Standards & Engagement

Consumer Perceptions on Sustainability & Energy Transition

UL STANDARDS & ENGAGEMENT INSIGHTS AND POLICY ANALYSIS

With the effects of climate change, from extreme weather events to sea-level rise, being felt across the nation, issues around sustainability, climate change adaptation, and harnessing renewable energy resources have surged in prominence — capturing the attention of consumers, businesses, and world leaders alike.

This multifaceted issue impacts the environmental, social, and economic arenas and is not merely a trend but a pivotal shift toward responsible consumption and environmental stewardship on a global scale.

Surveys conducted by UL Standards & Engagement found that U.S. consumers are concerned about environmental issues like resource waste and pollution, prioritizing recycling efforts and clean water. Consumers want to see industry and advocacy groups champion sustainability efforts and feel these groups should be playing a larger role in leading the clean energy transition. Many consumers are skeptical of "green marketing" efforts from brands and want to see demonstrable and transparent sustainability actions.

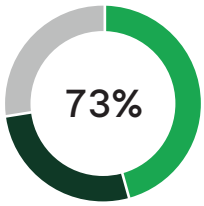
Consumers are motivated to take energy-saving steps to lower utility bills — where they can see the results of their decisions in monthly receipts. Solar energy was an area of particular interest to respondents and has enjoyed substantial footprint growth. In 2023, solar power accounted for 49% of all new energy generation capacity, followed by wind, accounting for 34%. Solar capacity has increased dramatically, with a 51% increase between 2022 and 2023.

Even with recycling, which topped the list of consumers' sustainability concerns, prevalent confusion is leading to unintended consequences. Nowhere in the survey results was that confusion clearer than with battery circularity. A significant number of consumers report disposing of lithium-ion batteries in the garbage or mixing them in with other recycling. This behavior extends beyond U.S. borders and has resulted in fires at waste management facilities across the globe.

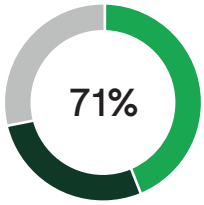
These disparities in opinion highlight the necessity for a comprehensive understanding of how sustainability is perceived and enacted by consumers. New breakthroughs in the space will be hindered by consumer confusion and even resistance without some change. Establishing clear standards around these developing environmental and energy priorities will be critical in achieving a more sustainable world.

TOP 5

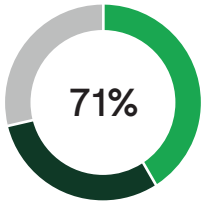
Important Sustainability Areas to Consumers



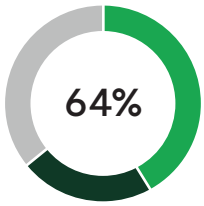
Reducing pollution
- 46%
- 27%



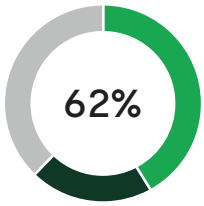
Improving ocean health and water quality
- 44%
- 27%



Recycling
- 41%
- 30%



Reducing climate change impacts on the wellbeing and safety of people
- 42%
- 22%



Increasing resilience to climate change impacts
- 42%
- 20%

One of several important concerns A top concern

For 40% of Americans, it is important that the products they buy do not harm the environment.

Who Should Lead the Sustainability Charge?

While a strong majority of Americans express environmental concern, there is still a divide between concern and action. The preference is for change to be driven by organizations with influence.

Waste and harm are top of mind:

Nearly half of U.S. consumers are concerned about wasting the resources of the planet (46%), with the sentiment particularly strong among younger respondents aged 18-34 (50%), those with college degrees (54%), and those who live in urban areas (50%). Consumers identify three key areas of concern for themselves personally: reducing pollution (73%), recycling (71%), and improving ocean health and water quality (71%).

Desire for greater industry leadership on energy transition:

More than a quarter (26%) support fully transitioning the U.S. energy supply to renewables such as solar, wind, and hydrogen, and expect market leaders and government agencies to lead this shift. More than half (55%) look to government agencies such as the U.S. Environmental Protection Agency and Department of Energy to spearhead the transition, with similar expectations placed on the energy and utility (53%) and policymakers at the federal, state, and local levels (52%).

Green marketing skepticism:

Consumers are no longer satisfied with token environmental gestures from brands. Today's market demands transparency and demonstrably sustainable practices. This shift reflects a growing recognition of the urgency of climate action and a skepticism of "greenwashing" – marketing tactics that overstate a product's environmental benefits. While a significant portion (40%) prioritize buying eco-friendly products, skepticism about "green marketing" (only 29% trust it) and the low impact on buying habits (25%) suggest a desire for broader change.

Increasing the use of renewable and alternative energy sources such as solar or wind is a top concern (20%) or one of several important concerns (40%) for consumers.

Rising Tide of Conscious Energy Use

The push for cleaner energy sources is strong, with a majority of consumers saying that increasing the use of alternative energy sources is top of mind for them.

Consumers believe renewable energy will positively affect quality of life:

On average, 61% of respondents believe that the advancement of solar, wind, and hydrogen energy technologies will positively influence aspects of life. However, 32% express concerns that these renewable energy developments might compromise the reliability and resilience of the national electric grid. At the individual level, 75% of consumers say they actively monitor their home energy usage.

Solar is being adopted or seriously considered by many consumers:

More than one in ten (11%) U.S. homeowners have installed solar panels to generate electricity, and another 33% have seriously considered doing so. Among those who have installed or considered installing solar panels in the last year, 75% cite saving money on monthly energy bills as their primary motivation, followed by 63% who want to help the environment, and 50% who seek to benefit from tax credits and rebates.

Backup power needs are prompting consumer action:

Concerns about the impact of renewable energy developments on the reliability and resiliency of the energy grid, along with the increased frequency and intensity of weather events, may be contributing to energy insecurity among consumers. Nearly one-third (29%) of U.S. homeowners have seriously considered installing a battery-based energy storage system to provide backup power, and 9% have followed through in the past year.

Consumers are throwing old lithium-ion batteries in the trash (36%) or mixing them with other recyclables (30%), contributing to fires at waste management facilities.

Battery Circularity Key to Clean Energy Transition

Many Americans identify recycling as a top priority. Yet a critical awareness gap exists on how to safely and sustainably handle old lithium-ion batteries, and it is hindering the clean energy potential of this power source.

Small, convenient changes more likely to be adopted by consumers:

Survey respondents rated recycling as one of their top environmental concerns, with 30% calling it their top concern and 41% identifying it as one of several top concerns. While more than half (55%) have recycled plastics, glass, metal, or paper — typically via curbside collection — just one in five (20%) U.S. adults say they have recycled old batteries at a recycling center or other collection point.

Awareness and access key to battery circularity:

Limited public awareness and recycling options could derail circularity initiatives. While 62% know not to throw lithium-ion batteries in the trash, 46% didn't know they could be recycled. Younger consumers (18-27) are more likely to throw lithium-ion batteries in the trash (46%), with 54% of them unaware they could be recycled. While only 30% of consumers always recycle lithium-ion batteries, 83% are likely to recycle them in the future. However, only 48% are aware of a local collection point — leaving 35% who want to recycle lithium-ion batteries, but don't know where to bring them; 79% say more convenient drop-off locations may incentivize battery recycling.

Unsafe disposal of lithium-ion batteries poses risk:

On average, a third of consumers report unsafe behaviors with old lithium-ion batteries: 36% reported throwing them in the trash, and 30% mixed them with other recyclables. Despite these dangerous practices, 79% of U.S. adults are concerned about the fire, environmental, and health risks associated with improper battery disposal. This confusion helps explain frequent battery fires at waste management facilities, where improper disposal has been linked to an average of three lithium-ion battery fires per month between 2013 and 2020.

Circularity and Battery Recycling

Our circular economy and recycling standards provide companies with best practices for developing and producing products while eliminating waste, reusing materials, and lowering greenhouse gas emissions.

UL 1974, Evaluation for Repurposing or Remanufacturing Batteries, provides requirements for the sorting and grading processes involved in repurposing lithium-ion batteries from their original use, such as in EVs, to use in other applications, such as energy storage. A forthcoming standard, UL 3601, Circular Economy of Lithium-Ion Batteries, will equip manufacturers and recycling facilities to implement safe and sustainable practices throughout the entire lifecycle of a battery.

UL 110, Sustainability for Mobile Phones, a standard used by Apple, Samsung, and Google in the design, production, and end-of-life management of smartphones, helps reduce e-waste by establishing processes for repair, refurbishment, and take-back programs.

UL 3600, Measuring and Reporting Circular Economy Aspects of Products, Sites and Organizations, evaluates sustainability efforts at the site, product, and company level, and enables companies to report transparently on sustainability efforts without greenwashing.

Advancing Sustainability Through Standards

UL Standards & Engagement has nearly 1,000 standards that support sustainability efforts — from clean energy generation to sustainable manufacturing and recycling, to adapting homes, buildings, and utilities to a changing climate. See highlights across our sustainability portfolio below.

Clean and Renewable Energy

Our standards are helping guide the development of sustainable energy technology, as well as the systems necessary for safe distribution, transmission, and energy storage.

UL 3741, Photovoltaic Hazard Control, and UL 6142, Small Wind Turbine Systems, are among more than 20 UL standards that make wind and solar power safe and accessible for homes and communities.

UL 2580, Batteries for Use In Electric Vehicles, and UL 2849, Electrical Systems for e-Bikes, are among approximately 20 EV and e-mobility standards helping facilitate safer, cleaner transportation alternatives.

Our 17 recently updated standards for fuel-handling equipment are also helping facilitate a safe transition away from fossil fuel reliance in the U.S. and Canada through requirements that ensure existing pumps and tanks are compatible with renewable content in biofuels.

Climate Change Resilience in the Built Environment

Our standards for the built environment help communities adapt to future impacts of climate change such as extreme heat, increased severe weather events, and rising sea levels.

UL 1897, Uplift Tests for Roof Covering Systems, and UL 2218, Impact Resistance of Prepared Roof Covering Materials, are among several standards that help ensure household rooftops can resist uplift and damage caused by flying debris in heavy winds.

UL 263, Fire Test of Building Construction and Materials, is one of three UL standards referenced in the 2021 International Wildland-Urban Interface Code and State of California Building Code that help evaluate building materials in areas at risk for wildfire exposure.

In Canada, we recently updated 23 public infrastructure standards to help ensure buildings and infrastructure are resilient to the effects of intense and frequent extreme weather events.

UL Standards & Engagement

At-A-Glance: Consumer Environmental Concerns

UL Standards & Engagement found that while consumers are concerned about the state of the environment, most want to see industry and advocacy groups champion sustainability efforts.

U.S. consumers' top environmental concerns

Recycling | Reducing pollution | Improving ocean health & water quality

Consumers are looking for influential groups to spearhead the clean energy transition

55% look to government agencies

53% look to energy and utility companies

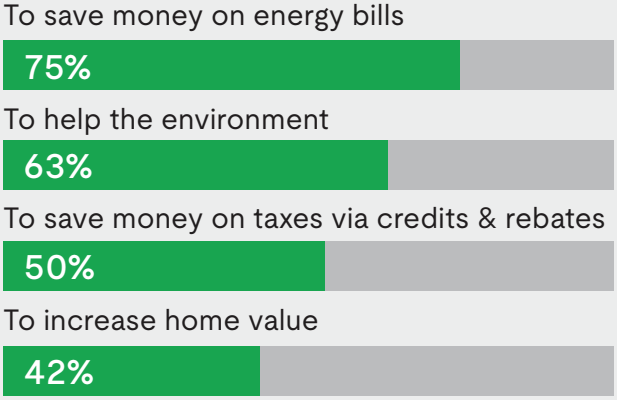
52% look to policymakers

Support for clean energy transition exists broadly and in the home

75%

of consumers say they actively monitor their home energy usage, leading many to make more sustainable, energy-saving home improvements like installing solar panels.

Reasons for installing solar panels:



61%

of respondents on average believe that the advancement of solar, wind, and hydrogen energy technologies will positively influence various aspects of life.

32% express concerns that these renewable energy developments might compromise the reliability and resilience of the national electric grid.

Confusion over battery disposal raises waste facility fire risk

of consumers throw batteries in the trash

mix batteries in with other recycling

This behavior helps to explain the rise in waste management facility fires sparked by old lithium-ion batteries going into thermal runaway.

Source: ULSE Insights Surveys August 2023-July 2024

Survey Methodology

These results were primarily taken from a ULSE Insights survey series of a cumulative 4,032 U.S. adults, conducted between November 2023 and June 2024. Supplemental results on battery circularity were taken from a separate ULSE Insights survey series of a cumulative 16,146 U.S. adults, conducted between August 2023 and July 2024, and are also included in the report.

All studies were designed and formulated by UL Standards & Engagement. Surveys were administered online by BV Insights. As a member of the Insights Association and ESOMAR (the European Society for Opinion and Marketing Research), BV Insights adheres to industry ethics and best practices, including maintaining the anonymity of respondents.

The margin of sampling error at 95% confidence for aggregate results is +/- 2.2%. Sampling error is larger for subgroups of the data. As with any survey, sampling error is only one source of possible error. While non-sampling error cannot be accurately calculated, precautionary steps were taken in all phases of the survey design and the collection and processing of the data to minimize its influence.

Note: All numbers are percentages unless otherwise noted. Figures may not total 100% due to rounding.