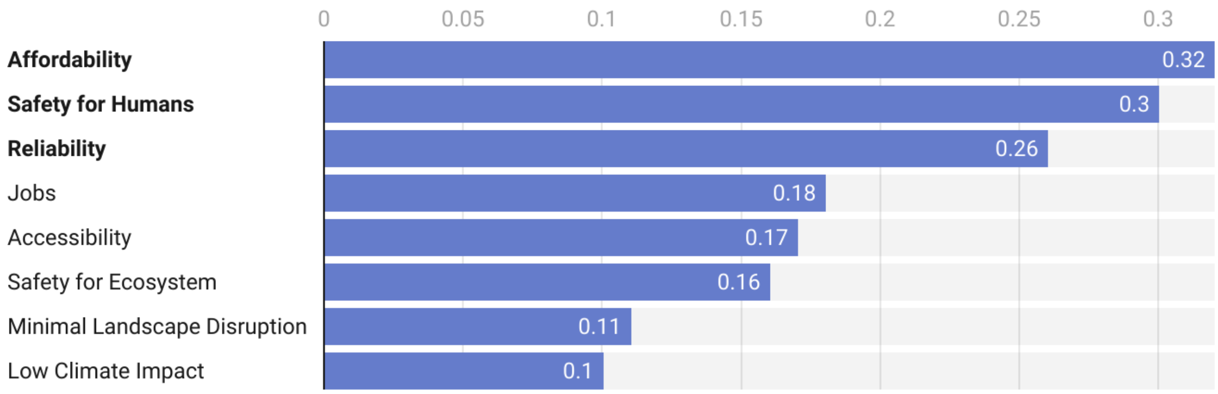
Secondary priorities include job creation and accessibility, highlighting the relevance of energy development as both an economic opportunity and a practical service. Environmental considerations—such as ecosystem protection, minimizing landscape disruption, and reducing climate impacts—are present but comparatively less salient, suggesting that environmental benefits are expected as a baseline rather than serving as primary differentiators.

Overall, Colorado's priority structure reflects a pragmatic transition context, where clean energy technologies are evaluated primarily on their ability to deliver affordable, safe, and reliable energy, while also supporting economic development. This creates a favorable but performance-driven environment for geothermal systems, particularly those positioned as cost-stable and reliable complements to variable renewables.

Figure 26

Public Priorities in Energy Systems in Colorado

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (194), 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).

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7.3.2. Familiarity with Geothermal Systems

Colorado residents report high overall familiarity with renewable energy technologies, reflecting the state's active engagement in clean energy deployment and policy innovation. Solar and wind show the highest familiarity levels, with large shares of respondents indicating they are very or extremely familiar, consistent with Colorado's visible and widespread adoption of these technologies.

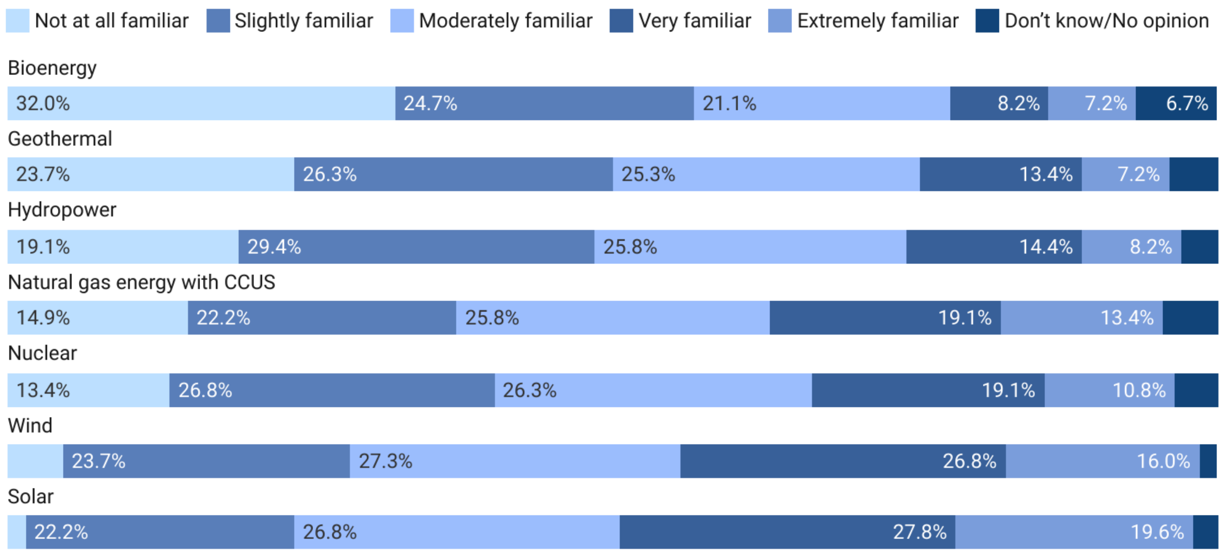
Geothermal familiarity occupies a middle position. While a majority of respondents report at least moderate familiarity, geothermal remains less familiar than solar, wind, and hydropower. This suggests that geothermal is recognized but not yet mainstream in public understanding, aligning with Colorado's status as an exploratory and emerging geothermal region rather than a mature market.

Hydropower and natural gas with CCUS also show moderate familiarity, while bioenergy and nuclear remain less well understood, with higher proportions of respondents indicating low familiarity or uncertainty.

Overall, the familiarity profile indicates that Colorado's public is well exposed to clean energy concepts, but geothermal still lags behind dominant renewables. This creates a context where acceptance is likely shaped not by lack of awareness, but by how geothermal is framed relative to cost, reliability, and system performance, rather than basic recognition.

Figure 27

Self-Reported Familiarity with Clean Energy Sources in Colorado



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Colorado in the 2025 GR Geothermal Perception Study (n = 194). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

7.3.3. Acceptance Levels for Geothermal Systems

Colorado exhibits consistently high acceptance of geothermal technologies, reflecting the state's strong clean energy orientation and openness to emerging energy systems. Among the three technologies, hydrothermal geothermal shows the highest acceptance, followed closely by geoexchange, with next-generation geothermal slightly lower but still firmly positive.

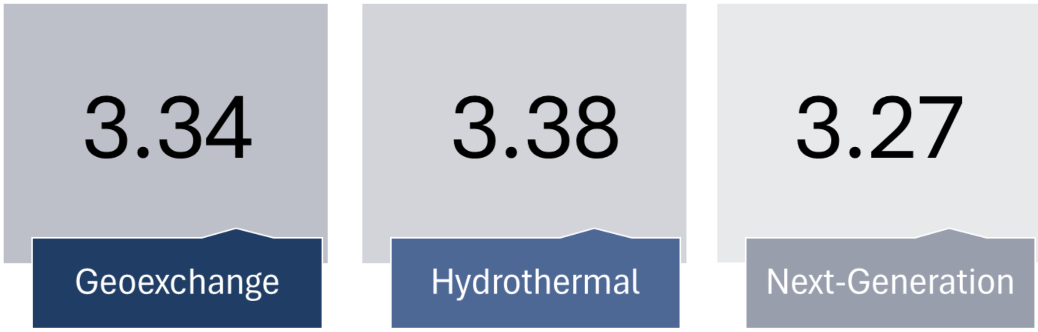
All three systems score above the neutral midpoint, indicating that geothermal technologies are generally viewed favorably rather than cautiously or skeptically. The relatively small differences between technologies suggest that Colorado residents do not sharply differentiate between geothermal types at the acceptance level, even where familiarity or market maturity varies.

The strong acceptance of hydrothermal systems likely reflects perceptions of technical maturity and reliability, while geoexchange benefits from its association with building-scale efficiency and practical applications. Acceptance of next-generation geothermal remains robust despite its emerging status, suggesting openness to innovation rather than resistance to novel technologies.

Overall, Colorado's acceptance profile indicates a supportive social environment for geothermal development, where public attitudes are broadly favorable and likely shaped more by evaluations of benefits, fairness, and system performance than by fundamental opposition or risk aversion.

Figure 28

Social Acceptance Levels for Geothermal Systems in Colorado



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (194) from residents of Colorado (2025 GR Geothermal Perception Study)

7.3.4. Key Predictors of Acceptance

In Colorado, geothermal acceptance is shaped by a pragmatic and benefit-oriented evaluation structure, reflecting the state's familiarity with subsurface energy development, growing interest in clean heating solutions, and openness to emerging energy technologies.

Geoexchange systems show a structured, benefit-driven acceptance profile:

- **Social Responsibility** is the strongest predictor of acceptance, followed by **Perceived Benefits**, **Familiarity**, and **Perceived Fairness**, indicating that societal contribution, tangible advantages, and equity considerations jointly shape support.
- **Subjective norms** (important people) have a significant positive effect, suggesting that peer and community endorsement plays a meaningful role.
- **Risk perceptions** also exert a small but significant positive effect, indicating engagement with system characteristics rather than deterrence.
- **Cost perceptions** and **hedonic impressions** do not significantly influence acceptance, suggesting limited affordability concerns for geoexchange systems.

Hydrothermal systems display a balanced but selective driver profile:

- **Perceived Benefits** and **Social Responsibility** are the strongest positive predictors of acceptance.
- **Familiarity** and **Perceived Fairness** also contribute positively, indicating that both understanding and equitable implementation matter.
- **Risk perceptions** are marginally significant, suggesting cautious but informed evaluation.
- **Cost perceptions**, **subjective norms**, and **hedonic impressions** do not significantly shape acceptance.

Next-generation geothermal follows a pragmatic and equity-oriented pattern:

- **Perceived Benefits** are the strongest predictor of acceptance, followed by **Familiarity**, **Perceived Fairness**, and **Subjective norms**, indicating a combination of practical evaluation and social influence.
- **Cost perceptions** have a significant negative effect, highlighting sensitivity to affordability for emerging geothermal technologies.
- **Hedonic impressions** contribute positively, suggesting affective appeal plays a supporting role.
- **Risk perceptions** and **Social Responsibility** do not significantly influence acceptance, reflecting selective engagement with system attributes.

Overall, these results indicate that geothermal acceptance in Colorado is driven primarily by perceived benefits, familiarity, and fairness across system types, with social endorsement reinforcing support. Cost sensitivity emerges most clearly for next-generation geothermal, while risk perceptions are not a primary barrier. These patterns reflect Colorado's pragmatic clean energy culture, where support is grounded in demonstrated benefits, equity considerations, and informed evaluation rather than cost or safety concerns alone.

7.4. Hawaii

Hawaii occupies a distinctive position in the U.S. energy landscape due to its geographic isolation, high electricity costs, and heavy dependence on imported fossil fuels. These conditions have made energy affordability, reliability, and energy independence central public priorities. At the same time, Hawaii has long pursued renewable energy leadership through ambitious climate targets and early adoption of clean technologies.

Geothermal energy has an established and visible role in Hawaii's electricity system, particularly through hydrothermal generation on the Big Island. As a result, public perceptions of geothermal are shaped by direct experience, local environmental and cultural considerations, and ongoing debates around land use, equity, and long-term sustainability.

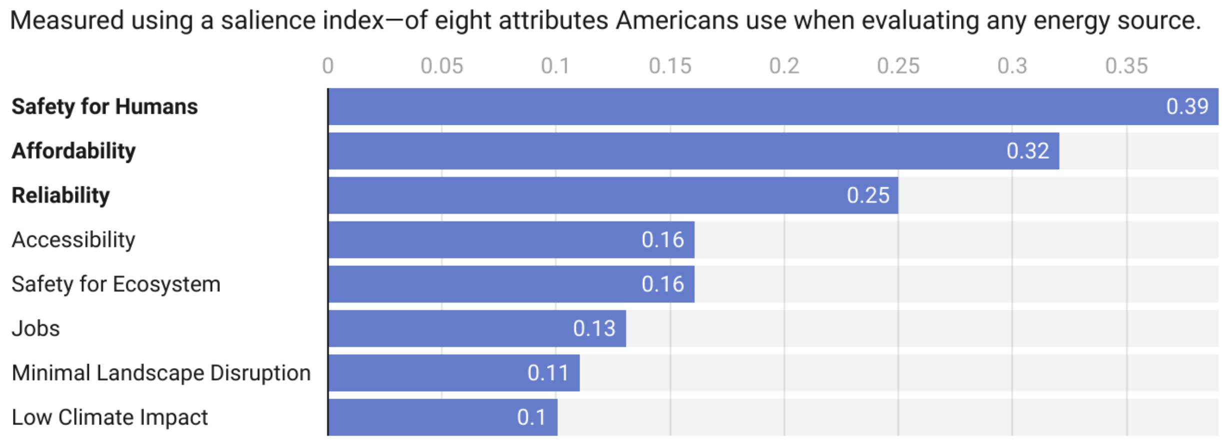
7.4.1. Public Priorities in Energy Systems

In Hawaii, public evaluations of energy systems are strongly shaped by concerns over human safety, which stands out as the most salient attribute. This reflects the state's unique geographic and geological context, including volcanic activity, seismic risk, and dense population patterns in coastal and urban areas. Affordability ranks second, highlighting persistent sensitivity to high electricity prices driven by imported fuels and isolated island grids. Reliability follows closely, underscoring the importance of stable energy supply in a system vulnerable to extreme weather events, fuel supply disruptions, and grid constraints.

Mid-tier priorities include accessibility and ecosystem safety, indicating public awareness of equity in energy access and the need to protect fragile island ecosystems. Lower salience is assigned to jobs, landscape disruption, and low climate impact, suggesting that while environmental and economic co-benefits matter, they are secondary to immediate concerns about safety, cost, and dependable service. Overall, Hawaii's priority structure reflects a pragmatic, risk-aware energy perspective rooted in local vulnerabilities and system resilience.

Figure 29

Public Priorities in Energy Systems in Hawaii



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (164), 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).

Created with Datawrapper

7.4.2. Familiarity with Geothermal Systems

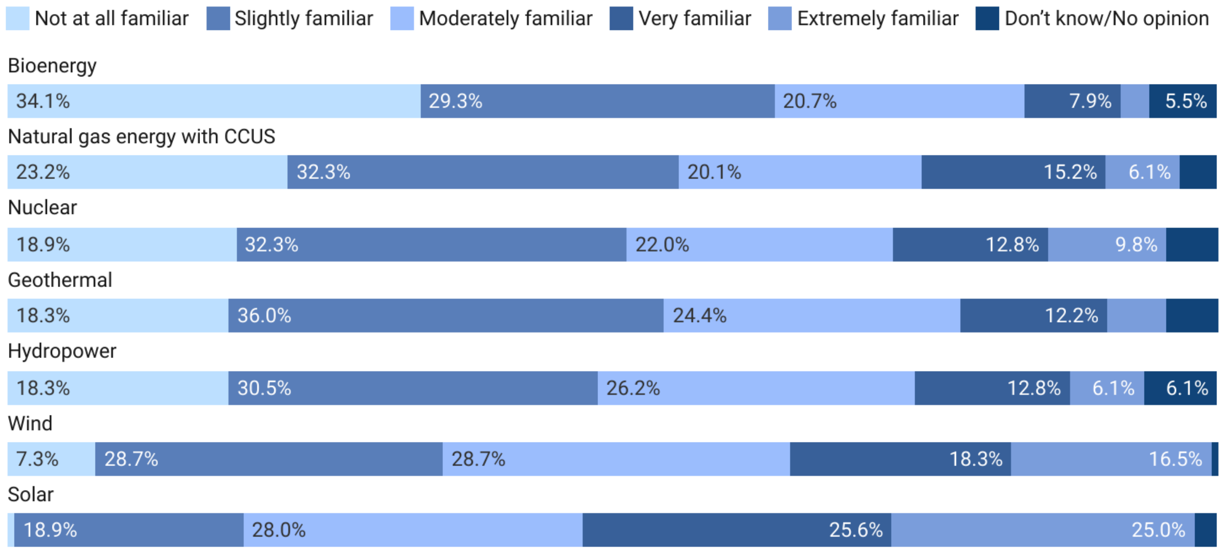
In Hawaii, familiarity with clean energy sources reflects both long-standing renewable deployment and ongoing exposure to energy transition debates. Solar energy stands out as the most familiar technology, with a large share of respondents reporting very high or extreme familiarity, consistent with widespread rooftop adoption and visibility across the islands. Wind and hydropower also show relatively high familiarity, reflecting their established roles in Hawaii's electricity mix.

Geothermal familiarity is moderate, with most respondents clustered in the "slightly" to "moderately familiar" categories and a smaller but notable share reporting high familiarity. This pattern suggests awareness of geothermal's presence—particularly on Hawaiʻi Island—without the broad, everyday visibility of solar. Bioenergy, nuclear, and natural gas with CCUS exhibit lower familiarity overall, indicating limited public engagement or direct experience with these systems.

Overall, Hawaii's familiarity profile reflects strong exposure to mature renewables, alongside more selective and uneven understanding of geothermal and emerging energy technologies.

Figure 30

Self-Reported Familiarity with Clean Energy Sources in Hawaii



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Hawaii in the 2025 GR Geothermal Perception Study (n = 164). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

7.4.3. Acceptance Levels for Geothermal Systems

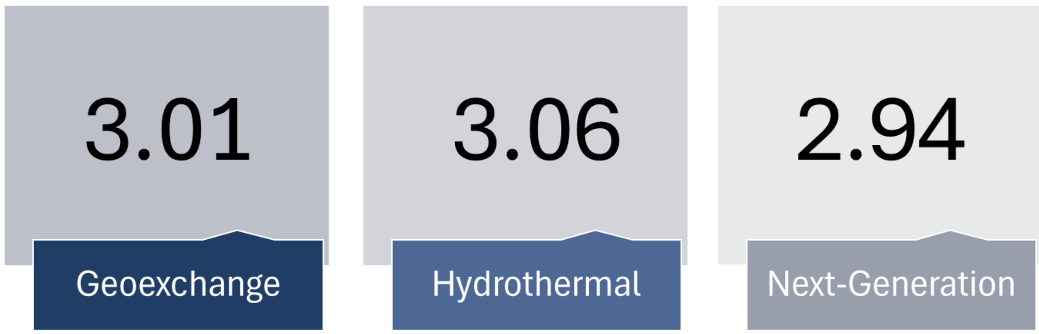
In Hawaii, acceptance of geothermal technologies is moderate and relatively balanced across system types, with hydrothermal geothermal showing the highest mean acceptance (3.06), followed closely by geoexchange systems (3.01). Next-generation geothermal records slightly lower acceptance (2.94), indicating greater caution toward emerging or less familiar applications.

The relatively strong performance of hydrothermal systems likely reflects Hawaii's direct experience with conventional geothermal power, particularly on Hawaiʻi Island, where geothermal has an established operational presence. Geoexchange systems benefit from associations with building-level efficiency and reduced fuel dependence but remain less visible to the general public. Lower acceptance of next-generation geothermal suggests uncertainty around technological maturity, scale, and potential impacts.

Overall, acceptance levels in Hawaii indicate openness to geothermal development, tempered by practical considerations related to familiarity, perceived benefits, and system readiness within a sensitive island energy context.

Figure 31

Social Acceptance Levels for Geothermal Systems in Hawaii



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (164) from residents of Hawaii (2025 GR Geothermal Perception Study)

7.4.4. Key Predictors of Acceptance

In Hawaii, geothermal acceptance is shaped by a context of islanded energy systems, high electricity costs, and strong sensitivity to fairness and local impacts, resulting in a selective but value-driven evaluation of geothermal technologies.

Geoexchange systems show a benefit- and equity-centered acceptance structure:

- **Perceived Benefits** and **Perceived Fairness** are the strongest predictors of acceptance, indicating that tangible advantages and equitable implementation are central to support.
- **Social Responsibility** also has a significant positive effect, reflecting the importance of broader societal and community considerations.
- **Hedonic impressions** are marginally significant, suggesting some affective engagement, though this factor is secondary.
- **Familiarity**, **cost perceptions**, **risk perceptions**, and **subjective norms** do not significantly influence acceptance, indicating limited reliance on knowledge levels, affordability concerns, or social endorsement for geoexchange systems.

Hydrothermal systems display a narrow, benefit-focused driver profile:

- **Perceived Benefits** are the strongest predictor of acceptance, followed by **Perceived Fairness**, highlighting the importance of tangible value and equity considerations.
- **Familiarity** also contributes positively, suggesting that basic understanding supports acceptance of established geothermal systems.
- **Subjective norms** are marginally significant, indicating limited but emerging social influence.

- **Cost perceptions**, **risk perceptions**, **social responsibility**, and **hedonic impressions** do not significantly shape acceptance.

Next-generation geothermal follows a moderately engaged evaluation pattern:

- **Perceived Benefits** are the strongest predictor of acceptance, followed by **Subjective norms**, **Perceived Fairness**, and **Familiarity**, indicating that support is shaped by a mix of practical evaluation, equity concerns, and social influence.
- **Cost perceptions**, **risk perceptions**, **social responsibility**, and **hedonic impressions** do not significantly influence acceptance, suggesting neither affordability nor safety concerns are dominant barriers.

Overall, these results indicate that geothermal acceptance in Hawaii is driven primarily by perceived benefits and fairness across all system types, with familiarity and social influence playing secondary roles. Cost sensitivity and risk perceptions are not primary barriers, reflecting the state's high baseline energy costs and experience with renewable energy. These patterns are consistent with Hawaii's island energy context, where equitable outcomes and demonstrated benefits are central to public support for geothermal development.

7.5. Idaho

Idaho represents an actively developing and exploratory geothermal region, characterized by meaningful geothermal potential alongside limited public visibility and large-scale deployment. The state has a history of direct-use geothermal applications—particularly for space heating, agriculture, and institutional facilities—but geothermal remains less prominent in broader public energy discussions than more visible renewable technologies.

Energy priorities in Idaho are closely linked to affordability, reliability, and practicality, reflecting a mix of rural and urban communities and significant cold-season heating demand. While Idaho benefits from relatively low electricity prices and a strong hydropower base, interest in locally sourced and resilient energy options has grown. In this context, geothermal is generally viewed as a functional and promising solution, with social acceptance shaped more by awareness and relevance than by opposition.

7.5.1. Public Priorities in Energy Systems

In Idaho, public evaluations of energy systems are most strongly shaped by safety for humans, which emerges as the most salient attribute (Figure32). This reflects a clear emphasis on avoiding health and safety risks associated with energy infrastructure and operations, particularly in communities where energy systems are closely integrated into daily life and local environments.

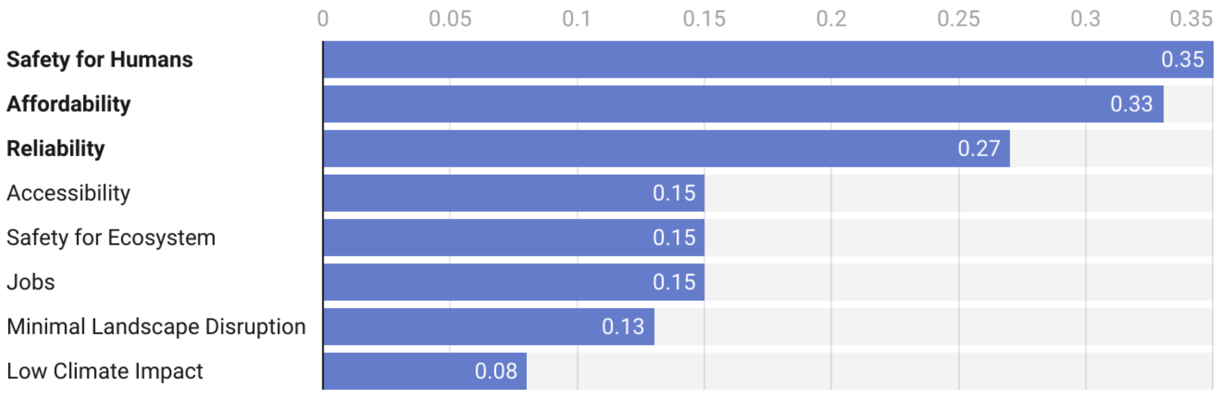
Affordability ranks a close second, underscoring the importance of cost-effective energy solutions in a state characterized by cold winters, significant heating demand, and a mix of rural and urban households. Reliability follows as the third most salient priority, highlighting the value placed on dependable energy supply across seasons and weather conditions.

A secondary tier of priorities includes accessibility, safety for ecosystems, and job creation, suggesting that equity, environmental protection, and economic benefits are relevant but less central to initial energy evaluations. Minimal landscape disruption ranks slightly lower, while low climate impact is the least salient attribute. Overall, Idaho's priority structure reflects a pragmatic and risk-aware energy perspective, centered on personal safety, affordability, and reliability rather than symbolic or climate-led considerations.

Figure 32

Public Priorities in Energy Systems in Idaho

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (167), 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).

Created with Datawrapper

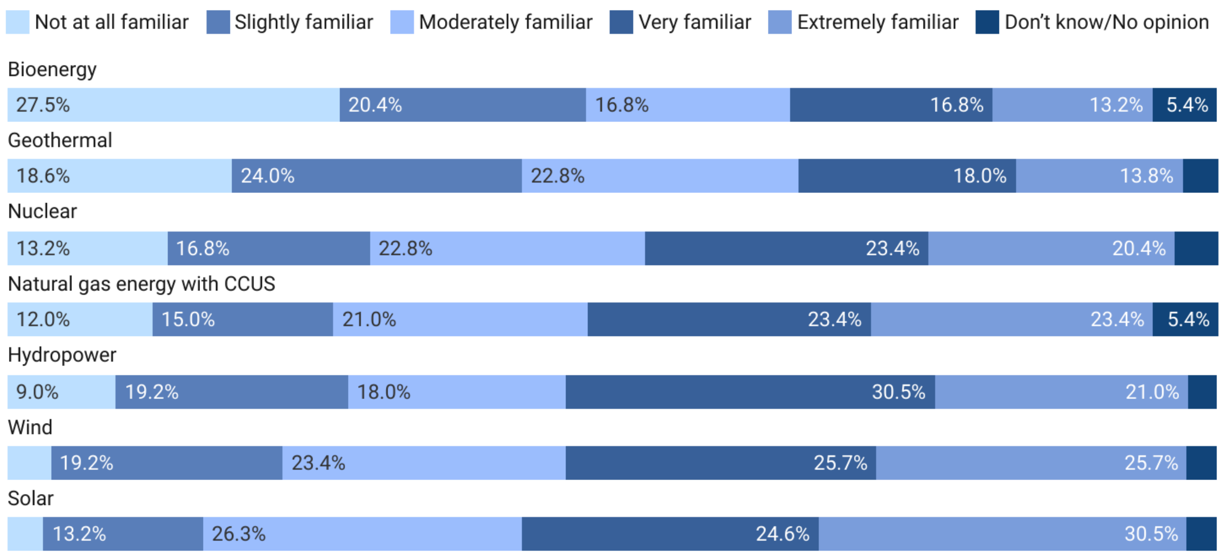
7.5.2. Familiarity with Geothermal Systems

In Idaho, familiarity with clean energy technologies reflects differences in visibility and everyday exposure. Solar energy is the most familiar technology, with a substantial share of respondents reporting very high or extreme familiarity, consistent with its widespread deployment and visibility. Wind and hydropower also show relatively high familiarity, reflecting their established roles in regional energy systems (Figure 33).

Familiarity with geothermal energy is moderate. Most respondents report being slightly or moderately familiar, while a smaller but notable share indicate high familiarity. This places geothermal below solar, wind, and hydropower, but above bioenergy and broadly comparable to nuclear and natural gas with carbon capture. The relatively small proportion of "don't know/no opinion" responses suggests that geothermal is not unfamiliar, but unevenly understood. Overall, Idaho's familiarity profile indicates a visibility gap rather than public disengagement.

Figure 33

Self-Reported Familiarity with Clean Energy Sources in Idaho



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Idaho in the 2025 GR Geothermal Perception Study (n = 167). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

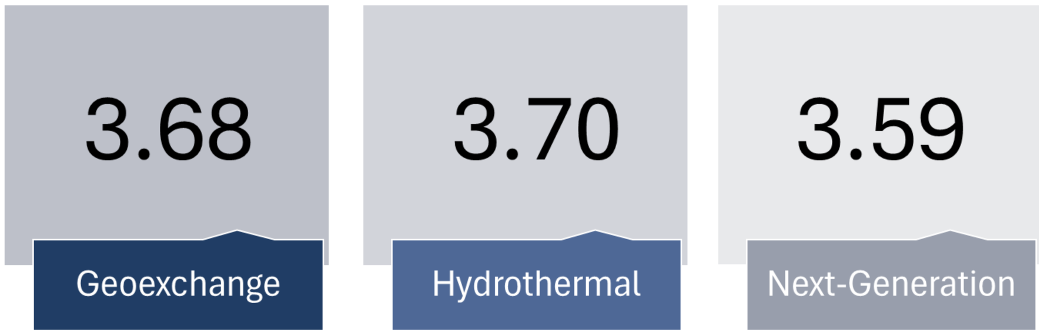
7.5.3. Acceptance Levels for Geothermal Systems

In Idaho, social acceptance of geothermal systems is generally positive across all three technology types, with relatively small differences between them (see Figure 34). Hydrothermal geothermal shows the highest level of acceptance (mean = 3.70), followed closely by geoexchange systems (mean = 3.68). These results suggest strong public comfort with established or building-scale geothermal applications that are perceived as practical, reliable, and low risk.

Acceptance of next-generation geothermal systems is slightly lower (mean = 3.59), but remains within a broadly positive range. This modest gap likely reflects greater uncertainty about newer or deeper geothermal technologies rather than resistance. Overall, Idaho's acceptance profile indicates openness to geothermal development, with relatively balanced attitudes across system types in an exploratory deployment context.

Figure 34

Social Acceptance Levels for Geothermal Systems in Idaho



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (167) from residents of Idaho (2025 GR Geothermal Perception Study)

7.5.4. Key Predictors of Acceptance

In Idaho, geothermal acceptance is shaped by a strongly practical and benefit-oriented evaluation framework, reflecting the state's geothermal resource potential, interest in affordable heating solutions, and emphasis on tangible performance outcomes.

Geoexchange systems show a narrowly focused, benefit-driven acceptance structure:

- **Perceived Benefits** are the strongest predictor of acceptance, followed by **Familiarity**, indicating that tangible advantages and understanding of the technology are central to support.
- **Cost perceptions** have a significant negative effect, highlighting sensitivity to affordability considerations.
- **Risk perceptions**, **subjective norms**, **social responsibility**, **hedonic impressions**, and **perceived fairness** do not significantly influence acceptance, suggesting that evaluations are largely grounded in practical benefit–cost considerations rather than social or affective factors.

Hydrothermal systems display a similarly pragmatic driver profile:

- **Perceived Benefits** and **Familiarity** are the strongest positive predictors of acceptance.
- **Social Responsibility** also has a significant positive effect, indicating some recognition of broader societal value.
- **Cost perceptions** are marginally significant, suggesting moderate sensitivity to affordability.
- **Risk perceptions**, **subjective norms**, **hedonic impressions**, and **perceived fairness** do not significantly shape acceptance.

Next-generation geothermal follows a structured but selective evaluation pattern:

- **Perceived Benefits** are the strongest predictor of acceptance, followed by **Familiarity**, **Subjective norms**, and **Perceived Fairness**, indicating a combination of practical evaluation and social influence.
- **Cost perceptions** and **hedonic impressions** are marginally significant, reflecting cautious but not prohibitive concern.
- **Risk perceptions** and **Social Responsibility** do not significantly influence acceptance, suggesting limited engagement with uncertainty or broader societal framing.

Overall, these results indicate that geothermal acceptance in Idaho is driven primarily by perceived benefits and familiarity across all system types, with cost sensitivity playing a secondary but consistent role. Social and affective factors are generally less influential, reflecting Idaho's pragmatic energy perspective, where support is shaped by clear advantages, affordability considerations, and demonstrated performance rather than broader normative or emotional factors.

7.6. Louisiana

Louisiana occupies a distinctive position in the U.S. geothermal landscape due to its extensive sedimentary basins, deep subsurface expertise, and long history with oil and gas development. These characteristics make the state particularly relevant for enhanced and next-generation geothermal systems, especially those that leverage existing drilling knowledge, infrastructure, and workforce capabilities.

At the same time, Louisiana's energy context is shaped by strong industrial demand, exposure to climate-related risks, and a legacy of fossil fuel production that influences public expectations around energy affordability, reliability, and economic contribution. Public perceptions of geothermal in Louisiana therefore emerge at the intersection of technological familiarity with subsurface energy systems and uncertainty about how geothermal fits within the state's current energy mix and transition pathways. This combination makes Louisiana a critical case for understanding acceptance of geothermal technologies in regions with high technical potential but limited public exposure.

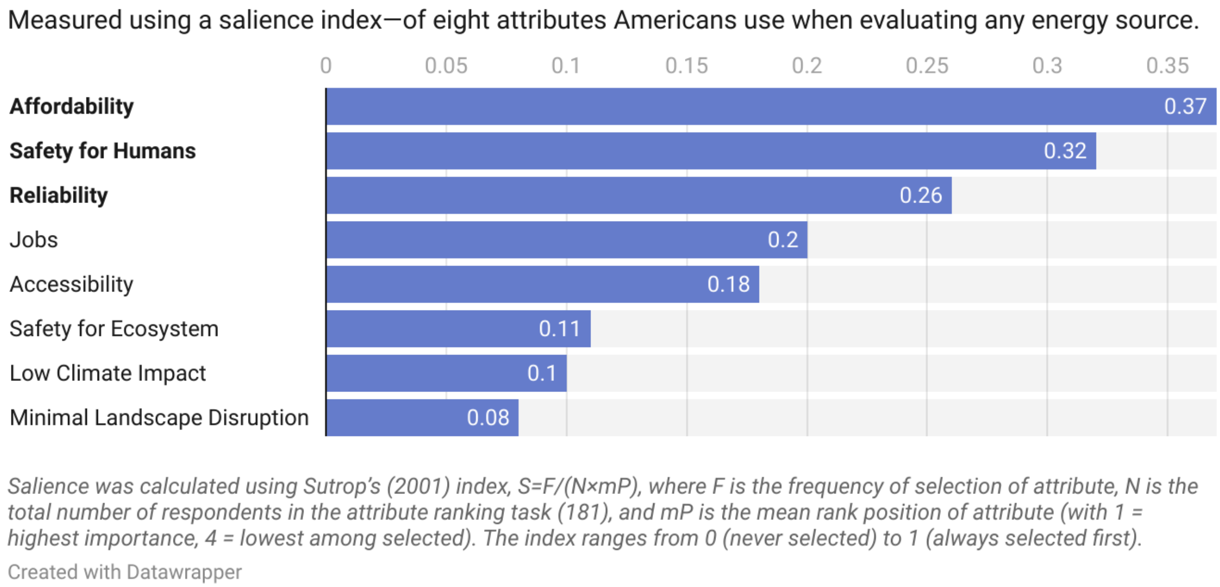
7.6.1. Public Priorities in Energy Systems

In Louisiana, public evaluations of energy systems are dominated by affordability, which emerges as the most salient attribute (see Figure 35). This reflects the state's strong industrial energy demand, sensitivity to energy prices, and the central role of energy costs for households and businesses alike. Safety for humans ranks second, underscoring concern about health and safety risks associated with energy production in a state with extensive industrial and subsurface activity.

Reliability follows closely as the third most salient priority, highlighting the importance of dependable energy supply in a region exposed to extreme weather events and grid disruptions. A secondary tier of priorities includes job creation and accessibility, indicating that economic benefits and broad availability matter, though less than cost and safety. Environmental attributes—safety for ecosystems, low climate impact, and minimal landscape disruption—rank lower overall, suggesting that while environmental considerations are present, immediate economic and reliability concerns play a more prominent role in initial energy evaluations in Louisiana.

Figure 35

Public Priorities in Energy Systems in Louisiana



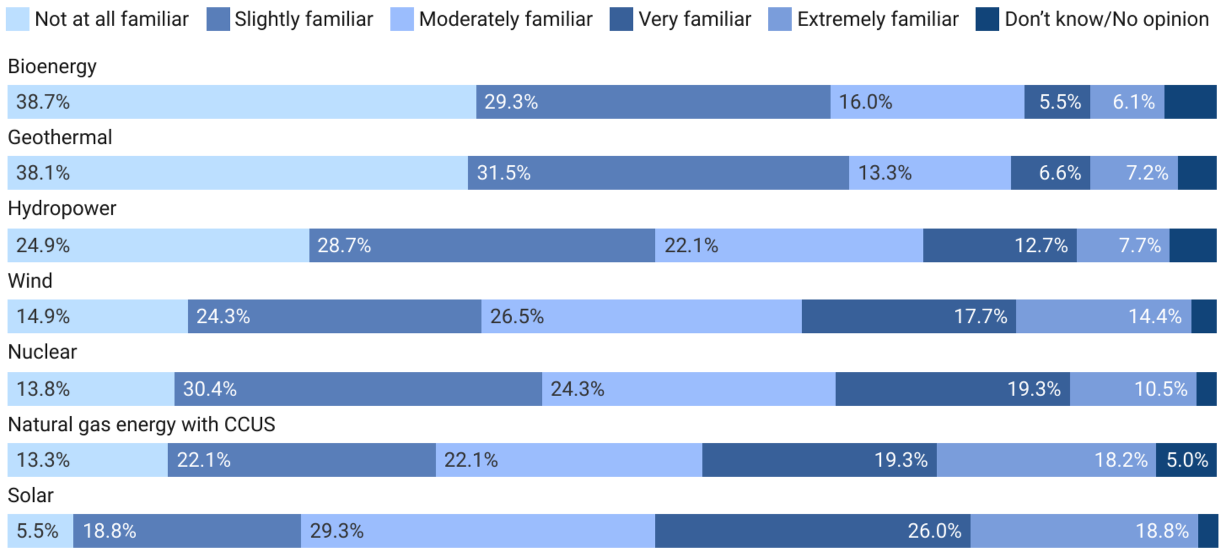
7.6.2. Familiarity with Geothermal Systems

In Louisiana, familiarity with clean energy technologies reflects strong exposure to widely deployed systems and comparatively limited awareness of geothermal energy (see Figure 36). Solar energy is the most familiar technology, with a large share of respondents reporting high or very high familiarity, consistent with its growing visibility and adoption. Wind, nuclear, and hydropower also show moderate to high familiarity, reflecting their established roles in the broader U.S. energy mix.

In contrast, familiarity with geothermal energy is relatively low. A majority of respondents report being not at all or slightly familiar, placing geothermal below most other clean energy sources. Bioenergy shows a similarly low familiarity profile, while natural gas with carbon capture occupies an intermediate position. Overall, Louisiana's familiarity pattern indicates that geothermal remains largely outside everyday public experience, despite the state's strong subsurface energy expertise and technical potential.

Figure 36

Self-Reported Familiarity with Clean Energy Sources in Louisiana



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Louisiana in the 2025 GR Geothermal Perception Study (n = 181). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

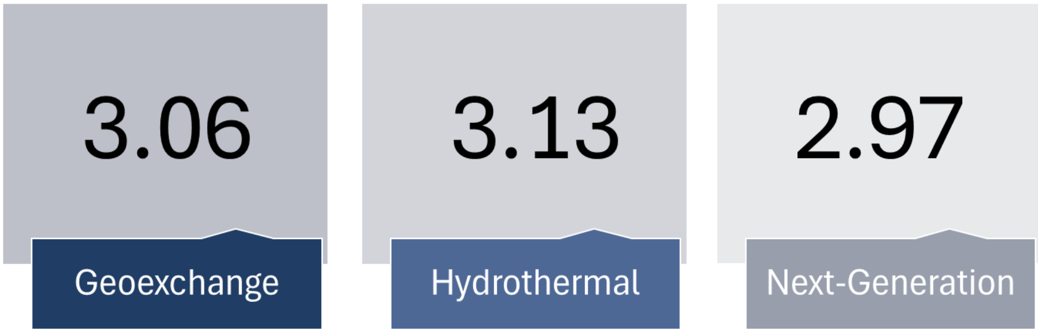
7.6.3. Acceptance Levels for Geothermal Systems

In Louisiana, social acceptance of geothermal systems is moderate and relatively balanced across technologies, with small differences between system types (see Figure 37). Hydrothermal geothermal records the highest level of acceptance (mean = 3.13), followed by geoexchange systems (mean = 3.06). These scores suggest a cautious yet generally positive attitude toward established or familiar geothermal applications.

Next-generation geothermal systems show slightly lower acceptance (mean = 2.97), indicating greater uncertainty toward deeper or emerging technologies. However, acceptance remains close to the neutral midpoint rather than reflecting outright opposition. Overall, Louisiana's acceptance profile suggests openness to geothermal development, tempered by limited familiarity and sensitivity to cost and system maturity. Acceptance appears strongest where geothermal is perceived as practical, reliable, and aligned with existing subsurface energy expertise.

Figure 37

Social Acceptance Levels for Geothermal Systems in Louisiana



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (181) from residents of Louisiana (2025 GR Geothermal Perception Study)

7.6.4. Key Predictors of Acceptance

In Louisiana, geothermal acceptance is shaped by a socially mediated and benefit-oriented evaluation structure, with notable differences across technologies that reflect the state's limited geothermal familiarity and strong reliance on social cues.

Geoexchange systems exhibit a socially reinforced benefit-driven pattern:

- **Perceived Benefits** and **Social Responsibility** are the strongest predictors of acceptance, indicating that support is driven by expectations of tangible advantages and broader societal contribution.
- **Familiarity** and **Subjective Norms (important people)** also exert significant positive effects, suggesting that awareness and social endorsement play a meaningful role in shaping evaluations.
- **Cost perceptions** are marginally significant and positive, indicating limited cost sensitivity and potentially low salience of affordability concerns in this context.
- **Risk perceptions, hedonic impressions, and perceived fairness** do not significantly influence acceptance.

Hydrothermal systems display a strongly social-normative profile:

- **Subjective Norms** emerge as the single strongest predictor of acceptance, followed by **Perceived Benefits**.
- **Social Responsibility**, **Familiarity**, and **Perceived Fairness** also contribute positively, indicating that acceptance is shaped by a combination of social influence, perceived legitimacy, and basic understanding.
- **Cost, risk, and hedonic perceptions** are not statistically significant.

Next-generation geothermal follows a socially anchored and collective-benefit pattern:

- **Social Responsibility** is the strongest predictor of acceptance, closely followed by **Perceived Benefits**.
- **Subjective Norms** also play a significant role, highlighting the importance of social endorsement for emerging technologies.
- **Familiarity, cost, risk, hedonic impressions, and fairness** do not significantly shape acceptance.

Overall, these results indicate that geothermal acceptance in Louisiana is driven primarily by **perceived benefits and social influence**, rather than economic or risk-based evaluations. Social responsibility and endorsement by important others play a central role, particularly for hydrothermal and next-generation systems, while affordability and risk perceptions remain secondary. This pattern reflects a context where geothermal technologies are evaluated less through technical scrutiny and more through their perceived societal value and social legitimacy.

7.7. Nevada

Nevada occupies a central position in the U.S. geothermal landscape as one of the country's most mature and established geothermal markets. The state hosts multiple operating geothermal power plants, long-standing exploration activity, and a regulatory environment that has consistently supported geothermal development. As a result, geothermal energy is more visible in Nevada than in most other states, both as a power-generation technology and as part of broader clean-energy strategies.

Nevada's energy context is shaped by strong renewable energy targets, a focus on grid reliability, and extensive experience integrating geothermal alongside solar and other renewables. Public perceptions of geothermal therefore emerge within a setting of higher familiarity, demonstrated performance, and policy legitimacy. This makes Nevada a critical reference case for understanding how social acceptance evolves when geothermal technologies move beyond exploration and into sustained, large-scale deployment.

7.7.1. Public Priorities in Energy Systems

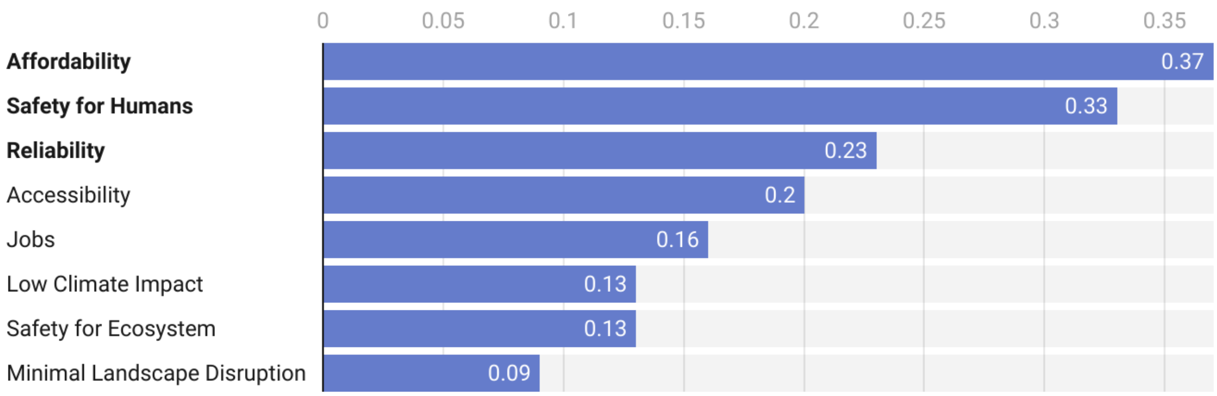
In Nevada, public evaluations of energy systems are strongly shaped by affordability, which emerges as the most salient attribute (see Figure 38). This reflects the importance placed on cost-effective energy in a state with high cooling demand, rapid population growth in urban areas, and sensitivity to household and system-level energy costs. Safety for humans ranks second, underscoring concern about health and safety impacts associated with energy infrastructure and operations.

Reliability follows as the third most salient priority, highlighting the value placed on consistent energy supply in a system increasingly reliant on renewables and exposed to extreme heat events. A secondary tier includes accessibility and job creation, indicating that equitable access and economic benefits matter, though less than cost, safety, and dependable service. Environmental attributes—low climate impact, safety for ecosystems, and minimal landscape disruption—rank lower overall, suggesting that while environmental considerations are present, practical and economic factors dominate initial energy evaluations in Nevada.

Figure 38

Public Priorities in Energy Systems in Nevada

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (176), 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).

Created with Datawrapper

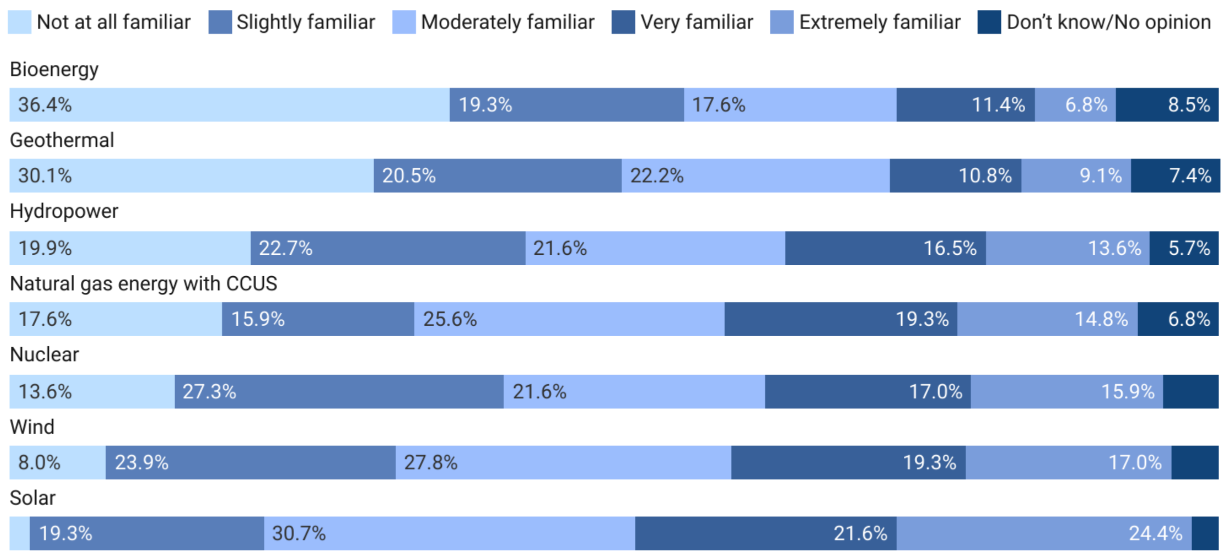
7.7.2. Familiarity with Geothermal Systems

In Nevada, familiarity with clean energy technologies is relatively high across multiple sources, reflecting the state's long-standing engagement with renewable energy development (see Figure 39). Solar and wind are the most familiar technologies, with large shares of respondents reporting high or very high familiarity, consistent with their widespread deployment and visibility. Hydropower and nuclear also show moderate familiarity, reflecting broader national exposure.

Familiarity with geothermal energy is notably higher in Nevada than in many other states. While a substantial share of respondents report only moderate familiarity, a meaningful proportion indicate very high or extreme familiarity, placing geothermal ahead of bioenergy and comparable to natural gas with carbon capture. The relatively low share of "don't know/no opinion" responses suggests that geothermal is a recognized and established part of Nevada's energy landscape, consistent with its mature geothermal market and policy support.

Figure 39

Self-Reported Familiarity with Clean Energy Sources in Nevada



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Nevadain the 2025 GR Geothermal Perception Study (n = 176). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

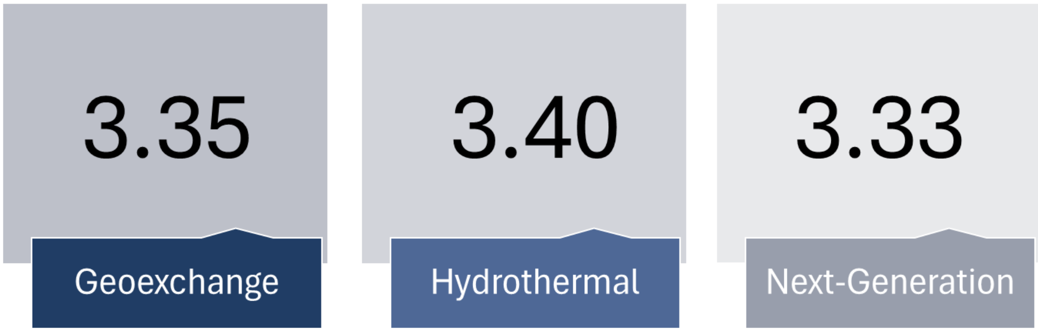
7.7.3. Acceptance Levels for Geothermal Systems

In Nevada, social acceptance of geothermal systems is consistently positive across all three technology types, with only minor variation between them (see Figure 40). Hydrothermal geothermal records the highest acceptance level (mean = 3.40), closely followed by geoexchange systems (mean = 3.35). Next-generation geothermal systems show a similar level of acceptance (mean = 3.33), indicating relatively balanced attitudes toward both established and emerging applications.

Compared to other states, Nevada's acceptance levels are notably high and uniform, reflecting the state's long-standing exposure to geothermal development, operational experience, and supportive policy environment. The absence of a pronounced acceptance gap between system types suggests that familiarity and demonstrated performance help reduce uncertainty around newer geothermal technologies. Overall, Nevada's results indicate a mature acceptance profile in which geothermal is broadly viewed as a credible and viable component of the state's energy system.

Figure 40

Social Acceptance Levels for Geothermal Systems in Nevada



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (176) from residents of Nevada (2025 GR Geothermal Perception Study)

7.7.4. Key Predictors of Acceptance

In Nevada, the predictors of geothermal acceptance vary across technologies, reflecting the state's strong geothermal resource base, active development history, and pragmatic evaluation of energy benefits and risks.

Geoexchange systems show a balanced, benefit- and risk-aware acceptance structure:

- **Perceived Benefits** are the strongest predictor of acceptance, followed by **Perceived Fairness** and **Familiarity**, indicating that tangible advantages, equitable implementation, and understanding all support acceptance.
- **Cost perceptions** have a marginally significant negative effect, suggesting sensitivity to affordability without being a dominant barrier.
- **Risk perceptions** have a significant positive association with acceptance, implying that respondents may view geoexchange as a controlled or manageable technology rather than a threatening one.
- **Social Responsibility** contributes positively, while subjective norms and hedonic impressions do not significantly shape acceptance.

Hydrothermal systems display a familiarity- and experience-driven profile:

- **Familiarity** and **Perceived Benefits** are the strongest predictors of acceptance, reflecting Nevada's long-standing exposure to hydrothermal development.
- **Hedonic evaluation** also plays a significant role, suggesting that intuitive or affective impressions matter alongside cognitive assessments.
- Cost, risk, fairness, and social responsibility are not statistically significant, indicating relatively stable and normalized perceptions of hydrothermal systems.

Next-generation geothermal follows a benefit-focused but cautious pattern:

- **Perceived Benefits** are the dominant driver of acceptance, with **Familiarity** also contributing positively.
- Cost, risk, fairness, social responsibility, and hedonic impressions do not significantly influence acceptance, suggesting early-stage evaluations centered on anticipated performance rather than broader social or ethical considerations.

Overall, geothermal acceptance in Nevada is strongly shaped by perceived benefits and familiarity, particularly for established technologies. Geoexchange acceptance additionally reflects sensitivity to risk and fairness, while next-generation geothermal remains evaluated primarily through expected advantages rather than social or normative lenses.

7.8. New Mexico

New Mexico represents an actively developing geothermal context shaped by abundant subsurface resources, growing interest in enhanced geothermal systems (EGS), and a broader energy transition underway in a historically fossil-fuel-dependent state. With extensive sedimentary basins, existing oil and gas expertise, and increasing policy attention to clean energy diversification, geothermal is emerging as a potential complement to solar and wind in supporting grid reliability and economic transition.

Public perceptions of geothermal in New Mexico are therefore formed in a setting characterized by opportunity and uncertainty. While direct exposure to operational geothermal projects remains limited, awareness of subsurface energy development is relatively high, informed by long-standing experience with drilling, extraction, and energy-related employment. As a result, social acceptance reflects both openness to innovation and sensitivity to economic, environmental, and governance considerations associated with new geothermal deployment pathways.

7.8.1. Public Priorities in Energy Systems

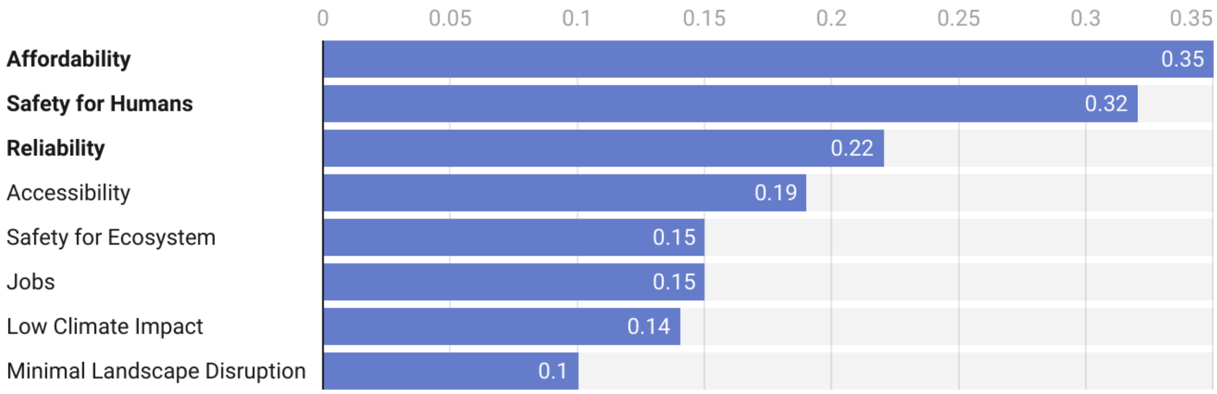
In New Mexico, public evaluations of energy systems are primarily shaped by affordability and safety for humans, which emerge as the two most salient attributes (see Figure 41). This reflects ongoing sensitivity to household energy costs alongside concerns related to subsurface activity and operational safety in a state with extensive drilling experience. Reliability ranks next, underscoring the importance of dependable energy supply amid increasing electricity demand and climate variability.

Mid-tier priorities include accessibility, ecosystem safety, and job creation, indicating balanced attention to equity, environmental protection, and economic opportunity in energy development. Low climate impact, while present, carries slightly less weight, suggesting that climate considerations are integrated but secondary to immediate cost and safety concerns. Overall, New Mexico's priority structure reflects a pragmatic, transition-oriented energy perspective grounded in affordability, human safety, and system reliability.

Figure 41

Public Priorities in Energy Systems in New Mexico

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (168), 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).

Created with Datawrapper

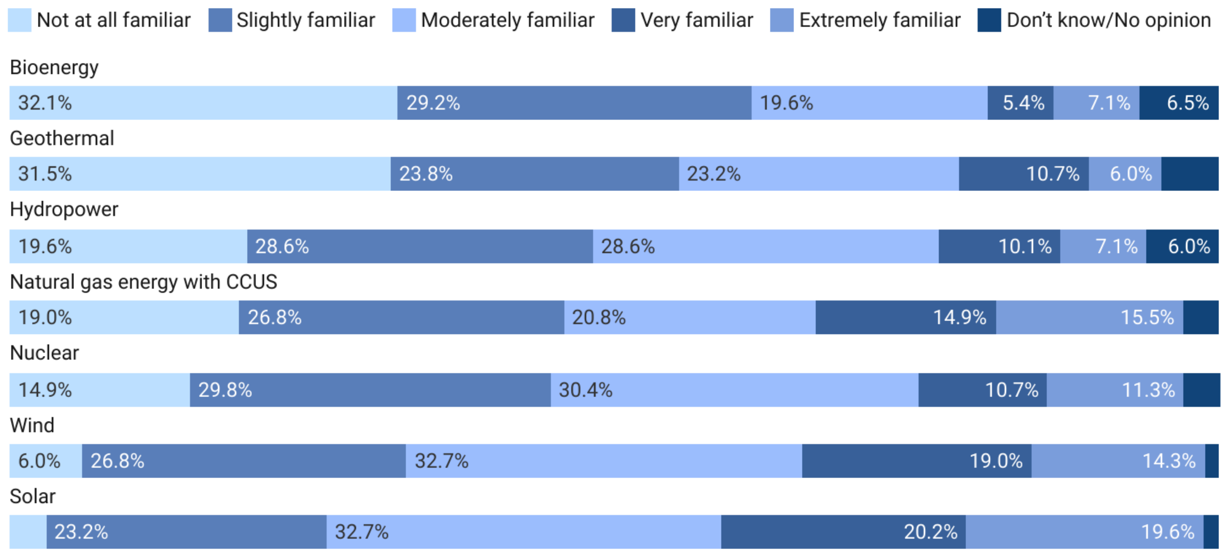
7.8.2. Familiarity with Geothermal Systems

In New Mexico, familiarity with clean energy technologies reflects broad exposure to a diverse energy mix, alongside moderate awareness of geothermal systems (see Figure 42). Solar and wind emerge as the most familiar technologies, with a large share of respondents reporting moderate to high familiarity, consistent with their visibility in regional energy development and public discourse. Nuclear energy also shows relatively high familiarity, reflecting the state's proximity to nuclear facilities and research activities.

Geothermal familiarity is moderate, with most respondents concentrated in the slightly to moderately familiar categories and a smaller share reporting high familiarity. This pattern suggests general awareness of geothermal potential without widespread public exposure to active projects. Bioenergy and natural gas with CCUS exhibit lower familiarity overall, indicating more limited public engagement with these technologies.

Figure 42

Self-Reported Familiarity with Clean Energy Sources in New Mexico



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of New Mexico in the 2025 GR Geothermal Perception Study (n = 176). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

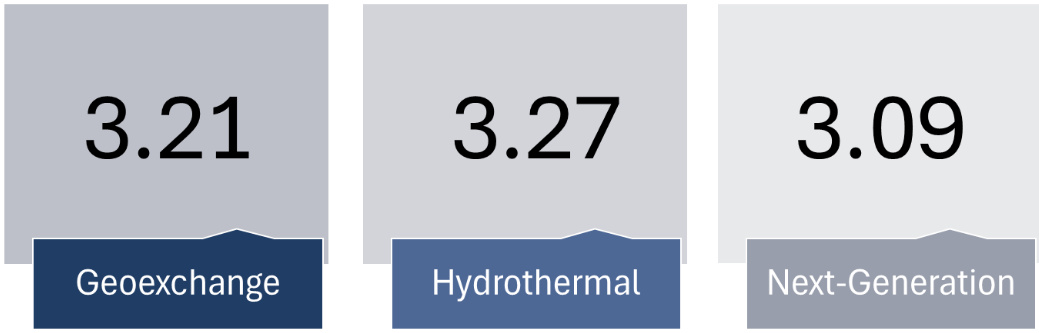
7.8.3. Acceptance Levels for Geothermal Systems

In New Mexico, social acceptance of geothermal systems is moderate across all three system types, with hydrothermal geothermal showing the highest mean acceptance (3.27), followed by geoexchange systems (3.21) and next-generation geothermal (3.09) (see Figure 43). This pattern suggests cautious openness toward geothermal development, with slightly stronger support for technologies perceived as more established or nearer to deployment.

Hydrothermal systems likely benefit from associations with conventional geothermal development and regional resource potential. Geoexchange systems maintain comparable acceptance, reflecting their alignment with building-level efficiency and local energy use. Lower acceptance of next-generation geothermal indicates greater uncertainty surrounding emerging technologies, technical complexity, and perceived readiness. Overall, acceptance in New Mexico reflects interest in geothermal energy tempered by familiarity gaps and pragmatic assessments of feasibility and maturity.

Figure 43

Social Acceptance Levels for Geothermal Systems in New Mexico



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (168) from residents of New Mexico (2025 GR Geothermal Perception Study)

7.8.4. Key Predictors of Acceptance

In New Mexico, the predictors of geothermal acceptance vary across technologies, reflecting the state's strong geothermal potential, energy development experience, and emphasis on perceived benefits and social relevance.

Geoexchange systems show a multi-dimensional acceptance structure:

- **Perceived Benefits** are the strongest predictor of acceptance, followed by **Perceived Fairness**, **Hedonic evaluation**, and **Subjective Norms**, indicating that tangible advantages, perceived equity, positive affect, and social influence all contribute to support.
- **Familiarity** also has a significant positive effect, suggesting that understanding geoexchange systems enhances acceptance.
- **Cost perceptions** are marginally negative, while **risk perceptions** are not significant, indicating limited concern about economic or safety risks.
- **Social Responsibility** does not significantly influence acceptance, suggesting a more household-level evaluation.

Hydrothermal systems display a socially reinforced driver profile:

- **Perceived Benefits** and **Subjective Norms** are the strongest predictors, highlighting the importance of social endorsement and perceived advantages.
- **Familiarity** also contributes positively to acceptance.
- **Cost perceptions** and **Social Responsibility** are marginally significant, while **risk** and **hedonic evaluations** are not influential.

Next-generation geothermal follows a socially oriented pattern:

- **Perceived Benefits** and **Subjective Norms** are the dominant predictors of acceptance.

- **Social Responsibility** also has a significant positive effect, indicating sensitivity to broader societal value.
- **Familiarity, cost, risk, hedonic impressions, and fairness** do not significantly shape acceptance, reflecting lower engagement with technical and economic attributes.

Overall, these results indicate that geothermal acceptance in New Mexico is primarily driven by perceived benefits and social influence across all technologies. Social endorsement plays an especially important role for hydrothermal and next-generation systems, while fairness and experiential appeal matter most for geoexchange. Across technologies, risk perceptions are not a major barrier, and cost concerns are secondary to perceived value and community relevance.

7.9. New York

New York represents a policy-leading geothermal context, shaped by ambitious climate legislation, large and engaged publics, and a strong emphasis on building decarbonization. Through initiatives such as the Climate Leadership and Community Protection Act (CLCPA) and aggressive electrification targets for buildings, the state has positioned geothermal—particularly geoexchange systems—as a key pathway for reducing emissions from the heating and cooling sector.

Public perceptions of geothermal in New York are formed within a highly visible and politicized energy transition. While large-scale geothermal electricity generation remains limited, geoexchange systems have gained prominence through policy mandates, utility programs, and municipal-level pilots. As a result, social acceptance is influenced not only by technical considerations, but also by familiarity shaped through policy discourse, equity-oriented climate goals, and expectations around fairness, affordability, and public benefit in a densely populated and socially diverse state.

7.9.1. Public Priorities in Energy Systems

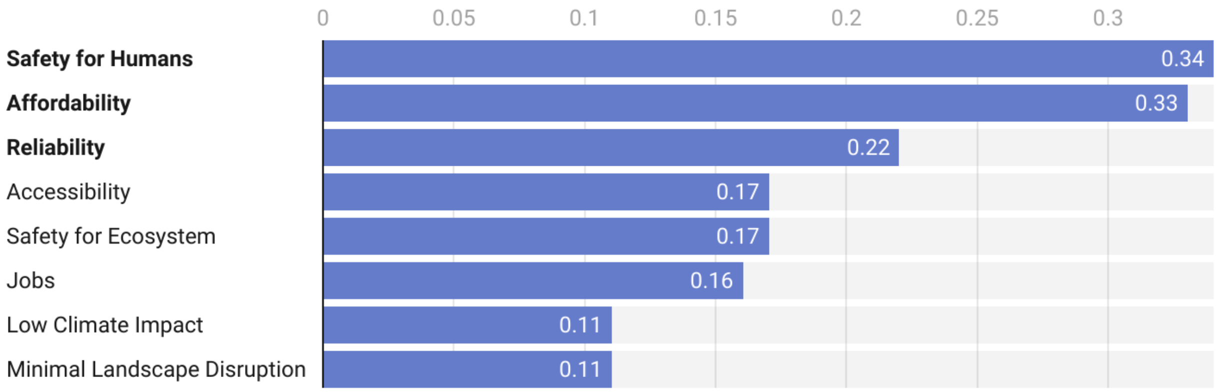
In New York, public evaluations of energy systems are primarily shaped by safety for humans and affordability, which emerge as the two most salient attributes (see Figure 44). This reflects strong concern for public health, building safety, and consumer protection in a densely populated state where energy infrastructure is closely embedded in residential and urban environments. Affordability's prominence underscores sensitivity to rising energy costs amid electrification policies and broader cost-of-living pressures.

Reliability ranks next, highlighting the importance of dependable energy supply in a complex and increasingly electrified grid. Mid-tier priorities include accessibility, ecosystem safety, and job creation, indicating balanced attention to equity, environmental stewardship, and economic opportunity. By contrast, low climate impact and minimal landscape disruption receive lower salience, suggesting that while climate goals are well established in policy discourse, immediate safety and cost considerations dominate public energy evaluations.

Figure 44

Public Priorities in Energy Systems in New York

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (294), 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).

Created with Datawrapper

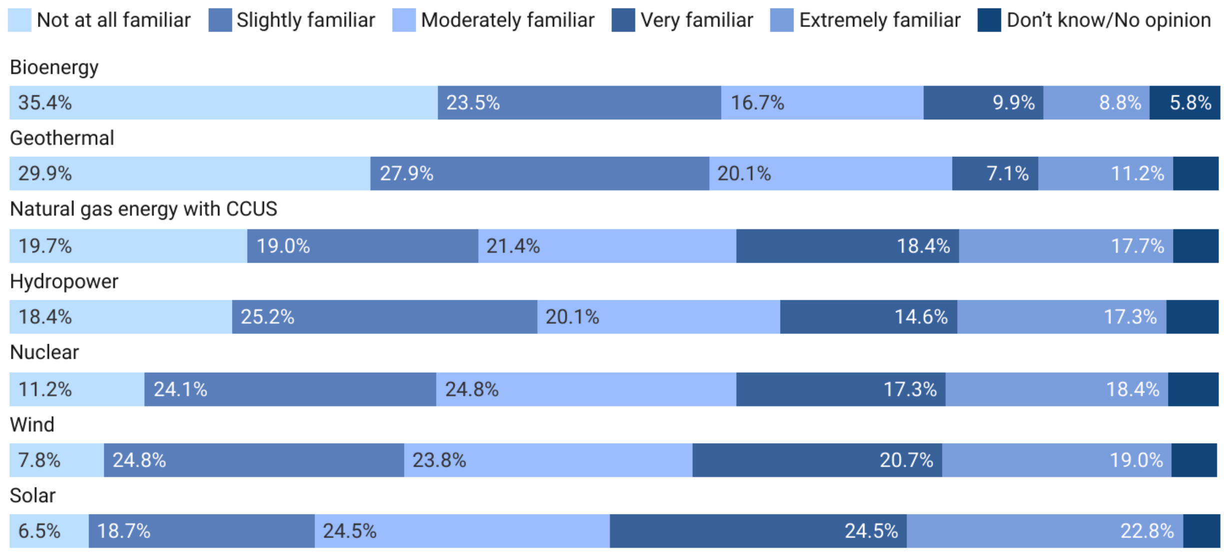
7.9.2. Familiarity with Geothermal Systems

In New York, familiarity with clean energy technologies reflects extensive exposure to widely deployed and publicly visible energy sources, alongside comparatively lower awareness of geothermal systems (see Figure 45). Solar and wind energy exhibit the highest familiarity levels, with substantial shares of respondents reporting very high or extreme familiarity, consistent with their prominence in state climate policy, utility programs, and public discourse. Nuclear energy also shows relatively high familiarity, reflecting New York's long-standing engagement with nuclear generation and associated policy debates.

By contrast, geothermal familiarity is moderate in absolute terms but lower relative to other clean energy sources. Most respondents report being slightly or moderately familiar with geothermal, while fewer indicate high familiarity. This pattern suggests general awareness of geothermal's existence and potential, but limited depth of understanding or direct exposure. Overall, geothermal remains less embedded in public consciousness than more established clean energy options in New York, underscoring the role of visibility and policy salience in shaping familiarity.

Figure 45

Self-Reported Familiarity with Clean Energy Sources in New York



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of New Yorkin the 2025 GR Geothermal Perception Study (n = 294). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

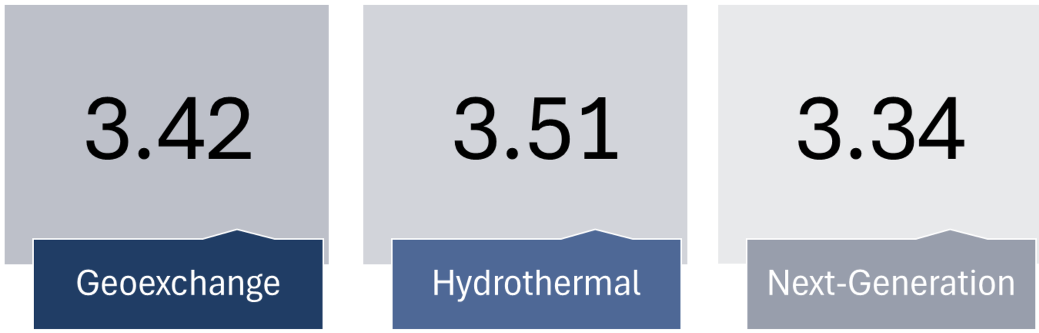
7.9.3. Acceptance Levels for Geothermal Systems

In New York, social acceptance of geothermal systems is relatively high across all three system types, reflecting the state's strong climate policy orientation and engaged public (see Figure 46). Hydrothermal geothermal records the highest mean acceptance (3.51), followed closely by geoexchange systems (3.42). Next-generation geothermal also shows solid acceptance (3.34), only modestly lower than the more established technologies.

The strong performance of hydrothermal and geoexchange systems likely reflects their perceived technological maturity, alignment with building decarbonization goals, and compatibility with New York's clean-energy transition strategies. While next-generation geothermal is less familiar, its acceptance remains comparatively robust, suggesting openness to innovation when systems are framed as contributing to reliability and emissions reduction. Overall, acceptance levels in New York indicate a favorable environment for geothermal deployment, with limited differentiation across system types and broad receptivity to both established and emerging geothermal applications.

Figure 46

Social Acceptance Levels for Geothermal Systems in New York



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (294) from residents of New York (2025 GR Geothermal Perception Study)

7.9.4. Key Predictors of Acceptance

In New York, acceptance of geothermal systems is shaped by a dense and socially embedded set of evaluative drivers, reflecting the state's strong policy leadership, high civic engagement, and mature public discourse on energy transition.

Geoexchange systems display a strongly social and institutional acceptance profile:

- **Perceived Benefits** emerge as the strongest predictor, followed closely by **Subjective Norms** and **Social Responsibility**, highlighting the importance of collective endorsement and perceived societal value.
- **Fairness** and **Familiarity** also exert significant positive effects, indicating sensitivity to equitable implementation and public understanding.
- **Perceived Risks** are positively associated with acceptance, suggesting that awareness of risks does not suppress support in this policy-mature context but may reflect informed evaluation rather than fear.

Hydrothermal systems show a similarly robust but more structured pattern:

- **Fairness** and **Social Responsibility** are among the strongest predictors, reinforcing the central role of governance trust and distributive justice.
- **Familiarity**, **Perceived Benefits**, **Risk perceptions**, and **Subjective Norms** all significantly contribute, indicating a highly differentiated and informed acceptance structure.

Next-generation geothermal systems follow a selective but socially anchored pathway:

- **Perceived Benefits** dominate acceptance, with **Familiarity**, **Subjective Norms**, and **Social Responsibility** also playing significant roles.
- Cost, risk, and hedonic perceptions do not significantly influence acceptance at this stage.

Overall, geothermal acceptance in New York is distinctly **institutional and socially mediated**, shaped less by cost concerns and more by trust, perceived collective benefit, and alignment with shared transition goals.

7.10. North Dakota

North Dakota represents an actively developing geothermal context shaped by extensive sedimentary basins, deep subsurface expertise, and a long-standing energy economy centered on oil and gas production. These geological and industrial conditions position the state as a promising candidate for enhanced and next-generation geothermal systems, particularly those that can leverage existing drilling knowledge, infrastructure, and workforce capabilities.

Public perceptions of geothermal in North Dakota are formed within a pragmatic energy landscape where reliability, affordability, and economic continuity are central concerns. While direct exposure to geothermal projects remains limited, residents are familiar with subsurface energy development and resource extraction more broadly. As a result, social acceptance reflects cautious openness toward geothermal innovation, balanced by attention to economic benefits, operational safety, and alignment with the state's established energy identity.

7.10.1. Public Priorities in Energy Systems

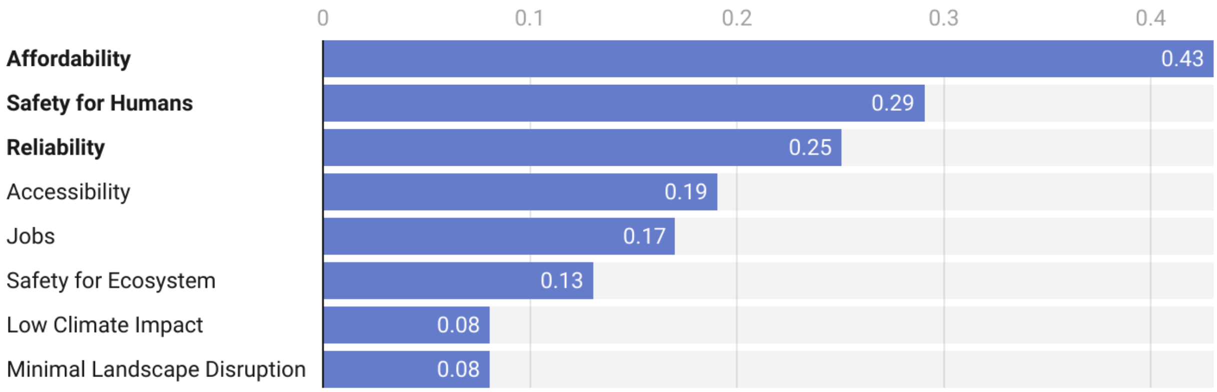
In North Dakota, public evaluations of energy systems are strongly dominated by affordability, which emerges as the most salient attribute by a wide margin (see Figure 47). This reflects the state's pragmatic energy culture and sensitivity to household and system-level energy costs in a region where energy production plays a central economic role. Safety for humans ranks second, indicating continued concern about operational and health risks associated with subsurface activities, followed closely by reliability, underscoring the importance of stable energy supply in a climate-prone and geographically dispersed system.

Mid-tier priorities include accessibility and job creation, highlighting attention to equitable energy access and local economic impacts. Safety for ecosystems receives moderate emphasis, while low climate impact and minimal landscape disruption are least salient. Overall, North Dakota's priority structure reflects a cost- and reliability-focused energy perspective, with environmental considerations present but secondary to economic and operational fundamentals.

Figure 47

Public Priorities in Energy Systems in North Dakota

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (164), 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).

Created with Datawrapper

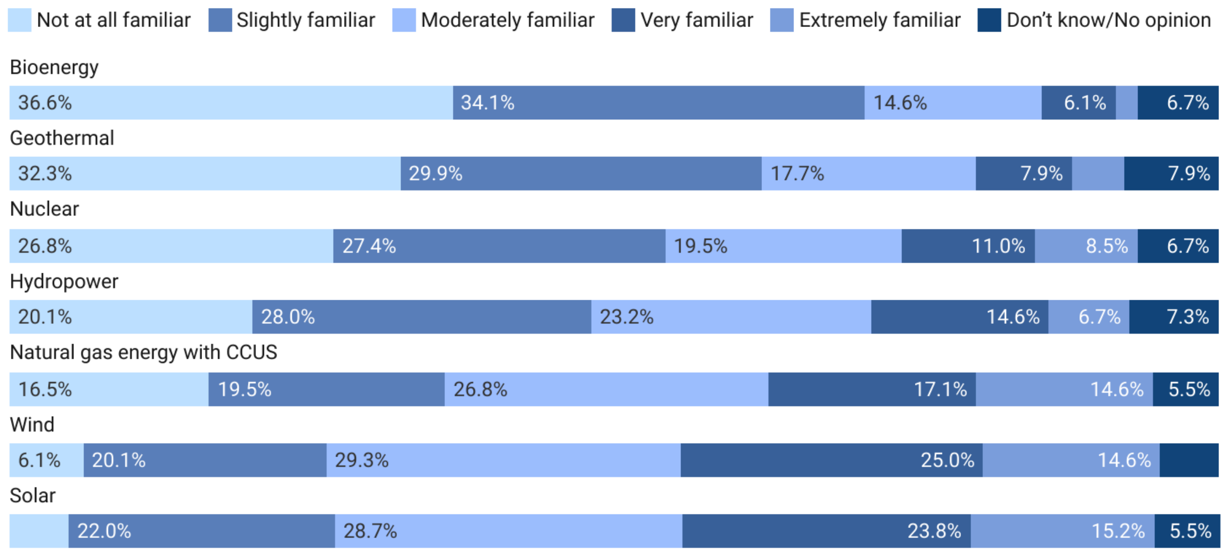
7.10.2. Familiarity with Geothermal Systems

In North Dakota, familiarity with clean energy technologies reflects an energy landscape still dominated by conventional production, with renewables playing a secondary but growing role (see Figure 48). Solar and wind energy are the most familiar technologies, with many respondents reporting moderate to high familiarity, reflecting their increasing visibility in regional energy planning and discourse. Hydropower and nuclear energy occupy a mid-range position, suggesting indirect awareness rather than routine engagement.

By contrast, geothermal systems remain among the least familiar clean energy sources. Most respondents report being not at all or only slightly familiar with geothermal, and only a small share indicate very high or extreme familiarity. This comparatively low awareness highlights geothermal's limited public presence in the state, despite North Dakota's subsurface expertise and exploratory geothermal potential. Overall, the familiarity profile suggests an early-stage awareness context that may shape cautious or underdeveloped perceptions of geothermal technologies.

Figure 48

Self-Reported Familiarity with Clean Energy Sources in North Dakota



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of North Dakota in the 2025 GR Geothermal Perception Study (n = 164). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

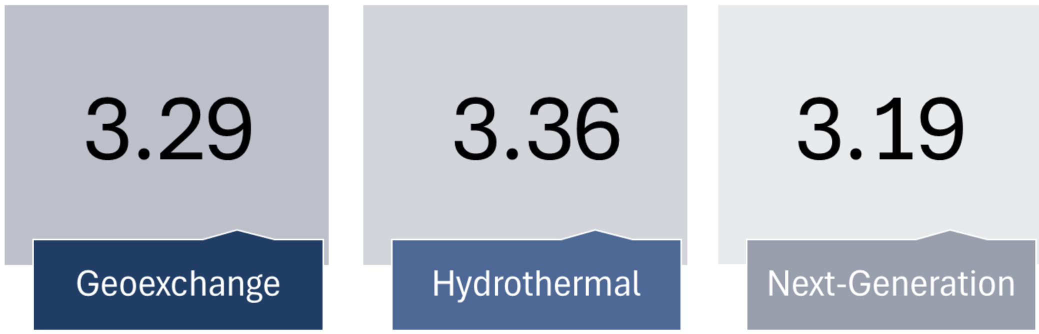
7.10.3. Acceptance Levels for Geothermal Systems

In North Dakota, social acceptance of geothermal systems is moderate across all three technology types, with hydrothermal geothermal registering the highest mean acceptance (3.36), followed by geoexchange systems (3.29) and next-generation geothermal (3.19) (see Figure 49). This relatively narrow spread suggests a broadly consistent evaluation of geothermal options rather than sharp differentiation between technologies.

Hydrothermal systems likely benefit from perceptions of technical maturity and alignment with existing subsurface energy expertise in the state. Geoexchange systems show comparable acceptance, reflecting interest in building-scale efficiency and localized energy solutions. Acceptance of next-generation geothermal is slightly lower, indicating greater uncertainty around emerging technologies, scalability, and near-term feasibility. Overall, these results point to cautious openness toward geothermal development in North Dakota, shaped by pragmatic assessments of reliability, cost, and technological readiness rather than strong enthusiasm or opposition.

Figure 49

Social Acceptance Levels for Geothermal Systems in North Dakota



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (164) from residents of North Dakota (2025 GR Geothermal Perception Study)

7.10.4. Key Predictors of Acceptance

In North Dakota, acceptance of geothermal systems is shaped by a pragmatic and socially grounded set of drivers, reflecting the state's strong energy-sector identity, familiarity with subsurface development, and community-oriented evaluation of new technologies.

Geoexchange systems exhibit a socially reinforced, benefit-oriented acceptance profile:

- **Perceived Benefits** emerge as the strongest predictor, followed by **Subjective Norms**, highlighting the importance of tangible value and social endorsement.
- **Familiarity** and **Social Responsibility** also exert significant positive effects, suggesting that understanding of the technology and alignment with community values support acceptance.
- Cost, fairness, hedonic perceptions, and risk do not significantly constrain acceptance at this stage.

Hydrothermal systems show a similar but more risk-aware pattern:

- **Perceived Benefits** and **Subjective Norms** are again the strongest predictors.
- **Familiarity** and **Risk perceptions** significantly contribute, indicating heightened attention to operational and subsurface safety considerations.
- Cost, fairness, and affective responses remain non-significant.

Next-generation geothermal systems follow a strongly social pathway:

- **Subjective Norms** emerge as the dominant driver, followed by **Perceived Benefits**, underscoring the importance of community cues for emerging technologies.
- Other factors, including familiarity, risk, and fairness, do not significantly influence acceptance.

Overall, geothermal acceptance in North Dakota is benefit-driven and socially mediated, with community endorsement playing a decisive role—particularly for next-generation systems—while economic concerns remain secondary.

7.11. Oregon

Oregon represents a mature geothermal context shaped by long-standing state policy support, operational experience with geothermal electricity, and a strong public commitment to clean energy and climate action. The state hosts multiple operating hydrothermal facilities and has actively pursued enhanced geothermal systems (EGS), supported by favorable regulatory frameworks, public investment, and institutional capacity. Geothermal development is embedded within a broader energy transition focused on decarbonization, grid reliability, and rural economic development.

Public perceptions of geothermal in Oregon are therefore formed in a policy-stable and environmentally engaged setting. While geothermal is less visible than wind or solar, it is not viewed as a speculative or unfamiliar technology. As a result, social acceptance reflects informed evaluation rather than novelty-driven uncertainty, with emphasis on governance quality, environmental protection, and alignment with Oregon's long-term climate and energy objectives.

7.11.1. Public Priorities in Energy Systems

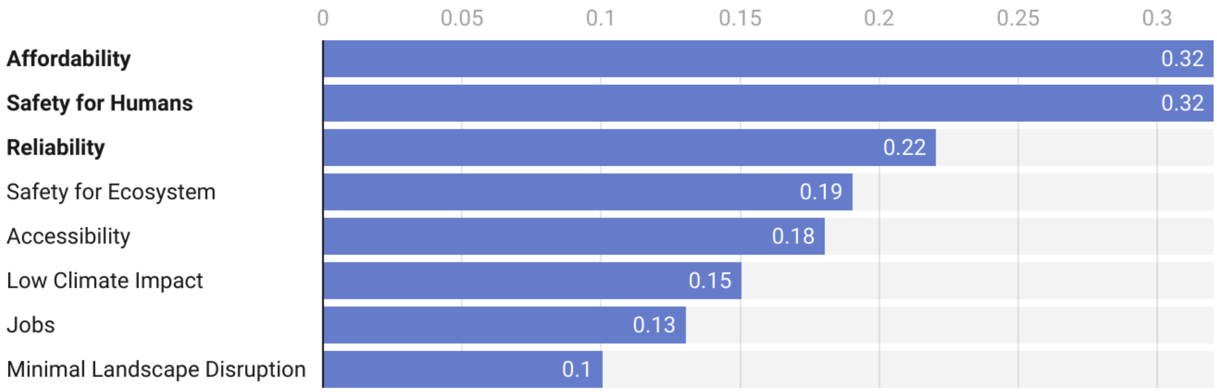
In Oregon, public evaluations of energy systems are shaped by a balanced emphasis on affordability and safety for humans, which emerge as the two most salient attributes (see Figure 50). This reflects a pragmatic energy perspective that combines cost sensitivity with strong concern for public health and operational safety. Reliability follows closely, underscoring the importance of dependable energy supply in a state managing growing electrification alongside climate-driven system stressors.

Environmental considerations are also prominent. Safety for ecosystems and low climate impact rank among the mid-tier priorities, consistent with Oregon's long-standing environmental values and policy leadership on climate action. Accessibility and job creation receive moderate emphasis, indicating awareness of equity and economic benefits without overshadowing system performance and protection goals. Overall, Oregon's priority structure reflects a mature, sustainability-oriented energy outlook that integrates affordability, safety, reliability, and environmental stewardship.

Figure 50

Public Priorities in Energy Systems in Oregon

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (181), 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).

Created with Datawrapper

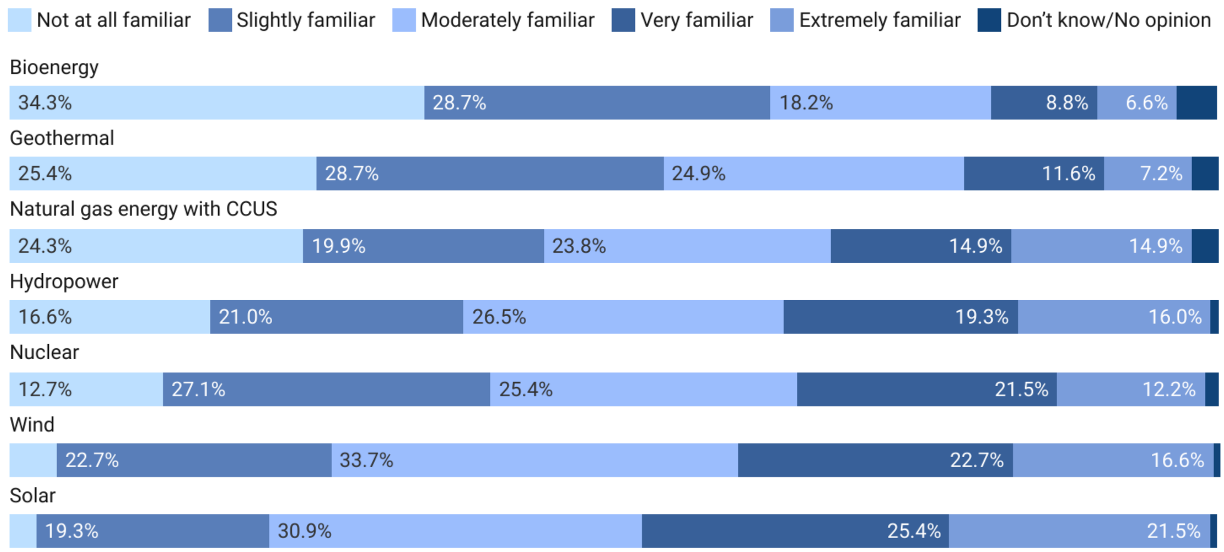
7.11.2. Familiarity with Geothermal Systems

In Oregon, familiarity with clean energy technologies is relatively high across several established sources, reflecting the state's long-standing engagement with renewable energy and environmental policy (see Figure 51). Solar and wind emerge as the most familiar technologies, with a substantial share of respondents reporting moderate to high familiarity, consistent with their visibility in Oregon's electricity mix and public discourse. Hydropower also shows strong familiarity, reflecting its historic role in the region's energy system.

Geothermal familiarity is moderate in absolute terms but comparatively lower than solar, wind, and hydropower. Most respondents cluster in the slightly to moderately familiar categories, with a smaller share indicating high familiarity. This suggests general awareness of geothermal's presence and potential, without the everyday visibility of more mature renewables. Bioenergy and natural gas with CCUS display lower familiarity overall, indicating more limited public engagement with these systems.

Figure 51

Self-Reported Familiarity with Clean Energy Sources in Oregon



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Oregon in the 2025 GR Geothermal Perception Study (n = 181). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

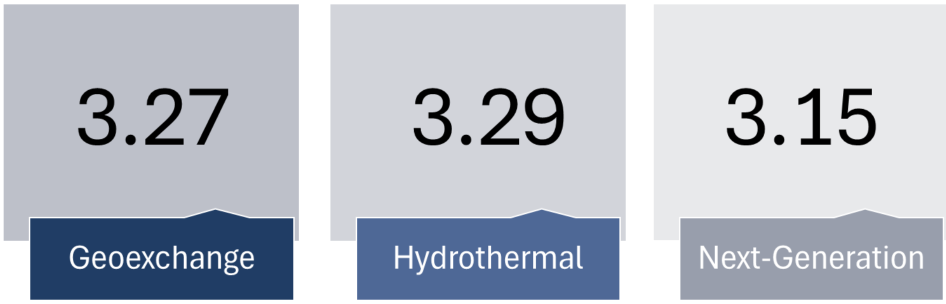
7.11.3. Acceptance Levels for Geothermal Systems

In Oregon, social acceptance of geothermal systems is moderate across all three system types, reflecting the state's mature renewable energy market and long-standing policy support for clean energy (see Figure 52). Hydrothermal geothermal shows the highest mean acceptance (3.29), followed closely by geoexchange systems (3.27), indicating broad comfort with both utility-scale and building-level applications. These closely aligned scores suggest that geothermal technologies are perceived as credible and complementary within Oregon's diversified energy portfolio.

Next-generation geothermal exhibits slightly lower acceptance (3.15), pointing to greater uncertainty surrounding emerging technologies despite Oregon's innovation-oriented policy environment. This gap likely reflects limited public familiarity rather than active resistance. Overall, acceptance patterns in Oregon indicate stable and pragmatic support for geothermal energy, grounded in trust in regulatory institutions and experience with renewable energy development.

Figure 52

Social Acceptance Levels for Geothermal Systems in Oregon



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (181) from residents of Oregon (2025 GR Geothermal Perception Study)

7.11.4. Key Predictors of Acceptance

In Oregon, acceptance of geothermal systems reflects a mature clean-energy context shaped by strong environmental values, long-standing renewable deployment, and robust state support for decarbonization. Across system types, acceptance is guided less by novelty and more by perceived contribution to collective goals and social legitimacy.

Geoexchange systems show a socially grounded acceptance profile:

- **Perceived Benefits** are the strongest driver, followed by **Subjective Norms** and **Fairness**, indicating that support is closely tied to shared expectations and equitable implementation.
- **Social Responsibility** also contributes positively, reinforcing alignment with Oregon's sustainability ethos.
- Familiarity, cost, risk, and hedonic perceptions do not significantly influence acceptance.

Hydrothermal systems exhibit a similar but more pronounced social structure:

- **Subjective Norms** emerge as the dominant predictor, followed by **Perceived Benefits**, **Social Responsibility**, and **Risk perceptions**, suggesting informed engagement rather than risk aversion.

Next-generation geothermal acceptance is more selective:

- **Perceived Benefits**, **Social Responsibility**, and **Familiarity** are significant, while cost and risk remain non-salient.

Overall, geothermal acceptance in Oregon is strongly norm-driven and institutionally anchored, reflecting a public accustomed to evaluating energy technologies through collective benefit, fairness, and environmental stewardship rather than personal cost or novelty concerns.

7.12. Texas

Texas represents a distinctive geothermal context characterized by vast sedimentary basins, extensive subsurface data, and significant potential for next-generation geothermal systems, embedded within one of the world's most mature oil and gas economies. The state's long-standing expertise in drilling, reservoir management, and energy infrastructure positions geothermal—particularly next-generation systems—as a technically feasible extension of existing capabilities rather than a disruptive departure.

Public perceptions of geothermal in Texas are therefore shaped by pragmatism, scale, and performance-oriented evaluation. While direct public exposure to geothermal remains limited compared to wind and solar, familiarity with subsurface energy development is high, informed by decades of hydrocarbon production and energy-sector employment. As a result, social acceptance reflects a balance between openness to innovation that leverages existing strengths and caution regarding economic viability, reliability, and system integration within a competitive energy market.

7.12.1. Public Priorities in Energy Systems

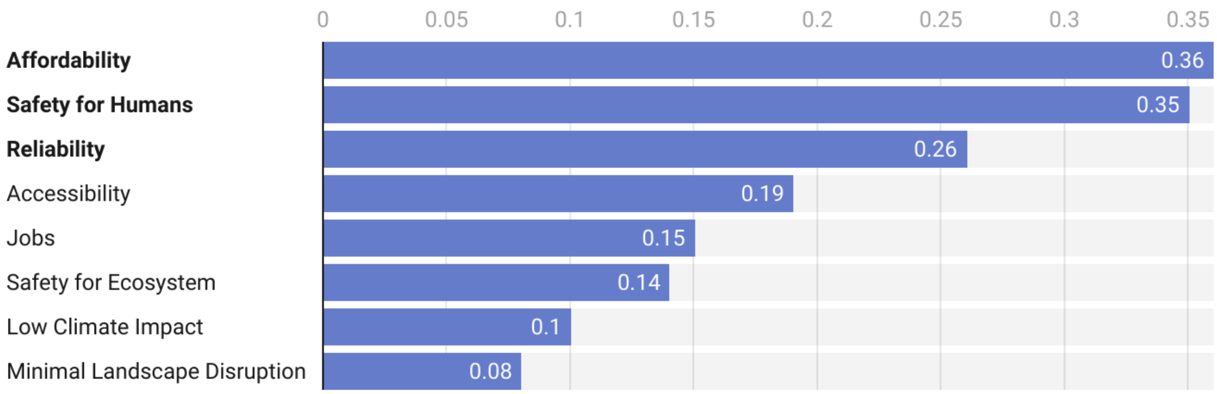
In Texas, public evaluations of energy systems are strongly shaped by affordability and safety for humans, which emerge as the two most salient attributes (see Figure 53). This reflects a cost-conscious energy culture combined with heightened attention to operational safety in a state with extensive subsurface energy activity. Reliability ranks next, underscoring the importance Texans place on dependable energy supply to support economic activity, extreme weather resilience, and grid stability.

Mid-level priorities include accessibility and job creation, highlighting the value placed on widespread energy availability and employment opportunities tied to the energy sector. Safety for ecosystems receives moderate emphasis, while low climate impact and minimal landscape disruption rank lower. Overall, Texas exhibits a pragmatic, performance-oriented priority structure centered on affordability, safety, and reliability rather than primarily environmental or aesthetic considerations.

Figure 53

Public Priorities in Energy Systems in Texas

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (459), 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).

Created with Datawrapper

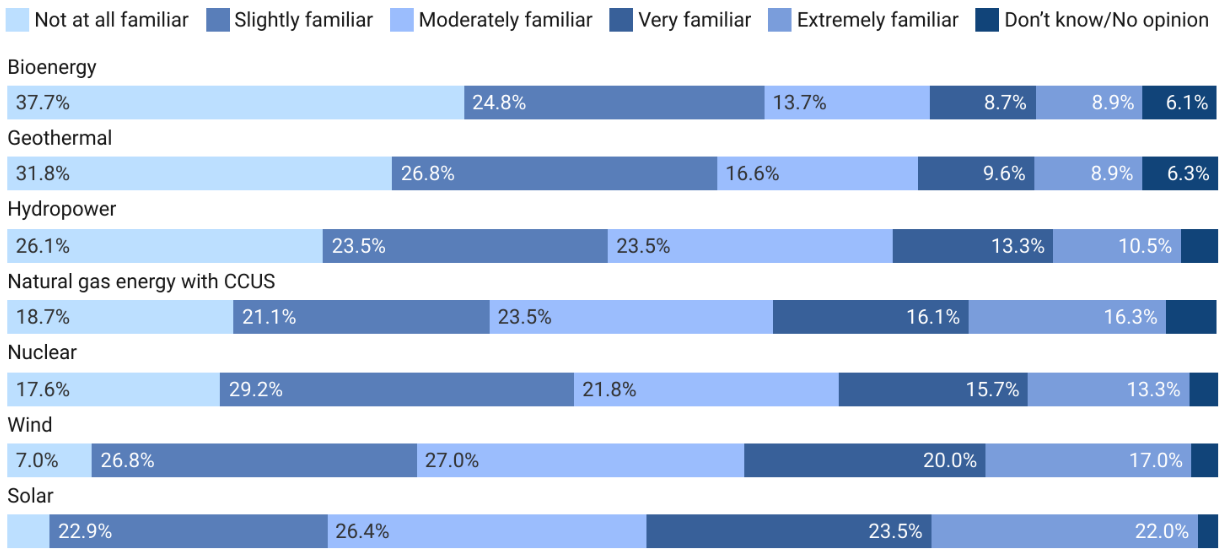
7.12.2. Familiarity with Geothermal Systems

In Texas, familiarity with clean energy technologies reflects broad exposure to a diverse and highly visible energy mix, with geothermal remaining comparatively less familiar (see Figure 54). Solar and wind exhibit the highest levels of moderate to high familiarity, consistent with their rapid deployment and public visibility across the state. Natural gas with CCUS and nuclear energy also show relatively strong familiarity, reflecting Texas's long-standing association with large-scale, centralized energy infrastructure.

Geothermal familiarity is lower by comparison, with a substantial share of respondents reporting being not at all or only slightly familiar. While some awareness exists—likely informed by Texas's extensive subsurface expertise and energy workforce—direct public exposure to geothermal development remains limited. Overall, geothermal in Texas occupies an intermediate awareness position: more familiar than niche technologies like bioenergy, but significantly less embedded in public consciousness than wind, solar, or natural gas-based systems.

Figure 54

Self-Reported Familiarity with Clean Energy Sources in Texas



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Texas in the 2025 GR Geothermal Perception Study (n = 459). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

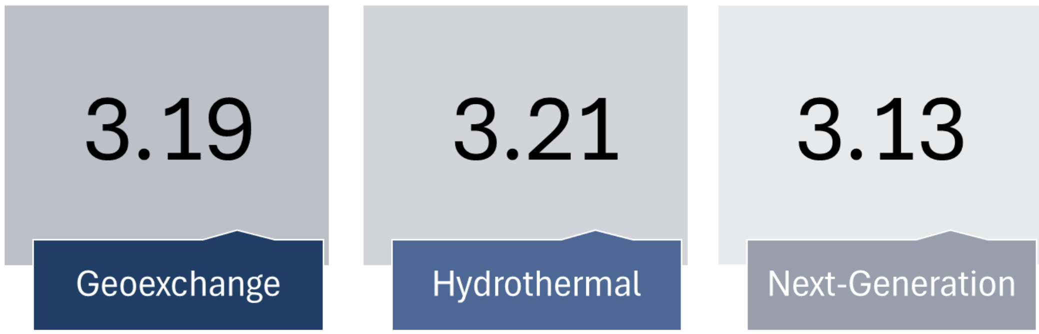
7.12.3. Acceptance Levels for Geothermal Systems

In Texas, social acceptance of geothermal systems is moderate across all three system types, with hydrothermal geothermal showing the highest mean acceptance (3.21), followed closely by geoexchange systems (3.19), and next-generation geothermal (3.13) (see Figure 55). This relatively compressed range suggests broadly cautious but open attitudes toward geothermal development.

Hydrothermal systems benefit from perceptions of technical maturity and alignment with existing large-scale energy infrastructure. Geoexchange systems achieve comparable acceptance, likely reflecting their building-level applications and perceived practicality. Lower acceptance of next-generation geothermal reflects greater uncertainty regarding technological readiness and deployment risks. Overall, acceptance patterns in Texas indicate pragmatic interest in geothermal energy, shaped by a strong energy culture that values reliability and proven performance while remaining attentive to emerging subsurface opportunities.

Figure 55

Social Acceptance Levels for Geothermal Systems in Texas



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (459) from residents of Texas (2025 GR Geothermal Perception Study)

7.12.4. Key Predictors of Acceptance

In Texas, acceptance of geothermal systems is shaped by a pragmatic, experience-based evaluation framework, reflecting the state's deep familiarity with subsurface energy development, strong energy labor identity, and cost-sensitive electricity culture.

Geoexchange systems exhibit a balanced but socially reinforced acceptance profile:

- **Subjective norms** and **familiarity** emerge as the strongest predictors, indicating that peer endorsement and experiential knowledge are central to support.
- **Perceived benefits**, **fairness**, and **social responsibility** also significantly contribute, highlighting expectations of tangible value and equitable implementation.
- **Cost perceptions** exert a small but significant negative effect, underscoring price sensitivity even for distributed technologies.

Hydrothermal systems show a highly structured and experience-driven pattern:

- **Familiarity** is the dominant driver, followed by **subjective norms** and **fairness**, reflecting confidence rooted in Texas's conventional energy expertise.
- **Perceived benefits** reinforce acceptance, while higher cost sensitivity modestly constrains support.

Next-generation geothermal systems follow a forward-looking but cautious pathway:

- **Perceived benefits**, **familiarity**, **fairness**, and **subjective norms** significantly shape acceptance.
- **Cost sensitivity** again emerges as a modest barrier, while risk perceptions remain non-significant.

Overall, geothermal acceptance in Texas is strongly grounded in familiarity, social validation, and perceived economic value, with cost considerations playing a more prominent role than in policy-driven states but less than in early-stage markets.

7.13. Utah

Utah represents an actively developing geothermal context characterized by strong subsurface resource potential, increasing policy attention, and a growing portfolio of operational and proposed geothermal projects. The state benefits from favorable geology, a history of renewable energy development, and active engagement from both public agencies and private developers, positioning geothermal as a viable contributor to long-term energy diversification.

Public perceptions of geothermal in Utah are shaped by a combination of emerging familiarity and cautious evaluation. While geothermal has a more visible presence than in many exploratory states—particularly through hydrothermal development—public understanding remains uneven across system types. As a result, social acceptance reflects openness to geothermal's potential benefits, especially reliability and clean energy contributions, alongside continued sensitivity to cost, implementation fairness, and perceived risks associated with subsurface technologies.

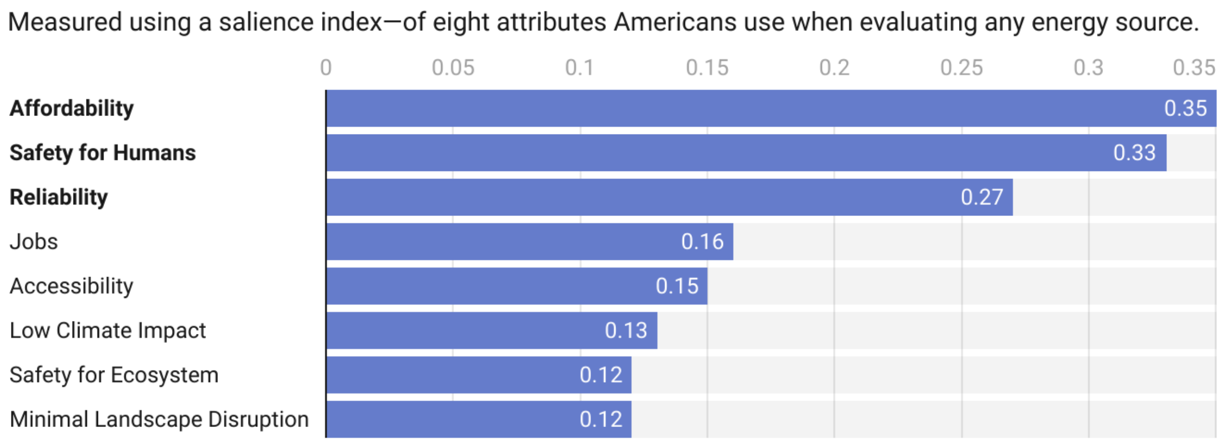
7.13.1. Public Priorities in Energy Systems

In Utah, public evaluations of energy systems are strongly anchored in affordability and safety for humans, which emerge as the two most salient attributes (see Figure 56). This reflects concern for household energy costs alongside heightened attention to safety in a state with growing exposure to subsurface energy development. Reliability ranks closely behind, underscoring the importance of dependable power supply in a rapidly growing state with increasing electricity demand.

Mid-tier priorities include job creation and accessibility, signaling interest in the economic and distributive benefits of energy development. Environmental considerations—such as low climate impact, ecosystem safety, and minimal landscape disruption—remain present but secondary. Overall, Utah's priority structure reflects a pragmatic, development-oriented energy perspective that balances economic viability, human safety, and system reliability while gradually integrating environmental considerations.

Figure 56

Public Priorities in Energy Systems in Utah



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (174), 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).

Created with Datawrapper

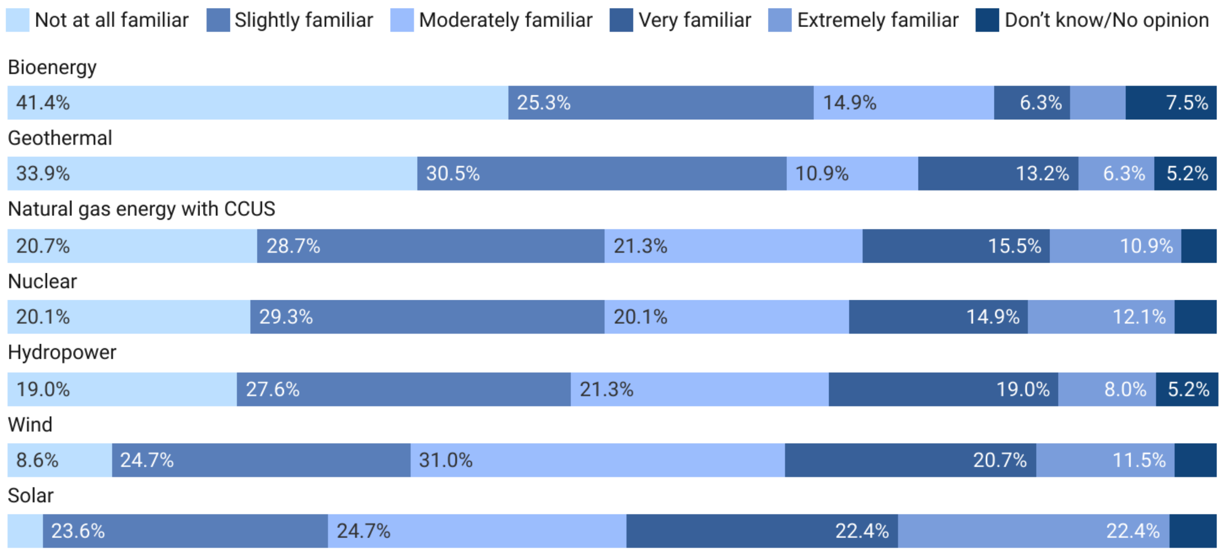
7.13.2. Familiarity with Geothermal Systems

In Utah, familiarity with clean energy technologies reflects broad exposure to renewable and low-carbon energy sources, alongside relatively limited awareness of geothermal systems (see Figure 57). Solar and wind are the most familiar technologies, with a substantial share of respondents reporting moderate to high familiarity, consistent with their visibility in Utah's energy landscape. Hydropower and nuclear energy also show moderate familiarity, reflecting their established presence in regional and national energy systems.

By contrast, geothermal familiarity remains comparatively low. Most respondents report being not at all or only slightly familiar with geothermal energy, with a smaller proportion indicating moderate familiarity and relatively few reporting high familiarity. This pattern suggests that, despite Utah's significant geothermal resource potential and ongoing exploration, geothermal remains less salient in public awareness than other clean energy options.

Figure 57

Self-Reported Familiarity with Clean Energy Sources in Utah



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Utah in the 2025 GR Geothermal Perception Study (n = 174). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

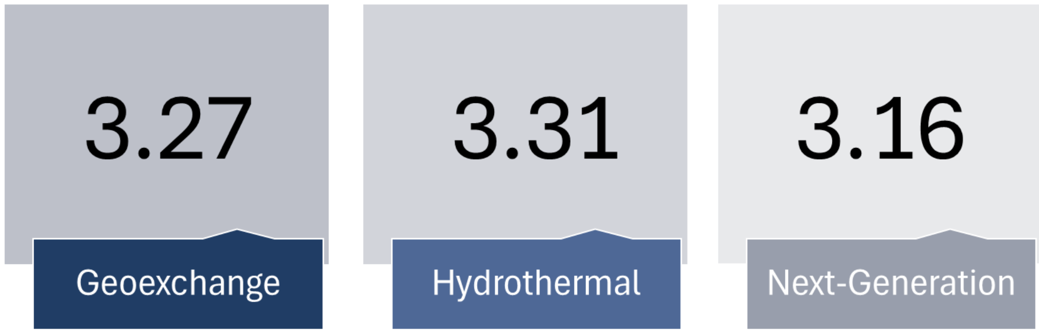
7.13.3. Acceptance Levels for Geothermal Systems

In Utah, social acceptance of geothermal systems is moderate across all three system types, with hydrothermal geothermal receiving the highest mean acceptance (3.31), followed by geoexchange systems (3.27) and next-generation geothermal (3.16) (see Figure 58). This pattern suggests cautious but generally favorable attitudes toward geothermal development in a state with active exploration and demonstrated subsurface resource potential.

Hydrothermal systems likely benefit from perceptions of technological maturity and alignment with Utah's existing geothermal projects. Geoexchange systems show comparable acceptance, reflecting interest in localized, building-scale energy solutions. Slightly lower acceptance of next-generation geothermal indicates greater uncertainty surrounding emerging technologies, technical complexity, and perceived readiness. Overall, acceptance in Utah reflects openness to geothermal energy tempered by familiarity gaps and pragmatic assessments of feasibility and development stage.

Figure 58

Social Acceptance Levels for Geothermal Systems in Utah



Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (174) from residents of Utah (2025 GR Geothermal Perception Study)

7.13.4. Key Predictors of Acceptance

In Utah, acceptance of geothermal systems is shaped by a pragmatic and benefit-oriented evaluation structure, reflecting the state's exploratory geothermal context, strong subsurface energy familiarity, and cautious but growing openness to innovation.

Geoexchange systems exhibit a value-driven acceptance profile:

- **Perceived Benefits** are the strongest predictor of acceptance, followed by **Familiarity** and **Social Responsibility**, indicating that understanding system advantages and perceived societal contribution are central.
- Other factors—including cost, risk, fairness, and social norms—do not significantly shape acceptance, suggesting relatively early-stage evaluations centered on perceived utility rather than broader social considerations.

Hydrothermal systems display a more diversified pattern:

- **Perceived Benefits** and **Familiarity** remain key drivers, complemented by significant effects of **Social Responsibility**, **Hedonic evaluation**, and **Fairness**, indicating sensitivity to both governance and experiential factors.

Next-generation geothermal systems are driven by a focused innovation-oriented pathway:

- **Perceived Benefits** and **Familiarity** dominate acceptance, with **Hedonic perceptions** also contributing positively.
- Cost, risk, and social norms are not significant at this stage.

Overall, geothermal acceptance in Utah is primarily benefit- and familiarity-led, with increasing differentiation across system types as technological complexity rises.

7.14. Washington

Washington represents a policy-leading geothermal context shaped by strong climate governance, high public engagement with energy and environmental issues, and a long-standing commitment to decarbonization. While the state's electricity system is already dominated by hydropower, growing concerns around grid resilience, seasonal variability, and long-term clean-energy diversification have increased interest in complementary firm resources such as geothermal energy.

Public perceptions of geothermal in Washington are formed within a highly informed and institutionally mature policy environment. Residents are accustomed to renewable energy discourse, regulatory oversight, and participatory decision-making, which tends to elevate expectations around transparency, environmental performance, and social responsibility. As a result, social acceptance reflects not only assessments of technical and economic performance but also alignment with broader climate goals, governance quality, and collective benefit. This context provides a strong foundation for evaluating how different geothermal system types are perceived within a socially engaged and policy-responsive public.

7.14.1. Public Priorities in Energy Systems

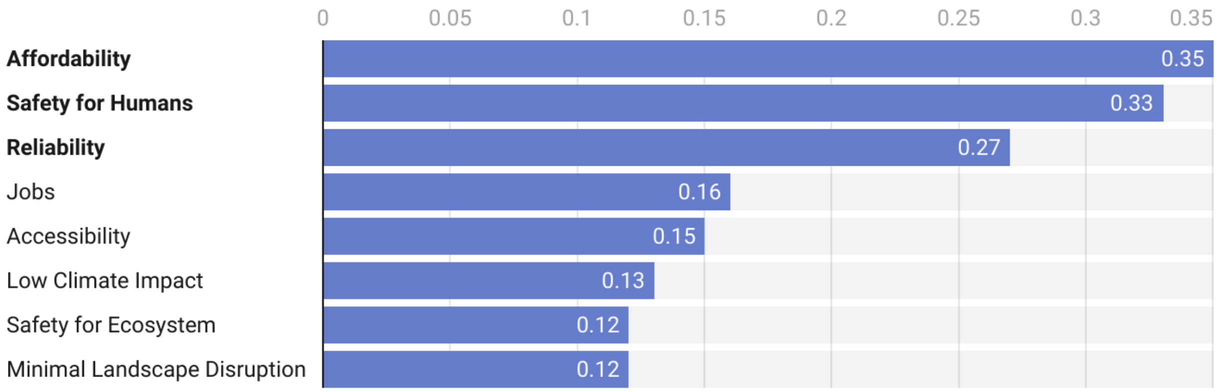
In Washington, public evaluations of energy systems are strongly shaped by affordability and safety for humans, which emerge as the two most salient attributes (see Figure 59). This reflects persistent concerns about household energy costs alongside high expectations for public and operational safety in a state with strong regulatory traditions. Reliability ranks next, underscoring the importance of dependable energy supply amid growing electrification and climate-related system stresses.

Mid-tier priorities include job creation and accessibility, indicating attention to economic opportunity and equitable energy access within the clean-energy transition. Environmental considerations—such as low climate impact, ecosystem safety, and minimal landscape disruption—are present but comparatively less salient, suggesting that environmental protection is largely assumed within Washington's policy context rather than actively contested. Overall, Washington's priority structure reflects a pragmatic, governance-oriented energy perspective that balances affordability, safety, and system reliability within an established climate policy framework.

Figure 59

Public Priorities in Energy Systems in Washington

Measured using a salience index—of eight attributes Americans use when evaluating any energy source.



Salience was calculated using Sutrop's (2001) index, S=F/(N×mP), where F is the frequency of selection of attribute, N is the total number of respondents in the attribute ranking task (179), 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).

Created with Datawrapper

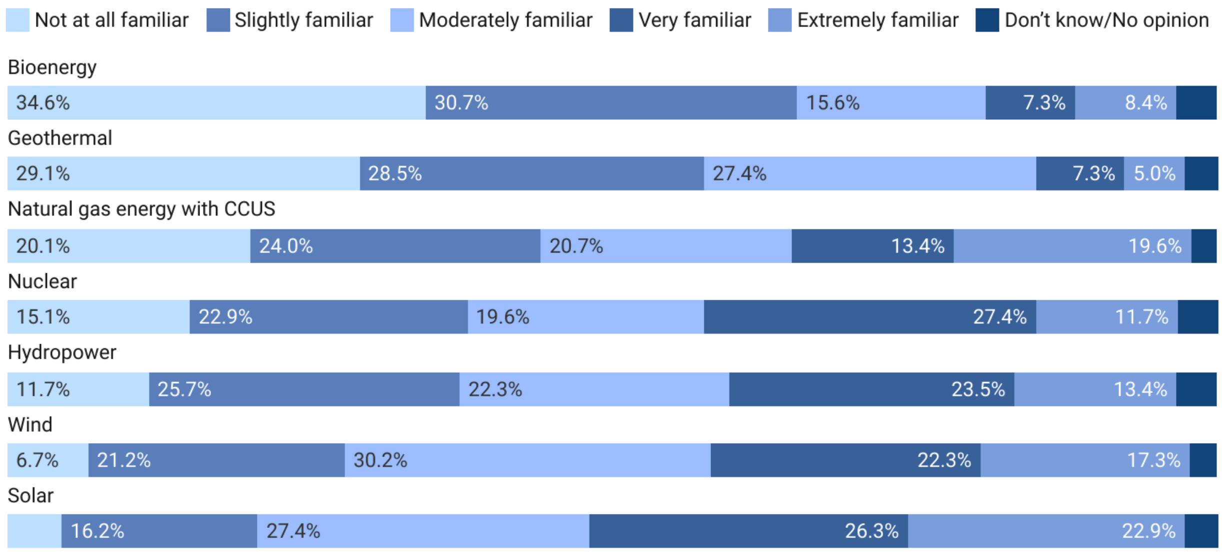
7.14.2. Familiarity with Geothermal Systems

In Washington, familiarity with clean energy technologies is generally high, reflecting long-standing public engagement with energy and climate policy (see Figure 60). Solar, hydropower, and wind exhibit the highest levels of familiarity, with large shares of respondents reporting moderate to very high awareness, consistent with their visibility in the state's electricity mix and policy discourse. Nuclear energy also shows substantial familiarity, reflecting its established presence in the regional energy system.

Geothermal familiarity is moderate relative to other clean energy sources. While most respondents report being slightly to moderately familiar with geothermal, fewer indicate very high familiarity compared to solar, wind, or hydropower. This suggests broad awareness of geothermal as a concept, but more limited exposure to specific applications or projects. Bioenergy and natural gas with CCUS display comparatively lower familiarity, indicating more limited public engagement with these technologies.

Figure 60

Self-Reported Familiarity with Clean Energy Sources in Washington



Familiarity was measured using a 5-point scale ranging from "Not at all familiar" to "Extremely familiar," with an additional "Don't know/No opinion" option. Results reflect responses from residents of Washington in the 2025 GR Geothermal Perception Study (n = 179). Percentages may not sum to 100% due to rounding.

Created with Datawrapper

7.14.3. Acceptance Levels for Geothermal Systems

In Washington, social acceptance of geothermal systems is moderate to moderately high across all three system types, reflecting the state's strong climate policy orientation and engaged public (see Figure 61). Hydrothermal geothermal records the highest mean acceptance (3.39), followed by next-generation geothermal (3.30) and geoexchange systems (3.29). The relatively narrow spread across system types suggests broadly consistent support rather than sharp differentiation between technologies.

Hydrothermal systems likely benefit from their association with established geothermal development pathways and alignment with Washington's clean electricity goals. Geoexchange systems maintain comparable acceptance, reflecting their relevance to building-level decarbonization and efficiency. Slightly lower—but still positive—acceptance of next-generation geothermal indicates openness to emerging technologies, tempered by uncertainty around technical complexity and deployment readiness. Overall, acceptance patterns in Washington suggest cautious optimism grounded in policy trust, environmental commitment, and system reliability considerations.

Figure 61

Social Acceptance Levels for Geothermal Systems in Washington

Acceptance scores are based on a composite index combining favorability, comfort, and overall support. Each item was measured on a 1–5 scale. Results are based on regional survey responses (179) from residents of Washington (2025 GR Geothermal Perception Study)

7.14.4. Key Predictors of Acceptance

In Washington, acceptance of geothermal systems reflects a socially embedded and experience-oriented evaluation structure, consistent with the state's strong policy leadership, high public engagement with energy issues, and mature clean energy discourse.

Geoexchange systems exhibit a socially anchored acceptance profile:

- **Familiarity and Social Influence (Important People)** are the strongest predictors of acceptance, alongside significant effects of **Hedonic appeal** and **Perceived Fairness**, indicating that lived experience, peer endorsement, and procedural trust are central.
- **Cost concerns** negatively influence acceptance, while perceived benefits and risk play a secondary role, suggesting evaluations shaped by practical affordability within a socially informed context.

Hydrothermal systems show a highly socialized and familiarity-driven pattern:

- **Familiarity** is the dominant driver, followed closely by **Social Influence** and **Hedonic perceptions**, highlighting the importance of experiential understanding and community validation.
- **Cost sensitivity** negatively affects acceptance, while benefits, risk, and fairness are less salient.

Next-generation geothermal systems reflect a trust- and experience-led pathway:

- **Familiarity, Social Influence, Social Responsibility, and Hedonic appeal** all significantly shape acceptance, indicating openness to innovation when supported by social legitimacy and perceived societal value.

- **Cost concerns** again reduce acceptance, while perceived benefits and risk remain non-significant.

Overall, geothermal acceptance in Washington is strongly shaped by **familiarity, social context, and experiential factors**, with cost acting as a consistent constraint. Compared to more exploratory states, Washington exhibits a more mature, socially embedded evaluation structure across geothermal technologies.

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