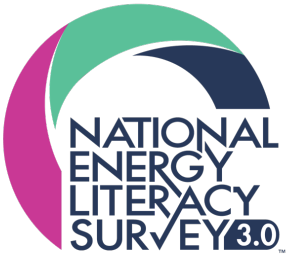

NATIONAL ENERGY LITERACY AMONG HIGH SCHOOL SENIORS AND RECENT GRADUATES

March 2026

OUR HISTORY

The National Energy Foundation (NEF) has empowered millions of students and families to make wise energy choices for five decades through its nonprofit mission to cultivate and promote an energy literate society. A community of volunteer classroom teachers and staff educators brings unique educational integrity to NEF's K - 12 energy education programs, including the nationally recognized, award-winning program Think! Energy. Energy utilities and organizations partner with NEF to address critical energy topics such as efficiency, safety, transportation and workforce development. NEF recognizes the importance of education in making informed energy decisions.

Energy from natural resources impacts our economy, our national security, the environment, and our quality of life. Access to energy knowledge allows students from any background and circumstance to be empowered in personal energy decisions, as well as local and national energy discussions. Energy education in schools is an effective way to deliver important messages to students, families and communities on a local and national level.

As NEF continues to grow our national presence, we are committed to representing the communities in which we serve and the classroom educators who make our work possible. Each year, NEF reaches communities across the country with a diverse makeup of teachers, students and families. Achieving our mission to cultivate and promote an energy literate society requires our teams to stay current with critical energy topics, maintain educational integrity, and understand the behaviors and attitudes of students toward energy.

We would like to extend our sincere gratitude to Cicero for their invaluable partnership on this project. Their expertise was instrumental in managing the survey design, data collection, and comprehensive analysis. We appreciate the high-quality insights they provided, which were essential to the success of this initiative.

Abstract

In 2017, the National Energy Foundation conducted a national survey to assess the energy literacy of U.S. high school seniors and recent graduates. The study, which included a demographically diverse sample, established a benchmark for understanding energy literacy across five core energy domains. A follow-up study was conducted in 2022 using the same methodology to enable longitudinal comparison. Results from the second wave revealed a statistically significant decline in energy literacy, coinciding with widespread educational disruption during the COVID-19 pandemic. In 2025, the National Energy Foundation commissioned a third national wave of the study to evaluate whether energy literacy has recovered as learning environments stabilize. This wave surveyed a nationally representative sample of high school seniors and recent graduates using a consistent assessment framework. Findings illustrate that energy literacy has rebounded meaningfully since 2022, indicating recovery from pandemic-era disruption. However, overall literacy remains below 2017 levels. In addition, recovery is uneven, with students from lower-income households continuing to lag their peers. Shifts in student engagement patterns further suggest that while concern and confidence around energy issues remain high, depth of understanding and follow-through are inconsistent. These results highlight both progress and persistent challenges, reinforcing the need for sustained and equitable energy education initiatives.

Macro Exogenous Context Shaping Energy Literacy

The 2025 wave of the National Energy Foundation's Energy Literacy Study takes place amid a set of broader forces that shape how students encounter, interpret, and engage with energy. These forces operate largely outside formal curricula, yet they meaningfully influence attention, relevance, and opportunities for learning. Understanding this context is essential for interpreting trends in energy literacy and for distinguishing temporary disruption from longer-term structural challenges.

COVID-Era Disruption and Educational Recovery

One of the most consequential forces shaping recent cohorts of students has been the COVID-19 pandemic. Prolonged school closures, rapid shifts to remote instruction, and disruptions to instructional continuity affected nearly every aspect of secondary education. National research has documented learning loss across multiple subjects, with disproportionate impacts on students from lower-income households and those with less educational support outside the classroom.[1234]

The 2022 wave of this study captured students during a period of acute disruption, when instructional routines were still unsettled and academic recovery had not yet begun in earnest. The 2025 wave reflects a different moment. Schools have largely returned to in-person instruction; instructional time has stabilized, and students have had additional exposure to core academic content. The rebound observed in energy literacy aligns with broader evidence that students are regaining ground as learning environments normalize.[567] At the same time, disparate gains mirror those seen across the education system more broadly, suggesting structural inequities continue to shape outcomes.[8]

Rising Visibility of Energy Through Artificial Intelligence and Technology

Since 2022, rapid growth in artificial intelligence and data-intensive technologies has increased public attention to electricity demand, grid capacity, and energy infrastructure.[9] Unlike many traditional energy topics, these issues have entered mainstream

discourse through news coverage, social media, and everyday technology use. For students who are digital natives, energy is increasingly experienced not as an abstract system, but as a prerequisite for the tools, platforms, and services they rely on daily.

Survey results indicate that students demonstrate relatively strong awareness that increased use of artificial intelligence and digital technologies drives higher electricity demand. This awareness highlights the role of relevance and immediacy in shaping understanding. It also suggests opportunities for educators to connect foundational energy concepts, such as generation, transmission, and tradeoffs, to contemporary technologies students already value and use.

Broader Energy System Transitions

Students surveyed in 2025 are coming of age during a period of significant energy system transition. Electrification of transportation and buildings, decarbonization efforts, and large-scale infrastructure investment are reshaping how energy is produced, delivered, and consumed. These shifts increase reliance on the electric grid and elevate the importance of understanding energy sources, system reliability, and the economic and environmental tradeoffs associated with different pathways.

Together, these macro-level forces create both challenges and opportunities for energy literacy. They raise the stakes for informed understanding, while also offering new entry points for engagement. As this study shows, improvements in energy literacy are possible as conditions stabilize, but the broader context continues to shape who benefits from recovery and how deeply understanding is developed.

Why Energy Literacy Matters Today

Energy literacy remains a foundational requirement for informed participation in modern society. Energy underpins nearly every aspect of daily life, from transportation and housing to communication, education, and economic activity. As energy systems grow more complex and interconnected, the ability to understand basic energy concepts, evaluate tradeoffs, and make informed decisions becomes increasingly important for individuals and communities alike.

High school seniors and recent graduates occupy a pivotal segment in this landscape. As they transition into adulthood, they begin to take on greater responsibility for their own energy use, financial decisions, and civic participation. Many are becoming first-time voters, entering the workforce, or pursuing postsecondary education, all while navigating an energy system undergoing rapid change. Decisions related to energy consumption, technology adoption, and public policy increasingly require a baseline level of energy literacy to be made thoughtfully and responsibly.

Events of the past several years have added further complexity to this transition. The COVID-19 pandemic disrupted formal education, informal learning, and daily routines for students across the country. Instructor continuity was interrupted, academic priorities were reshuffled, and exposure to non-core subjects was often reduced. The 2022 wave of the National Energy Foundation's Energy Literacy Study documented the effects of this disruption, revealing a marked decline in energy literacy among high school seniors and recent graduates.

The 2025 wave captures students at a different point in time. Learning environments have largely stabilized, and students have had additional opportunities to re-engage with academic content.[10] This moment offers a critical opportunity to assess not only whether energy literacy is improving, but how recovery is distributed across student populations. National averages can obscure important differences in access, reinforcement, and engagement that shape long-term outcomes.

This paper builds on the National Energy Foundation's longitudinal framework to examine changes in energy literacy from 2017 through 2025. Moving beyond headline trends, it seeks to identify patterns of recovery, persistent gaps, and evolving student mindsets. Understanding these dynamics is essential for informing education strategies that support not only short-term rebound, but durable and equitable energy literacy as students enter adulthood.

Study Design and Longitudinal Framework

The 2025 National Energy Foundation Energy Literacy Study was designed to maintain continuity with prior waves conducted in 2017 and 2022. This longitudinal approach allows for reliable comparison over time and supports interpretation of observed changes in energy literacy such as either temporary disruption or longer-term structural trends. Consistency in measurement, sampling, and analytical methods is central to this framework.

As with previous iterations, the study focused on high school seniors and recent graduates, a population at a critical transition point between adolescence and adulthood. This cohort is uniquely positioned to reflect both the cumulative effects of K–12 education and the emerging responsibilities associated with independent energy use, financial decision-making, and civic participation.

Core Measurement Framework

Energy literacy was assessed across five core domains that reflect widely accepted principles of energy education and align with guidance from the U.S. Department of Energy.[11]

Each domain was measured using knowledge-based questions designed to test conceptual understanding rather than rote memorization. To preserve longitudinal integrity, the core structure of the assessment remained consistent across all three waves. Where updates were made, they were limited and intentional, reflecting evolving energy contexts while maintaining comparability. Table 1 summarizes the key themes and concepts assessed within each core energy domain.

Core Energy Topic	Themes
Basic Energy Concepts	• General definition of energy • Laws of energy • Energy transformation
Energy Use	• Consumer energy usage • General energy consumption trends • Health and safety factors
Energy Tradeoffs and Implications	• Quality of life • Energy resource limitations • Energy development impacts/constraints
Energy Efficiency and Conservation	• Impact of technology on energy • Impact of behavior
Sources & Types of Energy	• Energy sources • Renewable versus nonrenewable • Types and forms of energy

Table 1: Core Energy Topics

Composite Scoring and Segmentation

An overall energy literacy score was calculated for each participant as an average of domain-level scores, with equal weighting applied across the five domains. This approach ensures that no single topic disproportionately influences the overall score and allows for meaningful comparison across time and subpopulations.

In addition to knowledge-based measures, the study included attitudinal and behavioral questions that enable segmentation of students into distinct engagement profiles. These segments, originally developed in 2017, have been preserved across waves to track shifts in how students perceive, prioritize, and act on energy-related issues over time.

Sample Design and Representation

The 2025 study surveyed a nationally representative sample of high school seniors and recent graduates. Participants were recruited through a consumer panel provider using quotas to ensure balanced representation across key demographic characteristics, including age, gender, household income, geographic region, and educational status. This approach supports generalizability of findings to the broader U.S. student population.

By maintaining methodological consistency across three national waves, the National Energy Foundation's Energy Literacy Study provides a robust foundation for examining trends in knowledge, behavior, and engagement. This longitudinal design enables the analysis that follows, distinguishing signs of recovery from persistent gaps and identifying where targeted educational efforts may have the greatest impact.

The State of Energy Literacy in 2025

At the national level, results from the 2025 Energy Literacy Study indicate a meaningful increase in energy literacy among high school seniors and recent graduates compared with 2022. Average scores improved across most core energy domains, signaling a recovery from the decline observed during the COVID-era disruption. These gains suggest the reduction in energy literacy documented in 2022 was not permanent and that students are re-engaging with energy concepts as instructional environments stabilize. Table 2 shows the change in composite energy literacy scores across topics between 2017 and 2025.

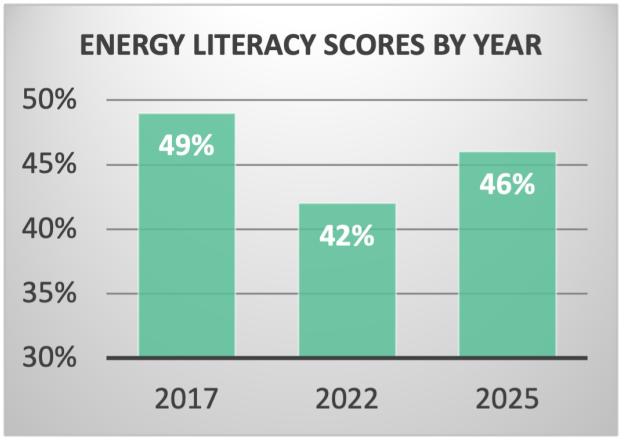

Table 2: Energy Literacy Scores by Year

Despite this improvement, overall energy literacy in 2025 remains below the benchmark established in 2017. While progress is evident, recovery is incomplete, and national averages mask important variation in how students are regaining knowledge and skills. The longitudinal comparison underscores that returning to pre-pandemic conditions alone is not sufficient to fully restore energy literacy to earlier levels.

Domain-Level Patterns

Improvements since 2022 are observed across most of the five core energy domains. Reported energy-related behaviors and understanding of efficiency and conservation have returned to, or exceeded, pre-pandemic levels. These areas are often reinforced through everyday experience and household practices, which may help explain their relatively strong recovery.

Other domains, including energy use and energy tradeoffs, show more modest gains. These topics tend to require structured instruction and contextual understanding that may not be readily reinforced outside the classroom. The uneven pace of recovery across domains highlights the importance of comprehensive energy education that extends beyond behavioral messaging to include system-level understanding. Table 3 shows the change in energy literacy categories between 2017 and 2025.

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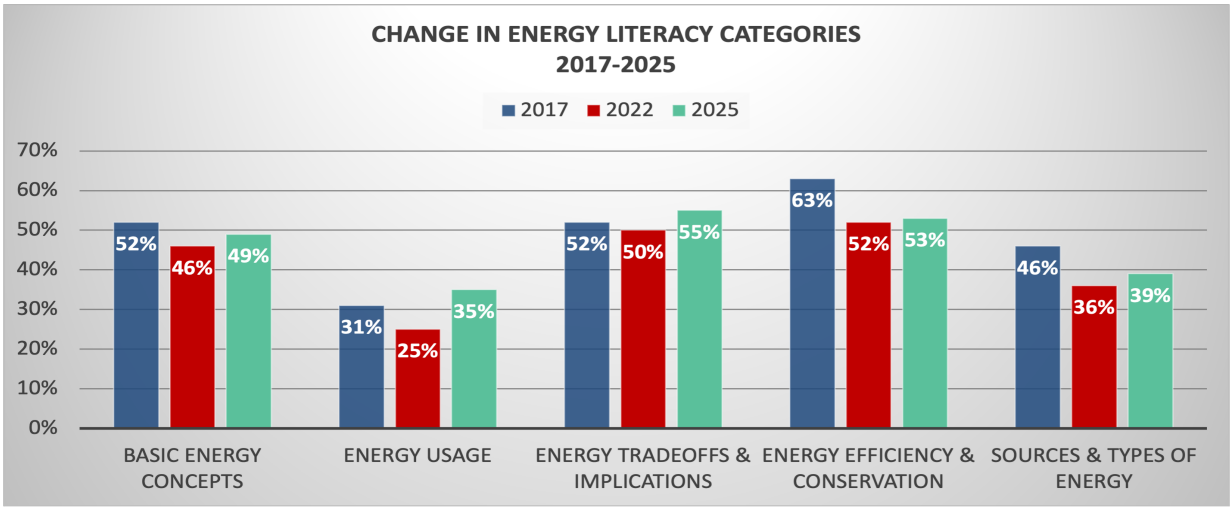

Table 3: Changes in Energy Literacy Categories

Interpreting the Rebound

The rebound observed in 2025 should be understood in the context of broader educational recovery. As students regain instructional time, routine, and exposure to academic content, improvements in energy literacy mirror patterns seen in other subject areas. At the same time, the persistence of a gap relative to 2017 suggests that some effects of disruption may last, particularly for students with less support.

Taken together, these findings position 2025 as a transition point rather than an endpoint. Energy literacy is improving, but the trajectory remains uneven and incomplete. The sections that follow examine how recovery differs across student populations and how shifts in engagement may shape future outcomes.

Uneven Recovery: Demographic Differences in Energy Literacy

While benchmarks show improvement in energy literacy between 2022 and 2025, recovery is not evenly distributed across student populations. Demographic analysis reveals persistent gaps that predate the COVID-19 pandemic and, in several cases, shows limited evidence of narrowing during the recovery period. These patterns suggest energy literacy is shaped not only by instructional exposure, but also by broader structural factors that influence access, stability, and reinforcement beyond the classroom.

Household Income

Household income continues to be one of the strongest predictors of energy literacy in 2025. Students from lower-income households score lower on overall energy literacy compared with peers from higher-income households. When examined longitudinally, these students also demonstrate weaker gains since 2022, indicating recovery has been slower and less complete.

In several core domains, improvement among lower-income students has been modest even as national scores rise. This pattern mirrors broader educational recovery trends and suggests that income functions as a structural constraint on learning. Differences in access to educational resources, stability of learning environments, and opportunities for reinforcement outside of school may contribute to these gaps.

Additional Demographic Patterns

Income is not the only dimension along which recovery varies. Differences in energy literacy are also observed across parental education levels, geography, gender, and high school status. Students whose parents have higher levels of educational attainment continue to demonstrate higher energy literacy scores, consistent with patterns seen in both prior waves and in educational outcomes more broadly.

Gender remains a statistically significant factor in 2025. Male students score modestly higher on average than female students on the composite energy literacy measure. While the magnitude of this difference is smaller than gaps associated with income or parent education, its persistence suggests that differences in exposure, confidence, or engagement with energy-related topics may continue to shape outcomes. These findings point to the importance of considering how energy education and outreach resonate across student groups, particularly as the energy sector seeks to broaden participation and diversify future talent pathways.

High school status also remains a meaningful differentiator. Current high school seniors score higher on average than recent graduates, indicating stronger energy literacy among students who are still actively engaged in secondary education. This pattern suggests recent classroom exposure to academic content may reinforce energy concepts more effectively before graduation. It may also reflect the role of structured learning environments in supporting knowledge retention, which can diminish as students transition out of high school and into more varied postsecondary or workforce pathways.

Geographic differences persist as well. Students in urban areas tend to score higher than those in suburban or rural settings, reflecting underlying socioeconomic and institutional differences. While these gaps are not unique to energy literacy, their persistence underscores the importance of understanding how context shapes learning opportunities.

Recovery Is Not One-Dimensional

Importantly, recovery does not follow a single pattern across outcomes. Some students demonstrate gains in reported energy-related behaviors without corresponding gains in knowledge. Others show improved understanding of energy concepts without sustained changes in behavior. These divergent patterns highlight the limits of relying on a single metric to assess recovery and reinforce the value of examining knowledge, attitudes, and behaviors together.

National averages can suggest progress, but they can also obscure the experiences of students who are not fully recovering. The findings presented here indicate that while energy literacy is rebounding overall, structural inequities continue to shape who benefits from that rebound. Addressing these gaps will require targeted and differentiated approaches that extend beyond broad-based recovery efforts.

Shifting Student Segments: How Engagement with Energy Is Changing

In addition to measuring energy literacy, the 2025 study examines how students engage with energy-related issues through a segmentation framework based on attitudes and behaviors. Building on the approach established in 2017 and refined in 2022, this framework uses responses to attitudinal and behavioral questions to identify broad patterns in how students think about, prioritize, and act on energy issues. Maintaining consistent segment definitions across waves allows for meaningful comparisons over time and helps illuminate how engagement is evolving.

Using factor and cluster analyses, students were categorized into four distinct segments, Agents of Change, Mindful Wanderers, Big Talkers, and Indifferent Onlookers. Each segment reflects a different combination of concern, confidence, knowledge, and willingness to act. Together, these personas provide insight into how students translate awareness of energy issues into action or fail to do so.

Agent of Change

In 2025, Agents of Change represent 24% of students. These students place a higher priority on energy than their peers and tend to be engaged across multiple dimensions of energy-related issues. They view energy as an important component of national policy and environmental stewardship, and they are more likely to see personal responsibility as part of making a difference. Agents of Change continue to demonstrate stronger knowledge of energy sources, efficiency, and conservation, and they are more likely than other groups to align their behaviors with their stated values. Compared with earlier waves, the size of this segment has declined modestly, suggesting fewer students are sustaining high levels of informed, action-oriented engagement.

Mindful Wanderer

Mindful Wanderers account for 25% of students in 2025. These students recognize that energy issues matter, but they often express uncertainty about

how to get involved or whether their individual actions can meaningfully contribute to broader outcomes. They tend to shy away from policy engagement or activism, yet they are inclined to adopt low-effort, everyday behaviors such as turning off lights or conserving energy when it is convenient. This segment remains characterized by concern paired with hesitation, reflecting an awareness of the issue without a strong sense of agency or direction.

Big Talker

At 19% of students, Big Talkers remain a prominent segment in 2025, though smaller than in 2022. Big Talkers generally agree that energy is important and are confident expressing opinions on energy-related topics. However, they are less willing to change personal behaviors when doing so affects comfort, convenience, or routine. While this group often signals engagement through discussion and expressed concern, their knowledge levels and behavioral follow-through tend to lag their confidence. The growth of this segment over the long term underscores a pattern in which energy is increasingly talked about, even when consistent action does not follow.

Indifferent Onlooker

Indifferent Onlookers make up 31% of students in 2025, representing the largest segment in this wave. Students in this group do not express strong opinions about energy issues and tend to approach energy-related topics with neutrality rather than enthusiasm. Their energy literacy scores fall below the overall average, and they are less likely to report energy-related behaviors or a sense of personal responsibility. The expansion of this segment suggests that, alongside more vocal forms of engagement, a substantial portion of students remains detached from energy issues altogether.

Table 4 presents the size of each segment in 2025.

Segment	Size (2025)
 **Agent of Change**	**24%** of students
 **Mindful Wanderer**	**25%** of Students
 **Big Talker**	**19%** of students
 **Indifferent Onlooker**	**31%** of students

Table 4: Student Segment by Size

Changes in Distribution of Segment Over Time

Between 2017 and 2025, the distribution of students across segments has shifted in meaningful ways. The proportion of Agents of Change has declined relative to earlier waves, while the presence of segments characterized by weaker follow-through or lower engagement has grown. Energy remains a salient topic for many students, but the dominant forms of engagement appear to be changing.

Big Talkers and Indifferent Onlookers together now account for half of the student population. This shift suggests that while outright disengagement is not the only trend, deeper, action-oriented engagement is becoming less common. Students are increasingly polarized between those who express confidence

without consistent behavior change and those who remain largely neutral on energy issues.

Implications of Segment Shifts

Segment-analysis highlights stark contrasts in energy literacy and behavior. Agents of Change lead in both knowledge and action, while Big Talkers exhibit high confidence but lower knowledge competencies and rates of sustained behavior change.

As the student population tilts toward segments marked by confidence without consistent action, there is a growing risk that perceived understanding will outpace actual competence. This pattern has implications for both individual energy use and future civic and policy engagement. Bridging the divide between awareness and informed action remains a central challenge for energy education.

Tracking evolving engagement patterns is vital for interpreting literacy trends and designing interventions that move students from passive or performative engagement to informed participation.

How Students Learn About Energy Today

Students obtain energy literacy through both formal educational and encounters in their daily lives. Understanding these information sources provides context for interpreting literacy outcomes and engagement patterns observed in the 2025 study. Table 5 identifies students' first choice for energy information, while Table 6 illustrates their most trusted sources.

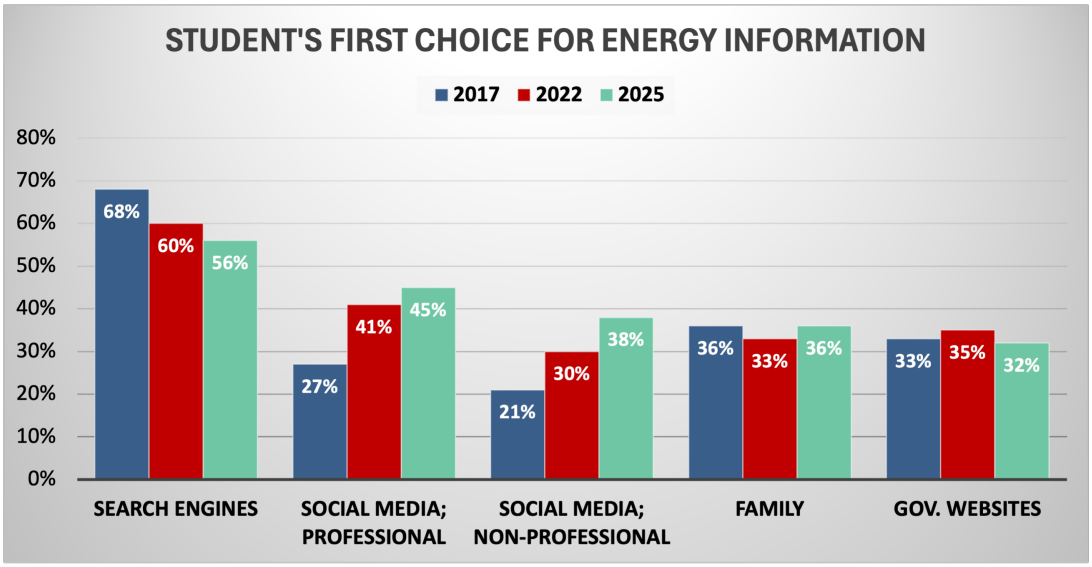

Table 5: Student's First Choice for Energy Information

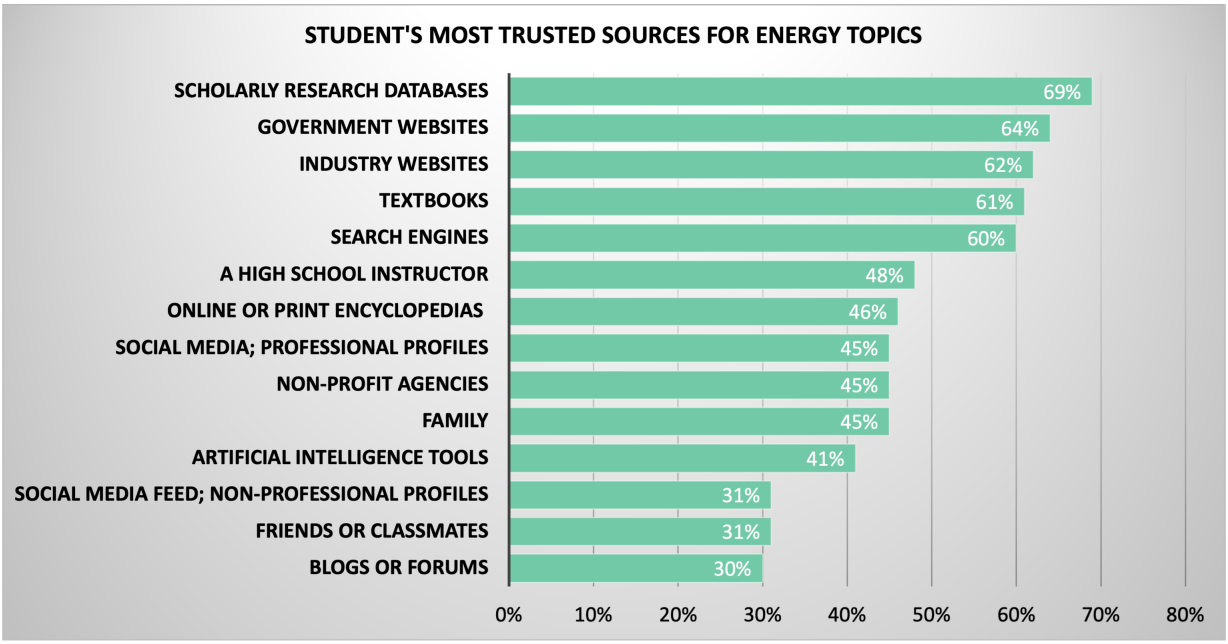

Table 6: Student's Most Trusted Sources for Energy Topics

Survey results indicate that students most often turn first to digital and online sources when seeking information about energy. Search engines, video platforms, and social media serve as primary entry points, reflecting broader shifts in how young people access information. Compared with earlier waves, reliance on social media platforms has increased, reinforcing the role of short-form and algorithm-driven content in shaping initial exposure to energy-related topics.

At the same time, students report higher levels of trust in more traditional and authoritative sources, including educators, textbooks, and established institutions, even though they engage with these sources less frequently. This mismatch between trust and use presents a challenge for energy education. Information that students encounter most often is not always the information they consider most reliable, and trusted sources may struggle to compete for attention in crowded digital environments.

Family members and peers also play a role in shaping understanding, though conversations about energy are often informal and inconsistent. For some students, particularly those with family members working in energy-related fields, exposure extends beyond the classroom. For others, energy remains a peripheral topic, encountered only when directly connected to technology use or personal convenience.

These patterns highlight the importance of meeting students where they are while reinforcing the credibility and accessibility of high-quality information. Improving energy literacy will require not only strong educational content, but also effective delivery through channels that align with students' media habits and engagement styles. The implications of these findings for education and outreach are explored in the section that follows.

Implications and Action Agenda: From Rebound to Resilience

Findings from the 2025 Energy Literacy Study indicate that recovery from the COVID-era disruption is underway, but incomplete. National energy literacy scores have improved since 2022, demonstrating that students are re-engaging with energy concepts as learning environments stabilize. At the same time, persistent gaps and shifting engagement patterns underscore that recovery alone is not sufficient to ensure durable and equitable energy literacy.

Recovery Creates Momentum, Not Equity

The rebound observed in 2025 reflects progress, but it has not been shared evenly. Students from lower-income households continue to trail their peers, and in several cases have experienced weaker gains since 2022. These patterns mirror broader educational recovery trends and suggest that without targeted support, existing disparities may persist or widen over time. Addressing equity in energy literacy will require approaches that account for differences in access, stability, and reinforcement beyond the classroom.

Engagement Is Changing Faster Than Understanding

Shifts in student segmentation reveal that energy remains salient for many students, but the nature of engagement is evolving. Growth in segments characterized by confidence without behavior consistency highlights a disconnect between concern and action. This pattern suggests that surface-level engagement may increasingly outpace deep understanding. Educational strategies that convert interest and confidence into competence and sustained behavior will be critical.

Information Channels Matter

Students' reliance on digital and social sources for energy information, combined with greater trust in less frequently used authoritative sources, presents both challenges and opportunities. Improving energy literacy will require aligning credible content with the channels students use most, while reinforcing skills such as evaluating sources and assessing the reliability of information. Attention to both content and delivery is essential.

From Rebound to Resilience

Taken together, these findings position 2025 as a transition point. Energy literacy is improving, but structural and behavioral challenges remain. Moving from rebound to resilience will require sustained, differentiated efforts that support students across diverse contexts and engagement styles. The National Energy Foundation's longitudinal framework provides a foundation for tracking not only whether energy literacy improves over time, but whether improvements are equitable, durable, and translated into informed action as students enter adulthood.

Energy Workforce Development

Although the survey was not designed as a workforce development instrument, the findings have meaningful implications for the energy industry's ability to attract and prepare the next

generation of workers. High school seniors and recent graduates are entering adulthood during a period of rapid energy system change, with growing electrification, infrastructure investment, and rising electricity demand driven in part by artificial intelligence and digital technologies. The rebound in energy literacy observed in 2025 suggests that the COVID-era decline did not permanently weaken the talent pipeline. At the same time, overall literacy remains below the 2017 benchmark, and recovery is uneven across income and educational backgrounds. These gaps matter for workforce readiness, as foundational understanding of energy systems, tradeoffs, and safety underpins both technical roles and the broader range of operational, administrative, and policy-facing jobs across the energy sector.

Attitudinal findings further highlight both opportunity and risk for workforce development. Many students express interest in energy issues and confidence in discussing them, yet segment shifts toward profiles characterized by confidence without consistent follow-through suggest that awareness does not always translate into sustained engagement or skill-building. This dynamic points to a potential disconnect between interest in energy as an abstract issue and understanding of energy as a career pathway. For industry partners, these results underscore the value of early exposure, clearer signaling of career relevance, and partnerships that connect classroom learning to real-world applications. Strengthening energy literacy in secondary education is not only a civic or consumer outcome, but a strategic investment in the future workforce, helping ensure that interest in energy is converted into competence, capability, and long-term participation in the industry. These patterns have implications not only for education and civic outcomes, but also for the future energy workforce.

Conclusions and Recommendations

The 2025 National Energy Foundation Energy Literacy Study marks an important inflection point in the longitudinal record of energy literacy among high school seniors and recent graduates. Following the pronounced decline documented in 2022, energy literacy has rebounded meaningfully as educational environments have stabilized. This recovery demonstrates that pandemic-era disruption did not permanently erode students' capacity to engage with energy concepts. When instructional continuity returns, learning can and does recover.

At the same time, the findings make clear that recovery is incomplete. National energy literacy levels in 2025 remain below the 2017 benchmark, indicating that time alone is insufficient to fully restore prior levels of understanding. Moreover, recovery has been uneven. Students from lower-income households and those with fewer educational supports continue to lag their peers, reflecting broader structural inequities in education that extend beyond energy-specific content.

Engagement with energy remains high, but its form is evolving. Many students express confidence, concern, and strong opinions about energy issues, yet these attitudes are not consistently matched by depth of understanding or sustained behavior. The growth of segments characterized by confidence without follow-through suggests a growing gap between perceived and actual competence. As energy systems become more complex and more central to daily life, this gap carries real consequences for personal decision-making and civic participation.

In summary, the 2025 findings position energy literacy at a crossroads. The rebound from disruption offers momentum, but without intentional action, persistent gaps and shallow engagement risk becoming entrenched. Strengthening energy literacy now requires moving beyond recovery toward resilience.

Recommendations

The National Energy Foundation identifies the following priority actions to support durable and equitable improvements in energy literacy.

1. Shift from Recovery to Reinforcement

As schools stabilize, energy education should transition from restoring lost ground to reinforcing foundational understanding. This includes revisiting core concepts such as energy use, tradeoffs, and systems thinking that may not fully recover without deliberate instructional emphasis. Reinforcement should be sustained over time rather than treated as a short-term remediation effort.

2. Target Support for Persistently Underserved Students

Income-based and contextual disparities remain one of the most consistent findings across all three waves of the study. Improving national averages without addressing these gaps risks leaving large segments of students behind. Energy education initiatives should prioritize accessibility, relevance, and reinforcement for students from lower-income households and communities with fewer educational resources.

3. Convert Confidence into Competence

The growth of engagement styles marked by strong opinions, but weaker understanding highlights a central challenge for energy education. Programs should be designed to translate interest and confidence into deeper knowledge and consistent behavior. This includes emphasizing systems-level understanding, real-world tradeoffs, and the practical implications of energy decisions.

4. Connect Energy Concepts to Contemporary Technology

Students increasingly encounter energy through the technologies they use daily, including artificial intelligence, digital infrastructure, and connected devices. These touchpoints offer powerful entry points for learning. Energy education should explicitly connect foundational concepts to modern technologies, helping students understand how energy production, reliability, and tradeoffs underpin the tools they value.

5. Sustain Longitudinal Measurement and Learning

The ability to distinguish disruption, recovery, and structural challenges depends on consistent measurement over time. Continued longitudinal study is essential for understanding which interventions work, for whom, and under what conditions. Ongoing data collection allows energy education efforts to adapt as student contexts and energy systems evolve.

Looking Ahead

The 2025 study demonstrates that progress in energy literacy is possible but not guaranteed. Recovery creates opportunity, not equity by default. Strengthening energy literacy for future generations will require sustained commitment, targeted strategies, and alignment with how students live, learn, and engage with energy in an increasingly complex world. By focusing on resilience rather than rebound alone, educators and stakeholders can help ensure that today's students enter adulthood prepared to make informed energy decisions as consumers, citizens, and leaders.

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